APPENDIX E

DOMESTIC SUPPLY WELL SEARCH DOCUMENTATION

TABLE 1
DOMESTIC WELL SURVEY

SUNOCO STATION #0363-5430
610 OLD YORK ROAD
WARMINSTER, PENNSYLVANIA

PROPERTY OWNER OR RETAIL/LEASEE NAME	PROPERTY USAGE	ADDRESS NO.	STREET	WMA CUSTOMER? YES	WMA CUSTOMER? NO	SUPPLY WELL? YES	SUPPLY WELL? NO	SURVEY NOT RETURNED	WELL SAMPLED	COMMENTS
Warminster Water Authority	Commercial	415	Gibson Avenue	√		√				215-675-3301
	Residential	529	Lemon Street	√		√				Information from PADEP file review
	Residential	575	Maple Street	√		√				Information from PADEP file review
	Residential	577	Maple Street	√		√				Information from PADEP file review
Robert A. Thomas	Residential	480	Nemoral Street	√			√			
Jeff Walsh	Residential	481	Nemoral Street	√			√			
Anthony and Helen Bongarzone	Residential	486	Nemoral Street	√			√			
	Residential	489	Nemoral Street					√		
George and Kathleen D Krajci	Residential	490	Nemoral Street	√			√			
McHugh	Residential	495	Nemoral Street					√		
	Residential	512	Nemoral Street					√		
	Residential	513	Nemoral Street					√		
Nelson Mears	Residential	525 A/B	Nemoral Street	√			√			
Harold Van Sant	Residential	526	Nemoral Street	√			√			
Moritzs	Residential	536	Nemoral Street					√		
	Residential	535 A/B	Nemoral Street	√			√			
Jane E. Gibson	Residential	545 A/B	Nemoral Street	√			√			
Gabor	Residential	546	Nemoral Street	√			√			
	Residential	548	Nemoral Street					√		
	Residential	555 A/B	Nemoral Street					√		
	Residential	556 A/B	Nemoral Street					√		
Denise M. Guerrelli	Residential	558	Nemoral Street	√			√			
	Residential	565	Nemoral Street					√		
	Residential	566 A/B	Nemoral Street					√		
	Residential	567	Nemoral Street					√		
	Residential	575 A/B	Nemoral Street					√		
No Name	Residential	576 A/B	Nemoral Street	√			√			
	Residential	588	Nemoral Street					√		
Jim Dugan	Residential	590	Nemoral Street	√			√			
Donald P. Pfister	Residential	452	Olive Street	√		√				Well not in use
Moore	Residential	460	Olive Street	√		√				Well not in use
	Residential	470	Olive Street			√				Information from PADEP file review
O'Neill	Residential	480 A/B	Olive Street			√				Information from PADEP file review
	Residential	490	Olive Street			√				Information from PADEP file review
Adam and Helen Sobol	Residential	500	Olive Street	√			√			
William Reichert	Residential	520	Olive Street	√			√			
Dorothy Brundage	Residential	530	Olive Street	√			√			
Mirack	Residential	536	Olive Street	√			√			
McDonnell	Residential	540	Olive Street					√		
Emil Kraiser	Residential	550	Olive Street	√			√			
	Residential	552	Olive Street					√		

TABLE 1
DOMESTIC WELL SURVEY

SUNOCO STATION #0363-5430
610 OLD YORK ROAD
WARMINSTER, PENNSYLVANIA

PROPERTY OWNER OR RETAIL/LEASEE NAME	PROPERTY USAGE	ADDRESS NO.	STREET	WMA CUSTOMER? YES	WMA CUSTOMER? NO	SUPPLY WELL? YES	SUPPLY WELL? NO	SURVEY NOT RETURNED	WELL SAMPLED	COMMENTS
	Residential	556	Olive Street					√		
Richard Stien	Residential	560	Olive Street	√			√			
	Residential	566	Olive Street					√		
	Residential	580	Olive Street					√		
	Residential	582	Olive Street					√		
Robert M. Kraft	Residential	586 A/B	Olive Street	√			√			
	Residential	590	Olive Street	√			√			
Warminster Municipal Authority	Commercial		Roberts Road			√				Pump Station
David Stein (National Auto Sales)	Commercial	336	W. Street Rd	√			√			
Rymar Plaza II	Commercial	530	W. Street Rd	√			√			
Denny's	Commercial	520	W. Street Rd	√			√			
Kinkade (Tree House Flowers)	Commercial	540	W. Street Rd	√			√			
	Commercial	550	W. Street Rd	√			√			
	Commercial	556	W. Street Rd					√		
Burger King	Commercial	580	W. Street Rd	√			√			
Warminster Electronics (Eugene Polron)	Commercial	586	W. Street Rd	√			√			
The Dove Bar	Commercial	590	W. Street Rd					√		
	Residential	590A	W. Street Rd					√		
Penzoil (Jiffy Lube)	Commercial	600	W. Street Rd	√			√			
Ted (Steak & Hoagie factory)	Commercial	610	W. Street Rd	√			√			
Eagle Diner	Commercial		W. Street Rd					√		
United Church of Christ	Commercial	785	W. Street Rd					√		
Lafferty Chevrolet	Commercial	829	W. Street Rd		√	√			30-May-01	Well is main source of water
Center Point Plaza (Wallers & Assoc.)	Commercial		W. Street Rd	√			√			610-444-6000
Christ's Home (retirement village)	Residential	1220	W. Street Rd	√		√			1-Jun-01	Well supplies one permanently unoccupied residence.
John Mayer (office space)	Commercial	755	Old York Rd	√			√			
Pathmark Stores	Commercial	700	Old York Rd	√			√			
Archbishop Wood	Commercial	655	Old York Rd	√			√			
Warminster Plaza	Commercial		Old York Rd	√			√			
Hatboro Federal Savings	Commercial	609	Old York Rd	√			√			
Drug Emporium	Commercial	599	Old York Rd	√			√			
John Meyer (stores)	Commercial	541-553	Old York Rd	√			√			
Delafronzio (stores)	Commercial	525-539	Old York Rd	√			√			
PNC Bank	Commercial	521	Old York Rd	√			√			
Warminster Ambulance Corp	Commercial	555	Evergreen Ave	√			√			
	Residential	552	Norwood Ave	√			√			
	Residential	554	Norwood Ave					√		
	Residential	512	Norwood Ave							

ACCUTEST

06/12/01

RECEIVED JUN 1 3 2001

Technical Report for

Groundwater & Environmental Services

Sun, 610 Old York Road, Warminster, PA 0363-5430

Accutest Job Number: E92327

Report to:

Groundwater & Environmental Services
410 Eagleview Blvd.
Suite 110
Exton, PA 19341

ATTN: Mike Sarcinello

Total number of pages in report: 4

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Vincent J. Pugliese
President

Certifications: NJ(12129), NY(10983), CA, CT, DE, FL, MA, MD, NC, PA, RI, SC, VA

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Accutest Laboratories

Sample Summary

Groundwater & Environmental Services

Job No: E92327

Sun, 610 Old York Road, Warminster, PA 0363-5430

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
E92327-1	06/01/01	14:20	BB	06/04/01	DW	Drinking Water	CHRIST'S HOME

Accutest Laboratories

Report of Analysis

Client Sample ID:	CHRIST'S HOME		
Lab Sample ID:	E92327-1	**Date Sampled:**	06/01/01
Matrix:	DW - Drinking Water	**Date Received:**	06/04/01
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	Sun, 610 Old York Road, Warminster, PA 0363-5430		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	A45687.D	1	06/08/01	MRD	n/a	n/a	VA1195
Run #2							

VOA Special List

CAS No.	Compound	Result	MCL	RL	Units	Q
71-43-2	Benzene	ND	5.0	1.0	ug/l	
108-88-3	Toluene	ND	1000	1.0	ug/l	
100-41-4	Ethylbenzene	ND	700	1.0	ug/l	
1330-20-7	Xylene (total)	ND	10000	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND		1.0	ug/l	
91-20-3	Naphthalene	ND		5.0	ug/l	
98-82-8	Isopropylbenzene	ND		2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		81-118%
17060-07-0	1,2-Dichloroethane-D4	105%		68-124%
2037-26-5	Toluene-D8	100%		85-119%
460-00-4	4-Bromofluorobenzene	106%		75-127%

ND = Not detected
MCL = Maximum Contamination Level (40 CFR 141)
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

BJ

ACCUTEST

CHAIN OF CUSTODY

FRESH PONDS CORPORATE VILLAGE, BUILDING B
2235 ROUTE 130, DAYTON, NJ 08810
732-329-0200 FAX: 732-329-3499/3480

ACCUTEST JOB #: E9227

ACCUTEST QUOTE #:

CLIENT INFORMATION

NAME: GES, Inc
ADDRESS: 410 Eagleview blvd, Suite 110
CITY: Exton STATE: Pa ZIP: 19341
SEND REPORT TO: Mike Sarcinello
PHONE #: 610-458-1077 ext 157

FACILITY INFORMATION

PROJECT NAME: Sun - Warminster
LOCATION: Exxon # 0363-5430 Old York Rd
PROJECT NO.:
FAX #:

ANALYTICAL INFORMATION

8260 B - BTEX MTBE Oxygenates Naphthalene

MATRIX CODES

DW - DRINKING WATER
GW - GROUND WATER
WW - WASTE WATER
SO - SOIL
SL - SLUDGE
OI - OIL
LIQ - OTHER LIQUID
SOL - OTHER SOLID

ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	COLLECTION DATE	COLLECTION TIME	SAMPLED BY:	MATRIX	# OF BOTTLES	PRESERVATION HCl	NaOH	HNO3	H2SO4	NONE	8260	LAB USE ONLY
-1	Christ's Home	6/1/01	1420	BG	GW	3	X					X	951

DATA TURNAROUND INFORMATION

- [X] 21 DAYS STANDARD — APPROVED BY:
- [ ] 14 DAYS *RUSH*
- [ ] 7 DAYS *EMERGENCY*
- [ ] OTHER

21 DAY TURNAROUND HARDCOPY. EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED

DATA DELIVERABLE INFORMATION

- [ ] NJ REDUCED
- [ ] NJ Full
- [ ] FULL CLP
- [ ] DISK DELIVERABLE
- [ ] OTHER (SPECIFY)
- [ ] COMMERCIAL "A"
- [ ] COMMERCIAL "B"
- [ ] STATE FORMS

COMMENTS/REMARKS

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESION, INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER:	DATE TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
1. B Blum	6/1/01 1545	1. [illegible]	2. [illegible]	6/4/01 11:25	2. Bert Allen
RELINQUISHED BY: 3. Bert Allen	DATE/TIME: 6/4/01 1356	RECEIVED BY: 3. [illegible]	RELINQUISHED BY: 4.	DATE TIME:	RECEIVED BY: 4.
RELINQUISHED BY: 5.	DATE TIME:	RECEIVED BY: 5.	SEAL #	PRESERVE WHERE APPLICABLE ☑	ON ICE ☑ TEMPERATURE 5 C

4

TRS

ACCUTEST.

06/11/01

RECEIVED JUN 13 2001

Technical Report for

Groundwater & Environmental Services

Sun, 610 Old York Road, Warminster, PA 0363-5430

Accutest Job Number: E92225

Report to:

Groundwater & Environmental Services
410 Eagleview Blvd.
Suite 110
Exton, PA 19341

ATTN: Mike Sarcinello

Total number of pages in report: 4

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Vincent J. Pugliese
President

Certifications: NJ(12129), NY(10983), CA, CT, DE, FL, MA, MD, NC, PA, RI, SC, VA

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Accutest Laboratories

Sample Summary

Groundwater & Environmental Services

Job No: E92225

Sun, 610 Old York Road, Warminster, PA 0363-5430

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
E92225-1	05/31/01	13:50	BB	06/01/01	AQ	Ground Water	LAFFERTY CHEVROLET

Accutest Laboratories

Report of Analysis

Client Sample ID:	LAFFERTY CHEVROLET		
Lab Sample ID:	E92225-1	**Date Sampled:**	05/31/01
Matrix:	AQ - Ground Water	**Date Received:**	06/01/01
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	Sun, 610 Old York Road, Warminster, PA 0363-5430		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	O41737.D	1	06/08/01	NM	n/a	n/a	VO2286
Run #2							

VOA Special List

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		81-118%
17060-07-0	1,2-Dichloroethane-D4	97%		68-124%
2037-26-5	Toluene-D8	99%		85-119%
460-00-4	4-Bromofluorobenzene	100%		75-127%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

CHAIN OF CUSTODY

ACCUTEST

GW

FRESH PONDS CORPORATE VILLAGE, BUILDING B
2235 ROUTE 130, DAYTON, NJ 08810
732-329-0200 FAX: 732-329-3499/3480

ACCUTEST JOB #: E92225
ACCUTEST QUOTE #:

CLIENT INFORMATION

NAME: GES, Inc
ADDRESS: 410 Eagleview Blvd, Suite 110
CITY: Exton STATE: Pa ZIP: 19341
SEND REPORT TO: Lisa Holderbach
PHONE #: 610-458-1077 ext 110

FACILITY INFORMATION

PROJECT NAME: Sun - Walmington
LOCATION: 610 old York Rd #0363-5430
PROJECT NO.:
FAX #:

ANALYTICAL INFORMATION

8260B - BTEX, MTBE, Naphthalene

MATRIX CODES

DW - DRINKING WATER
GW - GROUND WATER
WW - WASTE WATER
SO - SOIL
SL - SLUDGE
OI - OIL
LIQ - OTHER LIQUID
SOL - OTHER SOLID

ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	COLLECTION DATE	COLLECTION TIME	SAMPLED BY:	MATRIX	# OF BOTTLES	PRESERVATION HCl	HNO3	DI H2O	H2SO4	NONE	6	LAB USE ONLY
-1	Lafferty Chevrolet	5/31/01	1350	BB	GW	3	Y						939

DATA TURNAROUND INFORMATION

- [x] 21 DAYS STANDARD
- [ ] 14 DAYS *RUSH*
- [ ] 7 DAYS *EMERGENCY*
- [ ] OTHER

APPROVED BY:

21 DAY TURNAROUND HARDCOPY. EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED

DATA DELIVERABLE INFORMATION

- [ ] NJ REDUCED
- [ ] NJ Full
- [ ] FULL CLP
- [ ] DISK DELIVERABLE
- [ ] OTHER (SPECIFY)
- [ ] COMMERCIAL "A"
- [ ] COMMERCIAL "B"
- [ ] STATE FORMS

COMMENTS/REMARKS

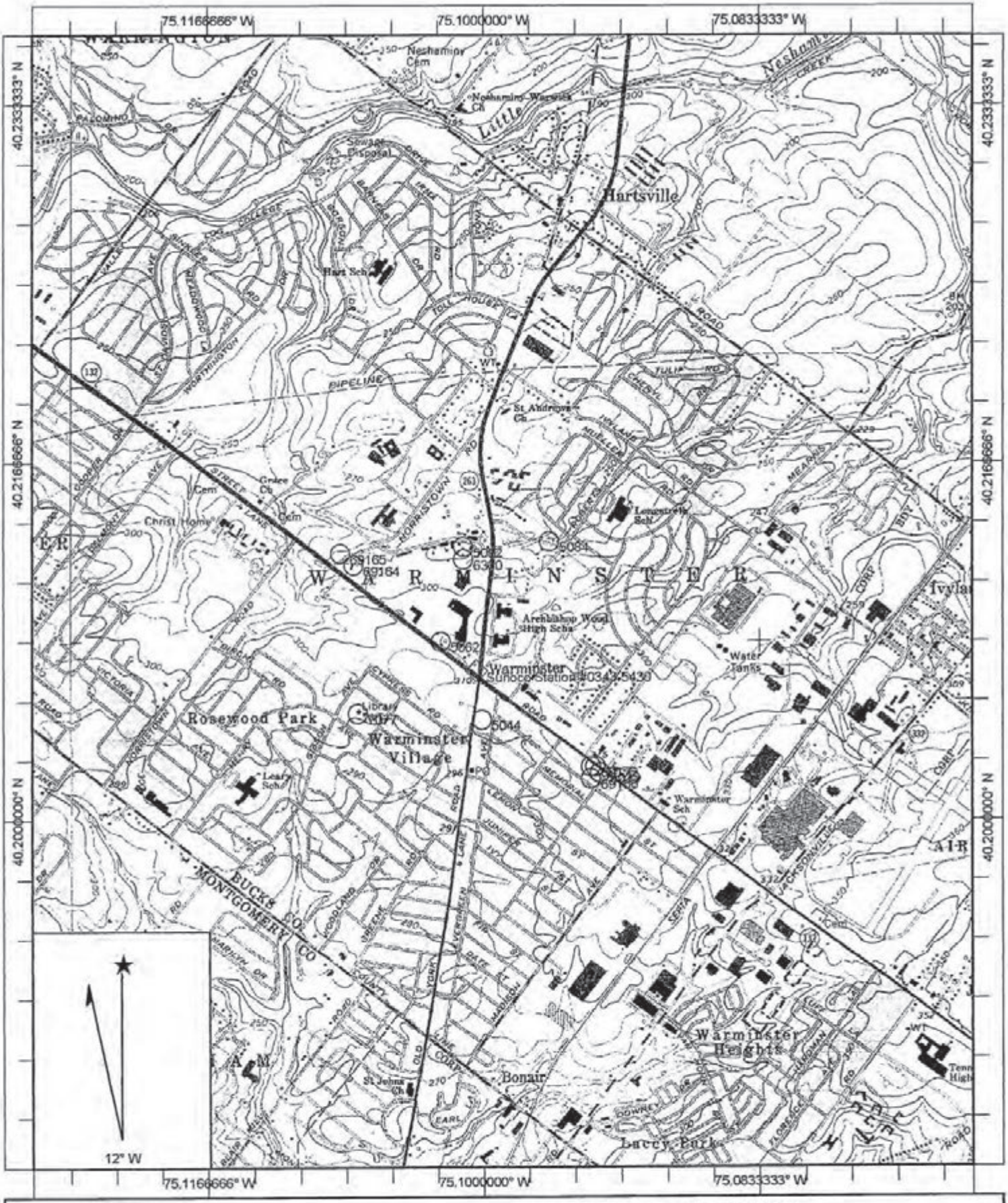
SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESION, INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER:	DATE TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
1. B Blue	5/31/01 1600	1. GES Fridge	2. Laura Gotham	6/1/01 10:00	2.
RELINQUISHED BY:	DATE TIME: 6/1/01 1305	RECEIVED BY: 3.	RELINQUISHED BY: 4.	DATE TIME:	RECEIVED BY: 4.
RELINQUISHED BY: 5.	DATE TIME:	RECEIVED BY: 5.	SEAL #	PRESERVE WHERE APPLICABLE	ON ICE [x] TEMPERATURE 2 °C

TRS

APPENDIX F

PENNSYLVANIA GROUNDWATER INFORMATION SYSTEM (PAGWIS) SUMMARY



Name: HATBORO
Date: 12/22/105
Scale: 1 inch equals 2000 feet

Location: 040.2101888° N 075.0988450° W
Caption: Sunoco Station #0364-5430
610 Old York Road
Warminster, PA

Copyright (C) 1997, Maptech, Inc.

Markers

Name: Sunoco Station #0343-5430
Short Name: Site
Coordinates: 040.2069440° N, 075.1003000° W
Comment: Sun Warminster, 610 Old York Road

Name: 5082
Short Name: 5082
Coordinates: 040.2127800° N, 075.1011100° W
Comment: Warminster PAGWIS Search #1

Name: 6300
Short Name: 6300
Coordinates: 040.2122200° N, 075.1011100° W
Comment: Warminster PAGWIS Search #2

Name: 69166
Short Name: 69166
Coordinates: 040.2019500° N, 075.0933300° W
Comment: Warminster PAGWIS Search #3

Name: 5033
Short Name: 5033
Coordinates: 040.2022200° N, 075.0927800° W
Comment: Warminster PAGWIS Search #4

Name: 5062
Short Name: 5062
Coordinates: 040.2083300° N, 075.1025000° W
Comment: Warminster PAGWIS Search #5

Name: 5036
Short Name: 5036
Coordinates: 040.2025000° N, 075.0930600° W
Comment: Warminster PAGWIS Search #6

Name: 69172
Short Name: 69172
Coordinates: 040.2025000° N, 075.0933300° W
Comment: Warminster PAGWIS Search #7

Name: 7077
Short Name: 7077
Coordinates: 040.2050000° N, 075.1075000° W
Comment: Warminster PAGWIS Search #8

Name: 5084
Short Name: 5084
Coordinates: 040.2130500° N, 075.0958300° W

Comment: Warminster PAGWIS Search #9

Name: 5044

Short Name: 5044

Coordinates: 040.2047200° N, 075.1000000° W

Comment: Warminster PAGWIS Search #10

Name: 69164

Short Name: 69164

Coordinates: 040.2119400° N, 075.1077800° W

Comment: Warminster PAGWIS Search #11

Name: 69165

Short Name: 69165

Coordinates: 040.2125000° N, 075.1086100° W

Comment: Warminster PAGWIS Search #12

PA Topographic & Geologic Survey

PaGWIS

SELECTED WELLS

Menu | New Selection

Email comments to Topo Geo.

You have selected 12 Well(s). To create a comma separated list of all these wells, click **Create List.** If you want to limit the list, place check marks next to the wells you want to have included, and then click **Create List.**

Create List

Page 1 of 1

Record	PA Well ID	Driller	Driller Well ID	Date Drilled	Owner	County	Municipality	Image
☐ 1	5082	JOHN O'DONNELL & SON		1/1/1915	CHRIST'S HOME FOR CHILDREN	BUCKS	WARMINSTER TWP.	No Image
☐ 2	6300	JOHN WILEY		1/1/1932	CHRIST'S HOME FOR CHILDREN	BUCKS	WARMINSTER TWP.	No Image
☐ 3	69166			11/29/1985	GALLAGHER TOM	BUCKS	WARMINSTER TWP.	No Image
☐ 4	5033	UNKNOWN		1/1/1935	GRADWELL , FRANK	BUCKS	WARMINSTER TWP.	No Image
☐ 5	5062				JONES , C	BUCKS	WARMINSTER TWP.	No Image
☐ 6	5036	F E BUEHLER & SON		4/17/1970	SMITH , ELMER	BUCKS	WARMINSTER TWP.	No Image
☐ 7	69172	F E BUEHLER & SON		1/1/1970	SMITH ELMER	BUCKS	WARMINSTER TWP.	No Image
☐ 8	7077	UNKNOWN		1/1/1954	WARMINSTER AUTH	BUCKS	WARMINSTER TWP.	No Image
☐ 9	5084	W ROLLIN RAAB & SON INC		2/9/1980	WARMINSTER AUTH	BUCKS	WARMINSTER TWP.	No Image
☐ 10	5044	UNKNOWN		1/1/1938	WARMINSTER HOSIERY CO	BUCKS	WARMINSTER TWP.	No Image
☐ 11	69164			11/1/1985	WARMINSTER MUN AUTH	BUCKS	WARMINSTER TWP.	No Image
☐ 12	69165			10/1/1985	WARMINSTER MUN AUTH	BUCKS	WARMINSTER TWP.	No Image

PA Topographic & Geologic Survey

PaGWIS

DETAILS FOR WELL 5082

Menu | New Selection

Email comments to Topo Geo.

Record: 1 of 12

(There is a total of 12 Wells in the list.)

First Well | Prev.Well | Next Well | Last Well

Return to Summary List

Well Driller: **JOHN O'DONNELL & SON**

PA Well ID: **5082**

License: **0399**

Driller Well ID:

Type of Activity:

Original Well By:

Date Drilled: **1/1/1915**

Drilling Method: **CABLE TOOL**

Owner: **CHRIST'S HOME FOR CHILDREN**

Address of Well:

Zipcode:

County: **BUCKS**

Municipality: **WARMINSTER TWP.**

Quadrangle: **HATBORO**

Latitude: **40.21278**

Longitude: **-75.10111**

Well Depth (*ft*): **161**

Well Finish: **OPEN HOLE**

Depth to Bedrock(*ft*):

Did Not Encounter Bedrock:

Well Yield (*gpm*):

Yield Measure Method:

Static Water Level: **90**
(*ft below land surface*)

Water level after yield test:
(*ft below land surface*)

Length of Yield Test:
(*minutes*)

Saltwater Zone(*ft*):

Use of Well: **WITHDRAWAL**

Use of Water: **PUBLIC SUPPLY**

BOREHOLE

	Top	Bottom	Diameter
SECTION 1:	**0**	**161**	**6**

CASING

CASING 1: Top: **0** Bottom: **12** Diameter: **6** Material: **OTHER METAL**

Record: 1 of 12

(There is a total of 12 Wells in the list.)

First Well | Prev.Well | Next Well | Last Well

Return to Summary List

PA Topographic & Geologic Survey **PaGWIS**

DETAILS FOR WELL 6300

Menu | New Selection

Email comments to Topo Geo.

Record: 2 of 12

(There is a total of 12 Wells in the list.)

First Well | Prev.Well | Next Well | Last Well

Return to Summary List

Well Driller: **JOHN WILEY**

PA Well ID: **6300**

License: **-241**

Driller Well ID:

Type of Activity:

Original Well By:

Date Drilled: **1/1/1932**

Drilling Method: **CABLE TOOL**

Owner: **CHRIST'S HOME FOR CHILDREN**

Address of Well:

Zipcode:

County: **BUCKS**

Municipality: **WARMINSTER TWP.**

Quadrangle: **HATBORO** Latitude: **40.21222** Longitude: **-75.10111**

Well Depth (*ft*): **200**

Well Finish: **OPEN HOLE**

Depth to Bedrock(*ft*):

Did Not Encounter Bedrock:

Well Yield (*gpm*): **35**

Yield Measure Method:

Static Water Level: (*ft below land surface*)

Water level after yield test: (*ft below land surface*)

Length of Yield Test: (*minutes*)

Saltwater Zone(*ft*):

Use of Well: **WITHDRAWAL**

Use of Water: **DOMESTIC**

BOREHOLE

	Top	Bottom	Diameter
SECTION 1:	**0**	**200**	**6**

CASING

CASING 1: Top: **0** Bottom: Diameter: **6** Material: **OTHER METAL**

Record: 2 of 12

(There is a total of 12 Wells in the list.)

First Well | Prev.Well | Next Well | Last Well

Return to Summary List

PA Topographic & Geologic Survey

PaGWIS

DETAILS FOR WELL 69166

Menu | New Selection

Email comments to Topo Geo.

Record: 3 of 12

(There is a total of 12 Wells in the list.)

First Well | Prev.Well | Next Well | Last Well

Return to Summary List

Well Driller: **ALLEN H DORN**

PA Well ID: **69166**

License: **0121**

Driller Well ID:

Type of Activity: **New Well**

Original Well By:

Date Drilled: **11/29/1985**

Drilling Method:

Owner: **GALLAGHER TOM**

Address of Well:

Zipcode:

County: **BUCKS**

Municipality: **WARMINSTER TWP.**

Quadrangle: **HATBORO**

Latitude: **40.20195**

Longitude: **-75.09333**

Well Depth (*ft*): **100**

Well Finish: **OPEN HOLE**

Depth to Bedrock(*ft*): **23**

Did Not Encounter Bedrock:

Well Yield (*gpm*): **12**

Yield Measure Method: **ESTIMATED**

Static Water Level: (*ft below land surface*)

Water level after yield test: **15** (*ft below land surface*)

Length of Yield Test: **0.25** (*minutes*)

Saltwater Zone(*ft*):

Use of Well: **WITHDRAWAL**

Use of Water: **DOMESTIC**

CASING

CASING 1: Top: **0** Bottom: **30** Diameter: **6** Material:

SEAL 1 Top: Bottom: Type: **UNKNOWN**

WATER BEARING ZONE

WATER BEARING ZONE 1: Top: **65** Bottom: Yield:

WATER BEARING ZONE 2: Top: **90** Bottom: Yield:

WATER BEARING ZONE 3: Top: **75** Bottom: Yield:

Record: 3 of 12

(There is a total of 12 Wells in the list.)

First Well | Prev.Well | Next Well | Last Well

Return to Summary List

PA Topographic & Geologic Survey

PaGWIS

DETAILS FOR WELL 5033

Menu | New Selection

Email comments to Topo Geo.

Record: 4 of 12

(There is a total of 12 Wells in the list.)

First Well | Prev.Well | Next Well | Last Well

Return to Summary List

Well Driller: **UNKNOWN**

PA Well ID: **5033**

License: **1**

Driller Well ID:

Type of Activity:

Original Well By:

Date Drilled: **1/1/1935**

Drilling Method: **CABLE TOOL**

Owner: **GRADWELL , FRANK**

Address of Well:

Zipcode:

County: **BUCKS**

Municipality: **WARMINSTER TWP.**

Quadrangle: **HATBORO**

Latitude: **40.20222**

Longitude: **-75.09278**

Well Depth (*ft*): **40**

Well Finish: **OPEN HOLE**

Depth to Bedrock(*ft*):

Did Not Encounter Bedrock:

Well Yield (*gpm*):

Yield Measure Method:

Static Water Level: **8.76**
(*ft below land surface*)

Water level after yield test:
(*ft below land surface*)

Length of Yield Test:
(*minutes*)

Saltwater Zone(*ft*):

Use of Well: **WITHDRAWAL**

Use of Water: **DOMESTIC**

BOREHOLE

	Top	Bottom	Diameter
SECTION 1:	**0**	**40**	**8**

CASING

CASING 1: Top: **0** Bottom: Diameter: **8** Material: **STEEL**

Record: 4 of 12

(There is a total of 12 Wells in the list.)

First Well | Prev.Well | Next Well | Last Well

Return to Summary List

PA Topographic & Geologic Survey **PaGWIS**

DETAILS FOR WELL 5062

Menu | New Selection

Email comments to Topo Geo.

Record: 5 of 12

(There is a total of 12 Wells in the list.)

First Well | Prev.Well | Next Well | Last Well

Return to Summary List

Well Driller:

License:

PA Well ID: **5062**

Driller Well ID:

Type of Activity:

Date Drilled:

Original Well By:

Drilling Method:

Owner: **JONES , C**

Address of Well:

Zipcode:

County: **BUCKS**

Municipality: **WARMINSTER TWP.**

Quadrangle: **HATBORO** Latitude: **40.20833** Longitude: **-75.1025**

Well Depth (*ft*):

Depth to Bedrock(*ft*):

Well Yield (*gpm*):

Static Water Level: (*ft below land surface*)

Length of Yield Test: (*minutes*)

Well Finish:

Did Not Encounter Bedrock:

Yield Measure Method:

Water level after yield test: (*ft below land surface*)

Saltwater Zone(*ft*):

Use of Well: **WITHDRAWAL**

Use of Water: **DOMESTIC**

Record: 5 of 12

(There is a total of 12 Wells in the list.)

First Well | Prev.Well | Next Well | Last Well

Return to Summary List

PA Topographic & Geologic Survey **PaGWIS**

DETAILS FOR WELL 5036

Menu | New Selection

Email comments to Topo Geo.

Record: 6 of 12

(There is a total of 12 Wells in the list.)

First Well | Prev.Well | Next Well | Last Well

Return to Summary List

Well Driller: **F E BUEHLER & SON, INC.** PA Well ID: **5036**

License: **0130** Driller Well ID:

Type of Activity: Original Well By:

Date Drilled: **4/17/1970** Drilling Method: **AIR ROTARY**

Owner: **SMITH , ELMER**

Address of Well: Zipcode:

County: **BUCKS**

Municipality: **WARMINSTER TWP.**

Quadrangle: **HATBORO** Latitude: **40.2025** Longitude: **-75.09306**

Well Depth (*ft*): **95** Well Finish: **OPEN HOLE**

Depth to Bedrock(*ft*): Did Not Encounter Bedrock:

Well Yield (*gpm*): Yield Measure Method:

Static Water Level: (*ft below land surface*) Water level after yield test: (*ft below land surface*)

Length of Yield Test: (*minutes*) Saltwater Zone(*ft*):

Use of Well: **WITHDRAWAL** Use of Water: **DOMESTIC**

BOREHOLE

	Top	Bottom	Diameter
SECTION 1:	**0**	**95**	**6**

CASING

CASING 1: Top: **0** Bottom: **40** Diameter: **6** Material: **STEEL**

WATER BEARING ZONE

WATER BEARING ZONE 1: Top: **50** Bottom: Yield:

WATER BEARING ZONE 2: Top: **92** Bottom: Yield:

Record: 6 of 12

(There is a total of 12 Wells in the list.)

First Well | Prev.Well | Next Well | Last Well

Return to Summary List

PA Topographic & Geologic Survey **PaGWIS**

DETAILS FOR WELL 69172

Menu | New Selection

Email comments to Topo Geo.

Record: 7 of 12

(There is a total of 12 Wells in the list.)

First Well | Prev.Well | Next Well | Last Well

Return to Summary List

Well Driller: **F E BUEHLER & SON, INC.** PA Well ID: **69172**

License: **0130** Driller Well ID:

Type of Activity: **New Well** Original Well By:

Date Drilled: **1/1/1970** Drilling Method:

Owner: **SMITH ELMER**

Address of Well: Zipcode:

County: **BUCKS**

Municipality: **WARMINSTER TWP.**

Quadrangle: **HATBORO** Latitude: **40.2025** Longitude: **-75.09333**

Well Depth (*ft*): **95** Well Finish: **OPEN HOLE**

Depth to Bedrock(*ft*): **16** Did Not Encounter Bedrock:

Well Yield (*gpm*): Yield Measure Method: **UNKNOWN**

Static Water Level: (*ft below land surface*) Water level after yield test: (*ft below land surface*)

Length of Yield Test: **44** (*minutes*) Saltwater Zone(*ft*):

Use of Well: **WITHDRAWAL** Use of Water: **DOMESTIC**

CASING

CASING 1: Top: **0** Bottom: **41** Diameter: **6** Material:

WATER BEARING ZONE

WATER BEARING ZONE 1: Top: **20** Bottom: Yield:

WATER BEARING ZONE 2: Top: **95** Bottom: Yield:

WATER BEARING ZONE 3: Top: **50** Bottom: Yield:

Record: 7 of 12

(There is a total of 12 Wells in the list.)

First Well | Prev.Well | Next Well | Last Well

Return to Summary List

PA Topographic & Geologic Survey **PaGWIS**

DETAILS FOR WELL 7077

Menu | New Selection

Email comments to Topo Geo.

Record: 8 of 12

(There is a total of 12 Wells in the list.)

First Well | Prev.Well | Next Well | Last Well

Return to Summary List

Well Driller: **UNKNOWN** PA Well ID: **7077**

License: **1** Driller Well ID:

Type of Activity: Original Well By:

Date Drilled: **1/1/1954** Drilling Method: **CABLE TOOL**

Owner: **WARMINSTER AUTH**

Address of Well: Zipcode:

County: **BUCKS**

Municipality: **WARMINSTER TWP.**

Quadrangle: **HATBORO** Latitude: **40.205** Longitude: **-75.1075**

Well Depth (*ft*): **300** Well Finish: **OPEN HOLE**

Depth to Bedrock(*ft*): Did Not Encounter Bedrock:

Well Yield (*gpm*): Yield Measure Method:

Static Water Level: **13** (*ft below land surface*) Water level after yield test: (*ft below land surface*)

Length of Yield Test: (*minutes*) Saltwater Zone(*ft*):

Use of Well: **WITHDRAWAL** Use of Water: **PUBLIC SUPPLY**

BOREHOLE

	Top	Bottom	Diameter
SECTION 1:	**0**	**300**	**10**

CASING

CASING 1: Top: **0** Bottom: **63** Diameter: **10** Material: **STEEL**

CASING 2: Top: **0** Bottom: **44** Diameter: **14** Material: **STEEL**

(There is a total of 12 Wells in the

Record: 8 of 12 list.)

First Well | Prev.Well | Next Well | Last Well

Return to Summary List

PA Topographic & Geologic Survey **PaGWIS**

DETAILS FOR WELL 5084

Menu | New Selection

Email comments to Topo Geo.

Record: 9 of 12

(There is a total of 12 Wells in the list.)

First Well | Prev.Well | Next Well | Last Well

Return to Summary List

Well Driller: **RAAB WELL DRILLING, INC** PA Well ID: **5084**

License: **0330** Driller Well ID:

Type of Activity: Original Well By:

Date Drilled: **2/9/1980** Drilling Method: **AIR ROTARY**

Owner: **WARMINSTER AUTH**

Address of Well: Zipcode:

County: **BUCKS**

Municipality: **WARMINSTER TWP.**

Quadrangle: **HATBORO** Latitude: **40.21305** Longitude: **-75.09583**

Well Depth (*ft*): **400** Well Finish: **OPEN HOLE**

Depth to Bedrock(*ft*): Did Not Encounter Bedrock:

Well Yield (*gpm*): Yield Measure Method:

Static Water Level: *(ft below land surface)* Water level after yield test: *(ft below land surface)*

Length of Yield Test: *(minutes)* Saltwater Zone(*ft*):

Use of Well: **WITHDRAWAL** Use of Water: **PUBLIC SUPPLY**

BOREHOLE

	Top	Bottom	Diameter
SECTION 1:	**0**	**400**	**8**

CASING

CASING 1: Top: **0** Bottom: **50** Diameter: **8** Material: **STEEL**

CASING 2: Top: **0** Bottom: Diameter: **12** Material: **STEEL**

(There is a total of 12 Wells in the

Record: 9 of 12

list.)

First Well | Prev.Well | Next Well | Last Well

Return to Summary List

PA Topographic & Geologic Survey **PaGWIS**

DETAILS FOR WELL 5044

Menu | New Selection

Email comments to Topo Geo.

Record: 10 of 12

(There is a total of 12 Wells in the list.)

First Well | Prev.Well | Next Well | Last Well

Return to Summary List

Well Driller: **UNKNOWN**

PA Well ID: **5044**

License: **1**

Driller Well ID:

Type of Activity:

Original Well By:

Date Drilled: **1/1/1938**

Drilling Method: **CABLE TOOL**

Owner: **WARMINSTER HOSIERY CO**

Address of Well:

Zipcode:

County: **BUCKS**

Municipality: **WARMINSTER TWP.**

Quadrangle: **HATBORO**

Latitude: **40.20472**

Longitude: **-75.1**

Well Depth (*ft*): **56**

Well Finish: **OPEN HOLE**

Depth to Bedrock(*ft*):

Did Not Encounter Bedrock:

Well Yield (*gpm*):

Yield Measure Method:

Static Water Level: (*ft below land surface*)

Water level after yield test: (*ft below land surface*)

Length of Yield Test: (*minutes*)

Saltwater Zone(*ft*):

Use of Well: **UNUSED**

Use of Water: **UNUSED**

BOREHOLE

	Top	Bottom	Diameter
SECTION 1:	**0**	**56**	**6**

CASING

CASING 1: Top: **0** Bottom: Diameter: **6** Material: **UNKNOWN**

Record: 10 of 12

(There is a total of 12 Wells in the list.)

First Well | Prev.Well | Next Well | Last Well

Return to Summary List

PA Topographic & Geologic Survey **PaGWIS**

DETAILS FOR WELL 69164

Menu | New Selection

Email comments to Topo Geo.

Record: 11 of 12

(There is a total of 12 Wells in the list.)

First Well | Prev.Well | Next Well | Last Well

Return to Summary List

Well Driller: **RAAB WELL DRILLING, INC**

PA Well ID: **69164**

License: **0330**

Driller Well ID:

Type of Activity: **New Well**

Original Well By:

Date Drilled: **11/1/1985**

Drilling Method:

Owner: **WARMINSTER MUN AUTH**

Address of Well:

Zipcode:

County: **BUCKS**

Municipality: **WARMINSTER TWP.**

Quadrangle: **HATBORO**

Latitude: **40.21194**

Longitude: **-75.10778**

Well Depth (*ft*): **514**

Well Finish: **OPEN HOLE**

Depth to Bedrock(*ft*): **8**

Did Not Encounter Bedrock:

Well Yield (*gpm*): **80**

Yield Measure Method: **VOLUMETRIC, WATCH & BUCKET**

Static Water Level: **20** (*ft below land surface*)

Water level after yield test: **120** (*ft below land surface*)

Length of Yield Test: **12** (*minutes*)

Saltwater Zone(*ft*):

Use of Well: **TEST**

Use of Water: **PUBLIC SUPPLY**

CASING

CASING 1: Top: **0** Bottom: **20** Diameter: **6** Material:

SEAL 1 Top: Bottom: Type: **NONE**

Record: 11 of 12

(There is a total of 12 Wells in the list.)

First Well | Prev.Well | Next Well | Last Well

Return to Summary List

PA Topographic & Geologic Survey **PaGWIS**

DETAILS FOR WELL 69165

Menu | New Selection

Email comments to Topo Geo.

Record: 12 of 12 **(There is a total of 12 Wells in the list.)**

First Well | Prev.Well | Return to Summary List

Well Driller: **RAAB WELL DRILLING, INC** PA Well ID: **69165**

License: **0330** Driller Well ID:

Type of Activity: **New Well** Original Well By:

Date Drilled: **10/1/1985** Drilling Method:

Owner: **WARMINSTER MUN AUTH**

Address of Well: Zipcode:

County: **BUCKS**

Municipality: **WARMINSTER TWP.**

Quadrangle: **HATBORO** Latitude: **40.2125** Longitude: **-75.10861**

Well Depth (*ft*): **375** Well Finish: **OPEN HOLE**

Depth to Bedrock(*ft*): **10** Did Not Encounter Bedrock:

Well Yield (*gpm*): **105** Yield Measure Method: **VOLUMETRIC, WATCH & BUCKET**

Static Water Level: **8** (*ft below land surface*) Water level after yield test: **108** (*ft below land surface*)

Length of Yield Test: **24** (*minutes*) Saltwater Zone(*ft*):

Use of Well: **TEST** Use of Water: **PUBLIC SUPPLY**

CASING

CASING 1: Top: **0** Bottom: **20** Diameter: **6** Material:

SEAL 1 Top: Bottom: Type: **NONE**

Record: 12 of 12 **(There is a total of 12 Wells in the list.)**

First Well | Prev.Well | Return to Summary List

Distance Calculator

Enter values **Find Answer**

Hints!
Maintain all negitive values

Site Location	
Latitude	**Longitude**
40.206944	**-75.099872**

Well Locations					
Latitude	Longitude	Estimated Distance from Site (feet)	Estimated Distance from Site (meter)	Direction from Site	pagwis number
40.21278	-75.10111	2159	658	NW	1
40.21222	-75.10111	1958	597	NW	2
40.20195	-75.09333	2580	786	SE	3
40.20222	-75.09278	2625	800	SE	4
40.20833	-75.1025	891	271	NW	5
40.2025	-75.09306	2499	761	SE	6
40.2025	-75.09333	2442	744	SE	7
40.205	-75.1075	2243	683	SW	8
40.21305	-75.09583	2499	761	NE	9
40.20472	-75.1	813	248	SW	10
40.21194	-75.10778	2862	872	NW	11
40.2125	-75.10861	3171	966	NW	12

APPENDIX G

GROUNDWATER LABORATORY ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY DOCUMENTATION

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

ANALYTICAL RESULTS

Prepared for:

SUN Retail:/GES
410 Eagleview Blvd
Suite 110
Exton PA 19341
610-458-1077

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 928504. Samples arrived at the laboratory on Monday, January 17, 2005. The PO# for this group is WARMINSTER.

Client Description	Lancaster Labs Number
MW-1 Grab Water Sample	4448327
MW-2 Grab Water Sample	4448328
MW-3 Grab Water Sample	4448329
MW-4 Grab Water Sample	4448330
MW-5 Grab Water Sample	4448331
MW-6 Grab Water Sample	4448332
MW-7 Grab Water Sample	4448333

1 COPY TO	SUN Retail:/GES	Attn: Connie Johnson
1 COPY TO	Lancaster Labs	Attn: Sandy Patton

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Questions? Contact your Client Services Representative
Sandra L Patton at (717) 656-2300.

Respectfully Submitted,

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Lancaster Laboratories Sample No. WW 4448327

MW-1 Grab Water Sample
Station# 0363-5430 Job# 02-01682
SUN: 610 Old York Road - Warminster, PA
Collected:01/13/2005 13:00 by K

Account Number: 11224

Submitted: 01/17/2005 15:00
Reported: 01/20/2005 at 09:44
Discard: 02/20/2005

SUN Retail:/GES
410 Eagleview Blvd
Suite 110
Exton PA 19341

WARM1

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02300	UST-Unleaded Waters by 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	5.	ug/l	1
05401	Benzene	71-43-2	N.D.	1.	ug/l	1
05407	Toluene	108-88-3	N.D.	1.	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.	1.	ug/l	1
05420	Isopropylbenzene	98-82-8	N.D.	5.	ug/l	1
05439	Naphthalene	91-20-3	N.D.	5.	ug/l	1
06310	Xylene (Total)	1330-20-7	N.D.	1.	ug/l	1

Commonwealth of Pennsylvania Lab Certification No. 36-037
Trip blank vials were not received by the laboratory for this sample group.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	01/18/2005 16:33	Carrie J Stock	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	01/18/2005 16:33	Carrie J Stock	n.a.

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4448328

MW-2 Grab Water Sample
Station# 0363-5430 Job# 02-01682
SUN: 610 Old York Road - Warminster, PA
Collected:01/13/2005 13:20 by K

Account Number: 11224

Submitted: 01/17/2005 15:00
Reported: 01/20/2005 at 09:44
Discard: 02/20/2005

SUN Retail:/GES
410 Eagleview Blvd
Suite 110
Exton PA 19341

WARM2

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02300	UST-Unleaded Waters by 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	39.	5.	ug/l	1
05401	Benzene	71-43-2	6.	1.	ug/l	1
05407	Toluene	108-88-3	N.D.	1.	ug/l	1
05415	Ethylbenzene	100-41-4	59.	1.	ug/l	1
05420	Isopropylbenzene	98-82-8	14.	5.	ug/l	1
05439	Naphthalene	91-20-3	20.	5.	ug/l	1
06310	Xylene (Total)	1330-20-7	5.	1.	ug/l	1

Commonwealth of Pennsylvania Lab Certification No. 36-037
Trip blank vials were not received by the laboratory for this sample group.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	01/18/2005 16:57	Carrie J Stock	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	01/18/2005 16:57	Carrie J Stock	n.a.

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4448329

MW-3 Grab Water Sample
Station# 0363-5430 Job# 02-01682
SUN: 610 Old York Road - Warminster, PA
Collected:01/13/2005 13:50 by K

Account Number: 11224

Submitted: 01/17/2005 15:00
Reported: 01/20/2005 at 09:44
Discard: 02/20/2005

SUN Retail:/GES
410 Eagleview Blvd
Suite 110
Exton PA 19341

WARM3

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02300	UST-Unleaded Waters by 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	19.	5.	ug/l	1
05401	Benzene	71-43-2	N.D.	1.	ug/l	1
05407	Toluene	108-88-3	N.D.	1.	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.	1.	ug/l	1
05420	Isopropylbenzene	98-82-8	N.D.	5.	ug/l	1
05439	Naphthalene	91-20-3	N.D.	5.	ug/l	1
06310	Xylene (Total)	1330-20-7	N.D.	1.	ug/l	1

Commonwealth of Pennsylvania Lab Certification No. 36-037
Trip blank vials were not received by the laboratory for this sample group.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	01/18/2005 17:21	Carrie J Stock	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	01/18/2005 17:21	Carrie J Stock	n.a.

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4448330

MW-4 Grab Water Sample
Station# 0363-5430 Job# 02-01682
SUN: 610 Old York Road - Warminster, PA
Collected:01/13/2005 13:35 by K

Account Number: 11224

Submitted: 01/17/2005 15:00
Reported: 01/20/2005 at 09:45
Discard: 02/20/2005

SUN Retail:/GES
410 Eagleview Blvd
Suite 110
Exton PA 19341

WARM4

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02300	UST-Unleaded Waters by 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	5.	ug/l	1
05401	Benzene	71-43-2	N.D.	1.	ug/l	1
05407	Toluene	108-88-3	N.D.	1.	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.	1.	ug/l	1
05420	Isopropylbenzene	98-82-8	N.D.	5.	ug/l	1
05439	Naphthalene	91-20-3	N.D.	5.	ug/l	1
06310	Xylene (Total)	1330-20-7	N.D.	1.	ug/l	1

Commonwealth of Pennsylvania Lab Certification No. 36-037
Trip blank vials were not received by the laboratory for this sample group.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	01/18/2005 17:44	Carrie J Stock	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	01/18/2005 17:44	Carrie J Stock	n.a.

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Lancaster Laboratories Sample No. WW 4448331

MW-5 Grab Water Sample
Station# 0363-5430 Job# 02-01682
SUN: 610 Old York Road - Warminster, PA
Collected:01/13/2005 14:10 by K

Account Number: 11224

Submitted: 01/17/2005 15:00
Reported: 01/20/2005 at 09:45
Discard: 02/20/2005

SUN Retail:/GES
410 Eagleview Blvd
Suite 110
Exton PA 19341

WARM5

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02300	UST-Unleaded Waters by 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	14.	5.	ug/l	1
05401	Benzene	71-43-2	N.D.	1.	ug/l	1
05407	Toluene	108-88-3	N.D.	1.	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.	1.	ug/l	1
05420	Isopropylbenzene	98-82-8	N.D.	5.	ug/l	1
05439	Naphthalene	91-20-3	N.D.	5.	ug/l	1
06310	Xylene (Total)	1330-20-7	N.D.	1.	ug/l	1

Commonwealth of Pennsylvania Lab Certification No. 36-037
Trip blank vials were not received by the laboratory for this sample group.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	01/18/2005 18:07	Carrie J Stock	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	01/18/2005 18:07	Carrie J Stock	n.a.

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

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Analysis Report

Lancaster Laboratories Sample No. WW 4448332

MW-6 Grab Water Sample
Station# 0363-5430 Job# 02-01682
SUN: 610 Old York Road - Warminster, PA
Collected:01/13/2005 14:30 by K

Account Number: 11224

Submitted: 01/17/2005 15:00
Reported: 01/20/2005 at 09:45
Discard: 02/20/2005

SUN Retail:/GES
410 Eagleview Blvd
Suite 110
Exton PA 19341

WARM6

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02300	UST-Unleaded Waters by 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	5.	ug/l	1
05401	Benzene	71-43-2	N.D.	1.	ug/l	1
05407	Toluene	108-88-3	N.D.	1.	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.	1.	ug/l	1
05420	Isopropylbenzene	98-82-8	N.D.	5.	ug/l	1
05439	Naphthalene	91-20-3	N.D.	5.	ug/l	1
06310	Xylene (Total)	1330-20-7	N.D.	1.	ug/l	1

Commonwealth of Pennsylvania Lab Certification No. 36-037
Trip blank vials were not received by the laboratory for this sample group.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	01/18/2005 18:30	Carrie J Stock	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	01/18/2005 18:30	Carrie J Stock	n.a.

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4448333

MW-7 Grab Water Sample
Station# 0363-5430 Job# 02-01682
SUN: 610 Old York Road - Warminster, PA
Collected:01/13/2005 12:35 by K

Account Number: 11224

Submitted: 01/17/2005 15:00
Reported: 01/20/2005 at 09:45
Discard: 02/20/2005

SUN Retail:/GES
410 Eagleview Blvd
Suite 110
Exton PA 19341

WARM7

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Method Detection Limit	Units	Dilution Factor
02300	UST-Unleaded Waters by 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	5.	ug/l	1
05401	Benzene	71-43-2	N.D.	1.	ug/l	1
05407	Toluene	108-88-3	N.D.	1.	ug/l	1
05415	Ethylbenzene	100-41-4	N.D.	1.	ug/l	1
05420	Isopropylbenzene	98-82-8	N.D.	5.	ug/l	1
05439	Naphthalene	91-20-3	N.D.	5.	ug/l	1
06310	Xylene (Total)	1330-20-7	N.D.	1.	ug/l	1

Commonwealth of Pennsylvania Lab Certification No. 36-037
Trip blank vials were not received by the laboratory for this sample group.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	01/18/2005 18:53	Carrie J Stock	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	01/18/2005 18:53	Carrie J Stock	n.a.

#=Laboratory MethodDetection Limit exceeded target detection limit
N.D.=Not detected at or above the Reporting Limit

Analysis Request / Environmental Services Chain of Custody

Lancaster Laboratories
Where quality is a science.

Acct. # 11224 6175 Group# 928504 Sample # 4448227-33

For Lancaster Laboratories use only

COC # 0074687

Please print. Instructions on reverse side correspond with circled numbers.

(1)
Client: GES Acct. #:
Project Name/#: 02 02061 06 206 PWSID #:
Project Manager: Kmyarda Faglemen P.O.#:
Sampler: Kurt Rab Quote #:
Name of state where samples were collected: PA

(2) Sample Identification	Date Collected	Time Collected	(3) Grab	Composite	(4) Matrix: Soil	Water (Potable ☑ Check if Applicable, NPDES ☐)	Other	Total # of Containers	(5) Analyses Requested: 8260B compounds MTBE Naphthalene 8260B	Remarks
MW-1	1-13-05	13:00	X			X		3	X	
MW-2	1-13-05	13:20	X			X		3	X	3.5°C
MW-3	1-13-05	13:50	X			X		3	X	1/17/05
MW-4	1-13-05	13:35	X			X		3	X	
MW-5	1-12-05	14:10	X			X		3	X	
MW-6	1-13-05	14:30	X			X		3	X	
MW-7	1-13-05	12:35	X			X		3	X	

For Lab Use Only
FSC:
SCR #:

(6) Temperature of samples upon receipt (if requested)

(7) **Turnaround Time Requested (TAT)** (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

(8) **Data Package Options** (please circle if required)
QC Summary, Type I (Tier I), Type II (Tier II), Type III (NJ Red. Del.), Type IV (CLP), Type VI (Raw Data), GLP, Other
SDG Complete? Yes No
Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

Relinquished by:	Date	Time	Received by:	Date	Time
	1/13/05	18:00	GES Fridge		
	1-17-05	09:00		01/17/05	0900
	01/17/05	1700			

(9)

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Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client.

2102 Rev. 10/27/02

Lancaster Laboratories
2425 New Holland Pike • Lancaster, PA 17601

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Certificate of Analysis

May 3, 2005

Pat Crawford
Groundwater Environmental Serv
410 Eagleview Boulevard
Suite 110
Exton, PA 19341

Lab ID#: 9610667

Project Name: **Sunoco Warminster, PA 610 Old York Road**
Workorder ID: **Sun Warminster 610 Old York Rd**

PO#: 02-02061-06-160-XX

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Qualifier Flags - These flags may follow individual results for a specific analyte
- U - Indicates that the analyte was not detected
- J - Indicates an estimated value between method detection limit and the practical quantitation limit for the analyte
- E - Indicates an estimated value outside of the calibration range of the analysis
- B - Indicates that the analyte was found in the method blank associated with the sample

A result of ND indicates that the analyte was Not Detected at the Reporting Detection Limit (RDL).

ALSI is a NELAC accredited laboratory. ALSI certifies that all applicable test results meet the requirements of NELAC. For an inventory of our NELAC accreditations and Scope of Work please visit our website at www.analyticallab.com or contact your Project Manager at (717)944-5541 for a complete listing.

If you have any questions in reference to this laboratory report, please contact your ALSI project coordinator or the laboratory manager listed at the bottom of this report at 717-944-5541.

Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.

The Chain-of-Custody document is included as part of this report.

ALSI's webpage contains links to water quality documents on the internet. Visit us at www.analyticallab.com.

Note: This document is included as part of the Analytical Report and must be retained as a permanent record thereof.

Alan J. Lopez
Laboratory Manager

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May 3, 2005

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Lab ID #: **9610667001**
Received: 04/20/05 21:15
Discard: 05/17/05
Page: 1 Of 1
PO#: 02-02061-06-160-XX

Project Name: **Sunoco Warminster, PA 610 Old York Road**
Workorder ID: **Sun Warminster 610 Old York Rd**
COC Number:

Sample ID: **MW-1**
Date Collected: 04/20/05 11:33
Matrix: Water
Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
VOLATILE ORGANICS								
Benzene	ND	ug/L	1.0	SW846 8260B	05/02/05 04:33	05/02/05	TEH	
Ethylbenzene	ND	ug/L	1.0	SW846 8260B	05/02/05 04:33	05/02/05	TEH	
Isopropylbenzene	ND	ug/L	1.0	SW846 8260B	05/02/05 04:33	05/02/05	TEH	
Methyl t-Butyl Ether	ND	ug/L	1.0	SW846 8260B	05/02/05 04:33	05/02/05	TEH	
Naphthalene	ND	ug/L	2.0	SW846 8260B	05/02/05 04:33	05/02/05	TEH	
Toluene	ND	ug/L	1.0	SW846 8260B	05/02/05 04:33	05/02/05	TEH	
Total Xylenes	ND	ug/L	3.0	SW846 8260B	05/02/05 04:33	05/02/05	TEH	

Surrogates	Result	Units	Recovery	Limits
1,2-Dichloroethane-d4	23.5	ug/L	78.3%	(70 - 134)
Dibromofluoromethane	26	ug/L	86.7%	(71 - 135)
Toluene-d8	27.8	ug/L	92.7%	(74 - 132)
4-Bromofluorobenzene	28.6	ug/L	95.3%	(84 - 116)

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Alan J. Lopez
Laboratory Manager

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Lab ID #: 9610667002
Received: 04/20/05 21:15
Discard: 05/17/05
Page: 1 Of 1
PO#: 02-02061-06-160-XX

Project Name: Sunoco Warminster, PA 610 Old York Road
Workorder ID: Sun Warminster 610 Old York Rd
COC Number:

Sample ID: MW-2
Date Collected: 04/20/05 11:13
Matrix: Water
Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
VOLATILE ORGANICS								
Benzene	ND	ug/L	1.0	SW846 8260B	05/02/05 05:44	05/02/05	TEH	
Ethylbenzene	9.3	ug/L	1.0	SW846 8260B	05/02/05 05:44	05/02/05	TEH	
Isopropylbenzene	3.3	ug/L	1.0	SW846 8260B	05/02/05 05:44	05/02/05	TEH	
Methyl t-Butyl Ether	3.9	ug/L	1.0	SW846 8260B	05/02/05 05:44	05/02/05	TEH	
Naphthalene	4.3	ug/L	2.0	SW846 8260B	05/02/05 05:44	05/02/05	TEH	
Toluene	ND	ug/L	1.0	SW846 8260B	05/02/05 05:44	05/02/05	TEH	
Total Xylenes	ND	ug/L	3.0	SW846 8260B	05/02/05 05:44	05/02/05	TEH	

Surrogates	Result	Units	Recovery	Limits
1,2-Dichloroethane-d4	23.9	ug/L	79.7%	(70 - 134)
Dibromofluoromethane	26.4	ug/L	88.0%	(71 - 135)
Toluene-d8	27.5	ug/L	91.7%	(74 - 132)
4-Bromofluorobenzene	26.9	ug/L	89.7%	(84 - 116)

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Laboratory Manager

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Certificate of Analysis

May 3, 2005

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Lab ID #: **9610667003**
Received: 04/20/05 21:15
Discard: 05/17/05
Page: 1 Of 1

Project Name: **Sunoco Warminster, PA 610 Old York Road** PO#: 02-02061-06-160-XX
Workorder ID: **Sun Warminster 610 Old York Rd** COC Number:

Sample ID: **MW-3** Matrix: Water
Date Collected: 04/20/05 10:37 Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
VOLATILE ORGANICS								
Benzene	ND	ug/L	1.0	SW846 8260B	05/02/05 06:20	05/02/05	TEH	
Ethylbenzene	ND	ug/L	1.0	SW846 8260B	05/02/05 06:20	05/02/05	TEH	
Isopropylbenzene	ND	ug/L	1.0	SW846 8260B	05/02/05 06:20	05/02/05	TEH	
Methyl t-Butyl Ether	ND	ug/L	1.0	SW846 8260B	05/02/05 06:20	05/02/05	TEH	
Naphthalene	ND	ug/L	2.0	SW846 8260B	05/02/05 06:20	05/02/05	TEH	
Toluene	ND	ug/L	1.0	SW846 8260B	05/02/05 06:20	05/02/05	TEH	
Total Xylenes	ND	ug/L	3.0	SW846 8260B	05/02/05 06:20	05/02/05	TEH	

Surrogates	Result	Units	Recovery	Limits
1,2-Dichloroethane-d4	24.2	ug/L	80.7%	(70 - 134)
Dibromofluoromethane	26.6	ug/L	88.7%	(71 - 135)
Toluene-d8	28.1	ug/L	93.7%	(74 - 132)
4-Bromofluorobenzene	27.8	ug/L	92.7%	(84 - 116)

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Laboratory Manager

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Lab ID #: **9610667004**
Received: 04/20/05 21:15
Discard: 05/17/05
Page: 1 Of 1

Project Name: **Sunoco Warminster, PA 610 Old York Road**
PO#: 02-02061-06-160-XX
Workorder ID: **Sun Warminster 610 Old York Rd**
COC Number:

Sample ID: **MW-4**
Matrix: Water
Date Collected: 04/20/05 10:55
Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
VOLATILE ORGANICS								
Benzene	ND	ug/L	1.0	SW846 8260B	05/02/05 06:55	05/02/05	TEH	
Ethylbenzene	ND	ug/L	1.0	SW846 8260B	05/02/05 06:55	05/02/05	TEH	
Isopropylbenzene	ND	ug/L	1.0	SW846 8260B	05/02/05 06:55	05/02/05	TEH	
Methyl t-Butyl Ether	ND	ug/L	1.0	SW846 8260B	05/02/05 06:55	05/02/05	TEH	
Naphthalene	ND	ug/L	2.0	SW846 8260B	05/02/05 06:55	05/02/05	TEH	
Toluene	ND	ug/L	1.0	SW846 8260B	05/02/05 06:55	05/02/05	TEH	
Total Xylenes	ND	ug/L	3.0	SW846 8260B	05/02/05 06:55	05/02/05	TEH	

Surrogates	Result	Units	Recovery	Limits
1,2-Dichloroethane-d4	24.5	ug/L	81.7%	(70 - 134)
Dibromofluoromethane	26.3	ug/L	87.7%	(71 - 135)
Toluene-d8	28.7	ug/L	95.7%	(74 - 132)
4-Bromofluorobenzene	28.6	ug/L	95.3%	(84 - 116)

Comments:

A positive result for oxidant was obtained for this sample - utilizing a HACH test kit. It is recommended that subsequent - sampling events utilize a dechlorination agent if oxidant is - determined to be present. Ref:SW-846 Methodology Table 4.1

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Lab ID #: **9610667005**
Received: 04/20/05 21:15
Discard: 05/17/05
Page: 1 Of 1
PO#: 02-02061-06-160-XX

Project Name: **Sunoco Warminster, PA 610 Old York Road**
Workorder ID: **Sun Warminster 610 Old York Rd**
COC Number:

Sample ID: **MW-5**
Date Collected: 04/20/05 09:43
Matrix: Water
Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
VOLATILE ORGANICS								
Benzene	ND	ug/L	1.0	SW846 8260B	05/02/05 07:30	05/02/05	TEH	
Ethylbenzene	ND	ug/L	1.0	SW846 8260B	05/02/05 07:30	05/02/05	TEH	
Isopropylbenzene	ND	ug/L	1.0	SW846 8260B	05/02/05 07:30	05/02/05	TEH	
Methyl t-Butyl Ether	5.0	ug/L	1.0	SW846 8260B	05/02/05 07:30	05/02/05	TEH	
Naphthalene	ND	ug/L	2.0	SW846 8260B	05/02/05 07:30	05/02/05	TEH	
Toluene	ND	ug/L	1.0	SW846 8260B	05/02/05 07:30	05/02/05	TEH	
Total Xylenes	ND	ug/L	3.0	SW846 8260B	05/02/05 07:30	05/02/05	TEH	

Surrogates	Result	Units	Recovery	Limits
1,2-Dichloroethane-d4	24.9	ug/L	83.0%	(70 - 134)
Dibromofluoromethane	27.2	ug/L	90.7%	(71 - 135)
Toluene-d8	27.7	ug/L	92.3%	(74 - 132)
4-Bromofluorobenzene	29.2	ug/L	97.3%	(84 - 116)

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Alan J. Lopez
Laboratory Manager

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Certificate of Analysis

May 3, 2005

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Lab ID #: **9610667006**
Received: 04/20/05 21:15
Discard: 05/17/05
Page: 1 Of 1

Project Name: **Sunoco Warminster, PA 610 Old York Road** PO#: 02-02061-06-160-XX
Workorder ID: **Sun Warminster 610 Old York Rd** COC Number:

Sample ID: **MW-6** Matrix: Water
Date Collected: 04/20/05 10:14 Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
VOLATILE ORGANICS								
Benzene	ND	ug/L	1.0	SW846 8260B	05/02/05 08:06	05/02/05	TEH	
Ethylbenzene	ND	ug/L	1.0	SW846 8260B	05/02/05 08:06	05/02/05	TEH	
Isopropylbenzene	ND	ug/L	1.0	SW846 8260B	05/02/05 08:06	05/02/05	TEH	
Methyl t-Butyl Ether	2.0	ug/L	1.0	SW846 8260B	05/02/05 08:06	05/02/05	TEH	
Naphthalene	ND	ug/L	2.0	SW846 8260B	05/02/05 08:06	05/02/05	TEH	
Toluene	ND	ug/L	1.0	SW846 8260B	05/02/05 08:06	05/02/05	TEH	
Total Xylenes	ND	ug/L	3.0	SW846 8260B	05/02/05 08:06	05/02/05	TEH	

Surrogates	Result	Units	Recovery	Limits
1,2-Dichloroethane-d4	24.8	ug/L	82.7%	(70 - 134)
Dibromofluoromethane	27.4	ug/L	91.3%	(71 - 135)
Toluene-d8	28.2	ug/L	94.0%	(74 - 132)
4-Bromofluorobenzene	27.5	ug/L	91.7%	(84 - 116)

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Alan J. Lopez
Laboratory Manager

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Certificate of Analysis

May 3, 2005

Pat Crawford
Groundwater Environmental Serv
410 Eagleview Boulevard
Suite 110
Exton, PA 19341

Lab ID #: 9610667007
Received: 04/20/05 21:15
Discard: 05/17/05
Page: 1 Of 1

Project Name: Sunoco Warminster, PA 610 Old York Road
PO#: 02-02061-06-160-XX
Workorder ID: Sun Warminster 610 Old York Rd
COC Number:

Sample ID: MW-7
Matrix: Water
Date Collected: 04/20/05 09:13
Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
VOLATILE ORGANICS								
Benzene	ND	ug/L	1.0	SW846 8260B	05/02/05 08:41	05/02/05	TEH	
Ethylbenzene	ND	ug/L	1.0	SW846 8260B	05/02/05 08:41	05/02/05	TEH	
Isopropylbenzene	ND	ug/L	1.0	SW846 8260B	05/02/05 08:41	05/02/05	TEH	
Methyl t-Butyl Ether	ND	ug/L	1.0	SW846 8260B	05/02/05 08:41	05/02/05	TEH	
Naphthalene	ND	ug/L	2.0	SW846 8260B	05/02/05 08:41	05/02/05	TEH	
Toluene	ND	ug/L	1.0	SW846 8260B	05/02/05 08:41	05/02/05	TEH	
Total Xylenes	ND	ug/L	3.0	SW846 8260B	05/02/05 08:41	05/02/05	TEH	

Surrogates	Result	Units	Recovery	Limits
1,2-Dichloroethane-d4	25.2	ug/L	84.0%	(70 - 134)
Dibromofluoromethane	27	ug/L	90.0%	(71 - 135)
Toluene-d8	27.7	ug/L	92.3%	(74 - 132)
4-Bromofluorobenzene	28.6	ug/L	95.3%	(84 - 116)

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Alan J. Lopez
Laboratory Manager

Serial Number 961057

Analytical Labs

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Analytical Labs
Scott Brunk
Customer Service Rep

Project Name:	GES Project Number:		
Sunoco: Warminster, PA	02-02061-06-160-XX		
610 Old York Road	Contract No.: Sunoco GW		
GES Project / Case Manager:	Client Phone:	Client Fax:	
Patrick Crawford / Susan Cameron	610 458-1077, extension 169	610 458-2300	
Client Name:		Client E-mail:	
Groundwater & Environmental Services, Inc.		pcrawford@gesonline.com	
Client Address:			
410 Eagleview Blvd., Suite 110, Exton PA 19341			

Page 1 of 1

STANDARD REPORT DELIVERY

DATE DUE

EXPEDITED REPORT DELIVERY (SURCHARGE)
DATE DUE

NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	MATRIX TYPE: COMPOSITE (C) OR GRAB (G) INDICATE	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (OIL, SOLVENT...)	REQUIRED ANALYSES: BTEX, MTBE, Cumene, Naphthalene (8260B) 40 ml vials	EDB (504) 40 ml vials	TPH (Amber Bottles)	Diss Lead (6020) 500 ml plastic							REMARKS
		PRESERVATIVE						HCL	Na2S2O3	HCL	None							
								NUMBER OF CONTAINERS SUBMITTED										
4/20/05	11:33	MW-1	G	x				3										Detection Limits Must Meet PADEP SHS
4/20/05	11:13	MW-2	G	x				3										
4/20/05	10:37	MW-3	G	x				3										
4/20/05	10:56	MW-4	G	x				3										
4/20/05	9:43	MW-5	G	x				3										
4/20/05	10:14	MW-6	G	x				3										
4/20/05	9:13	MW-7	G	x				3										

ENTERED 4/21/05

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
	4/20/05	12:30		4.20.05	14:02			
RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
GES Fridge	4/20/05	12:30	D. Hawk AST	4/20/05	1400			

Gel 4200 F 2115

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT YES / NO	CUSTODY SEAL NO.	STL LOG NO.	LABORATORY REMARKS:
AST	4.20.05	2115	NO 8			

FCU036:12.20.00:2

Original - Return to Laboratory with Sample(s)

JLK 4/21/05 1427

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Certificate of Analysis

August 1, 2005

Pat Crawford
Groundwater Environmental Serv
410 Eagleview Boulevard
Suite 110
Exton, PA 19341

Lab ID#: **9618865**

PO#: 02-02061-06-160-XX

Project Name: **Sunoco Warminster, PA 610 Old York Road**
Workorder ID: **Sun Warminster 610 Old York Rd**

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Qualifier Flags - These flags may follow individual results for a specific analyte

- U - Indicates that the analyte was not detected
- J - Indicates an estimated value between method detection limit and the practical quantitation limit for the analyte
- E - Indicates an estimated value outside of the calibration range of the analysis
- B - Indicates that the analyte was found in the method blank associated with the sample

A result of ND indicates that the analyte was Not Detected at the Reporting Detection Limit (RDL).

ALSI is a NELAC accredited laboratory. ALSI certifies that all applicable test results meet the requirements of NELAC. For an inventory of our NELAC accreditations and Scope of Work please visit our website at www.analyticallab.com or contact your Project Manager at (717)944-5541 for a complete listing.

If you have any questions in reference to this laboratory report, please contact your ALSI project coordinator or the laboratory manager listed at the bottom of this report at 717-944-5541.

Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.

The Chain-of-Custody document is included as part of this report.

ALSI's webpage contains links to water quality documents on the internet. Visit us at www.analyticallab.com.

Note: This document is included as part of the Analytical Report and must be retained as a permanent record thereof.

Alan J. Lopez
Laboratory Manager

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Certificate of Analysis

August 1, 2005

Pat Crawford
Groundwater Environmental Serv
410 Eagleview Boulevard
Suite 110
Exton, PA 19341

Lab ID #: **9618865001**
Received: 07/15/05 23:30
Discard: 08/15/05

Project Name: **Sunoco Warminster, PA 610 Old York Road**
PO#: 02-02061-06-160-XX
Workorder ID: **Sun Warminster 610 Old York Rd**
COC Number:

Sample ID: **MW-1**
Matrix: Water
Date Collected: 07/15/05 11:38
Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
VOLATILE ORGANICS								
Benzene	2.0	ug/L	1.0	SW846 8260B	07/26/05 22:37	07/26/05	TEH	
Ethylbenzene	227	ug/L	10.0	SW846 8260B	07/27/05 08:06	07/27/05	KLH	
Isopropylbenzene	49.6	ug/L	1.0	SW846 8260B	07/26/05 22:37	07/26/05	TEH	
Methyl t-Butyl Ether	57.4	ug/L	1.0	SW846 8260B	07/26/05 22:37	07/26/05	TEH	
Naphthalene	241	ug/L	20.0	SW846 8260B	07/27/05 08:06	07/27/05	KLH	
Toluene	8.0	ug/L	1.0	SW846 8260B	07/26/05 22:37	07/26/05	TEH	
Total Xylenes	445	ug/L	30.0	SW846 8260B	07/27/05 08:06	07/27/05	KLH	

Surrogates	Result	Units	Recovery	Limits
1,2-Dichloroethane-d4	27.8	ug/L	92.7%	(70 - 134)
1,2-Dichloroethane-d4	290	ug/L	96.7%	(70 - 134)
Dibromofluoromethane	29.4	ug/L	98.0%	(71 - 135)
Dibromofluoromethane	296	ug/L	98.7%	(71 - 135)
Toluene-d8	27.6	ug/L	92.0%	(74 - 132)
Toluene-d8	290	ug/L	96.7%	(74 - 132)
4-Bromofluorobenzene	29	ug/L	96.7%	(84 - 116)
4-Bromofluorobenzene	272	ug/L	90.7%	(84 - 116)

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Alan J. Lopez
Laboratory Manager

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Certificate of Analysis

August 1, 2005

Pat Crawford
Groundwater Environmental Serv
410 Eagleview Boulevard
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Lab ID #: **9618865002**
Received: 07/15/05 23:30
Discard: 08/15/05

Project Name: **Sunoco Warminster, PA 610 Old York Road** PO#: 02-02061-06-160-XX
Workorder ID: **Sun Warminster 610 Old York Rd** COC Number:

Sample ID: **MW-2** Matrix: Water
Date Collected: 07/15/05 11:18 Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
VOLATILE ORGANICS								
Benzene	38.1	ug/L	1.0	SW846 8260B	07/26/05 20:11	07/26/05	TEH	
Ethylbenzene [1]	161	ug/L	1.0	SW846 8260B	07/26/05 20:11	07/26/05	TEH	
Isopropylbenzene	79.7	ug/L	1.0	SW846 8260B	07/26/05 20:11	07/26/05	TEH	
Methyl t-Butyl Ether	89.9	ug/L	1.0	SW846 8260B	07/26/05 20:11	07/26/05	TEH	
Naphthalene [2]	142	ug/L	2.0	SW846 8260B	07/26/05 20:11	07/26/05	TEH	
Toluene	1.5	ug/L	1.0	SW846 8260B	07/26/05 20:11	07/26/05	TEH	
Total Xylenes	68.7	ug/L	3.0	SW846 8260B	07/26/05 20:11	07/26/05	TEH	

Surrogates	Result	Units	Recovery	Limits
1,2-Dichloroethane-d4	26.4	ug/L	88.0%	(70 - 134)
Dibromofluoromethane	28.2	ug/L	94.0%	(71 - 135)
Toluene-d8	26.9	ug/L	89.7%	(74 - 132)
4-Bromofluorobenzene	27.6	ug/L	92.0%	(84 - 116)

1 - This compound was recovered below quality control criteria in the matrix spike and matrix spike duplicate of this sample. The LCS had acceptable recoveries, satisfying method criteria.

2 - This compound was recovered above quality control criteria in the matrix spike and matrix spike duplicate of this sample. The LCS had acceptable recoveries, satisfying method criteria.

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Alan J. Lopez
Laboratory Manager

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Certificate of Analysis

August 1, 2005

Pat Crawford
Groundwater Environmental Serv
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Lab ID #: **9618865003**
Received: 07/15/05 23:30
Discard: 08/15/05

Project Name: **Sunoco Warminster, PA 610 Old York Road**
PO#: 02-02061-06-160-XX
Workorder ID: **Sun Warminster 610 Old York Rd**
COC Number:

Sample ID: **MW-3**
Matrix: Water
Date Collected: 07/15/05 10:33
Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
VOLATILE ORGANICS								
Benzene	ND	ug/L	1.0	SW846 8260B	07/27/05 07:30	07/27/05	KLH	
Ethylbenzene	ND	ug/L	1.0	SW846 8260B	07/27/05 07:30	07/27/05	KLH	
Isopropylbenzene	ND	ug/L	1.0	SW846 8260B	07/27/05 07:30	07/27/05	KLH	
Methyl t-Butyl Ether	ND	ug/L	1.0	SW846 8260B	07/27/05 07:30	07/27/05	KLH	
Naphthalene	ND	ug/L	2.0	SW846 8260B	07/27/05 07:30	07/27/05	KLH	
Toluene	ND	ug/L	1.0	SW846 8260B	07/27/05 07:30	07/27/05	KLH	
Total Xylenes	ND	ug/L	3.0	SW846 8260B	07/27/05 07:30	07/27/05	KLH	

Surrogates	Result	Units	Recovery	Limits
1,2-Dichloroethane-d4	30.8	ug/L	103.0%	(70 - 134)
Dibromofluoromethane	31	ug/L	103.0%	(71 - 135)
Toluene-d8	30	ug/L	100.0%	(74 - 132)
4-Bromofluorobenzene	27	ug/L	90.0%	(84 - 116)

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Alan J. Lopez
Laboratory Manager

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Certificate of Analysis

August 1, 2005

Pat Crawford
Groundwater Environmental Serv
410 Eagleview Boulevard
Suite 110
Exton, PA 19341

Lab ID #: **9618865004**
Received: 07/15/05 23:30
Discard: 08/15/05

Project Name: **Sunoco Warminster, PA 610 Old York Road**
PO#: 02-02061-06-160-XX
Workorder ID: **Sun Warminster 610 Old York Rd**
COC Number:

Sample ID: **MW-4**
Matrix: Water
Date Collected: 07/15/05 10:58
Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
VOLATILE ORGANICS								
Benzene	ND	ug/L	1.0	SW846 8260B	07/26/05 21:24	07/26/05	TEH	
Ethylbenzene	ND	ug/L	1.0	SW846 8260B	07/26/05 21:24	07/26/05	TEH	
Isopropylbenzene	ND	ug/L	1.0	SW846 8260B	07/26/05 21:24	07/26/05	TEH	
Methyl t-Butyl Ether	ND	ug/L	1.0	SW846 8260B	07/26/05 21:24	07/26/05	TEH	
Naphthalene	ND	ug/L	2.0	SW846 8260B	07/26/05 21:24	07/26/05	TEH	
Toluene	ND	ug/L	1.0	SW846 8260B	07/26/05 21:24	07/26/05	TEH	
Total Xylenes	ND	ug/L	3.0	SW846 8260B	07/26/05 21:24	07/26/05	TEH	

Surrogates	Result	Units	Recovery	Limits
1,2-Dichloroethane-d4	26.6	ug/L	88.7%	(70 - 134)
Dibromofluoromethane	26.8	ug/L	89.3%	(71 - 135)
Toluene-d8	27.5	ug/L	91.7%	(74 - 132)
4-Bromofluorobenzene	25.2	ug/L	84.0%	(84 - 116)

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Alan J. Lopez
Laboratory Manager

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Certificate of Analysis

August 1, 2005

Pat Crawford
Groundwater Environmental Serv
410 Eagleview Boulevard
Suite 110
Exton, PA 19341

Lab ID #: 9618865005
Received: 07/15/05 23:30
Discard: 08/15/05

Project Name: Sunoco Warminster, PA 610 Old York Road
PO#: 02-02061-06-160-XX
Workorder ID: Sun Warminster 610 Old York Rd
COC Number:

Sample ID: MW-5
Matrix: Water
Date Collected: 07/15/05 09:23
Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
VOLATILE ORGANICS								
Benzene	ND	ug/L	1.0	SW846 8260B	07/26/05 22:01	07/26/05	TEH	
Ethylbenzene	ND	ug/L	1.0	SW846 8260B	07/26/05 22:01	07/26/05	TEH	
Isopropylbenzene	ND	ug/L	1.0	SW846 8260B	07/26/05 22:01	07/26/05	TEH	
Methyl t-Butyl Ether	ND	ug/L	1.0	SW846 8260B	07/26/05 22:01	07/26/05	TEH	
Naphthalene	ND	ug/L	2.0	SW846 8260B	07/26/05 22:01	07/26/05	TEH	
Toluene	ND	ug/L	1.0	SW846 8260B	07/26/05 22:01	07/26/05	TEH	
Total Xylenes	ND	ug/L	3.0	SW846 8260B	07/26/05 22:01	07/26/05	TEH	

Surrogates	Result	Units	Recovery	Limits
1,2-Dichloroethane-d4	27.8	ug/L	92.7%	(70 - 134)
Dibromofluoromethane	28.1	ug/L	93.7%	(71 - 135)
Toluene-d8	28.6	ug/L	95.3%	(74 - 132)
4-Bromofluorobenzene	26.4	ug/L	88.0%	(84 - 116)

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Alan J. Lopez
Laboratory Manager

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Certificate of Analysis

August 1, 2005

Pat Crawford
Groundwater Environmental Serv
410 Eagleview Boulevard
Suite 110
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Lab ID #: 9618865006
Received: 07/15/05 23:30
Discard: 08/15/05

Project Name: Sunoco Warminster, PA 610 Old York Road
PO#: 02-02061-06-160-XX
Workorder ID: Sun Warminster 610 Old York Rd
COC Number:

Sample ID: MW-6
Matrix: Water
Date Collected: 07/15/05 09:53
Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
VOLATILE ORGANICS								
Benzene	ND	ug/L	1.0	SW846 8260B	07/27/05 00:48	07/27/05	JHD	
Ethylbenzene	ND	ug/L	1.0	SW846 8260B	07/27/05 00:48	07/27/05	JHD	
Isopropylbenzene	ND	ug/L	1.0	SW846 8260B	07/27/05 00:48	07/27/05	JHD	
Methyl t-Butyl Ether	ND	ug/L	1.0	SW846 8260B	07/27/05 00:48	07/27/05	JHD	
Naphthalene	ND	ug/L	2.0	SW846 8260B	07/27/05 00:48	07/27/05	JHD	
Toluene	ND	ug/L	1.0	SW846 8260B	07/27/05 00:48	07/27/05	JHD	
Total Xylenes	ND	ug/L	3.0	SW846 8260B	07/27/05 00:48	07/27/05	JHD	

Surrogates	Result	Units	Recovery	Limits
1,2-Dichloroethane-d4	23.5	ug/L	78.3%	(70 - 134)
Dibromofluoromethane	23.8	ug/L	79.3%	(71 - 135)
Toluene-d8	30.3	ug/L	101.0%	(74 - 132)
4-Bromofluorobenzene	28.1	ug/L	93.7%	(84 - 116)

This report relates only to the sample as received by the laboratory, and may only be reproduced in full.

Alan J. Lopez
Laboratory Manager

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Certificate of Analysis

August 1, 2005

Pat Crawford
Groundwater Environmental Serv
410 Eagleview Boulevard
Suite 110
Exton, PA 19341

Lab ID #: 9618865007
Received: 07/15/05 23:30
Discard: 08/15/05

Project Name: Sunoco Warminster, PA 610 Old York Road
PO#: 02-02061-06-160-XX
Workorder ID: Sun Warminster 610 Old York Rd
COC Number:

Sample ID: MW-7
Matrix: Water
Date Collected: 07/15/05 08:48
Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
VOLATILE ORGANICS								
Benzene	ND	ug/L	1.0	SW846 8260B	07/27/05 01:17	07/27/05	JHD	
Ethylbenzene	ND	ug/L	1.0	SW846 8260B	07/27/05 01:17	07/27/05	JHD	
Isopropylbenzene	ND	ug/L	1.0	SW846 8260B	07/27/05 01:17	07/27/05	JHD	
Methyl t-Butyl Ether	ND	ug/L	1.0	SW846 8260B	07/27/05 01:17	07/27/05	JHD	
Naphthalene	ND	ug/L	2.0	SW846 8260B	07/27/05 01:17	07/27/05	JHD	
Toluene	ND	ug/L	1.0	SW846 8260B	07/27/05 01:17	07/27/05	JHD	
Total Xylenes	ND	ug/L	3.0	SW846 8260B	07/27/05 01:17	07/27/05	JHD	

Surrogates	Result	Units	Recovery	Limits
1,2-Dichloroethane-d4	24.3	ug/L	81.0%	(70 - 134)
Dibromofluoromethane	23.9	ug/L	79.7%	(71 - 135)
Toluene-d8	30.1	ug/L	100.0%	(74 - 132)
4-Bromofluorobenzene	29.4	ug/L	98.0%	(84 - 116)

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Alan J. Lopez
Laboratory Manager

Serial Number

Analytical Labs

Analytical Labs 9618865
Scott Brunk
Customer Service Rep

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Project Name:	GES Project Number:	
Sunoco: Warminster, PA	02-02061-06-160-XX	
610 Old York Road	Contract No.: Sunoco GW	
GES Project / Case Manager: Patrick Crawford / Susan Cameron	Client Phone: 610 458-1077, extension 169	Client Fax: 610 458-2300
Client Name: Groundwater & Environmental Services, Inc.	Client E-mail: pcrawford@gesonline.com	
Client Address: 410 Eagleview Blvd., Suite 110, Exton PA 19341		

Page 1 of 1

STANDARD REPORT DELIVERY ⊗
DATE DUE
EXPEDITED REPORT DELIVERY (SURCHARGE) ○
DATE DUE
NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	MATRIX: COMPOSITE (C) OR GRAB (G) INDICATE	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (OIL, SOLVENT—)	NUMBER OF CONTAINERS SUBMITTED	REQUIRED ANALYSES: BTEX, MTBE, Cumene, Naphthalene (8260B) 40 ml vials	EDB (504) 40 ml vials	TPH (Amber Bottles)	Diss Lead (6020) 500 ml plastic	PRESERVATIVE	REMARKS
									HCL	Na2S2O3	HCL	None		
7/15/05	11:38	MW-1	G	x				3						
7/15/05	11:18	MW-2	G	x				3						
7/15/05	10:38	MW-3	G	x				3						
7/15/05	10:58	MW-4	G	x				3						
7/15/05	9:23	MW-5	G	x				3						
7/15/05	9:53	MW-6	G	x				3						
7/15/05	8:48	MW-7	G	x				3						

Detection Limits

	Y	N	Initials
Custody Seals Present?			
(If present) Seals Intact?			
Received on Ice?	✓		MT
COC/Labels Complete/Accurate	✓		
Cont in Good Cond?	✓		
Correct Containers?	✓		
Correct Sample Volumes?	✓		
Correct Preservation?	✓		
Headspace/Volatiles?			

Cooler Temp:
Cooler #:
Therm ID:
Ship Carrier: FedEx UPS DHL Other FS
Tracking #:

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
	7/15/05	12:45		7-15-05	13:50		7-15-05	2350
RECEIVED BY: (SIGNATURE) GES Fridge	7/15/05	12:46	RECEIVED BY: (SIGNATURE)	7-14-05	~~2350~~ 1350	RECEIVED BY: (SIGNATURE) ALS	7/15	2330

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT YES ○ NO ○	CUSTODY SEAL NO.	STL LOG NO.	LABORATORY REMARKS:
						ENTERED 7/19/05

SM 7-15-05 2353

FCU038:12.20.00:2

Original - Return to Laboratory with Sample(s)

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Certificate of Analysis

September 20, 2005

Pat Crawford
Groundwater Environmental Serv
410 Eagleview Boulevard
Suite 110
Exton, PA 19341

Lab ID#: **9624460**

Project Name: **Sunoco Warminster, PA 610 Old York Road**
Workorder ID: **Sunoco Warminster 610 Old York**

PO#: 02-02061-06-160-XX

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Qualifier Flags - These flags may follow individual results for a specific analyte
- U - Indicates that the analyte was not detected
- J - Indicates an estimated value between method detection limit and the practical quantitation limit for the analyte

A result of ND indicates that the analyte was Not Detected at the Reporting Detection Limit (RDL).

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If you have any questions in reference to this laboratory report, please contact your ALSI project coordinator or the laboratory manager listed at the bottom of this report at 717-944-5541.

Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.

The Chain-of-Custody document is included as part of this report.

ALSI's webpage contains links to water quality documents on the internet. Visit us at www.analyticallab.com.

Note: This document is included as part of the Analytical Report and must be retained as a permanent record thereof.

Alan J. Lopez
Laboratory Manager

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Certificate of Analysis

September 20, 2005

Pat Crawford
Groundwater Environmental Serv
410 Eagleview Boulevard
Suite 110
Exton, PA 19341

Lab ID #: **9624460001**
Received: 09/07/05 21:00
Discard: 10/04/05

PO#: 02-02061-06-160-XX

Project Name: **Sunoco Warminster, PA 610 Old York Road**
Workorder ID: **Sunoco Warminster 610 Old York**
COC Number:

Sample ID: **MW-2**
Matrix: Water
Date Collected: 09/07/05 10:40
Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
VOLATILE ORGANICS								
Benzene	10.0	ug/L	1.0	SW846 8260B	09/15/05 14:03	09/15/05	KLM	
Ethylbenzene	18.5	ug/L	1.0	SW846 8260B	09/15/05 14:03	09/15/05	KLM	
Isopropylbenzene	11.0	ug/L	1.0	SW846 8260B	09/15/05 14:03	09/15/05	KLM	
Methyl t-Butyl Ether	59.5	ug/L	1.0	SW846 8260B	09/15/05 14:03	09/15/05	KLM	
Naphthalene	23.0	ug/L	2.0	SW846 8260B	09/15/05 14:03	09/15/05	KLM	
Toluene	ND	ug/L	1.0	SW846 8260B	09/15/05 14:03	09/15/05	KLM	
Total Xylenes	ND	ug/L	3.0	SW846 8260B	09/15/05 14:03	09/15/05	KLM	

Surrogates	Result	Units	Recovery	Limits
1,2-Dichloroethane-d4	28.6	ug/L	95.2%	(50 - 152)
Dibromofluoromethane	28.9	ug/L	96.4%	(63 - 137)
Toluene-d8	27.6	ug/L	91.9%	(80 - 128)
4-Bromofluorobenzene	26.3	ug/L	87.6%	(76 - 125)

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Certificate of Analysis

September 20, 2005

Pat Crawford
Groundwater Environmental Serv
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Lab ID #: 9624460002
Received: 09/07/05 21:00
Discard: 10/04/05

Project Name: Sunoco Warminster, PA 610 Old York Road PO#: 02-02061-06-160-XX
Workorder ID: Sunoco Warminster 610 Old York COC Number:

Sample ID: MW-4 Matrix: Water
Date Collected: 09/07/05 10:20 Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
VOLATILE ORGANICS								
Benzene	ND	ug/L	1.0	SW846 8260B	09/15/05 13:28	09/15/05	KLM	
Ethylbenzene	ND	ug/L	1.0	SW846 8260B	09/15/05 13:28	09/15/05	KLM	
Isopropylbenzene	ND	ug/L	1.0	SW846 8260B	09/15/05 13:28	09/15/05	KLM	
Methyl t-Butyl Ether	ND	ug/L	1.0	SW846 8260B	09/15/05 13:28	09/15/05	KLM	
Naphthalene	ND	ug/L	2.0	SW846 8260B	09/15/05 13:28	09/15/05	KLM	
Toluene	ND	ug/L	1.0	SW846 8260B	09/15/05 13:28	09/15/05	KLM	
Total Xylenes	ND	ug/L	3.0	SW846 8260B	09/15/05 13:28	09/15/05	KLM	

Surrogates	Result	Units	Recovery	Limits
1,2-Dichloroethane-d4	29	ug/L	96.8%	(50 - 152)
Dibromofluoromethane	29.4	ug/L	97.9%	(63 - 137)
Toluene-d8	27.7	ug/L	92.3%	(80 - 128)
4-Bromofluorobenzene	25.1	ug/L	83.8%	(76 - 125)

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September 20, 2005

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Groundwater Environmental Serv
410 Eagleview Boulevard
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Lab ID #: 9624460003
Received: 09/07/05 21:00
Discard: 10/04/05

PO#: 02-02061-06-160-XX

Project Name: Sunoco Warminster, PA 610 Old York Road
Workorder ID: Sunoco Warminster 610 Old York
COC Number:

Sample ID: MW-5
Matrix: Water
Date Collected: 09/07/05 09:23
Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
VOLATILE ORGANICS								
Benzene	ND	ug/L	1.0	SW846 8260B	09/15/05 05:51	09/15/05	CPK	
Ethylbenzene	ND	ug/L	1.0	SW846 8260B	09/15/05 05:51	09/15/05	CPK	
Isopropylbenzene	ND	ug/L	1.0	SW846 8260B	09/15/05 05:51	09/15/05	CPK	
Methyl t-Butyl Ether	1.9	ug/L	1.0	SW846 8260B	09/15/05 05:51	09/15/05	CPK	
Naphthalene	ND	ug/L	2.0	SW846 8260B	09/15/05 05:51	09/15/05	CPK	
Toluene	ND	ug/L	1.0	SW846 8260B	09/15/05 05:51	09/15/05	CPK	
Total Xylenes	ND	ug/L	3.0	SW846 8260B	09/15/05 05:51	09/15/05	CPK	

Surrogates	Result	Units	Recovery	Limits
1,2-Dichloroethane-d4	28.2	ug/L	94.1%	(50 - 152)
Dibromofluoromethane	29.5	ug/L	98.3%	(63 - 137)
Toluene-d8	24.8	ug/L	82.7%	(80 - 128)
4-Bromofluorobenzene	25.8	ug/L	85.8%	(76 - 125)

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Laboratory Manager

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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

COC #: 9624460 | 1 of 1
ALSI Quote #:

Client Name: GES
Address: 410 Eagleview Blvd suite 110 Exton PA
Contact: PAT CRAWFORD
Phone#: 610-458-1077
Project Name/#: Sun Warminster
Bill To:

TAT: [X] Normal-Standard TAT is 10-12 business days. [ ] Rush-Subject to ALSI approval and surcharges.
Date Required: _____ Approved By: _____
Email? [ ] -Y
Fax? [ ] -Y No.: _____

Container Type: Vial
Container Size: 40ml
Preservative: HCl

ANALYSES/METHOD REQUESTED: (8260B) BTEX/MTBE Ethanol, naphthalene

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	Enter Number of Containers Per Sample or Field Results Below.
1 MW-1	9/7/05	[illegible]	G	GW	
2 MW-2	9/7/05	10:40	G	GW	
3 MW-3	9/7/05		G	GW	
4 MW-4	9/7/05	10:20	G	GW	
5 MW-5	9/7/05	9:23	G	GW	
6 MW-6	9/7/05	9:43	G	GW	
7 MW-7	9/7/05	9:00	G	GW	
8					
9					
10					

Receipt Information (completed by Receiving Lab)
Cooler Temp: _____ Cooler #: _____
Therm. ID _____

	Y	N
Custody Seals Present?		
(if present) Seals Intact?		
Received on Ice?	X	
COC/Labels Agree?		
Cont. in Good Cond.?		
Correct Containers?		
Correct Sample Volumes?		
Correct Preservation?		

Information concerning all noncompliance samples/containers shall be recorded on the COC.

Ship. Carrier: UPS / FedEx / DHL / Other GES
Tracking #: _____

Sample/COC Comments
>10 samples - broken in transit 2ea 9/7/05

ALSI Field Services: [ ] Pickup [ ] Labor [ ] Composite Sampling [ ] Rental Equipment [ ] Other: _____

Project Comments:

Logged By (initials/date/time): CK 9/7/05 2141
Reviewed By (initials/date/time): JLK 9/8/05 1423

Data Deliverables: [ ] Standard [ ] CLP-like [ ] USACE [ ]
Special Processing: [ ] USACE [ ] Navy [ ]
State Samples Collected In: [ ] NY [ ] NJ [ ] PA [ ] NC [ ]
Reportable to PADEP? [ ] Yes PWSID # _____
Sample Disposal: [ ] Lab [ ] Special
EDDS: Format Type- _____

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 Tyler Shadd	9/7/05	13:00	2 GES Fridge	9/7/05	13:00
3 [illegible]	9-7-05	16:10	4 JLA ALSI	9/7/05	16:10
5 JLA ALSI	9/7/05	21:00	6 Mgr ALSI	9/7	2100
7			8		
9			10		

* G=Grab; C=Composite
**Matrix - Al=Air; DW=Drinking Water; GW=Groundwater; Oi=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

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Rev 8/04

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Certificate of Analysis

October 4, 2005

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Lab ID#: **9626056**

Project Name: **Sunoco Warminster, PA 610 Old York Road**
Workorder ID: **Sun Warminster 610 Old York Rd**

PO#: 02-02061-06-160-XX

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Laboratory Manager

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Certificate of Analysis

October 4, 2005

Pat Crawford
Groundwater Environmental Serv
410 Eagleview Boulevard
Suite 110
Exton, PA 19341

Lab ID #: **9626056001**
Received: 09/20/05 22:00
Discard: 10/18/05

Project Name: **Sunoco Warminster, PA 610 Old York Road** PO#: 02-02061-06-160-XX
Workorder ID: **Sun Warminster 610 Old York Rd** COC Number:

Sample ID: **MW-3** Matrix: Water
Date Collected: 09/20/05 10:30 Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
VOLATILE ORGANICS								
Benzene	ND	ug/L	1.0	SW846 8260B	09/30/05 00:42	09/30/05	JHD	
Ethylbenzene	ND	ug/L	1.0	SW846 8260B	09/30/05 00:42	09/30/05	JHD	
Isopropylbenzene	ND	ug/L	1.0	SW846 8260B	09/30/05 00:42	09/30/05	JHD	
Methyl t-Butyl Ether	ND	ug/L	1.0	SW846 8260B	09/30/05 00:42	09/30/05	JHD	
Naphthalene	ND	ug/L	2.0	SW846 8260B	09/30/05 00:42	09/30/05	JHD	
Toluene	ND	ug/L	1.0	SW846 8260B	09/30/05 00:42	09/30/05	JHD	
Total Xylenes	ND	ug/L	3.0	SW846 8260B	09/30/05 00:42	09/30/05	JHD	

Surrogates	Result	Units	Recovery	Limits
1,2-Dichloroethane-d4	36.8	ug/L	123.0%	(50 - 152)
Dibromofluoromethane	33.8	ug/L	113.0%	(63 - 137)
Toluene-d8	36.1	ug/L	120.0%	(80 - 128)
4-Bromofluorobenzene	31.5	ug/L	105.0%	(76 - 125)

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Alan J. Lopez
Laboratory Manager

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October 4, 2005

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Lab ID #: 9626056002
Received: 09/20/05 22:00
Discard: 10/18/05

Project Name: Sunoco Warminster, PA 610 Old York Road
PO#: 02-02061-06-160-XX
Workorder ID: Sun Warminster 610 Old York Rd
COC Number:

Sample ID: MW-4
Matrix: Water
Date Collected: 09/20/05 11:00
Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
VOLATILE ORGANICS								
Benzene	ND	ug/L	1.0	SW846 8260B	09/29/05 22:58	09/29/05	JHD	
Ethylbenzene	ND	ug/L	1.0	SW846 8260B	09/29/05 22:58	09/29/05	JHD	
Isopropylbenzene	ND	ug/L	1.0	SW846 8260B	09/29/05 22:58	09/29/05	JHD	
Methyl t-Butyl Ether	ND	ug/L	1.0	SW846 8260B	09/29/05 22:58	09/29/05	JHD	
Naphthalene	ND	ug/L	2.0	SW846 8260B	09/29/05 22:58	09/29/05	JHD	
Toluene	ND	ug/L	1.0	SW846 8260B	09/29/05 22:58	09/29/05	JHD	
Total Xylenes	ND	ug/L	3.0	SW846 8260B	09/29/05 22:58	09/29/05	JHD	

Surrogates	Result	Units	Recovery	Limits
1,2-Dichloroethane-d4	37.8	ug/L	126.0%	(50 - 152)
Dibromofluoromethane	34.8	ug/L	116.0%	(63 - 137)
Toluene-d8	35.2	ug/L	117.0%	(80 - 128)
4-Bromofluorobenzene	31	ug/L	103.0%	(76 - 125)

Comments:
A positive result for oxidant was obtained for this sample - utilizing a HACH test kit. It is recommended that subsequent - sampling events utilize a dechlorination agent if oxidant is - determined to be present. Ref:SW-846 Methodology Table 4.1

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Lab ID #: **9626056003**
Received: 09/20/05 22:00
Discard: 10/18/05

Project Name: **Sunoco Warminster, PA 610 Old York Road** PO#: 02-02061-06-160-XX
Workorder ID: **Sun Warminster 610 Old York Rd** COC Number:

Sample ID: **MW-5** Matrix: Water
Date Collected: 09/20/05 10:50 Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
VOLATILE ORGANICS								
Benzene	ND	ug/L	1.0	SW846 8260B	09/30/05 01:17	09/30/05	JHD	
Ethylbenzene	ND	ug/L	1.0	SW846 8260B	09/30/05 01:17	09/30/05	JHD	
Isopropylbenzene	ND	ug/L	1.0	SW846 8260B	09/30/05 01:17	09/30/05	JHD	
Methyl t-Butyl Ether	ND	ug/L	1.0	SW846 8260B	09/30/05 01:17	09/30/05	JHD	
Naphthalene	ND	ug/L	2.0	SW846 8260B	09/30/05 01:17	09/30/05	JHD	
Toluene	ND	ug/L	1.0	SW846 8260B	09/30/05 01:17	09/30/05	JHD	
Total Xylenes	ND	ug/L	3.0	SW846 8260B	09/30/05 01:17	09/30/05	JHD	

Surrogates	Result	Units	Recovery	Limits
1,2-Dichloroethane-d4	37.8	ug/L	126.0%	(50 - 152)
Dibromofluoromethane	34.5	ug/L	115.0%	(63 - 137)
Toluene-d8	35.5	ug/L	118.0%	(80 - 128)
4-Bromofluorobenzene	32.6	ug/L	109.0%	(76 - 125)

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Laboratory Manager

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Lab ID #: **9626056004**
Received: 09/20/05 22:00
Discard: 10/18/05

Project Name: **Sunoco Warminster, PA 610 Old York Road** PO#: 02-02061-06-160-XX
Workorder ID: **Sun Warminster 610 Old York Rd** COC Number:

Sample ID: **MW-6** Matrix: Water
Date Collected: 09/20/05 09:45 Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
VOLATILE ORGANICS								
Benzene	ND	ug/L	1.0	SW846 8260B	09/30/05 01:52	09/30/05	JHD	
Ethylbenzene	ND	ug/L	1.0	SW846 8260B	09/30/05 01:52	09/30/05	JHD	
Isopropylbenzene	ND	ug/L	1.0	SW846 8260B	09/30/05 01:52	09/30/05	JHD	
Methyl t-Butyl Ether	ND	ug/L	1.0	SW846 8260B	09/30/05 01:52	09/30/05	JHD	
Naphthalene	ND	ug/L	2.0	SW846 8260B	09/30/05 01:52	09/30/05	JHD	
Toluene	ND	ug/L	1.0	SW846 8260B	09/30/05 01:52	09/30/05	JHD	
Total Xylenes	ND	ug/L	3.0	SW846 8260B	09/30/05 01:52	09/30/05	JHD	

Surrogates	Result	Units	Recovery	Limits
1,2-Dichloroethane-d4	38.9	ug/L	130.0%	(50 - 152)
Dibromofluoromethane	34.9	ug/L	116.0%	(63 - 137)
Toluene-d8	35.4	ug/L	118.0%	(80 - 128)
4-Bromofluorobenzene	31.8	ug/L	106.0%	(76 - 125)

This report relates only to the sample as received by the laboratory, and may only be reproduced in full.

Alan J. Lopez
Laboratory Manager

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Certificate of Analysis

October 4, 2005

Pat Crawford
Groundwater Environmental Serv
410 Eagleview Boulevard
Suite 110
Exton, PA 19341

Lab ID #: **9626056005**
Received: 09/20/05 22:00
Discard: 10/18/05
Page: 6 Of 6

Project Name: **Sunoco Warminster, PA 610 Old York Road** PO#: 02-02061-06-160-XX
Workorder ID: **Sun Warminster 610 Old York Rd** COC Number:

Sample ID: **MW-7** Matrix: Water
Date Collected: 09/20/05 10:05 Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
VOLATILE ORGANICS								
Benzene	ND	ug/L	1.0	SW846 8260B	09/30/05 02:26	09/30/05	JHD	
Ethylbenzene	ND	ug/L	1.0	SW846 8260B	09/30/05 02:26	09/30/05	JHD	
Isopropylbenzene	ND	ug/L	1.0	SW846 8260B	09/30/05 02:26	09/30/05	JHD	
Methyl t-Butyl Ether	ND	ug/L	1.0	SW846 8260B	09/30/05 02:26	09/30/05	JHD	
Naphthalene	ND	ug/L	2.0	SW846 8260B	09/30/05 02:26	09/30/05	JHD	
Toluene	ND	ug/L	1.0	SW846 8260B	09/30/05 02:26	09/30/05	JHD	
Total Xylenes	ND	ug/L	3.0	SW846 8260B	09/30/05 02:26	09/30/05	JHD	

Surrogates	Result	Units	Recovery	Limits
1,2-Dichloroethane-d4	37.9	ug/L	126.0%	(50 - 152)
Dibromofluoromethane	34	ug/L	113.0%	(63 - 137)
Toluene-d8	35.3	ug/L	118.0%	(80 - 128)
4-Bromofluorobenzene	32	ug/L	107.0%	(76 - 125)

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Alan J. Lopez
Laboratory Manager

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CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

COC #: 96260526 of
ALSI Quote #:

Client Name: GES
Address: 410 Eagleview Blvd.
Exton, PA 19341
Contact: Patrick Crawford
Phone#: 610-458-1077 ext. 169
Project Name/#: Sunoco Warminster
Bill To:

TAT: [✓] Normal-Standard TAT is 10-12 business days. [ ] Rush-Subject to ALSI approval and surcharges.
Date Required: _____ Approved By: _____
Email? [ ] -Y _____
Fax? [ ] -Y No.: _____

	Container Type	Container Size	Preservative	ANALYSES/METHOD REQUESTED										Receipt Information (completed by Receiving Lab)
	CG	40mL	HCl	BTEX, MTBE, Cumene, Naphthalene (8260B)										Cooler Temp: _____ Cooler #: _____
														Therm. ID _____ Y N
														Custody Seals Present? [ ] [✓]
														(if present) Seals Intact? [ ] [ ]
														Received on Ice? [✓] [ ]
														COC/Labels Agree? [✓] [ ]
														Cont. in Good Cond.? [✓] [ ]
														Correct Containers? [✓] [ ]
														Correct Sample Volumes? [✓] [ ]
														Correct Preservation? [✓] [ ]

Information concerning all noncontormance samples/containers shall be recorded on the COC.

Ship. Carrier: UPS / FedEx / DHL / (Other) FS
Tracking #: _____

	Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	Enter Number of Containers Per Sample or Field Results Below.	Sample/COC Comments
1	MW-3	9/20/05	10:30	G	GW	3	
2	MW-4	9/20/05	11:00	G	GW	3	
3	MW-5	9/20/05	10:50	G	GW	3	
4	MW-6	9/20/05	9:45	G	GW	3	
5	MW-7	9/20/05	10:05	G	GW	3	
6							
7							
8							
9							
10							

ALSI Field Services: ☐Pickup ☐Labor ☐Composite Sampling ☐Rental Equipment ☐Other: _____

Project Comments:

Logged By (initials/date/time): CK 9/21/05 0024
Reviewed By (initials/date/time): JLK 9/21/05 1044

Data Deliverables: [ ] Standard [ ] CLP-like [ ] USACE [ ]
Special Processing: USACE [ ] Navy [ ]
State Samples Collected In: [ ] NY [ ] NJ [ ] PA [ ] NC [ ]
Reportable to PADEP? Yes [ ] PWSID # _____
Sample Disposal: Lab [ ] Special [ ]
EDDS: Format Type- _____

	Relinquished By / Company Name	Date	Time		Received By / Company Name	Date	Time
1	Keith S. Mosko	9/20/05		2	GES Fedex.	9-21-05	
3	[illegible]	9-20-05	11:05	4	JLA ALSI	9/20/05	1105
5	JLA ALSI	9/20/05	2200	6	Myer ALSI	9/20	2200
7				8			
9				10			

* G=Grab; C=Composite **Matrix - Al=Air; DW=Drinking Water; GW=Groundwater; Oil=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

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Rev 8/04

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Certificate of Analysis

November 15, 2005

Pat Crawford
Groundwater Environmental Serv
410 Eagleview Boulevard
Suite 110
Exton, PA 19341

Lab ID#: 9630078

Project Name: **Sunoco Warminster, PA 610 Old York Road**
Workorder ID: **Sunoco Warminster 610 Old York**

PO#: 02-02061-06-160-XX

This report relates only to the sample(s) as received by the laboratory. Laboratory reports may not be reproduced, except in full, without the written approval of the laboratory.

A result of ND indicates that the analyte was Not Detected at the Reporting Detection Limit (RDL).

ALSI is a NELAC accredited laboratory. ALSI certifies that all applicable test results meet the requirements of NELAC. For an inventory of our NELAC accreditations and Scope of Work please visit our website at www.analyticallab.com or contact your Project Manager at (717)944-5541 for a complete listing.

Samples collected by ALSI personnel are done so in accordance with the procedures set forth in the ALSI Field Sampling Plan.

If you have any questions in reference to this laboratory report, please contact your ALSI project coordinator or the laboratory manager listed at the bottom of this report at 717-944-5541.

Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.

The Chain-of-Custody document is included as part of this report.

ALSI's webpage contains links to water quality documents on the internet. Visit us at www.analyticallab.com.

All wastewater analyses comply with methodology requirements of 40CFR Part 136. All drinking water analyses comply with methodology requirements of 40 CFR Part 141.

Note: This document is included as part of the Analytical Report and must be retained as a permanent record thereof.

Alan J. Lopez
Laboratory Manager

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Certificate of Analysis

November 15, 2005

Pat Crawford
Groundwater Environmental Serv
410 Eagleview Boulevard
Suite 110
Exton, PA 19341

Lab ID #: **9630078001**
Received: 10/28/05 20:45
Discard: 11/29/05

Project Name: **Sunoco Warminster, PA 610 Old York Road** PO#: 02-02061-06-160-XX
Workorder ID: **Sunoco Warminster 610 Old York** COC Number:

Sample ID: **MW-1** Matrix: Water
Date Collected: 10/28/05 09:20 Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
VOLATILE ORGANICS								
Benzene	83.4	ug/L	5.0	SW846 8260B	11/09/05 17:36	11/09/05	KLM	A
Ethylbenzene	140	ug/L	5.0	SW846 8260B	11/09/05 17:36	11/09/05	KLM	A
Isopropylbenzene	22.2	ug/L	5.0	SW846 8260B	11/09/05 17:36	11/09/05	KLM	A
Methyl t-Butyl Ether	6330	ug/L	200	SW846 8260B	11/11/05 06:33	11/11/05	KLM	
Naphthalene	136	ug/L	10.0	SW846 8260B	11/09/05 17:36	11/09/05	KLM	A
Toluene	241	ug/L	5.0	SW846 8260B	11/09/05 17:36	11/09/05	KLM	A
Total Xylenes	812	ug/L	15.0	SW846 8260B	11/09/05 17:36	11/09/05	KLM	A

Surrogates	Result	Units	Recovery	Limits
1,2-Dichloroethane-d4	151	ug/L	100.0%	(50 - 152)
1,2-Dichloroethane-d4	4890	ug/L	81.4%	(50 - 152)
Dibromofluoromethane	131	ug/L	87.6%	(63 - 137)
Dibromofluoromethane	5470	ug/L	91.1%	(63 - 137)
Toluene-d8	164	ug/L	110.0%	(80 - 128)
Toluene-d8	6470	ug/L	108.0%	(80 - 128)
4-Bromofluorobenzene	135	ug/L	90.2%	(76 - 125)
4-Bromofluorobenzene	5850	ug/L	97.5%	(76 - 125)

Comments:
The GCMS volatiles analysis was performed at a dilution - due to the level of target compounds.

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Alan J. Lopez
Laboratory Manager

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Certificate of Analysis

November 15, 2005

Pat Crawford
Groundwater Environmental Serv
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Lab ID #: **9630078002**
Received: 10/28/05 20:45
Discard: 11/29/05

Project Name: **Sunoco Warminster, PA 610 Old York Road** PO#: 02-02061-06-160-XX
Workorder ID: **Sunoco Warminster 610 Old York** COC Number:

Sample ID: **MW-2** Matrix: Water
Date Collected: 10/28/05 09:40 Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
VOLATILE ORGANICS								
Benzene	76.7	ug/L	1.0	SW846 8260B	11/08/05 15:16	11/08/05	JHD	A
Ethylbenzene	195	ug/L	25.0	SW846 8260B	11/10/05 09:07	11/10/05	KLM	
Isopropylbenzene	80.8	ug/L	1.0	SW846 8260B	11/08/05 15:16	11/08/05	JHD	A
Methyl t-Butyl Ether	2750	ug/L	25.0	SW846 8260B	11/10/05 09:07	11/10/05	KLM	
Naphthalene	136	ug/L	2.0	SW846 8260B	11/08/05 15:16	11/08/05	JHD	A
Toluene	51.8	ug/L	1.0	SW846 8260B	11/08/05 15:16	11/08/05	JHD	A
Total Xylenes	67.3	ug/L	3.0	SW846 8260B	11/08/05 15:16	11/08/05	JHD	A

Surrogates	Result	Units	Recovery	Limits
1,2-Dichloroethane-d4	24	ug/L	79.9%	(50 - 152)
1,2-Dichloroethane-d4	737	ug/L	98.3%	(50 - 152)
Dibromofluoromethane	23.3	ug/L	77.7%	(63 - 137)
Dibromofluoromethane	723	ug/L	96.4%	(63 - 137)
Toluene-d8	32.3	ug/L	108.0%	(80 - 128)
Toluene-d8	815	ug/L	109.0%	(80 - 128)
4-Bromofluorobenzene	29.4	ug/L	98.1%	(76 - 125)
4-Bromofluorobenzene	715	ug/L	95.4%	(76 - 125)

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Alan J. Lopez
Laboratory Manager

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November 15, 2005

Pat Crawford
Groundwater Environmental Serv
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Lab ID #: 9630078003
Received: 10/28/05 20:45
Discard: 11/29/05
Page: 4 Of 8

Project Name: Sunoco Warminster, PA 610 Old York Road PO#: 02-02061-06-160-XX
Workorder ID: Sunoco Warminster 610 Old York COC Number:

Sample ID: MW-3 Matrix: Water
Date Collected: 10/28/05 10:15 Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
VOLATILE ORGANICS								
Benzene	3.1	ug/L	1.0	SW846 8260B	11/08/05 15:45	11/08/05	JHD	A
Ethylbenzene	ND	ug/L	1.0	SW846 8260B	11/08/05 15:45	11/08/05	JHD	A
Isopropylbenzene	ND	ug/L	1.0	SW846 8260B	11/08/05 15:45	11/08/05	JHD	A
Methyl t-Butyl Ether	749	ug/L	10.0	SW846 8260B	11/10/05 09:36	11/10/05	KLM	
Naphthalene	9.0	ug/L	2.0	SW846 8260B	11/08/05 15:45	11/08/05	JHD	A
Toluene	2.2	ug/L	1.0	SW846 8260B	11/08/05 15:45	11/08/05	JHD	A
Total Xylenes	26.0	ug/L	3.0	SW846 8260B	11/08/05 15:45	11/08/05	JHD	A

Surrogates	Result	Units	Recovery	Limits
1,2-Dichloroethane-d4	25.1	ug/L	83.7%	(50 - 152)
1,2-Dichloroethane-d4	304	ug/L	101.0%	(50 - 152)
Dibromofluoromethane	24.8	ug/L	82.5%	(63 - 137)
Dibromofluoromethane	290	ug/L	96.8%	(63 - 137)
Toluene-d8	33	ug/L	110.0%	(80 - 128)
Toluene-d8	324	ug/L	108.0%	(80 - 128)
4-Bromofluorobenzene	28.8	ug/L	95.8%	(76 - 125)
4-Bromofluorobenzene	290	ug/L	96.6%	(76 - 125)

Comments:

In the 8260 analysis, MTBE, benzene, and naphthalene were recovered outside quality control criteria in the MS/MSD of this sample. The LCS had acceptable recoveries, satisfying method criteria.
A positive result for oxidant was obtained for this sample - utilizing a HACH test kit. It is recommended that subsequent - sampling events utilize a dechlorination agent if oxidant is - determined to be present. Ref:SW-846 Methodology Table 4.1

This report relates only to the sample as received by the laboratory, and may only be reproduced in full.

Alan J. Lopez
Laboratory Manager

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Certificate of Analysis

November 15, 2005

Pat Crawford
Groundwater Environmental Serv
410 Eagleview Boulevard
Suite 110
Exton, PA 19341

Lab ID #: **9630078004**
Received: 10/28/05 20:45
Discard: 11/29/05

Project Name: **Sunoco Warminster, PA 610 Old York Road** PO#: 02-02061-06-160-XX
Workorder ID: **Sunoco Warminster 610 Old York** COC Number:

Sample ID: **MW-4** Matrix: Water
Date Collected: 10/28/05 10:00 Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
VOLATILE ORGANICS								
Benzene	ND	ug/L	1.0	SW846 8260B	11/08/05 16:14	11/08/05	JHD	A
Ethylbenzene	ND	ug/L	1.0	SW846 8260B	11/08/05 16:14	11/08/05	JHD	A
Isopropylbenzene	ND	ug/L	1.0	SW846 8260B	11/08/05 16:14	11/08/05	JHD	A
Methyl t-Butyl Ether	89.6	ug/L	1.0	SW846 8260B	11/08/05 16:14	11/08/05	JHD	A
Naphthalene	ND	ug/L	2.0	SW846 8260B	11/08/05 16:14	11/08/05	JHD	A
Toluene	ND	ug/L	1.0	SW846 8260B	11/08/05 16:14	11/08/05	JHD	A
Total Xylenes	ND	ug/L	3.0	SW846 8260B	11/08/05 16:14	11/08/05	JHD	A

Surrogates	Result	Units	Recovery	Limits
1,2-Dichloroethane-d4	25.6	ug/L	85.4%	(50 - 152)
Dibromofluoromethane	24.3	ug/L	81.1%	(63 - 137)
Toluene-d8	33.1	ug/L	110.0%	(80 - 128)
4-Bromofluorobenzene	29	ug/L	96.6%	(76 - 125)

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Alan J. Lopez
Laboratory Manager

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Certificate of Analysis

November 15, 2005

Pat Crawford
Groundwater Environmental Serv
410 Eagleview Boulevard
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Lab ID #: **9630078005**
Received: 10/28/05 20:45
Discard: 11/29/05

Project Name: **Sunoco Warminster, PA 610 Old York Road** PO#: 02-02061-06-160-XX
Workorder ID: **Sunoco Warminster 610 Old York** COC Number:

Sample ID: **MW-5** Matrix: Water
Date Collected: 10/28/05 09:56 Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
VOLATILE ORGANICS								
Benzene	ND	ug/L	1.0	SW846 8260B	11/08/05 16:43	11/08/05	JHD	A
Ethylbenzene	ND	ug/L	1.0	SW846 8260B	11/08/05 16:43	11/08/05	JHD	A
Isopropylbenzene	ND	ug/L	1.0	SW846 8260B	11/08/05 16:43	11/08/05	JHD	A
Methyl t-Butyl Ether	648	ug/L	10.0	SW846 8260B	11/10/05 10:05	11/10/05	KLM	
Naphthalene	ND	ug/L	2.0	SW846 8260B	11/08/05 16:43	11/08/05	JHD	A
Toluene	ND	ug/L	1.0	SW846 8260B	11/08/05 16:43	11/08/05	JHD	A
Total Xylenes	4.1	ug/L	3.0	SW846 8260B	11/08/05 16:43	11/08/05	JHD	A

Surrogates	Result	Units	Recovery	Limits
1,2-Dichloroethane-d4	25.2	ug/L	83.8%	(50 - 152)
1,2-Dichloroethane-d4	300	ug/L	99.9%	(50 - 152)
Dibromofluoromethane	24.3	ug/L	80.9%	(63 - 137)
Dibromofluoromethane	294	ug/L	98.1%	(63 - 137)
Toluene-d8	33.3	ug/L	111.0%	(80 - 128)
Toluene-d8	329	ug/L	110.0%	(80 - 128)
4-Bromofluorobenzene	28.3	ug/L	94.4%	(76 - 125)
4-Bromofluorobenzene	293	ug/L	97.7%	(76 - 125)

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Alan J. Lopez
Laboratory Manager

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Certificate of Analysis

November 15, 2005

Pat Crawford
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Lab ID #: 9630078006
Received: 10/28/05 20:45
Discard: 11/29/05
Page: 7 Of 8

Project Name: **Sunoco Warminster, PA 610 Old York Road**
PO#: 02-02061-06-160-XX
Workorder ID: **Sunoco Warminster 610 Old York**
COC Number:

Sample ID: **MW-6**
Matrix: Water
Date Collected: 10/28/05 10:14
Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
VOLATILE ORGANICS								
Benzene	ND	ug/L	1.0	SW846 8260B	11/08/05 17:12	11/08/05	JHD	A
Ethylbenzene	ND	ug/L	1.0	SW846 8260B	11/08/05 17:12	11/08/05	JHD	A
Isopropylbenzene	ND	ug/L	1.0	SW846 8260B	11/08/05 17:12	11/08/05	JHD	A
Methyl t-Butyl Ether	13.8	ug/L	1.0	SW846 8260B	11/08/05 17:12	11/08/05	JHD	A
Naphthalene	ND	ug/L	2.0	SW846 8260B	11/08/05 17:12	11/08/05	JHD	A
Toluene	ND	ug/L	1.0	SW846 8260B	11/08/05 17:12	11/08/05	JHD	A
Total Xylenes	ND	ug/L	3.0	SW846 8260B	11/08/05 17:12	11/08/05	JHD	A

Surrogates	Result	Units	Recovery	Limits
1,2-Dichloroethane-d4	25.2	ug/L	83.9%	(50 - 152)
Dibromofluoromethane	24.2	ug/L	80.8%	(63 - 137)
Toluene-d8	34	ug/L	113.0%	(80 - 128)
4-Bromofluorobenzene	28.2	ug/L	94.0%	(76 - 125)

Comments:

A positive result for oxidant was obtained for this sample - utilizing a HACH test kit. It is recommended that subsequent - sampling events utilize a dechlorination agent if oxidant is - determined to be present. Ref:SW-846 Methodology Table 4.1

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Alan J. Lopez
Laboratory Manager

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Certificate of Analysis

November 15, 2005

Pat Crawford
Groundwater Environmental Serv
410 Eagleview Boulevard
Suite 110
Exton, PA 19341

Lab ID #: **9630078007**
Received: 10/28/05 20:45
Discard: 11/29/05

Project Name: **Sunoco Warminster, PA 610 Old York Road** PO#: 02-02061-06-160-XX
Workorder ID: **Sunoco Warminster 610 Old York** COC Number:

Sample ID: **MW-7** Matrix: Water
Date Collected: 10/28/05 09:28 Collected by: Collected by Customer

Analysis Parameter	Result	Units	RDL	Method	Completed	Prep Date	By	Cntr
VOLATILE ORGANICS								
Benzene	ND	ug/L	1.0	SW846 8260B	11/08/05 17:41	11/08/05	JHD	A
Ethylbenzene	ND	ug/L	1.0	SW846 8260B	11/08/05 17:41	11/08/05	JHD	A
Isopropylbenzene	ND	ug/L	1.0	SW846 8260B	11/08/05 17:41	11/08/05	JHD	A
Methyl t-Butyl Ether	60.8	ug/L	1.0	SW846 8260B	11/08/05 17:41	11/08/05	JHD	A
Naphthalene	ND	ug/L	2.0	SW846 8260B	11/08/05 17:41	11/08/05	JHD	A
Toluene	1.7	ug/L	1.0	SW846 8260B	11/08/05 17:41	11/08/05	JHD	A
Total Xylenes	ND	ug/L	3.0	SW846 8260B	11/08/05 17:41	11/08/05	JHD	A

Surrogates	Result	Units	Recovery	Limits
1,2-Dichloroethane-d4	24.4	ug/L	81.2%	(50 - 152)
Dibromofluoromethane	24.3	ug/L	81.0%	(63 - 137)
Toluene-d8	32.7	ug/L	109.0%	(80 - 128)
4-Bromofluorobenzene	29.2	ug/L	97.4%	(76 - 125)

This report relates only to the sample as received by the laboratory, and may only be reproduced in full.

Alan J. Lopez
Laboratory Manager

9630078 Serial Number

Analytical Labs

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

Analytical Labs
Scott Brunk
Customer Service Rep

Project Name:	GES Project Number:	
Sunoco: Warminster, PA	02-02061-06-160-XX	
610 Old York Road	Contract No.: Sunoco GW	
GES Project / Case Manager: Patrick Crawford / Susan Cameron	Client Phone: 610 458-1077, extension 169	Client Fax: 610 458-2300
Client Name: Groundwater & Environmental Services, Inc.	Client E-mail: pcrawford@gesonline.com	
Client Address: 410 Eagleview Blvd., Suite 110, Exton PA 19341		

Page 1 of 1

STANDARD REPORT DELIVERY ( )
DATE DUE

EXPEDITED REPORT DELIVERY (SURCHARGE) ( )
DATE DUE

NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	MATRIX TYPE: COMPOSITE (C) OR GRAB (G) INDICATE	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (OIL, SOLVENT...)	REQUIRED ANALYSES: BTEX, MTBE, Cumene, Naphthalene (8260B) 40 ml vials	EDB (504) 40 ml vials	TPH (Amber Bottles)	Diss Lead (6020) 500 ml plastic							
								HCL	Na2S2 O3	HCL	None							
								NUMBER OF CONTAINERS SUBMITTED										
10/28/05	9:20	MW-1		x				3										
10/28/05	9:40	MW-2		x				3										
10/28/05	10:15	MW-3		x				3										
10/28/05	10:00	MW-4		x				3										
10/28/05	9:56	MW-5		x				3										
10/28/05	10:14	MW-6		x				3										
10/28/05	9:28	MW-7		x				3										

PRESERVATIVE

REMARKS: Detection Limits Must Meet PADEP SHS

	Y	N	Initials
Custody Seals Present?			
(If present) Seals Intact?			
Received on Ice?	✓		MT
COC/Labels Complete/Accurate	✓		
Cont in Good Cond?	✓		
Correct Containers?	✓		
Correct Sample Volumes?	✓		
Correct Preservation?	✓		
Headspace/Volatiles?			

Tracking #:

Cooler Temp:
Cooler #:
Therm ID:
Ship Carrier: FedEx UPS DHL Other: FS

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
Chris Wheaton	10/28/05	11:30		10-28-05	13:35		10/28/05	
RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
Chris Bridge	10/28/05	11:30	ACSI	10/28/05	1335	ACSI	10/28	2045

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT YES ( ) NO ( )	CUSTODY SEAL NO.	STL LOG NO.	LABORATORY REMARKS:
						ENTERED 10/28/05 2145

FCU036:12.20.00:2

Original - Return to Laboratory with Sample(s)

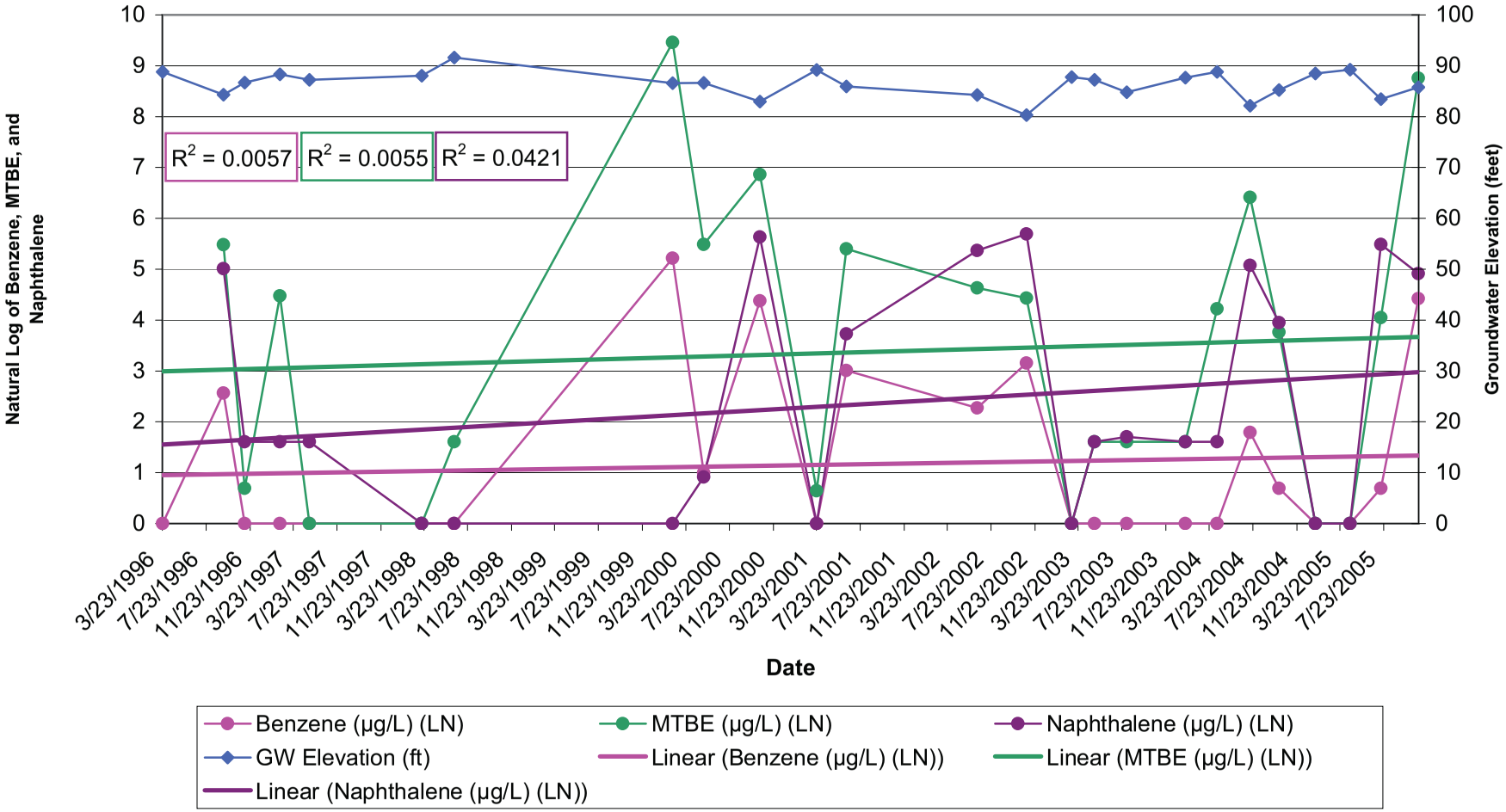
APPENDIX H

HYDROCARBON TREND GRAPHS

ALL HISTORICAL DATA

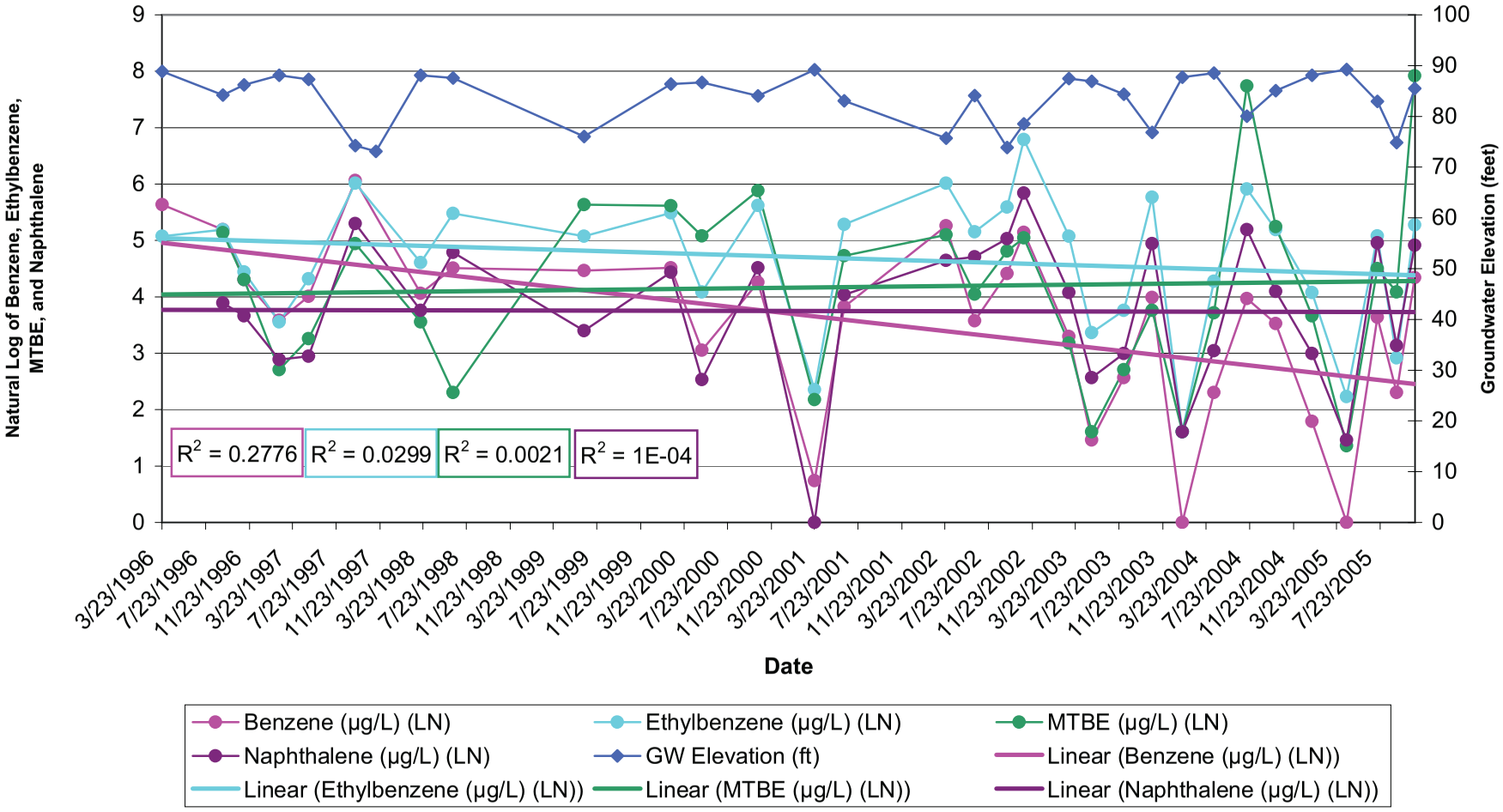
Sunoco Station #0363-5430
610 Old York Road, Warminster, PA

Groundwater Elevation and Natural Log of Benzene, MTBE, and Naphthalene in MW-1 over Time



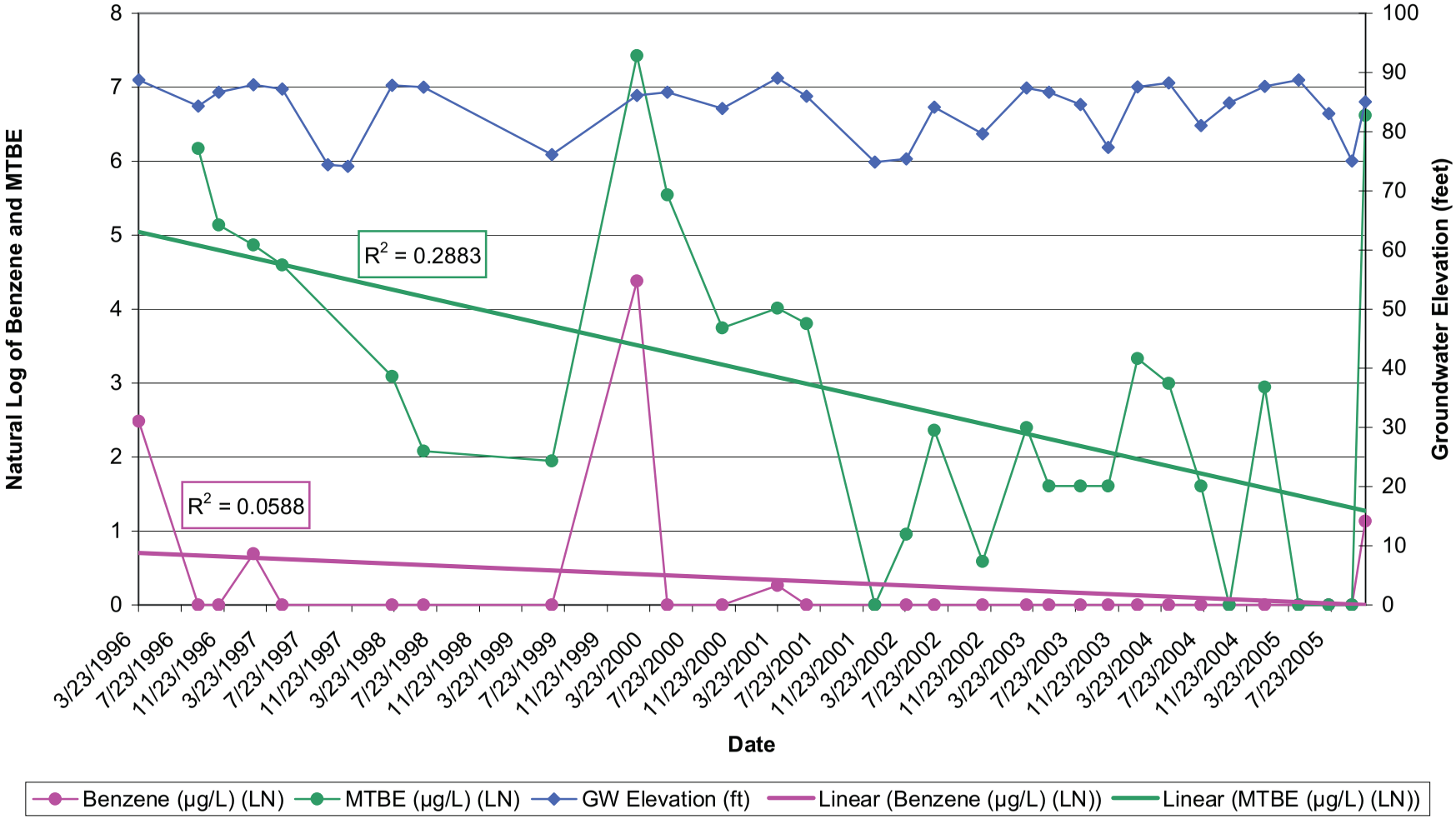
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610 Old York Road, Warminster, PA

Groundwater Elevation and Natural Log of Benzene, Ethylbenzene, MTBE, and Naphthalene in MW-2 over Time



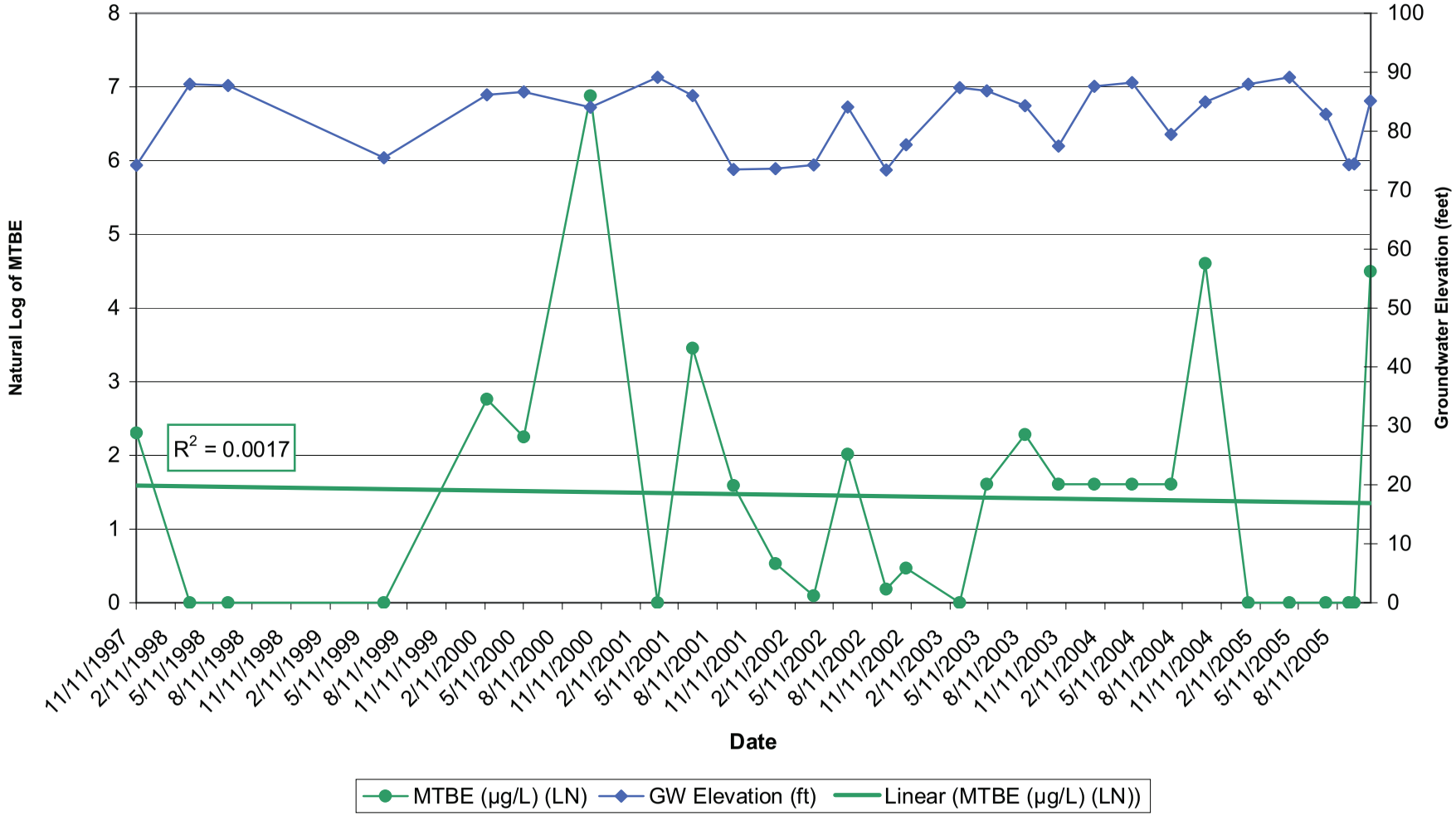
Sunoco Station #0363-5430
610 Old York Road, Warminster, PA

Groundwater Elevation and Natural Log of Benzene and MTBE in MW-3 over Time



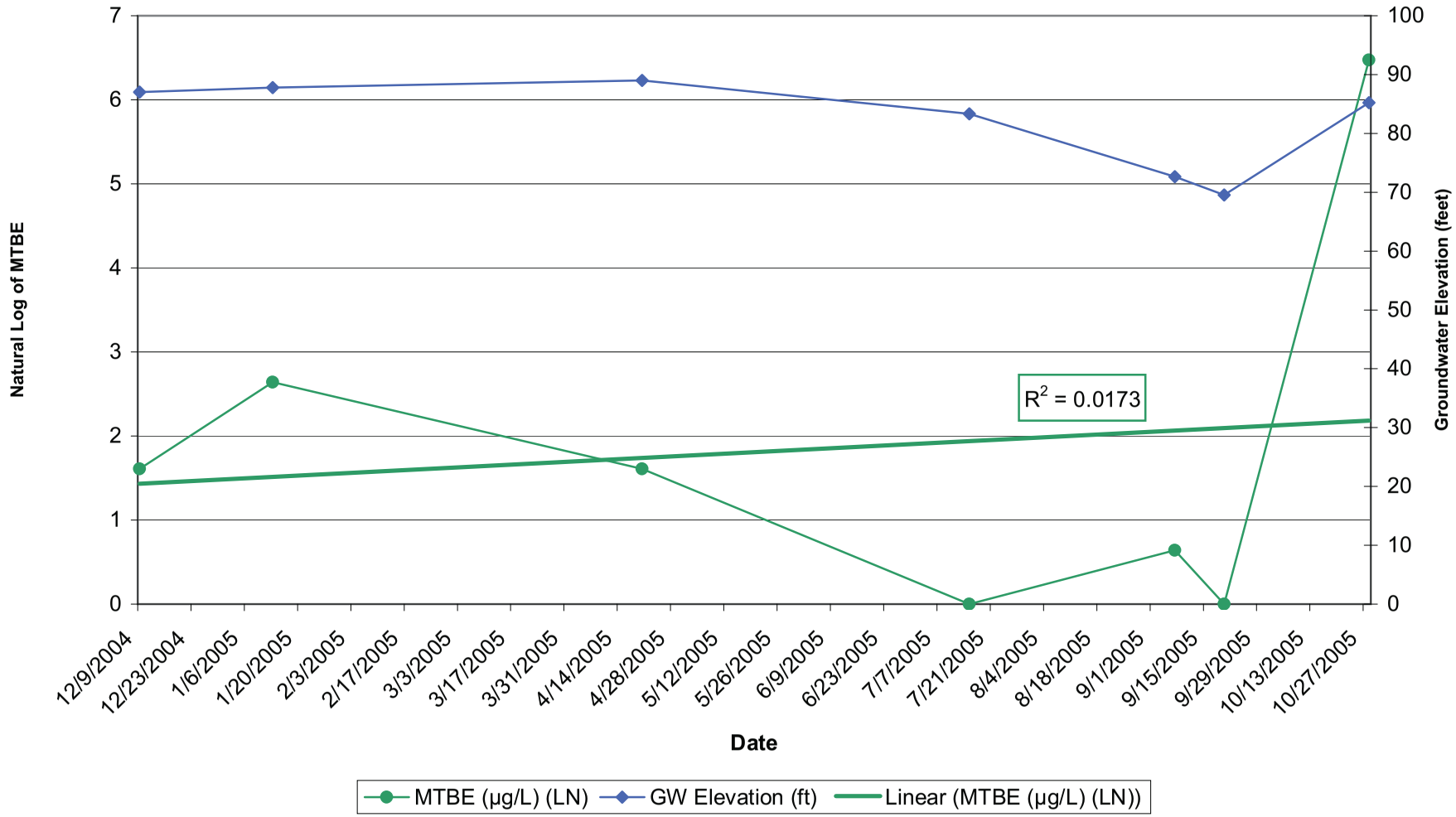
Sunoco Station #0363-5430
610 Old York Road, Warminster, PA

Groundwater Elevation and Natural Log of MTBE in MW-4 over Time



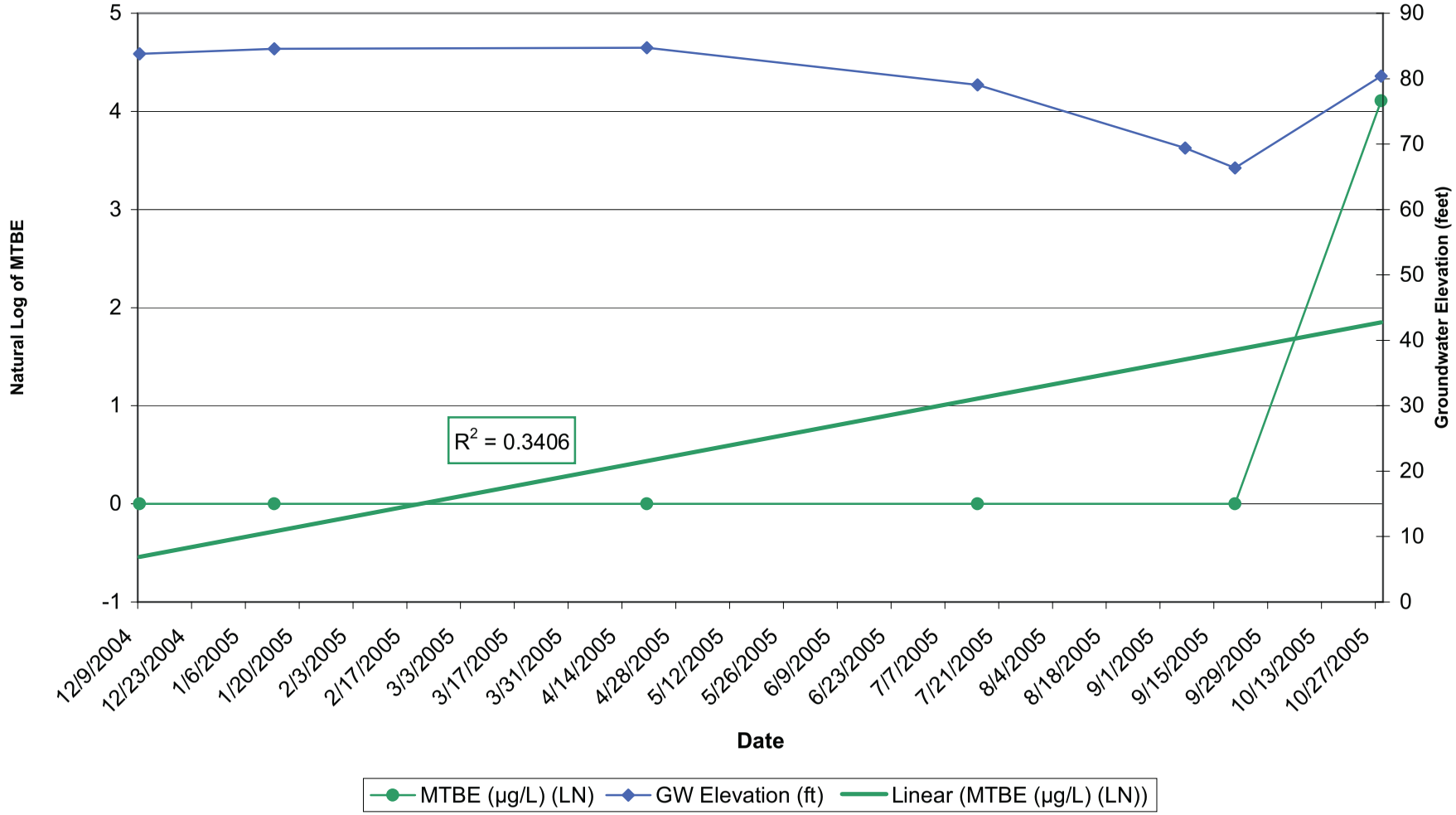
Sunoco Station #0363-5430
610 Old York Road, Warminster, PA

Groundwater Elevation and Natural Log of MTBE in MW-5 over Time



Sunoco Station #0363-5430
610 Old York Road, Warminster, PA

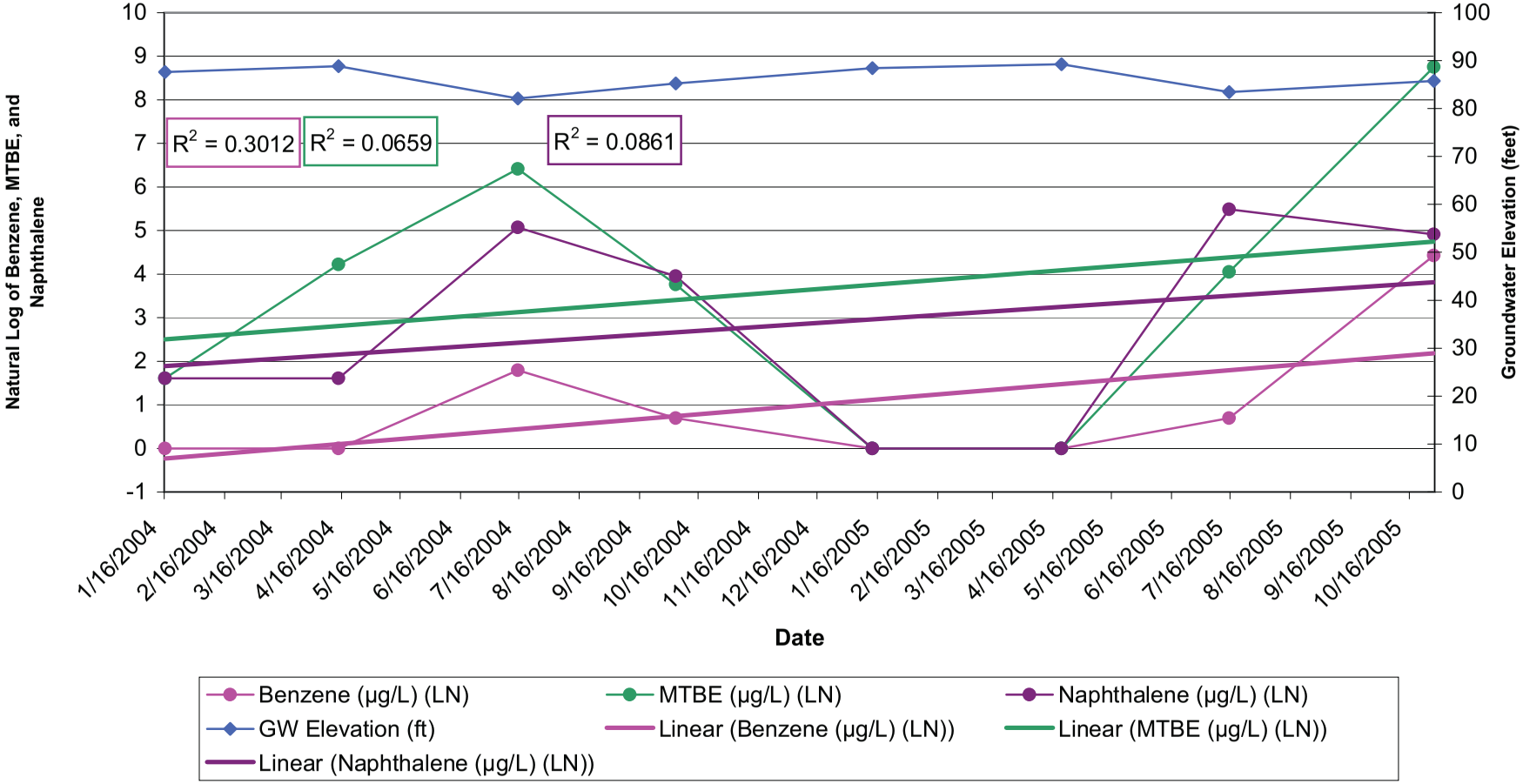
Groundwater Elevation and Natural Log of MTBE in MW-7 over Time



MOST RECENT EIGHT QUARTERS

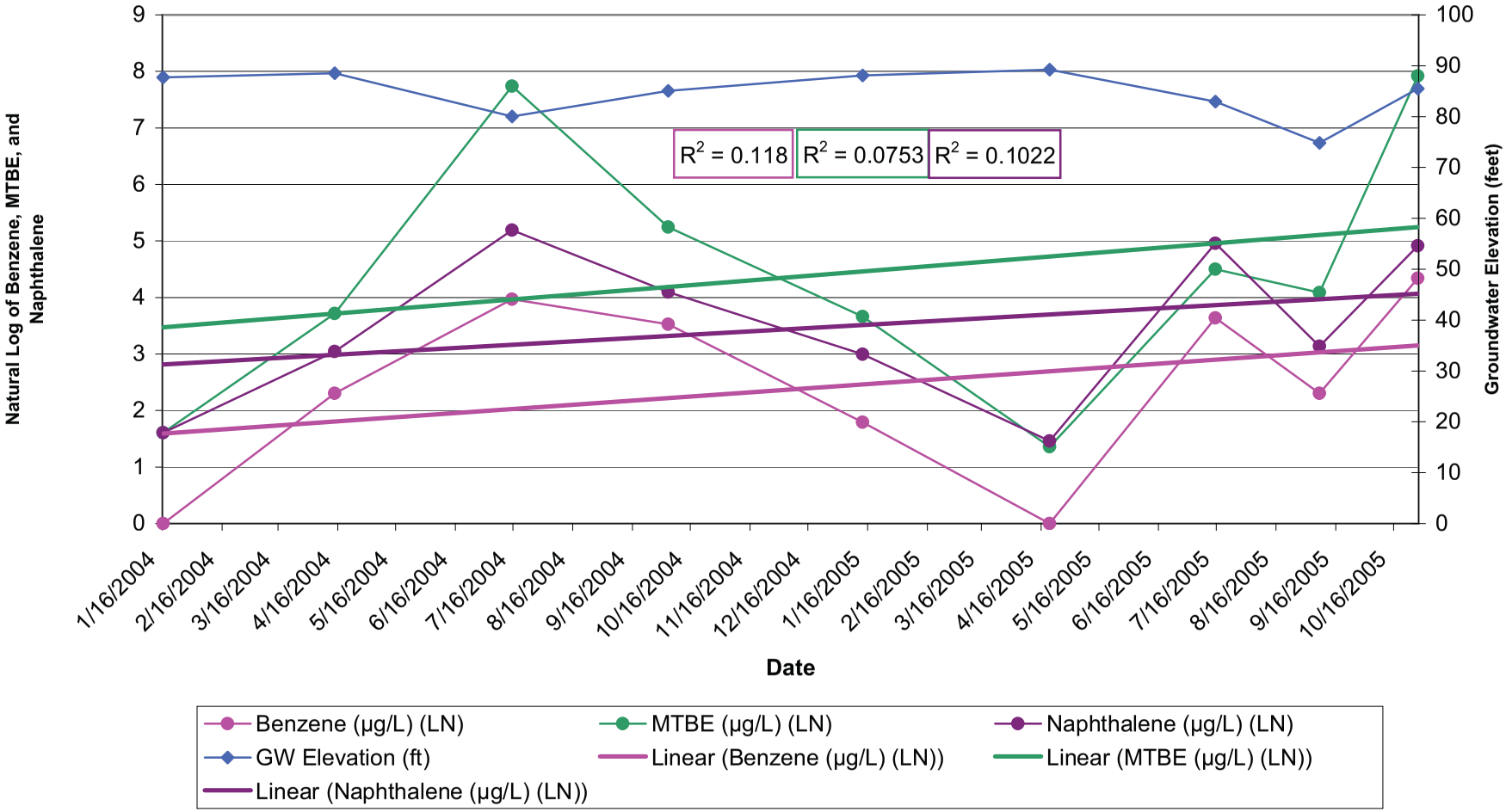
Sunoco Station #0363-5430
610 Old York Road, Warminster, PA

Groundwater Elevation and Natural Log of Benzene, MTBE, and Naphthalene in MW-1 January 2004 through October 2005



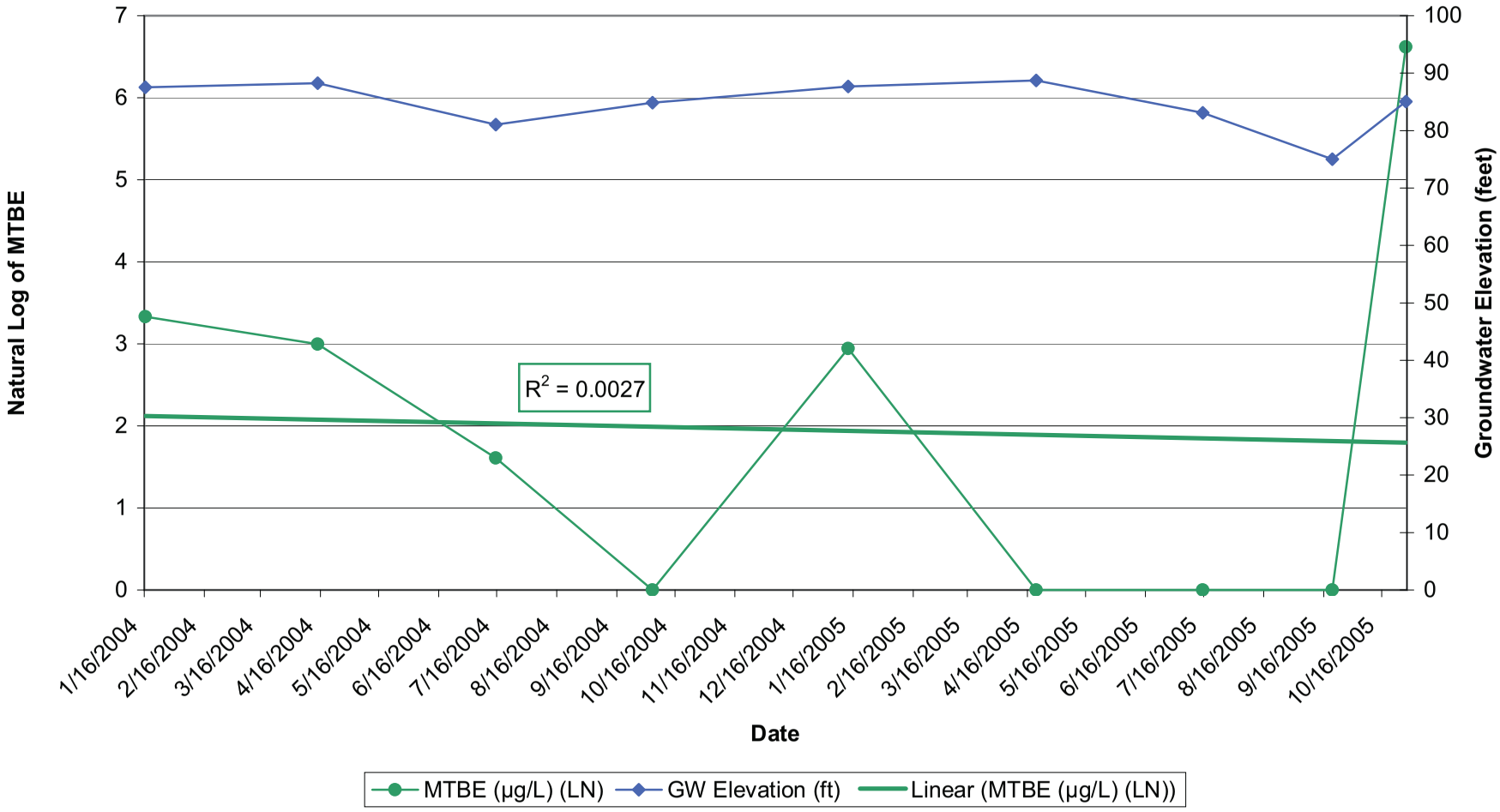
Sunoco Station #0363-5430
610 Old York Road, Warminster, PA

Groundwater Elevation and Natural Log of Benzene, MTBE, and Naphthalene in MW-2
January 2004 through October 2005



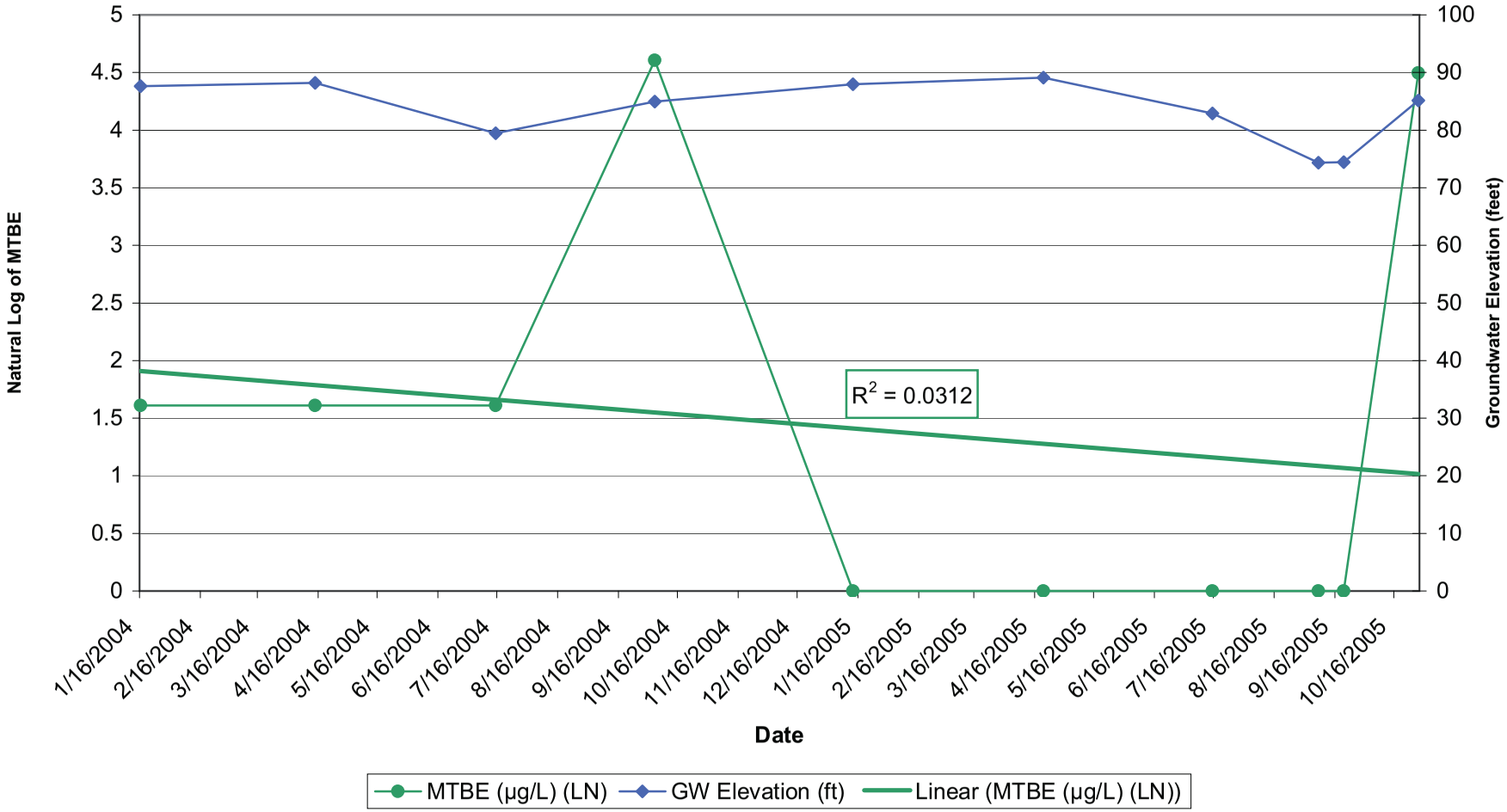
Sunoco Station #0363-5430
610 Old York Road, Warminster, PA

Groundwater Elevation and Natural Log of MTBE in MW-3
January 2004 through October 2005



Sunoco Station #0363-5430
610 Old York Road, Warminster, PA

Groundwater Elevation and Natural Log of MTBE in MW-4
January 2004 through October 2005



APPENDIX I

FATE AND TRANSPORT MODELING REPORT BY ES&T

Fate and Transport Modeling
for Sunoco Station #0363-5430
610 Old York Road
Warminster, Pennsylvania

prepared for

Groundwater & Environmental Services, Inc.
410 Eagleview Blvd., Suite 110
Exton, Pennsylvania 19341

by

Environmental Systems & Technologies
A Division of Groundwater & Environmental Services, Inc.
1750 Kraft Drive, Suite 2700
Blacksburg, Virginia 24060

1300319-02
December 2005

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Figure 2. Model domain.

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Figure 4. Initial MTBE concentration distribution and model-predicted MTBE concentration distributions at 5, 10, 15, 20 and 30 years.

Figure 5. Initial naphthalene concentration distribution and model-predicted naphthalene concentration distributions at 5, 10, 15, 20 and 30 years.

1. Introduction

The following provides an overview of the approach and results of fate and transport modeling conducted for the Sunoco Station #0363-5430 located at 610 Old York Road in Warminster, Pennsylvania. The purpose of the modeling is to evaluate the migration potential of dissolved phase constituents observed in groundwater at the site. The modeling activities involved a review of site data, conceptual model development, model selection, model construction, and model simulations. Details of the site conceptualization, modeling analyses, and results are described in the following sections.

2. Fate and Transport Analyses

Fate and transport modeling was conducted to evaluate the migration potential of dissolved phase hydrocarbons from the site and was based on site-specific data. The modeling effort concentrated on the dissolved hydrocarbon constituent concentrations over the last twelve quarters of sampling. Any analyzed constituent that has had an exceedance of the Pennsylvania Department of Environmental Protection Act II Statewide Health Standards (PADEP SHS) within the last twelve quarters was simulated in the modeling effort. Benzene, methyl tert-butyl ether (MTBE), and naphthalene are the only constituents to have exceeded the PADEP SHS during that time. Therefore, these constituents were evaluated in the modeling effort.

2.1 Site Conceptualization

The facility is located on the northwest corner of the intersection of Old York Road and Street Road in Warminster, Pennsylvania, approximately 1.7 miles south of Neshaminy Creek. The nearest surface water body, in the direction of flow, is Neshaminy Creek.

Seven monitoring wells (MW-1 through MW-7) have been installed at the facility. Monitoring well locations and facility features are shown on Figure 1. Groundwater sampling and monitoring activities have been conducted at the site since March 1996. Light non-aqueous phase liquid (LNAPL) has never been detected at the site; therefore, a continuing source will not be simulated in the modeling effort. Groundwater elevations at the site indicate groundwater flow to the north with an average gradient of 0.003.

Groundwater samples have been analyzed for benzene, toluene, ethylbenzene, xylenes, MTBE, isopropyl benzene, and naphthalene. Dissolved benzene, MTBE, and naphthalene are the only constituents that have exceeded the PADEP SHS in the last twelve quarters of sampling, therefore, these constituents were simulated in the modeling effort.

2.2 Model Selection

Numerical modeling of dissolved phase hydrocarbon fate and transport was conducted using the model BIOTRANS. BIOTRANS is a two-dimensional, finite element model that considers convective-dispersive transport, adsorption, and decay for multiple hydrocarbon constituents in

either porous or fractured media. Transport of dissolved species is simulated by solving the two-dimensional, vertically averaged convective-dispersive-reactive equation. The model utilizes steady-state velocity fields that represent average flow conditions. Analyses using BIOTRANS have been previously submitted and accepted by the U.S. EPA and state regulatory agencies. A detailed description of BIOTRANS is available in ES&T (1996).

2.3 Model Construction

The model domain covers an area of approximately 176,000 square feet, encompassing the site and surrounding downgradient areas to enable simulation of potential off-site dissolved migration. The finite element mesh contains 7,056 quadrilateral elements with a nodal spacing of 5 feet. The extent of the model domain and the finite element mesh are depicted in Figure 2. The model simulation was performed for 30 years to predict migration potential.

In the modeling effort, input parameter values were defined from site data whenever possible. When site-specific data were not available, literature values were utilized to define model input values. The following describes the input parameters and the values applied in the modeling effort.

Dissolved Species – Benzene, MTBE, and naphthalene were the constituents of concern considered in the model. For each constituent, the model requires molecular weight, pure phase solubility, and an adsorption coefficient. First-order decay was considered. The soil-water distribution coefficient, K_d, was calculated as the product of f_{oc} and K_{oc}, where f_{oc} represents the organic carbon content of the aquifer material, and K_{oc} is the organic carbon partition coefficient. No site-specific f_{oc} measurements were available, thus a conservative value of 0.005 was applied in the model. K_{oc} is chemical specific and describes the ratio of the amount of constituent adsorbed per unit weight of organic carbon in the aquifer material to the concentration in aqueous solution. The K_{oc} values utilized in the model were selected from Appendix A, Table 5, of the Act 2 regulations (PADEP, 2003). A first-order decay constant was also applied in the model (PADEP, 2003). Table 1 provides the chemical properties for benzene, MTBE, and naphthalene used in the modeling analyses.

Table 1. Chemical Properties Applied in the Modeling.

Parameter	Benzene	MTBE	Naphthalene	Units
Molecular weight[1]	78.11	8.15	128.17	g/mole
Solubility[2]	1,780	45,000	30	mg/L
K_{oc}[2]	58	12	950	cm^3/g
K_d	0.29	0.06	4.75	cm^3/g
First-order decay rate[2]	0.00096	0.0019	0.0027	d^{-1}

[1]http://chemfinder.cambridgesoft.com/
[2]Pa. Code § 250 (Appendix A, Table 5)

Initial Concentrations – The maximum benzene, MTBE, and naphthalene concentrations measured at all wells over the last twelve quarters were used as the initial concentration distributions in the model (Figures 3 through 5). Utilization of the maximum measured concentration distributions result in the most conservative estimate of dissolved-phase fate and transport.

Porosity – Total porosity is the ratio of void volume to total volume in the aquifer. A porosity value of 0.10 was utilized in the modeling effort. This value is representative of the competent shale bedrock encountered in borings at the facility (Freeze and Cherry, 1979).

Soil Bulk Density – The soil bulk density (ρ_b) is the mass of dry soil relative to the bulk soil volume. Bulk density can be calculated using porosity (Φ) and assuming a particle density of 2.65 g/cm^3, which is typical for a quartz, as

$$\rho_b = (1-\Phi) * 2.65 \text{ g/cm}^3$$

The bulk density applied in the modeling is 2.39 g/cm^3.

Longitudinal and Transverse Dispersivity – Hydrodynamic dispersion is the term applied to the combined effects of mechanical dispersion and molecular diffusion in causing a plume to spread within a groundwater system. For this modeling effort, the longitudinal and transverse dispersivities were conservatively estimated as 4 feet and 0.4 feet, respectively.

Groundwater Flow – Groundwater flow representative of measured site conditions was simulated in the modeling effort. A steady-state, uniform flow field was generated considering site hydrologic conditions. Measured groundwater elevations at the site indicate flow toward the northern portion of the facility, with a hydraulic gradient of 0.003. This hydraulic gradient was determined to represent average flow conditions across the site and in the offsite area. Hydraulic conductivity within the aquifer was estimated at 0.001 feet/day based on the competent shale bedrock encountered in borings at the facility (Freeze and Cherry, 1979). The aquifer thickness was assumed to be 85 feet based on the maximum well depth and average water table elevations at the site.

2.4 Modeling Results

Results of the modeling effort indicate that the combined effects of degradation, dispersion, and adsorption act to reduce benzene, MTBE, and naphthalene concentrations over time. Benzene concentrations are predicted to remain above the PADEP SHS of 5 µg/L for the entire 30 year simulation. No dissolved benzene migration is predicted. Predicted benzene concentrations at 5, 10, 15, 20 and 30 years are shown on Figure 3. The maximum benzene concentration in the plume at 5, 10, 15, 20 and 30 years is predicted to be 60.6 µg/L; 49.4 µg/L; 40.3 µg/L; 32.9 µg/L and 22.0 µg/L; respectively. MTBE concentrations are predicted to decrease to below the PADEP SHS of 20 µg/L between 22 and 23 years. No offsite migration beyond the initial MTBE plume extent is predicted. The initial and model-predicted MTBE concentration distributions are shown on Figure 4. The maximum MTBE concentration in the plume at 5, 10, 15 and 20 years is predicted to be 1516.9 µg/L, 420.5 µg/L, 126.4 µg/L and 43.1 µg/L; respectively. Dissolved naphthalene concentrations are predicted remain above the PADEP SHS of 100 µg/L for the

entire 30 year simulation. The initial and model-predicted naphthalene concentration distributions are shown on Figure 5. Offsite migration of dissolved naphthalene concentrations are not predicted. The maximum naphthalene concentration in the plume at 5, 10, 15, 20 and 30 years is predicted to be 203.8 µg/L; 195.9 µg/L; 188.3 µg/L; 181.0 µg/L and 167.23 µg/L; respectively.

3. Summary and Conclusions

Fate and transport modeling has been conducted utilizing current and historical data collected at the site. Site-specific input parameter values were defined from site data whenever possible. The initial concentrations utilized in the model represent the maximum concentrations observed during the most recent eight quarters of sampling.

Model results indicate that benzene concentrations above the PADEP SHS of 5 µg/L persist for the entire 30-year simulation with no off-site migration predicted. Dissolved MTBE concentrations above the PADEP SHS of 20 µg/L are predicted to remain at the site for 22 to 23 years with no additional migration beyond the initial concentration distribution. Dissolved naphthalene concentrations above the PADEP SHS of 100 µg/L are predicted to persist for at least 30 years. No off-site migration of naphthalene concentrations is predicted.

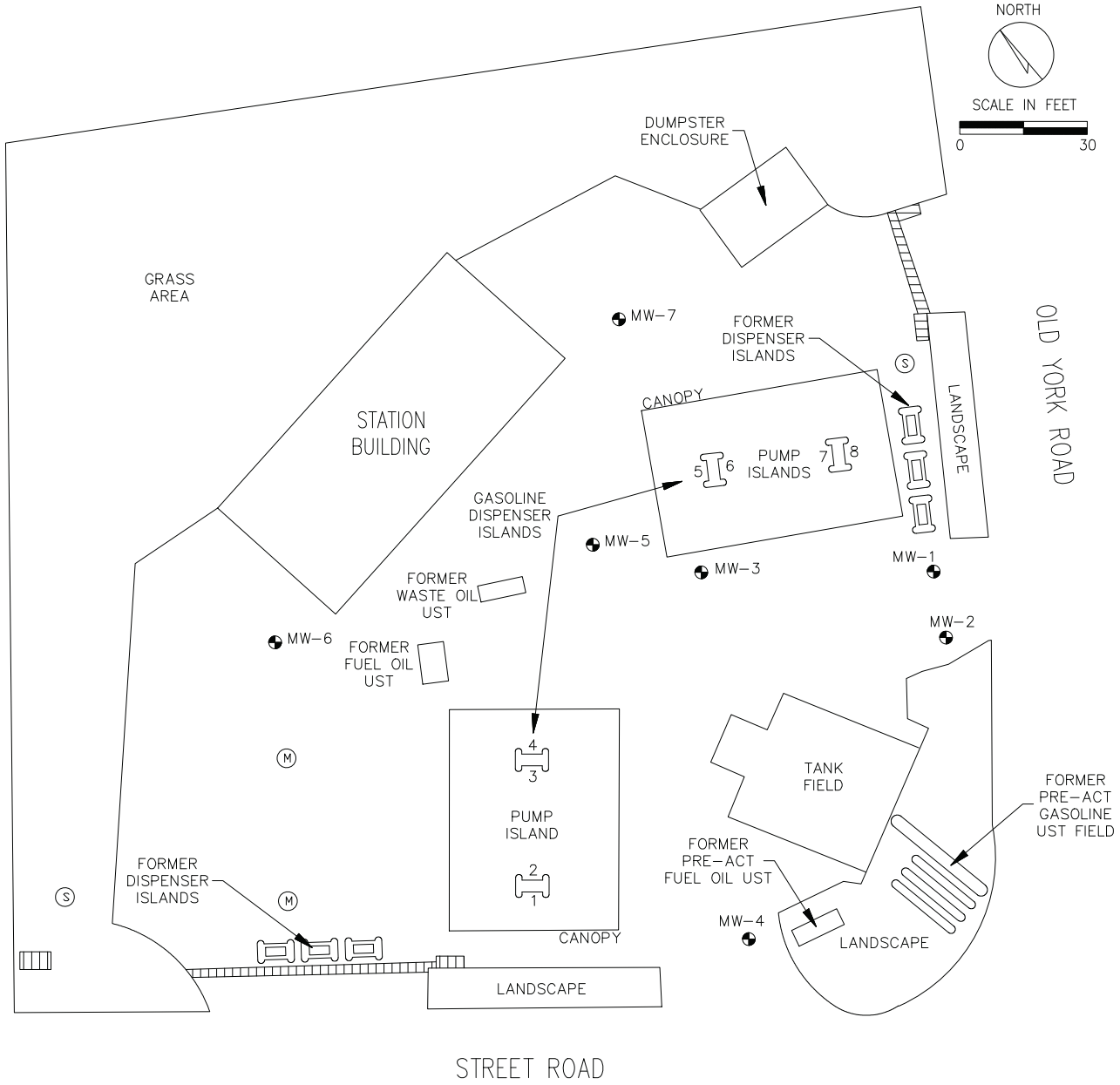
4. References

ChemFinder. Chemical Properties Database. http://chemfinder.cambridgesoft.com/

ES&T. 1996. *BIOTRANS, Areal Dissolved Phase Transport Model for Organic Chemical Spills with Natural or Enhanced Bioremediation, User and Technical Guide*. Environmental Systems & Technologies, Blacksburg, VA.

Freeze, R.A. and J.A. Cherry. 1979. *Groundwater*, Prentice-Hall, Inc., Englewood Cliffs, NJ.

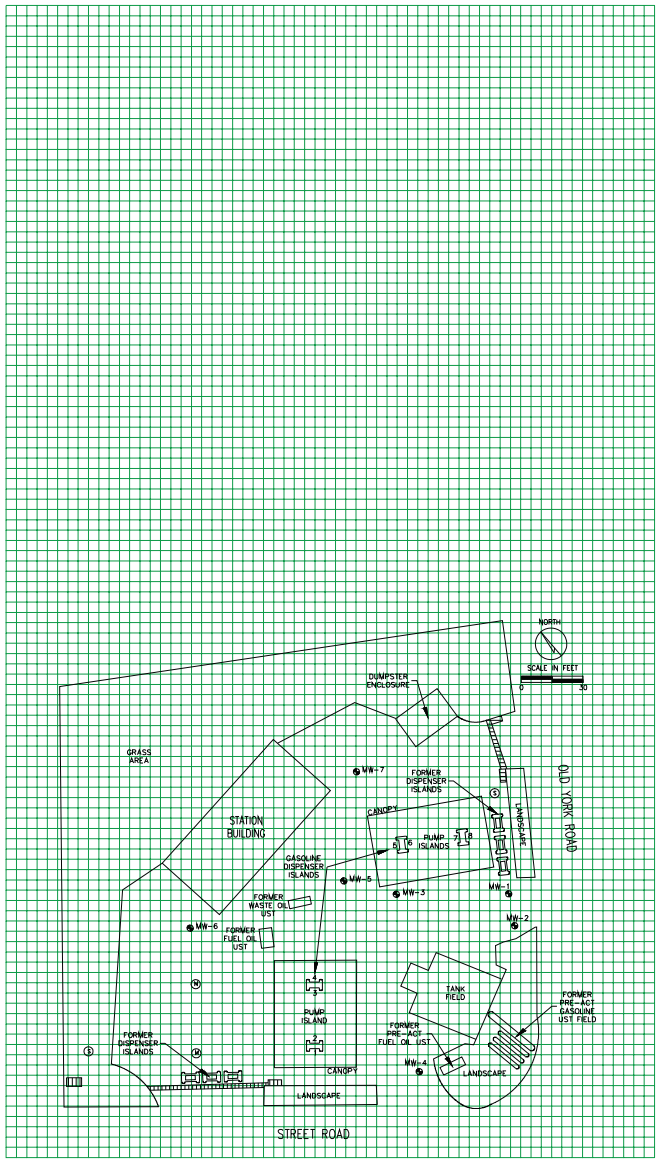
PADEP. 2003. Pennsylvania Bulletin Online.
http://www.pacode.com/secure/data/025/chapter250/chap250toc.html



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Date:	12/19/2005
Drafter:	WMG
Approved:	JWW

Figure 1. Site map showing facility features and monitoring well locations.

Environmental Systems & Technologies
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File Name:	Warminster 8.5x11.ppt
Date:	12/19/2005
Drafter:	WMG
Approved:	JWW

Figure 2. Model domain.

Environmental Systems & Technologies

A Division of GES

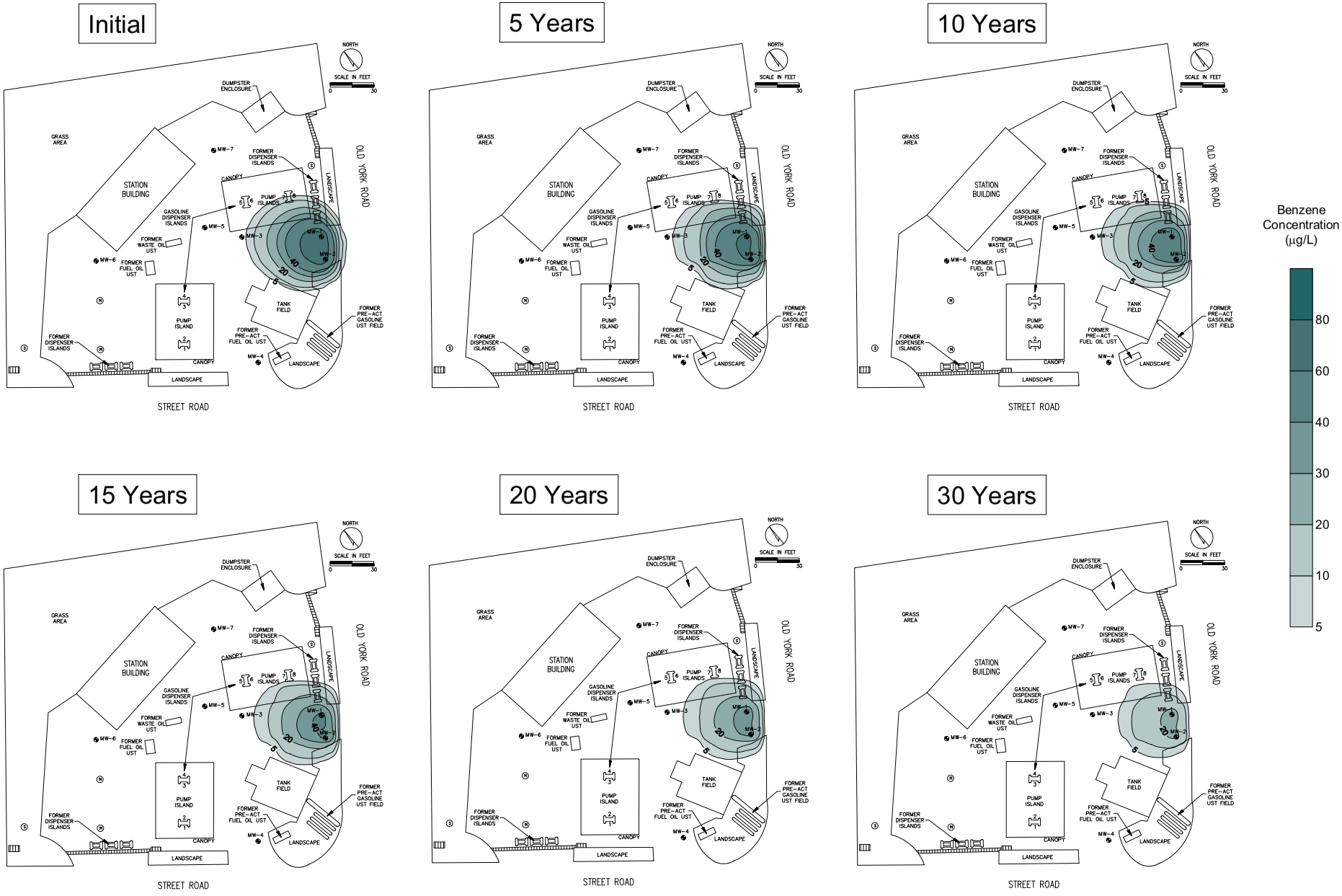
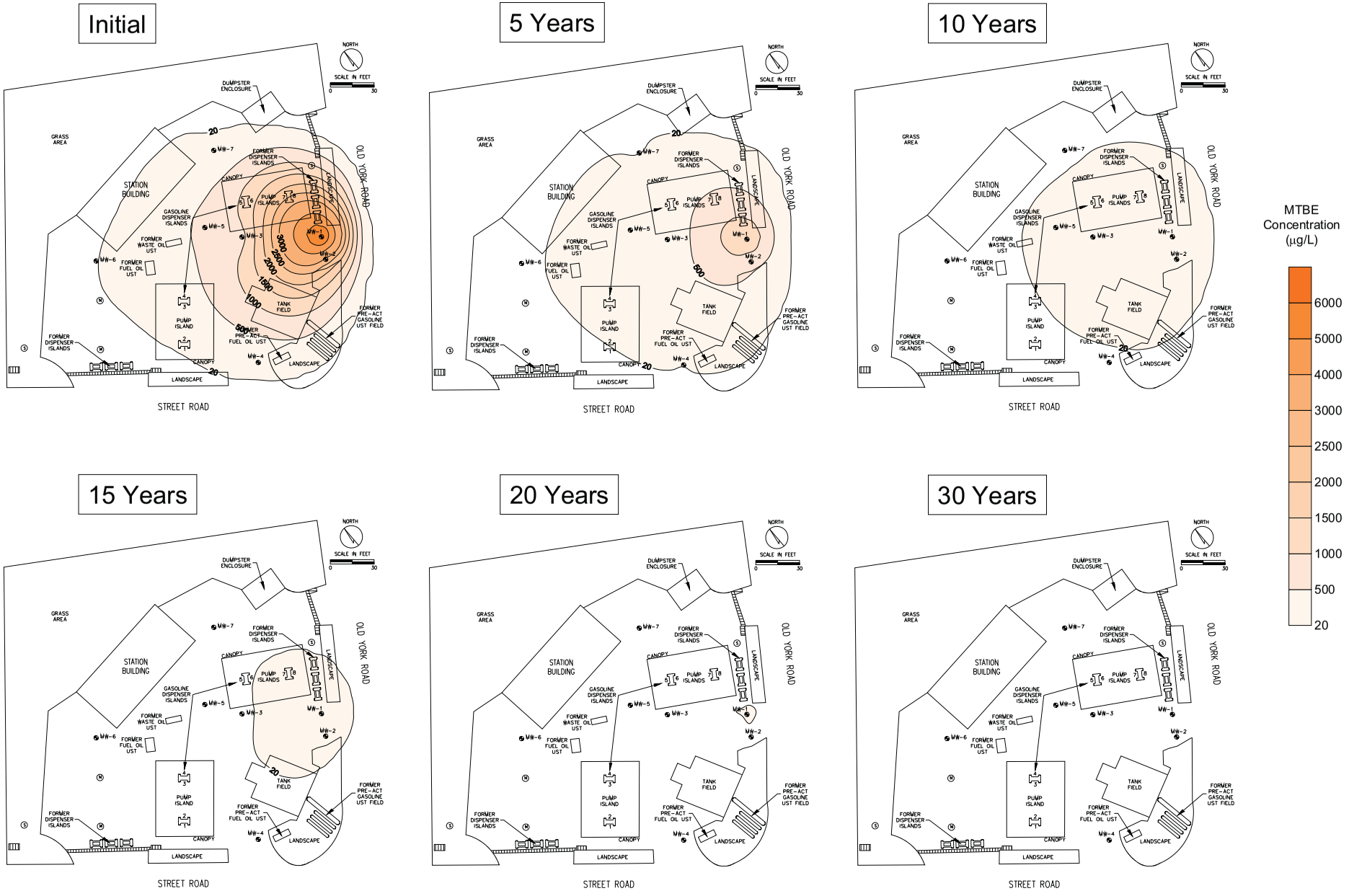


Figure 3. Initial benzene concentration distribution and model-predicted benzene concentration distributions at 5, 10, 15, 20 and 30 years.

File Name: Warminster11X17
Date: 12/19/2005
Drafter: WMG
Approved: JWW



Note: MTBE concentrations above 20 µg/L are not predicted.

Figure 4. Initial MTBE concentration distribution and model-predicted MTBE concentration distributions at 5, 10, 15, 20 and 30 years.

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Date: 12/19/2005
Drafter: WMG
Approved: JWW

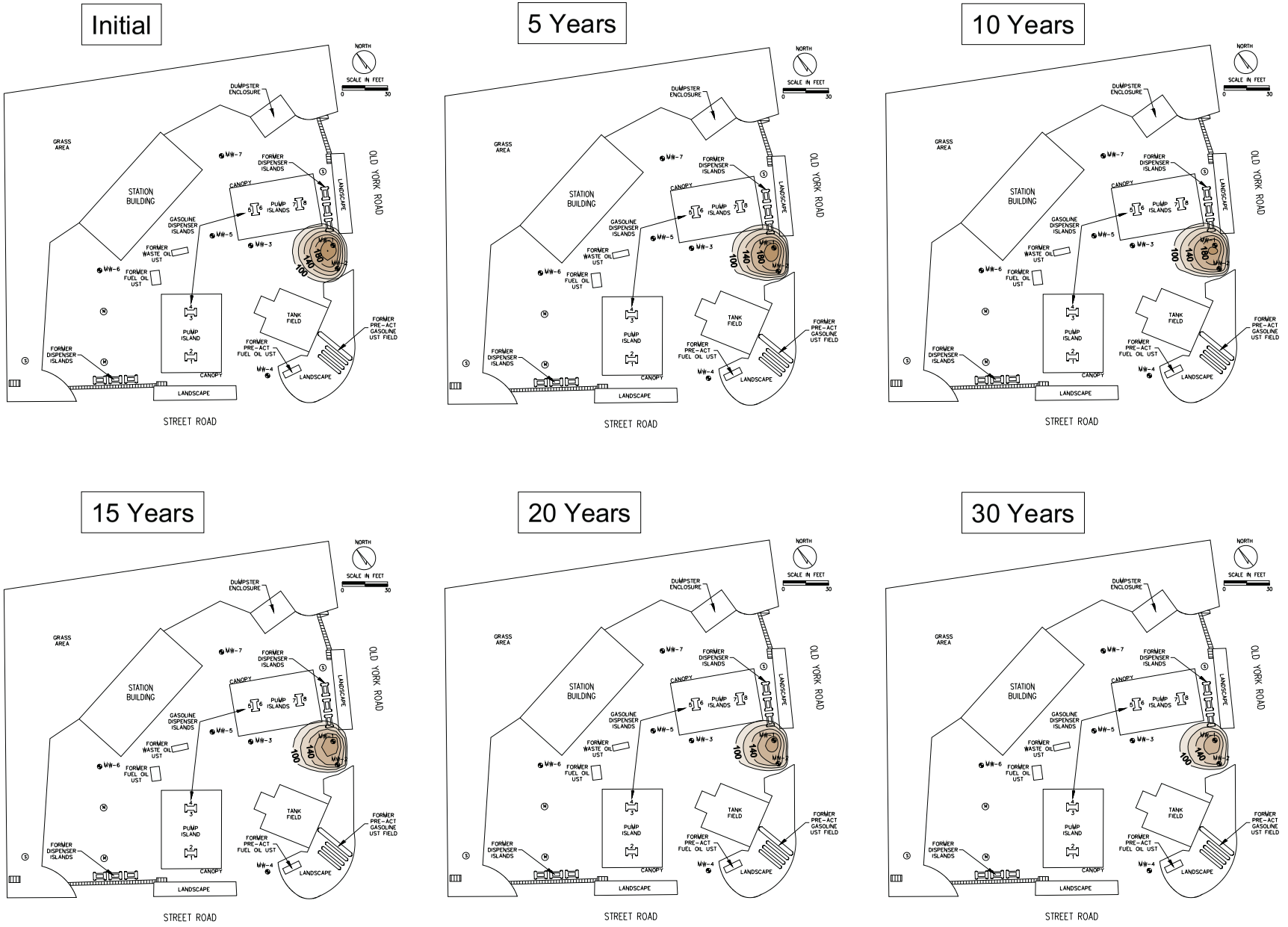


Figure 5. Initial naphthalene concentration distribution and model-predicted naphthalene concentration distributions at 5, 10, 15, 20 and 30 years.

File Name: Warminster11X17
Date: 12/19/2005
Drafter: WMG
Approved: JWW

Site Characterization Report/Remedial Action Completion Report

GES - October 1, 2009

SITE CHARACTERIZATION REPORT ADDENDUM/ REMEDIAL ACTION COMPLETION REPORT

SUNOCO FACILITY DUNS #0363-5430
610 York Road
Warminster, Pennsylvania

Prepared for:

SUNOCO INCORPORATED (R&M)
350 Eagleview Boulevard, Suite 300
Exton, PA 19341

Prepared by:

GROUNDWATER & ENVIRONMENTAL SERVICES, INC.
440 Creamery Way, Suite 500
Exton, PA 19341

October 1, 2009

SITE CHARACTERIZATION REPORT ADDENDUM/ REMEDIAL ACTION COMPLETION REPORT

Sunoco Facility DUNS #0363-5430
PADEP ID 09-30778
610 York Road
Warminster, Pennsylvania

Prepared For:

SUNOCO, INC. (R & M)
350 Eagleview Boulevard, Suite 300
Exton, Pennsylvania 19341

Prepared By:

Groundwater & Environmental Services, Inc.
440 Creamery Way, Suite 500
Exton, Pennsylvania 19341

Prepared by:

Krista Snyder
Project Manager

Reviewed by:



Jennifer L. O'Reilly, P.G.
Sr. Project Manager/
Sr. Hydrogeologist

By affixing my seal to this document, I am certifying that to the best of my knowledge the information is true and correct. I further certify that I am licensed to practice in the Commonwealth of Pennsylvania and that it is within my professional expertise to verify the correctness of the information.

October 2009

EXECUTIVE SUMMARY

Groundwater & Environmental Services, Inc. (GES), on behalf of Sunoco Inc. (R&M) (Sunoco), has prepared this Site Characterization Report Addendum/ Remedial Action Completion Report (SCRA/RACR) for the Sunoco Station #0363-5430, located at 610 York Road in Warminster Township, Bucks County, Pennsylvania. This report includes available historical information, site characterization activities, presents a conceptual model of subsurface hydrocarbon impact at the site as well as associated risk, and the demonstration of attainment for groundwater and soil.

The site is an active Sunoco gasoline retail facility and convenience store. The station building consists of a one-story convenience store building. Presently there are three 12,000-gallon unleaded gasoline fiberglass USTs and four multi-product dispenser islands on-site. Additionally, there are ten on-site monitoring wells (MW-1 through MW-10) located at the site.

Land use immediately surrounding the site is characterized by light commercial and residential properties. The Eagle Diner and Warminster Shopping Plaza are located northwest of the Site. Center Point Plaza is located to the west of the Site, across Street Road. Archbishop Wood High School, Nativity Catholic Church and School, and Hatboro Savings Bank are located to the east, across York Road. To the south is a light commercial area, with a residential area beyond. The nearest surface water body is an unnamed tributary of Little Neshaminy Creek located approximately one mile northwest of the site.

Soil analytical results indicated benzene was detected at concentrations above the PADEP SHS beneath the former dispenser islands and in the vicinity of the former Pre-Act UST field. No other target parameters were detected above the Pennsylvania Department of Environmental Protection (PADEP) Statewide Health Standards (SHS) in soil. Soil samples collected during monitoring well installation in 2007 exhibited a laboratory detection limit that exceeded the benzene SHS.

The groundwater quality data indicate the most significant presence of dissolved-phase hydrocarbons occurs in the monitoring wells in the vicinity of the former UST field and dispenser islands. According to the analytical results from the most recent groundwater sampling event (July 8, 2009), none of the constituents-of-concern (COCs) were detected at concentrations above the PADEP SHS.

Based on the limited source area of groundwater and soil impact, a short-duration, high-intensity targeted (HIT) remediation event was conducted at the site in April 2005. Groundwater attainment analytical results indicate an overall decreasing trend of hydrocarbon concentrations in groundwater at the site.

The results of the soil-vapor monitoring indicate that the COCs have either been not detected or have been detected at concentrations below the PADEP Non-Residential Indoor Air Criteria.

A risk assessment was completed for the site since potential open exposure pathways were identified; the results indicate that there is no risk associated with the potential open exposure pathways.

This report identifies the presence of dissolved-phase petroleum hydrocarbons and the appropriate remediation standard selection. Groundwater attainment criteria were applied to the entire site, with the northern, western, and eastern property boundaries as the downgradient point of compliance (as based on average groundwater flow).

Groundwater quality at the site meets the general attainment requirements for PADEP SHS for up to eight consecutive quarters (due to dry conditions during various sampling events) of post-remediation sampling of the on-site monitoring wells (MW-1 through MW-10) for toluene, ethylbenzene, total xylenes, isopropylbenzene, and naphthalene. Groundwater quality at the site meets the attainment requirements for Site-Specific Standards developed for benzene and methyl *tert*-butyl ether (MTBE).

To further support Site-Specific Standard attainment for dissolved-phase benzene and MTBE, historic graphical trend analyses of benzene and MTBE in all monitoring wells that have had a concentration exceeding the PADEP SHS are decreasing. The results of groundwater modeling indicate that benzene and MTBE will not migrate off-site at concentrations above the PADEP SHS. Considering the overall decreasing trends, it appears that the plume is decreasing and dissolved hydrocarbon constituents will not exceed Statewide Health or Site-Specific Standards at the property boundary. As a result, sensitive receptors will not be impacted.

As a result of the attainment demonstration of Site-Specific Standards in soil and groundwater, a potable supply well on-site will be prohibited and the property must remain non-residential in use. This activity and use limitation is detailed in the Environmental Covenant, which is required per the Uniform Environmental Covenants Act (UECA).

This report was developed in accordance with applicable sections of Pennsylvania's Storage Tanks, Corrective Action Regulations (Title 25, Chapter 245), as well as the Land Recycling and Environmental Remediation Standards Act (Title 25, Chapter 250). Considering the above, as detailed in this Remedial Action Completion Report, site groundwater and soil have been demonstrated to attain a combination of Statewide Health and Site-Specific Standards as outlined in Act 2 for PA unleaded gasoline parameters benzene, toluene, ethylbenzene, total xylenes, MTBE, isopropylbenzene, and naphthalene.

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1.0 INTRODUCTION

Groundwater & Environmental Services, Inc. (GES) has prepared this Site Characterization Report Addendum/ Remedial Action Completion Report (SCRA/RACR) on behalf of Sunoco Inc. (R&M) (Sunoco) following a release of gasoline from a regulated underground storage tank (UST) system in November 1995, at the Sunoco Station #0363-5430, located at 610 York Road, Warminster Township, Bucks County, Warminster, Pennsylvania (**Figure 1**). This report presents a chronological summary of available information pertaining to historical site background, characterization information, and demonstration of attainment.

The purpose of the investigation was to determine the nature and extent of petroleum hydrocarbon impact in the site subsurface, determine the environmental fate and transport of dissolved-phase hydrocarbons in groundwater, and to evaluate the potential risks posed by residual hydrocarbons in soil and groundwater. Sunoco is requesting a Release of Liability for soil and groundwater from the Pennsylvania Department of Environmental Protection (PADEP) for the site.

This report presents data and information to support Sunoco's request for a Release of Liability based on the following:

- site history;
- characterization of petroleum hydrocarbon impact to soil and groundwater;
- evaluation of potentially sensitive receptors;
- results of environmental fate and transport analysis;
- results from a Baseline Risk Assessment;
- demonstration of a combination of Statewide Health Standard (SHS) and Site-Specific Standard (SSS) attainment for soil; and
- demonstration of a combination of SHS and SSS attainment for groundwater.

During fieldwork, GES personnel followed appropriate guidelines as per United States Environmental Protection Agency (EPA) and Occupational Safety and Health Administration (OSHA) 29 CFR 1910.120 procedures. Operations were conducted using Level D protection measures with proper respiratory protection equipment and additional protective clothing readily available if site conditions warranted an upgrade to Level C protection. A site-specific health and safety plan detailing applicable safety precautions, as well as specific emergency procedures, was prepared for this site. A copy of the site-specific health and safety plan is on file at GES and is available upon request.

This report was developed in accordance with applicable sections of Pennsylvania's Storage Tanks, Corrective Action Regulations (Title 25, Chapter 245), as well as the Land Recycling and Environmental Remediation Standards Act (Title 25, Chapter 250).

2.0 FACILITY DESCRIPTION AND BACKGROUND

2.1 Facility Description and Location

The subject site is an active Sunoco service station located at 610 York Road at the intersection of York Road (Route 263) and Street Road, Warminster Township, Bucks County, Pennsylvania, (40° 12' 26" N, -75° 06' 00" W). The facility occupies a parcel that extends approximately 230 feet along York Road and approximately 240 feet along Street Road. The facility encompasses approximately 0.7 acres. **Figure 1** (Site Location Map) illustrates the location of the facility on the United States Geological Survey (USGS) 7.5 Minute Topographic Quadrangle Map for Hatboro, Pennsylvania. According to **Figure 1**, the topography of the site and surrounding area are gently sloping to the north, northeast, and northwest; the elevation of the site is approximately 310 feet above mean sea level.

Current existing features at the property include a one-story station building convenience store, three 12,000-gallon unleaded gasoline fiberglass underground storage tanks (USTs), and four unleaded gasoline dispenser islands. The current USTs were installed in December 1983. There are currently seven shallow monitoring wells (MW-1 through MW-6 and MW-10) and three deep monitoring wells (MW-7 through MW-9) located on-site as part of the environmental investigation. Access to the site is gained from both York Road and Street Road. A generalized site map showing property boundaries and pertinent site features is included as **Figure 2** (Site Map).

2.2 Local Land Use

Land use immediately surrounding the site is characterized by light commercial and residential properties. The Eagle Diner and Warminster Shopping Plaza are located northwest of the Site. Center Point Plaza is located to the west of the Site, across Street Road. Archbishop Wood High School, Nativity Catholic Church and School, and Hatboro Savings Bank are located to the east, across York Road. To the south are is a light commercial area, with a residential area beyond. A map of surrounding properties is included as **Figure 3**.

Warminster Municipal Water Authority supplies public water and sanitary sewer services to the facility and adjacent properties.

2.3 Sensitive Receptor Analysis

GES performed a detailed reconnaissance of the surrounding area and reviewed topographic maps for available data on the locations of nearby public reservoirs, surface water and other potentially sensitive receptors within a 2,500-foot radius of the site. The results of the survey are as follows:

- The existing on-site structure does not contain a basement;
- There are no basements or crawlspaces in the immediate vicinity of the site;
- The nearest surface water body is an unnamed tributary of Little Neshaminy Creek located approximately 3,200 feet northwest of the site;
- Municipal water and sanitary sewer are provided to the site and surrounding area by Warminster Municipal Water Authority;

- Subsurface utilities, including telephone, public water, and natural gas, are located along York Road;
- Subsurface utilities, including natural gas, sanitary sewer, and public water, are located in the northeastern portion of the site extending to the station building; and
- Commercial properties are located to the northwest (downgradient), west (sidegradient), and east (sidegradient) of the facility. Commercial properties, followed by a residential area, are located to the south (upgradient) of the site.

The Pennsylvania Department of Conservation and Natural Resources *"Ground Water Information System"* (PaGWIS) was used to identify private and public potable or withdrawal wells within a 2,500-foot radius of the facility. The database identified 14 total wells within approximately ½-mile of the facility: six domestic withdrawal wells, five public supply wells, and three unused wells. A copy of the PaGWIS water well database report and approximate locations of the identified wells are contained in **Appendix A** (PaGWIS Water Well Inventory Database Report).

Underground utilities in the immediate vicinity of the facility include water, storm sewer, telephone, gas, and sanitary sewer, all located along York Road. In general, underground utilities are located at depths ranging from three to five feet below ground surface (bgs). Historically, groundwater has generally occurred at depths between approximately five and 38 feet below top-of-casing (TOC), with an average depth of approximately 18 feet bgs. Based on these data, underground utilities are not likely to serve as pathways for contaminant migration.

In order to determine the use of applicable soil and groundwater standards, the potential future land use is considered to be non-residential. Available tax assessment information from Bucks County, Pennsylvania indicates that the site is currently zoned commercial. The future anticipated land use is expected to remain commercial.

2.4 Ecological Screening

Under currently accepted ecological principles, the retail gasoline station property offers little in terms of ecological value. The majority of the property is paved and is therefore unavailable for use by ecological receptors. Much of the observable surface soil appears to be ecologically limited, consisting primarily of unconsolidated materials included silty clay with sand overlying extremely weathered mica schist bedrock. There are no extant surface water bodies or ditches for rainwater to temporarily collect on-site; therefore, there are no sources of fresh water for potential receptors. Site photographs are included in **Appendix B**. Furthermore, an on-site evaluation of potential impacts to ecological receptors as defined in §250.311 was not performed since the following initial screening criteria were met:

1. the constituents-of-concern are light petroleum products, specifically gasoline;

2. the site has less than two acres of impacted surface soil; and

3. the site is developed, with paved areas and buildings covering the areas of concern, effectively eliminating specific exposure pathways to ecological receptors.

Since these criteria were met, no further ecological evaluation is required.

3.0 ENVIRONMENTAL INVESTIGATION HISTORY

The facility is located in a mixed commercial and residential area of Warminster, Pennsylvania. In general, commercial and residential properties occupy both sides of York Road and Street Road. The site has been operated by Sunoco as a retail gasoline facility since at least December 1983. Prior use of the property is unknown.

In November 1995, GES oversaw reconstruction activites and UST removal at the site. Handex of Eastern Pennsylvania (Handex) initiated site investigation activities in May 1996. Site activities have included the installation of ten on-site monitoring wells (MW-1 through MW-10) and subsequent quarterly groundwater sampling.

3.1 Underground Storage Tank System Removal (November 1995 – February 1996)

From November 1995 through February 1996, GES oversaw the reconstruction activities performed at the site, which included the removal of six unleaded gasoline dispenser islands and two 550-gallon steel USTs containing fuel oil and waste oil. Additionally, the station building, which was formerly an Atlantic two-bay automobile service station, was removed and replaced with the current Sunoco convenience store.

During excavation, three steel 3,000-gallon and one steel 4,000-gallon Pre-Act unleaded gasoline USTs, that were previously closed-in-place, were discovered at the southern corner of the property. These USTs and the associated steel piping that extended from them to the former dispenser islands were removed from the site. During their removal, the USTs were described as rusted and pitted, and the product piping was reportedly in fair condition. All USTs, piping, and other materials were disposed of as commercial waste. The inert substance that filled the closed-in-place USTs was removed and disposed of by Lorco Petroleum Services, Inc. of Old Bridge, New Jersey. All excavated soil was disposed of at the Pottstown Landfill in Pottstown, Pennsylvania.

Obvious localized soil contamination was observed in the UST excavations and beneath the eastern dispenser islands, and post-excavation confirmatory samples were collected by GES. A total of 23 soil samples were collected from beneath the former dispensers, product lines, and UST fields on December 28, 1995 and February 8, 13, and 27, 1996. No samples were collected from the western former dispenser islands due to an inability to access the open excavation.

The samples were submitted to Lancaster Laboratories, Inc. of Lancaster, Pennsylvania (Lancaster Labs) and were analyzed for benzene, toluene, ethylbenzene, total xylenes (BTEX), total petroleum hydrocarbons (TPH), and/or TPH-gasoline range organics (GRO) by EPA Method 8020A. Laboratory results indicated concentrations of benzene exceeding the PADEP Statewide Health Standards (SHS) in eight of the soil samples collected from beneath the dispensers and the unleaded gasoline UST field. Results also indicated the presence of toluene, ethylbenzene, and total xylenes at concentrations below the PADEP SHS in those areas as well as the presence of TPH and TPH-GRO in most samples. Historical soil analytical data are summarized in **Table 1**. Soil sample analytical data sheets and chain-of-custody documentation are presented in **Appendix C**. A map of the UST closure soil sample locations is included as **Figure 4**, which was taken from the GES Underground Storage Tank Closure Report, submitted to the PADEP on April 10, 1996.

The extent of over excavation conducted beneath the former product dispensers and UST field is unknown. Waste manifests associated with the disposal of contaminated soil from the site were submitted in the 1996 UST Closure report mentioned above. However, the manifests are related to all of the excavation activities conducted on-site, including the station reconstruction activities. It is unclear how many tons of soils were removed from the dispenser islands and/or UST excavations.

3.2 Notification of Reportable Release (February 1996)

As a result of the obvious contamination observed during the UST system closure activities described above, GES verbally reported a Notification of Reportable Release (NORR) to the PADEP on February 28, 1996, identifying the USTs as a possible source of contamination due to strong petroleum vapors and stained soils in the UST excavations. The paperwork was submitted to the PADEP on February 29, 1996. The 1996 NORR is included as **Appendix D**.

3.3 Monitoring Well Installation (May 1996)

According to the Site Characterization Report (SCR) submitted to the PADEP by Handex on May 28, 1996, the drilling and installation of three on-site monitoring wells (MW-1 through MW-3) was conducted by Pennsylvania-licensed driller B. L. Myers Bros., Inc. of Glenmoore, Pennsylvania (B.L. Myers) under the supervision of Handex personnel on March 13, 1996. The wells were installed by an air rotary drill rig to a depth of 25 feet bgs. Handex personnel continuously monitored the composition, color, texture, odor, and moisture content of all drill cuttings brought to the surface as the borehole was advanced. The drill cuttings were routinely screened in the field with a photoionization detector (PID) to provide a preliminary indication of the presence or absence of volatile organic compounds (VOCs).

One soil sample was collected by split-spoon sampler from each monitoring well boring at depths of five to seven feet bgs. The samples were submitted to Lancaster Labs for the analysis of BTEX by EPA Method 8020 and for TPH-GRO by EPA Method 8015. Analytical results indicated that the unleaded gasoline parameters were not detected in the soil samples. Historical soil analytical data are summarized in **Table 1**. Soil laboratory analytical data sheets and chain-of-custody documentation are presented in **Appendix C**.

Monitoring well MW-1 was constructed of 15 feet of 0.020-inch slotted Schedule 40 PVC well screen, from 5 to 20 feet bgs, flush-joined to five feet of solid Schedule 40 PVC well casing. Monitoring wells MW-2 and MW-3 were constructed of 20 feet of 0.020-inch slotted Schedule 40 PVC well screen, from 5 to 25 feet bgs, flush-joined to five feet of solid Schedule 40 PVC well casing. After the installation of the wells into each borehole, the annular space between the borehole wall and the well screen was filled with a sand filter pack and capped with a one-foot thick bentonite seal. The bentonite seal acts to prevent infiltration of surface water into the monitoring well. Cement grout was added to the remaining annular space to fill the borehole to surface grade. A locking well cap and flush-mounted manhole cover were then fitted on each well to prevent unauthorized access and to prevent surface runoff from entering the well. Additional details of well construction are included on the subsurface drilling logs in **Appendix E**.

3.4 Additional Monitoring Well Installation (October 1997)

To further delineate the extent of dissolved-phase hydrocarbons, one additional on-site monitoring well (MW-4) was installed on October 27, 1997 by Pennsylvania-licensed driller Lutz Environmental Company, Inc. of Linden, New Jersey (Lutz) under the supervision of GES personnel. The well was installed by an air rotary drill rig to a depth of 25 feet bgs. GES personnel continuously monitored the composition, color, texture, odor, and moisture content of all drill cuttings brought to the surface as the borehole was advanced. The drill cuttings were classified by the Unified Soil Classification System (USCS) and were routinely screened in the field with a PID to provide a preliminary indication of the presence or absence of volatile organic compounds (VOCs).

A soil sample was collected by a split-spoon sampler at an unknown depth and submitted to Lancaster Labs for the analysis of BTEX, methyl *tert*-butyl ether (MTBE), isopropylbenzene, and naphthalene by EPA Method 8021A. Analytical results indicated that unleaded gasoline parameters were not detected in the soil sample. Historical soil analytical data are summarized in **Table 1**. Laboratory analytical data sheets and chain-of-custody documentation are presented in **Appendix C**.

After the completion of the ten-inch diameter borehole, monitoring well MW-4 was constructed with 20 feet of 0.020-inch slotted Schedule 40 PVC well screen, from 5 to 25 feet bgs, flush joined to five feet of solid four-inch diameter Schedule 40 PVC well casing. The annular space between the borehole wall and well screen was filled with sand and capped with a bentonite seal and cement grout as described above. A locking well cap and a flush-mounted manhole cover were also fitted on the well. Details of well construction are included on the subsurface drilling log in **Appendix E**.

3.5 Supply Well Search (March 2001)

On March 9, 2001, GES conducted a door-to-door domestic well survey to determine if surrounding properties were connected to public water. GES also sampled two off-site supply wells, located at 829 West Street Road (Lafferty Chevrolet) and 1220 West Street Road (Christ's Home for Children). The samples were submitted to Accutest Laboratories of Dayton, New Jersey (Accutest) and analyzed for BTEX, MTBE, isopropylbenzene, and naphthalene by EPA Method 8260B. None of the constituents-of-concern (COCs) were detected in either supply well. Laboratory analytical results for the two supply wells, as well as a table summarizing the domestic well survey, are included in **Appendix F**. **Figure 3** shows the locations of the properties from which surveys were returned to GES and where private wells were found to be located. It should be noted that not all of the private wells are used as the primary drinking water source on these properties. Please refer to **Table 1** in **Appendix F** for details.

3.6 Additional Monitoring Well Installation (October/November 2004)

On October 18, 2004, the drilling and installation of two additional on-site monitoring wells (MW-5 and MW-6) were conducted by Pennsylvania-licensed driller Eichelbergers, Inc. of Mechanicsburg, Pennsylvania (Eichelbergers) under the supervision of GES personnel. The wells were installed by an air rotary drill rig to depths of 50 and 47 feet bgs, respectively. GES personnel continuously monitored the composition, color, texture, odor, and moisture content of all drill cuttings brought to the surface as the

borehole was advanced. The drill cuttings were classified and screened with a PID as described earlier.

Soil samples were collected from the drill cuttings of each borehole at depths of 25 feet (MW-5) and 15 feet (MW-6) bgs. The samples were submitted to Lancaster Labs and were analyzed for BTEX, MTBE, isopropylbenzene, and naphthalene by EPA Method 8260B. Analytical results indicated that the unleaded gasoline parameters were not detected in the soil samples. Historical soil analytical data are summarized in **Table 1**. Laboratory analytical data sheets and chain-of-custody documentation are presented in **Appendix C**.

After the completion of the eight-inch diameter borehole, monitoring well MW-5 was constructed with 40 feet of four-inch diameter, 0.020-inch slotted Schedule 40 PVC well screen, from ten to 50 feet bgs, flush-joined to ten feet of solid four-inch diameter Schedule 40 PVC well casing. Monitoring well MW-6 was constructed with 37 feet of 0.020-inch slotted Schedule 40 PVC well screen, from ten to 47 feet bgs, flush-joined to ten feet of solid four-inch diameter Schedule 40 PVC well casing. The annular spaces between each borehole wall and well screen were filled with sand and capped with a bentonite seal and cement grout as described above. Locking well caps and flush-mounted manhole covers were also fitted on each well.

On November 23, 2004, the drilling and installation of one additional on-site monitoring well (MW-7) were conducted by Eichelbergers under the supervision of GES personnel. The well was installed by an air rotary drill rig to a depth of 100 feet bgs, and the drill cuttings were monitored and classified as previously described. No soil sample was collected for laboratory analysis.

After the completion of the 8-inch diameter borehole, monitoring well MW-7 was constructed with 40 feet of two-inch diameter 0.020-inch slotted Schedule 40 PVC well screen, from 60 to 100 feet bgs. Six-inch diameter steel casing extended from the ground surface to 60 feet bgs to prevent water from the shallow aquifer from infiltrating the well. The annular space between the borehole wall and well screen were filled with sand and capped with a bentonite seal and cement grout as described above. A locking well cap and flush-mounted manhole cover were also fitted on the well. Details of well construction are included on the subsurface drilling logs provided in **Appendix E**.

3.7 High-Intensity Targeted Remediation via Chemical Oxidation

GES conducted a one-day chemical oxidation HIT event at the site on April 28, 2005. The chemical oxidation process uses air and hydrogen peroxide injected into the subsurface via on-site monitoring wells and injection wells. During the injection process, hydroxyl radicals are formed through reactions between hydrogen peroxide and naturally occurring iron. Hydroxyl radicals are known to be powerful oxidizers that will break down petroleum hydrocarbons into by-products of heat, carbon dioxide, and water. The process is carefully monitored and controlled to ensure safe and effective application. In addition to oxidizing petroleum hydrocarbon impact in saturated soil and groundwater, air injection enhances the distribution of hydrogen peroxide solution in subsurface soil and groundwater, and increases dissolved oxygen levels in groundwater, further promoting biodegradation. Based on the site characteristics and the location of the impact, GES determined that a 7-8% hydrogen peroxide solution should be injected into each selected well location at flow rates of approximately one to three gallons per minute (gpm). GES concentrated the chemical oxidation event in the area of the existing and former unleaded gasoline dispensers (monitoring wells MW-1, MW-3, and MW-5). The following is a summary of the HIT

remediation activities via chemical oxidation:

- April 28, 2005: GES performed remediation via chemical oxidation utilizing a 7 to 8% hydrogen peroxide solution. Approximately 450 gallons of the hydrogen peroxide solution were injected into MW-1, MW-3, and MW-5 during the event.

3.8 Soil-Gas Investigation (2007)

On February 9, 2007, GES supervised the installation of three soil-gas points (SG-1 through SG-3) in accordance with the Vapor Intrusion into Buildings from Groundwater and Soil under the Act 2 Statewide Health Standard (Pennsylvania Department of Environmental Protection, dated January 24, 2004). Soil-gas sampling implants were installed in soil-gas points SG-1 through SG-3 to depths of 4 feet each. The ½-inch diameter implants, constructed of stainless steel with a 0.0057-inch screen size, were manually installed to allow for long-term soil-gas monitoring. Polyethylene tubing was connected to the implant to allow for soil-gas sampling. Soil-gas point locations are depicted on **Figure 2**. Subsurface drilling logs are included in **Appendix E**.

On March 8, 2007 and December 14, 2007, the soil-gas points were sampled utilizing vacuum sealed, six-liter SUMMA canisters. During sample collection, a vacuum gauge was used to measure the initial and final vacuum of the canister as well as during collection. The soil-gas samples were transported under proper chain-of-custody documentation to Lancaster Laboratories for laboratory analysis of Pennsylvania unleaded gasoline parameters (BTEX, MTBE, and isopropylbenzene) via Method TO-15. Soil-gas analytical results demonstrate that none of the target parameters were detected in the samples at concentrations above the PADEP residential and non-residential indoor air criteria or EPA Region III risk-based concentrations for indoor air. Laboratory analytical results and chain-of-custody documentation are included in **Appendix G**. Soil-gas analytical data are summarized in **Table 2**.

3.9 Additional Monitoring Well Installation (February 2007)

On January 6, 2006, GES submitted an Additional Site Characterization Report /Remedial Action Plan (SCR/RAP). The PADEP subsequently approved the Additional SCR/RAP with modifications in a letter dated June 9, 2006, requesting that Sunoco install a deep monitoring well north of the former dispenser island and a deep and shallow monitoring well west of the pump island adjacent to Street Road **(Appendix H)**.

Between February 22 and 26, 2007, the drilling and installation of three additional on-site monitoring wells (MW-8 through MW-10) were conducted by B.L. Myers under the supervision of GES personnel. Deep monitoring wells MW-8 and MW-9 are located in the vicinity of the former dispenser island adjacent to York Road and west of the pump island adjacent to Street Road, respectively. Shallow monitoring well MW-10 is located west of the pump island adjacent to Street Road. Monitoring wells MW-8 through MW-10 were installed by an air rotary drill rig to depths of 100 feet, 89 feet, and 50 feet bgs, respectively. GES personnel continuously monitored the composition, color, texture, odor, and moisture content of all drill cuttings brought to the surface as the borehole was advanced. The drill cuttings were classified and screened with a PID as described earlier.

Soil samples were collected from the drill cuttings of each borehole at depths of ranging from 5 feet to 24 feet bgs. The samples were submitted to Lancaster Labs and were analyzed for BTEX, MTBE, isopropylbenzene, and naphthalene by EPA Method 8260B. Analytical results indicated that the unleaded gasoline parameters were not detected in the soil samples at concentrations above the PADEP SHS with the exception of benzene in soil samples MW-8 @ 5' and MW-8 @ 24', where the laboratory detection limit exceeded the PADEP SHS of 500 µg/kg. Historical soil analytical data are summarized in **Table 1**. Laboratory analytical data sheets and chain-of-custody documentation are presented in **Appendix C**.

After the completion of the eight-inch diameter borehole, monitoring well MW-8 was constructed with 40 feet of two-inch diameter, 0.020-inch slotted Schedule 40 PVC well screen, from 60 to 100 feet bgs, flush-joined to 60 feet of solid two-inch diameter Schedule 40 PVC well casing. Monitoring well MW-9 was constructed with 30 feet of two-inch diameter, 0.020-inch slotted Schedule 40 PVC well screen, from 59 to 89 feet bgs, flush-joined to 59 feet of solid two-inch diameter Schedule 40 PVC well casing. Monitoring well MW-10 was constructed with 40 feet of two-inch diameter, 0.020-inch slotted Schedule 40 PVC well screen, from 10 to 50 feet bgs, flush-joined to 10 feet of solid two-inch diameter Schedule 40 PVC well casing. The annular spaces between each borehole wall and well screen were filled with sand and capped with a bentonite seal and cement grout as described above. Locking well caps and flush-mounted manhole covers were also fitted on each well.

3.10 PADEP Meeting (July 2009)

On July 9, 2009, a meeting took place between PADEP (Lauren Mapleton and Walter Payne), Sunoco (Martin Liebhardt), and GES (Krista Snyder). During this meeting, GES presented the findings of the site characterization activities, including absorbed- and dissolved-phase analytical data and PADEP subsequently granted GES approval to utilize soil-gas analytical data to demonstrate that the soil and groundwater to ambient air pathways are incomplete. Evaluation of the exposure pathways are detailed in **Section 5.6**.

3.11 Attainment Monitoring Well Sampling

Attainment groundwater sampling was initiated on October 4, 2007 in monitoring wells MW-1 through MW-10. During each attainment groundwater monitoring and sampling event, liquid-level data and groundwater samples were collected from each monitoring well; it should be noted that samples were not collected from monitoring well MW-1 during two sampling events and from monitoring wells MW-2 and MW-3 during one sampling event because the wells were dry. Prior to sampling, the monitoring wells were purged of a minimum of three standing well volumes to remove fine-grained material from the gravel pack and well screens and promote a hydraulic connection between the well and the surrounding aquifer. Discharged water was treated on-site with a portable granular activated carbon (GAC) treatment system and discharged to the surface for infiltration in accordance with PADEP guidelines (Groundwater Monitoring Guidance, December 1, 2001).

The monitoring wells were sampled in accordance with GES Standard Operating Procedures and Quality Control protocols using dedicated, disposable bailers. The groundwater samples were submitted to Lancaster Labs for analysis of PADEP unleaded gasoline indicator parameters BTEX, MTBE, isopropylbenzene, and naphthalene via EPA Method 8260B. Groundwater laboratory analytical report

and chain-of-custody documentation for the four most recent sampling events are included in **Appendix 1.** Historic groundwater analytical data are summarized in **Table 3.** Groundwater quality is discussed in detail in **Section 4.2.3.**

4.0 SUBSURFACE CHARACTERIZATION

4.1 Site-Specific Geology and Hydrogeology

The Pennsylvania Geologic Survey Physiographic Provinces of Pennsylvania (Map 13) indicates that this site resides in the Gettysburg-Newark Lowland Section Piedmont Province. The Gettysburg-Newark Lowland Section is characterized by rolling low hills and valleys which have developed over red sedimentary rock. Isolated higher hills are formed on top of diabase, hornfels, and conglomerates. Sedimentary rocks in this region generally dip toward the north-northwest and smaller drainageways are oriented normal to the direction of dip so that some of the topography has a northeast-southwest linearity. However, the basic drainage pattern is dendritic.

The Atlas of Preliminary Geologic Quadrangles of Pennsylvania (Map 61) indicates that the site is underlain by the Stockton Formation. The Stockton Formation consists of gray to buff cross-bedded arkosic sandstone, pebbly sandstone, reddish-brown arkosic sandstone, siltstone, and silty mudstone. In the Hatboro area, the Stockton Formation strikes approximately N 65 degrees E and dips approximately 9 degrees NW.

According to the Engineering Characteristics of the Rocks of Pennsylvania (Geyer and Wilshusen, 1982), rocks of the Stockton Formation form a complex, heterogeneous, multi-aquifer system consisting of a series of gently dipping lithologic units with different hydraulic properties. Most groundwater in the unweathered zone moves through a network of interconnecting secondary openings, fractures, bedding plans, and joints. Groundwater is unconfined in the shallower part of the aquifer and semi-confined or confined in the deeper part of the aquifer. The average groundwater yield is 130 gpm from the arkosic sandstone and 20 gpm from the shale. Primary porosity occurs within the weathered portion of the formation while secondary permeability is within joints and bedding planes in the unweathered portions of the formation.

According to the subsurface drilling logs (**Appendix E**), the site is underlain by approximately seven feet of silt, sand, and clay. Weathered shale bedrock was encountered at depths of four to seven feet bgs. Competent red shale, sandstone, and siltstone bedrock was encountered at an average of 12 feet bgs, which is consistent with the regional geology descriptions.

A review of the United States Geologic Survey 7.5-Minute Hatboro, Pennsylvania topographic quadrangle indicates that the surrounding area slopes gently to the north, northeast, northwest, and southwest, suggesting that regional groundwater flow is also to the north, northeast, northwest, and southwest. A component of regional flow is likely toward an unnamed tributary of Little Neshaminy Creek, which is located approximately 3,200 feet northwest of the site.

The facility is located in the Delaware River Basin, Neshaminy Creek Subbasin, and the Neshaminy Creek Watershed. The lower Delaware Subbasin has a drainage area of approximately 2,708 square miles and the Neshaminy Creek Watershed drains approximately 233 square miles. The nearest downgradient surface water body is an unnamed tributary of Little Neshaminy Creek, which is located approximately 3,200 feet northwest of the site.

Historically, groundwater flow direction has varied with seasonal changes and has been towards the southwest, west-southwest, west-northwest, and east-northeast. During the most recent eight quarters of groundwater attainment sampling, the groundwater flow direction has been predominately to the north and west in the shallow water-bearing zone and to the north and east in the deep water-bearing zone. The horizontal groundwater gradient in the shallow water-bearing zone across the site and surrounding area has ranged from 0.01 to 0.25 feet/foot (ft/ft), with an average of 0.08 ft/ft (determined from the last four quarters of liquid-level data). The horizontal groundwater gradient in the deep water-bearing zone across the site and surrounding area has ranged from 0.001 to 0.01 ft/ft, with an average of 0.004 ft/ft (determined from the last four quarters of liquid-level data). Historical groundwater analytical data are summarized on **Table 3**.

Liquid-level data and groundwater samples were collected from monitoring wells MW-3 through MW-10 on October 8, 2008. (monitoring wells MW-1 and MW-2 were gauged and found to be dry). Liquid-level data and a groundwater sample were collected from monitoring well MW-2 on October 31, 2008 (monitoring well MW-1 was gauged and found to be dry). The liquid-level data collected on October 8, 2008 indicated depths to groundwater ranged from 23.89 feet (MW-3) to 36.20 feet (MW-7) below TOC. Based on the October 8, 2008 data, the local groundwater flow is toward the north-northwest with a gradient of 0.25 ft/ft in the shallow-bearing zone and toward the north with a gradient of 0.01 ft/ft in the deep water-bearing zone. Groundwater monitoring maps for the gauging and sampling event in the shallow and deep water-bearing zone are included as **Figure 5** and **Figure 6**, respectively (Groundwater Monitoring Map – Shallow Water Bearing Zone October 8, 2008 and Groundwater Monitoring Map – Deep Water Bearing Zone October 8, 2008).

Liquid-level data and groundwater samples were collected from monitoring wells MW-1 through MW-10 on February 3, 2009. The liquid-level data collected indicated depths to groundwater ranged from 13.06 feet (MW-1) to 19.40 feet (MW-7) below TOC. Based on the February 3, 2009 data, the local groundwater flow is variable, but generally toward the west-northwest with a gradient of 0.02 ft/ft in the shallow-bearing zone and toward the east with a gradient of 0.002 ft/ft in the deep water-bearing zone. Groundwater monitoring maps for the gauging and sampling event in the shallow and deep water-bearing zone are included as **Figure 7** and **Figure 8**, respectively (Groundwater Monitoring Map – Shallow Water Bearing Zone February 3, 2009 and Groundwater Monitoring Map – Deep Water Bearing Zone February 3, 2009).

Liquid-level data and groundwater samples were collected from monitoring wells MW-1 through MW-10 on April 6, 2009. The liquid-level data collected indicated depths to groundwater ranged from 17.27 feet (MW-1) to 23.41 feet (MW-7) below TOC. Based on the April 6, 2009 data, the local groundwater flow is variable, but generally toward the west with a gradient of 0.02 ft/ft in the shallow-bearing zone and toward the north with a gradient of 0.002 ft/ft in the deep water-bearing zone. Groundwater monitoring maps for the gauging and sampling event in the shallow and deep water-bearing zone are included as **Figure 9** and **Figure 10**, respectively (Groundwater Monitoring Map – Shallow Water Bearing Zone April 6, 2009 and Groundwater Monitoring Map – Deep Water Bearing Zone April 6, 2009).

Liquid-level data and groundwater samples were collected from monitoring wells MW-1 through MW-10 on July 8, 2009. The liquid-level data collected indicated depths to groundwater ranged from 9.57 feet (MW-1) to 15.99 feet (MW-7) below TOC. Based on the July 8, 2009 data, the local groundwater flow is variable, but generally toward the west-northwest with a gradient of 0.01 ft/ft in the shallow-bearing zone and toward the east with a gradient of 0.001 ft/ft in the deep water-bearing zone. Groundwater

monitoring maps for the gauging and sampling event in the shallow and deep water-bearing zone are included as **Figure 11** and **Figure 12**, respectively (Groundwater Monitoring Map – Shallow Water Bearing Zone July 8, 2009 and Groundwater Monitoring Map – Deep Water Bearing Zone July 8, 2009).

4.2 Nature and Extent of Release

There are three primary components to a plume of released hydrocarbon product to the subsurface. These components are generally comprised of an adsorbed phase, a separate phase (light non-aqueous phase liquid), and a dissolved phase. As a release of hydrocarbon product comes in contact with soil, a percentage of the release will become adsorbed on to the particles of soil. The amount of product that becomes adsorbed will depend upon the following factors:

- the properties of the product (viscosity, solubility, etc.);
- the intrinsic permeability of the soil (the relative ease with which a porous material transmits liquid);
- the amount of recharge, flushing, or infiltration of precipitation from the surface, and
- the amount of total organic carbon in the soil.

The remaining product will continue to migrate through the soil column in the unsaturated zone under the influence of gravity and follow the path of least resistance (lenses or layers with the highest intrinsic permeability). As the product encounters the capillary fringe (the portion of the soil column where water is drawn upward from the saturated zone and there is a greater percentage of water in this zone as compared to the soils above), it will tend to spread laterally and a greater percentage will remain adsorbed in this zone.

The product that continues to migrate through the capillary fringe will eventually encounter the saturated zone. The primary mechanism for product migration in the saturated zone of a bedrock aquifer is horizontal groundwater flow, which is in turn influenced by the following conditions:

- horizontal groundwater flow gradient;
- specific gravity less than water (tendency to float);
- secondary porosity of the aquifer material (bedrock and fractures); and
- the orientations of geologic structures (cleavage and joints).

Soluble compounds will dissolve into the groundwater and migrate with groundwater flow. The fate and transport of these compounds in the groundwater are dependent upon the individual properties of each constituent. The observed downward vertical gradient may influence the vertical migration of constituents. The more soluble and resistant to biodegradation the compound is, the greater the ability to dissolve in groundwater and transport greater distances (e.g., MTBE). The following sections detail the results of the investigations to define the nature and extent of hydrocarbons in the subsurface for this site.

4.2.1 Separate-Phase Hydrocarbons

Separate-phase hydrocarbons (SPH) have not been observed in any monitoring wells.

4.2.2 Soil Quality

Obvious, localized adsorbed-phase contamination was observed in the 1996 excavations related to the former UST and dispenser island removal. Soil analytical results from samples collected during UST closure activities between December 1995 and February 1996 indicated that benzene was detected in six samples (Disp-2, SS-1, SS-2, SS-7, SS-9, and SS-10) at concentrations above the PADEP SHS; however, it should be noted that the laboratory detection limit for soil sample SS-9 exceeded the PADEP SHS. Soil analytical results in two soil samples (SS-8 and SS-11) indicated benzene was non-detect; however, the laboratory detection limit exceeded the PADEP SHS. None of the remaining target parameters (toluene, ethylbenzene, and total xylenes) were detected at concentrations above PADEP SHS.

Soil analytical results for soil samples collected during monitoring well installation (MW-1 through MW-3) in March 1996 indicated that none of the target unleaded gasoline parameters (BTEX) were detected at those locations.

Soil analytical results for soil samples collected during monitoring well installation (MW-4) in October 1997 indicated that none of the target unleaded gasoline parameters (BTEX, MTBE, isopropylbenzene, and naphthalene) were detected at this location.

Soil analytical results for soil samples collected during monitoring well installation (MW-5 and MW-6) in October 2004 indicated that none of the target unleaded gasoline parameters (BTEX, MTBE, isopropylbenzene, and naphthalene) were detected at these locations.

Soil analytical results for soil samples collected during monitoring well installation (MW-8 through MW-10) in February 2007 indicated that the unleaded gasoline parameters (BTEX, MTBE, isopropylbenzene, and naphthalene) were not detected in the soil samples above the PADEP SHS with the exception of benzene in soil samples MW-8 @ 5' and MW-8 @ 24', where the laboratory detection limit exceeded the PADEP SHS of 500 µg/kg.

From these analytical results, it appears that the adsorbed-phase contamination was localized in the immediate vicinity of the former Pre-Act USTs and the former dispensers, and those areas are believed to be the sources of hydrocarbon contamination at the site. Historical soil analytical data are summarized in **Table 1**, the locations of the soil sample locations and soil borings are depicted on **Figure 4**, and the soil laboratory analytical reports are provided in **Appendix C**.

4.2.3 Groundwater Quality

Historically, groundwater samples were analyzed for PADEP unleaded gasoline parameters in accordance with the January 1995 PADEP guidance document titled *Closure Requirements for Underground Storage Tank Systems*. Groundwater monitoring has been conducted at the site since March 1996 in accordance with Act 32 Corrective Action Requirements. Historic groundwater monitoring data are summarized in **Table 3**.

Historical groundwater sampling results demonstrate that dissolved benzene, ethylbenzene, MTBE, and naphthalene were detected at concentrations above the PADEP SHS. Toluene, total xylenes, and isopropylbenzene have never been detected at concentrations above the PADEP SHS. During attainment

monitoring and sampling (initiated on October 4, 2007), benzene has been detected at concentrations above the PADEP SHS in monitoring well MW-2 during two of the eight sampling events. The remaining target parameters were not detected or were detected at concentrations below the PADEP SHS during post-remediation monitoring and sampling. Historical groundwater analytical data are summarized in **Table 3**.

Groundwater analytical results indicate that monitoring wells MW-1, MW-2, and MW-3 typically have historically had the highest dissolved COC concentrations. These wells are located in the vicinity of the former dispenser islands, which were located along the southeastern property boundary, and northeast of the former Pre-Act USTs, which were located in the southern corner of the site. This further supports the belief that the former UST system, dispenser islands, and product delivery lines are the sources of hydrocarbon contamination. See **Figure 13** for the source area locations.

During the most recent sampling event on July 8, 2009, all target parameters were not detected or were detected at concentrations below the PADEP SHS. Historical groundwater analytical data are summarized in **Table 3**. Groundwater laboratory analytical reports and chain-of-custody documentation from the four most recent sampling events are included in **Appendix I**.

Attainment groundwater sampling results indicate the most significant presence of dissolved-phase hydrocarbons is in the vicinity of the former dispenser islands along York Road, as shown by monitoring well MW-2, which is most likely residual contamination as a result of a release from these dispensers prior to replacement in 1996. The distributions of the maximum concentration of each COC detected at a concentration above the PADEP SHS during historic monitoring and sampling (benzene, ethylbenzene [one occasion in MW-2], MTBE, and naphthalene) are compared to concentration distributions detected above the PADEP SHS during the most recent sampling event (July 8, 2009) (**Figures 14** through **17**). Based upon the distributions of the dissolved-phase hydrocarbons (**Figures 14** through **17**), the source of the release appears to be associated with former Pre-Act UST field and the former pump islands located along York Road.

4.3 Source Identification

Based upon the dissolved-phase COCs in the monitoring wells, groundwater flow properties of the site, and the orientation of the former UST system, dispenser islands, and product delivery lines with respect to the historical dissolved-phase hydrocarbon distributions, the source area has been identified as the area encompassing the former Pre-Act UST field and the former pump islands located along York Road. The source area was identified based upon the following:

- the concentrations of dissolved-phase COCs detected in groundwater in monitoring wells MW-1 and MW-2;
- the concentrations of adsorbed-phase COCs detected in soil samples SS-1, SS-2, SS-7, SS-8, SS-9, SS-10, SS-11, and Disp-2 collected during UST removal activities in 2006 and soil sample MW-8 collected during monitoring well installation in 2007; and
- the location of the former pre-Act 2 UST field and former pump islands with respect to monitoring wells MW-1 and MW-2.

4.4 Dissolved-Phase Hydrocarbon Trend Analysis

GES analyzed the changes in dissolved-phase hydrocarbon concentrations in selected monitoring wells that have exhibited an exceedance of a any COC during historic and groundwater attainment monitoring and sampling in order to identify temporal trends and evaluate the effect of remedial actions. Trend analysis was performed to determine the stability of the plume.

The analysis was conducted using procedures described in ASTM E 1943-98, "Standard Guide for Remediation of Groundwater by Natural Attenuation at Petroleum Release sites." The analysis as specified by ASTM is a graphical approach which consists of plotting the natural log (LN) of the concentrations of each compound over time and fitting a straight line to the resulting plot. By comparing the trend lines for each well, and the location of the well within the plume, a determination can be made regarding the behavior of the plume (e.g., shrinking, stable, or expanding). When the source loading of a particular compound is less then the rate of natural attenuation, a downward trend line is exhibited. This downward trend line is evidence that natural attenuation is occurring and the plume is shrinking. When the source loading of a particular compound into the aquifer is exceeded by the rate of natural attenuation, an upward trend line is exhibited and the plume is considered to be expanding. Plots indicating a horizontal trend (neither upward nor downward) suggest that the loading rate is equal to the rate of attenuation, and the plume is considered to be stable. The R^2 value included on the graphical plots also assists in determining a trend.

The trends of each of the COCs in the monitoring wells noted above during historic groundwater sampling as well as the associated R^2 values are described as follows:

Well	COC	Trend	R^2-value
MW-1	Benzene MTBE Naphthalene	Decreasing Decreasing Stable	0.014 0.0677 0.0014
MW-2	Benzene Ethylbenzene MTBE Naphthalene	Decreasing Decreasing Decreasing Decreasing	0.4837 0.3118 0.146 0.2688
MW-3	Benzene MTBE	Decreasing Decreasing	0.0846 0.491
MW-4	MTBE	Decreasing	0.1212
MW-5	MTBE	Decreasing	0.2599
MW-7	MTBE	Decreasing	0.0426

COC – Constituent-of-Concern

The trends of each of the COCs in the monitoring wells noted above during attainment groundwater sampling as well as the associated R^2 values are described as follows:

Well	COC	Trend	R^2-value
MW-2	Benzene	Decreasing	0.1289

COC – Constituent-of-Concern

In summary, the analytical data in monitoring wells exhibiting concentrations of benzene, ethylbenzene, MTBE, and naphthalene above PADEP SHS during historic and attainment groundwater sampling are indicating decreasing trends. It should be noted that during groundwater attainment sampling, the only COC that has been detected at concentrations above the PADEP SHS is benzene in monitoring well MW-2. Historical groundwater analytical data are summarized in **Table 3**. The hydrocarbon trend graphs are presented in **Appendix J**.

5.0 FATE AND TRANSPORT ANALYSIS

5.1 Analytical Modeling

GES utilized Environmental Systems & Technologies (ES&T) to perform fate and transport modeling, which was conducted to predict the extent of off-site migration of dissolved-phase hydrocarbons detected at the site. Analytical modeling was performed utilizing the BIOTRANS method. Analytical models require simplifying assumptions regarding the flow and transport conditions. In this effort, the analytical model was considered to be conservative. Benzene, MTBE, and naphthalene were analyzed in this model since they are constituents-of-concern with concentrations detected above the PADEP SHS during the 12 quarters of groundwater monitoring prior to completion of the model. Ethylbenzene was detected above the PADEP SHS one time in monitoring well MW-2 (on October 30, 2002), but was not considered a concern for the site. The ES&T BIOTRANS model was submitted as part of the Additional SCR/RAP dated January 6, 2006, and was subsequently approved by the PADEP in a letter dated June 9, 2006. The fate and transport analysis is summarized in the following sections. Please refer to **Appendix K** for a detailed explanation of the model in the ES&T report.

5.2 Model Description

BIOTRANS is a two-dimensional, finite element model that considers convective-dispersive transport, adsorption, and decay for multiple hydrocarbon constituents in either porous or fractured media. Transport of dissolved-phase species is simulated by solving the two-dimensional, vertically averaged convective-dispersive-reactive equation. The model utilizes steady-state velocity fields that represent average flow conditions. Analysis using BIOTRANS have been previously submitted and accepted by the US EPA and state regulatory agencies.

5.3 Model Parameters

Input parameter values were defined from site-specific and published data. The following describes the input parameters of the BIOTRANS model and the values applied in the model.

Dissolved Species
Benzene, MTBE, and naphthalene were used in the model since these constituents were found above the PADEP SHS. The chemical properties of these constituents (molecular weight, solubility, K_d, K_{oc}, and the first order decay rate) were applied in the model. The K_{oc} values used in the model were selected from Appendix A, Table 5, of the Act 2 Regulations (PADEP, 2003).

Initial Concentrations
The maximum concentrations of benzene, MTBE, and naphthalene from the 8 groundwater sampling events conducted between August 6, 2005 and April 20, 2007 were used as the initial concentrations in the model. Using the maximum concentrations results in a more conservative estimate of the dissolved-phase fate and transport simulation.

Porosity
Due to the competent shale bedrock beneath the site, a porosity value of 0.10 was used in the model.

Soil Bulk Density
The soil bulk density used in the model is 2.39 g/cm^3.

Longitudinal and Transverse Dispersivity
The longitudinal and transverse dispersivities used in this model were conservatively estimated as 4 feet and 0.4 feet respectively.

Groundwater Flow
Groundwater flow representative of measured site conditions was simulated in the modeling effort. A steady-state, uniform flow field was generated considering site hydrogeologic conditions. Hydraulic conductivity within the aquifer was estimated to be 0.001 feet/day and aquifer thickness was assumed to be 85 feet based on the maximum well depth and average water table elevations at the site.

5.4 Modeling Results

Results of the ES&T BIOTRANS modeling simulation indicate that the effects of degradation, dispersion, and adsorption will act to reduce benzene, MTBE, and naphthalene concentrations over time. Benzene concentrations are predicted to remain above the PADEP SHS for the entire 30-year simulation. However, no off-site migration of the benzene plume is predicted. MTBE concentrations are predicted to decrease to below the PADEP SHS between 22 and 23 years with no off-site migration predicted beyond that of the initial MTBE plume (see **Figure 4** in **Appendix K**). Naphthalene concentrations are predicted to remain above the PADEP SHS for the entire 30-year simulation, but no off-site migration is predicted.

Since the modeling simulation was submitted, three additional monitoring wells (two deep [MW-8 and MW-9] and one shallow [MW-10]), have been installed on-site and subsequent quarterly groundwater monitoring has been conducted. Analytical results of the subsequent groundwater monitoring in the wells that existed on-site prior to model simulation, as well as newly installed shallow and deep monitoring wells, support the results of the modeling effort. Dissolved-phase concentrations have continued to exhibit a decreasing trend for benzene, ethylbenzene, MTBE, and naphthalene in monitoring wells in which they have exceeded the PADEP SHS. Additionally, dissolved-phase hydrocarbon concentrations in point-of-compliance wells remain non-detect or were detected below PADEP SHS. Considering the above, the BIOTRANS model approved as part of the January 2006 Additional SCR/RAP still applies to this site and is consistent with actual site data collected since its original submittal.

5.5 Vapor Intrusion Assessment

This section has been incorporated to assist in satisfying the requirements of Act 2 and the regulations published in Chapter 250 of the PA Code. This specific guidance provides additional attainment screening requirements to prevent the occurrence of unacceptable risk resulting from vapor intrusion of contaminants from soil and/or groundwater into indoor structures. The guidance identifies contaminants of potential indoor air concern (COPIACs), which may be present at the facility, and determines if additional characterization or remedial actions are required to mitigate vapor impacts to sensitive receptors. The guidance utilizes a flow chart (Indoor Air Quality Decision Matrix for SHS) based on the presence of SPH, preferential exposure pathways, dissolved-phase hydrocarbon concentrations, distances to potential receptors, soil type, established screening constituent levels derived from Pennsylvania-specific parameters, the Johnson and Ettinger (J&E) Vapor Intrusion model, and groundwater depths below the potential receptor.

There are two considerations to determine if the vapor intrusion pathway is a potential concern.

- Inhabited buildings must be close (within 100 horizontal feet) to a volatile source; and
- The source concentration must be above some threshold or screening concentration.

There is currently one building on-site: a one-story station building completed with a slab-on-grade construction. There are no additional buildings within 100 feet of the site. The following table indicates the historical maximum groundwater concentrations observed in monitoring wells, as well as the groundwater screening values for protection of indoor air in a residential and non-residential setting as referenced in Table 1 and Table 2 of the Vapor Intrusion into Buildings from Groundwater and Soil under the Act 2 Statewide Health Standard (PADEP, January 24, 2004).

Regulated Substance	Max. Observed Historical Concentration (µg/L)	Default Non-Residential Groundwater Screening Value (Volatilization to Indoor Air) (µg/L)	Default Residential Groundwater Screening Value (Volatilization to Indoor Air) (µg/L)	COPIAC
Benzene	430	5,900	3,500	No
Toluene	589	NOC	490,000	No
Ethylbenzene	886	45,000	27,000	Yes
Total Xylenes	1,150	NOC	130,000	Yes
MTBE	12,800	640,000	380,000	No
Isopropylbenzene	113	NOC	NOC	No
Naphthalene	344	NOC	25,000	Yes

NOC – Not of Concern, value above constituent water solubility
COPIAC - Constituent of Potential Indoor Air Concern

The maximum groundwater concentrations observed in on-site monitoring wells for BTEX, MTBE, isopropylbenzene, and naphthalene, based on historical groundwater sample analytical results are below the applicable PADEP default groundwater screening values. Therefore, vapor intrusion due to the volatilization of the constituents of concern from groundwater into indoor air is not a concern for this site.

The following table indicates the historical maximum adsorbed concentrations observed in soil samples compared to the soil screening values for protection of indoor air in a residential and non-residential setting, as referenced in Table 4 and Table 5 of the Vapor Intrusion into Buildings from Groundwater and Soil under the Act 2 Statewide Health Standard (PADEP, January 24, 2004).

Regulated Substance	Max. Observed Historical Concentration (µg/kg)	Default Non-Residential Soil Screening Value (Volatilization to Indoor Air) (µg/kg)	Default Residential Soil Screening Value (Volatilization to Indoor Air) (µg/kg)	COPIAC
Benzene	**1,900**	630	370	Yes
Toluene	51,000	110,000	76,000	Yes
Ethylbenzene	**41,000**	9,500	5,700	Yes
Total Xylenes	**250,000**	77,000	55,000	Yes
MTBE	<530	86,000	51,000	No
Cumene	<530	360,000+	360,000+	No
Naphthalene	3,700	NOC	64,000	No

NOC – not of concern
+ - Soil saturation concentration (Csat) – concentration above Csat may suggest the need to investigate the potential presence of NAPL.

Benzene, ethylbenzene, and total xylenes in soil exceed the PA default soil screening values. Therefore, vapor intrusion into a building from soil volatilization is a potential concern for this site.

On March 8, 2007 and December 14, 2007, the soil-vapor points (SG-1 through SG-3) were sampled and submitted for laboratory analysis of BTEX, MTBE, and isopropylbenzene via Method TO-15. Soil-gas analytical results demonstrate that none of the target parameters were detected in the samples at concentrations above the PADEP residential and non-residential indoor air criteria or EPA Region III risk-based concentrations for indoor air; therefore, vapor intrusion into a building from soil volatilization is not a concern for the site. Soil-vapor analytical results are summarized in **Table 2**.

5.6 Exposure Pathway Assessment

Using PADEP-approved EPA and ASTM guidance, this assessment identified potential current and future exposure pathways for human receptors, as per Pennsylvania Code §250.402. Where appropriate, incomplete exposure pathways and constituents that were not found in environmental media exceeding the statewide health criteria were eliminated from further consideration.

Human or ecological receptors can be exposed to COCs through four major pathway categories: 1) air, 2) groundwater, 3) soil, and 4) surface water. Within each pathway category are specific exposure pathway scenarios. The following is a description of each possible exposure pathway. Pathways pertinent to the site are identified.

5.6.1 Air Exposure Pathways

- *Inhalation of vapors volatilized from subsurface soils to the ambient air*: Analytical results from the subsurface soil samples collected at this site during site characterization activities indicated

that concentrations of benzene exceed the PADEP SHS. Three soil gas points were installed on-site and two rounds of soil gas sampling were conducted. Soil-vapor analytical results indicate that the target parameters were either not detected or detected at concentrations below the PADEP Residential and Non-Residential Indoor Air Criteria. Therefore, this pathway was not deemed relevant for this site.

- *Inhalation of vapors volatilized from groundwater into the ambient air*. Average depth to groundwater at this site ranges from five to 38 feet below TOC. Additionally, historical maximum groundwater concentrations do not exceed the PADEP Default Residential and Non-Residential Vapor Screening Values. Therefore, this pathway was not deemed relevant for this site.

- *Inhalation of vapors volatilized from subsurface soil into an enclosed space*: This scenario includes vapors entering basements, crawl spaces, subsurface utility vaults, and in some situations, enclosed buildings. Analytical results from subsurface soil samples collected during site characterization activities indicated that benzene, toluene, and total xylenes concentrations were above the default soil screening values for vapor intrusion. Three soil gas points were installed on-site and two rounds of soil gas sampling were conducted. Soil-vapor analytical results indicate that the target parameters were either not detected or detected at concentrations below the PADEP Residential and Non-Residential Indoor Air Criteria. Therefore, this pathway was not deemed relevant for this site.

- *Inhalation of vapors volatilized from groundwater into an enclosed space*: This scenario includes vapors entering basements, crawl spaces, subsurface utility vaults, and in some situations, enclosed buildings. Historical groundwater data indicated that none of the dissolved concentration values are above the default groundwater screening values for vapor intrusion. Additionally, separate-phase hydrocarbons (SPH) have never been detected at this site. Therefore, this pathway was not deemed relevant for this site.

5.6.2 Groundwater Exposure Pathways

- *Ingestion of groundwater through a water supply well*: According to a door-to-door survey conducted by GES in March 2001, the Warminster Municipal Water Authority supplies water to the site and surrounding area. There are potable wells used as the primary source of drinking water within a ½-mile radius of the site, but unleaded gasoline constituents were not detected in those wells when they were analyzed in 2001 by GES (**Section 3.5** of this report). Additionally, fate and transport modeling predicts that the constituents-of-concern (benzene, MTBE, and naphthalene) will not migrate offsite during the 30-year simulation. Based on that information, this pathway was not deemed relevant for this site.

5.6.3 Soil Exposure Pathways

- *Dermal contact and direct ingestion of contaminated soils*: Analytical results indicated that all COCs were either not detected or were below the direct contact medium specific concentrations (MSCs) set forth in Act 2. Therefore, this pathway was not deemed relevant for this site.

5.6.4 Surface Water Exposure Pathways

- *Contact with surface water contaminated by runoff from contaminated surface soil*: There is no body of surface water located within 2,500 feet of the site. Additionally, fate and transport modeling predicts that the constituents-of-concern (benzene, MTBE, and naphthalene) will not migrate offsite during the 30-year simulation. Therefore, this pathway was not deemed relevant for this site.

- *Contact with surface water contaminated by groundwater discharge*: There is no body of surface water located within 2,500 feet of the site. Additionally, fate and transport modeling predicts that the constituents-of-concern (benzene, MTBE, and naphthalene) will not migrate offsite during the 30-year simulation. Therefore, this pathway was not deemed relevant for this site.

There are no open exposure pathways relevant for this site. Due to pathway elimination, no further assessment of risk will be calculated.

6.0 SITE CONCEPTUAL MODEL

This site is currently an active Sunoco retail gasoline station and convenience store. The surrounding area consists mainly of commercial properties with a residential neighborhood beyond them to the south. There are ten on-site monitoring wells (MW-1 through MW-10) for the environmental investigation. According to the subsurface drilling logs, the site is underlain by silt, sand, and clay overlying red shale, siltstone, and sandstone bedrock of the Stockton Formation, which was encountered at an average depth of 12 feet bgs.

Historically, average depth to water across the site occurs from approximately five feet to 38 feet below TOC, with an average depth to water of approximately 16.35 feet bgs. Based on measured water levels, groundwater occurs in the shale bedrock; the aquifer underlying the site appears to be unconfined. During the most recent four quarters of groundwater sampling, the groundwater flow direction has been predominately to the north and west, with an average of 0.08 ft/ft in the shallow water-bearing zone, and to the north and east, with an average of 0.004 ft/ft in the deep water-bearing zone.

Unleaded gasoline constituents from the UST system and dispenser islands have impacted the subsurface. Site characterization activities identified adsorbed-phase hydrocarbons above the PADEP SHS in soil samples collected during UST closure activities in 1996 and site characterization activities in February 2007. Groundwater quality data indicate the most significant concentrations of dissolved-phase hydrocarbons occur in monitoring wells in the vicinity of the former UST field and dispensers (MW-1, MW-2, and MW-3). Concentrations of benzene, ethylbenzene, MTBE, and naphthalene have historically been detected above the PADEP SHS in groundwater. SPH have not been detected in any of the monitoring wells.

Soil analytical results indicated benzene was detected at concentrations above the PADEP SHS beneath the dispenser islands and the former UST field. No other target parameters were detected above the PADEP SHS in soil. Soil samples collected during monitoring well installation in 2007 exhibited a laboratory detection limit of benzene that exceeded the SHS.

Dissolved-phase hydrocarbons have dispersed across the site but are primarily concentrated in the vicinity of the former dispenser islands, as exhibited by groundwater samples collected from monitoring wells MW-1, MW-2, and MW-3. According to the most recent groundwater laboratory analytical results, benzene is the only COC that has been detected at concentrations above the PADEP SHS during groundwater attainment monitoring and sampling (during five of the last eight quarters in monitoring well MW-2 only).

Based on the extent of contamination at the site, the primary sources of hydrocarbon contamination are considered to be the former dispenser islands, the former pre-Act 2 UST field, and the product delivery lines associated with them, which were removed from the site in 1996 during site reconstruction activities.

The results of the soil-vapor monitoring indicate that the COCs have either been not detected or have been detected at concentrations below the PADEP Non-Residential Indoor Air Criteria.

An exposure pathway evaluation was conducted and no open pathways exist for this site. Due to pathway elimination, no further assessment of risk will be calculated.

Trend analysis was used to conservatively evaluate post-remediation site conditions with respect to dissolved-phase hydrocarbons. The results of the trend analysis indicate decreasing dissolved-phase hydrocarbons in the on-site monitoring well network in the shallow and deep water bearing zones.

Analytical fate and transport modeling was conducted to evaluate the conceptual model presented above with respect to the extent of off-site migration of dissolved phase hydrocarbons from the site. The fate and transport of these compounds in the groundwater is dependent upon the individual properties of each constituent. The more soluble and resistant to biodegradation the compound is, the greater the ability to dissolve in groundwater and transport greater distances (e.g., MTBE). Fate and transport results indicate benzene and naphthalene will not migrate off-site at concentrations above the PADEP SHS. Fate and transport modeling results indicate that MTBE will not migrate beyond that of the initial MTBE plume.

7.0 ATTAINMENT DEMONSTRATION

7.1 Soil

7.1.1 Statewide Health Standards

Historical soil analytical results from UST closure and site characterization activities demonstrate that concentrations of benzene have been detected above PADEP SHS in on-site soil samples. None of the remaining target parameters were detected at concentrations above the PADEP SHS. Therefore, soil has attained the PADEP SHS for toluene, ethylbenzene, total xylenes, MTBE, isopropylbenzene, and naphthalene.

The applicable Statewide Health Standards selected for soil at this site were determined based on the following criteria:

Non-residential – The current and future anticipated use of the site is commercial; therefore, the non-residential standard has been selected. The current site utilization is a gasoline retail facility.

Used Aquifer – Public water is provided to the site and surrounding area by the Warminster Municipal Water Authority; however, non-use aquifer determination has not been acquired for the site.

Total Dissolved Solids – Total dissolved solids are assumed to be less than or equal to 2,500.

Sample Depth – Soil samples were collected from surface and subsurface locations.

Soil Saturation – Soil samples were collected from unsaturated and saturated soil conditions.

Based on the above criteria, the below-listed values were determined to be the applicable Statewide Health Standards selected for this site. These standards are also included in **Table 1**, Historical Soil Analytical Data Summary.

Compound	**Statewide Health Standard (µg/kg)**
	Saturated/Unsaturated
Toluene	100,000
Ethylbenzene	70,000
Total Xylenes	1,000,000
MTBE	2,000
Isopropylbenzene	230,000/1,600,000
Naphthalene	10,000/25,000

7.1.2 Site-Specific Standards

Historical soil analytical results from UST closure and site characterization activities demonstrate that concentrations of benzene have been detected above PADEP SHS in on-site soil samples. Since there are no open soil exposure pathways, there is no risk. Therefore, a numeric value for the site-specific standard for benzene will not be determined.

7.2 Groundwater

7.2.1 Statewide Health Standards

During groundwater attainment monitoring and sampling, toluene, ethylbenzene, total xylenes, isopropylbenzene, MTBE, and naphthalene have not been detected at concentrations above the PADEP SHS. It should be noted that consecutive quarters of groundwater sampling could not be conducted at monitoring wells MW-1 through MW-3 due to dry conditions; however, during the last eight sampling events in monitoring well MW-1 and MW-3 all constituents of concern were below the SHS. It should also be noted that during the eight most recent consecutive groundwater sampling events in monitoring well MW-2, benzene and MTBE exceeded the PADEP SHS. Therefore, groundwater quality at the site meets the general attainment requirements for SHS for toluene, ethylbenzene, total xylenes, isopropylbenzene, and naphthalene.

The applicable Statewide Health Standards selected for groundwater at this site were determined based on the following criteria:

Non-residential – The current and future anticipated use of the site is commercial; therefore, the non-residential standard has been selected. The current site utilization is a gasoline retail facility.

Used Aquifer – Public water is provided to the site and surrounding area by the Warminster Municipal Water Authority; however, non-use aquifer determination has not been acquired for the site.

Total Dissolved Solids – Total dissolved solids are assumed to be less than or equal to 2,500.

Based on the above criteria, the below-listed values were determined to be the applicable SHS for the compounds of concern in a non-residential, used aquifer. These Standards are also included in **Table 3** (Historical Groundwater Monitoring Data Summary).

Compound	Statewide Health Standard (µg/L)
Toluene	1,000
Ethylbenzene	700
Total Xylenes	10,000
Isopropylbenzene	2,300
Naphthalene	100

7.2.2 Site-Specific Standards

Benzene and MTBE have been detected at concentrations above the PADEP SHS in monitoring well MW-2 on three and one occasions, respectively, during attainment sampling (seven consecutive and eight overall sampling events). Based on analytical fate and transport modeling, benzene and MTBE concentrations are not predicted to migrate beyond the property boundary at concentrations above the PADEP SHS. Additionally, there are no open groundwater exposure pathways, and subsequently there is no risk. Therefore, numeric values for the site-specific standards for benzene and MTBE will not be determined.

7.3 Environmental Covenant

On December 18, 2007, Governor Rendell signed Act 68, the Uniform Environmental Covenants Act (UECA), into law. UECA provides a standardized process for creating, documenting and assuring the enforceability of activity and use limitations on contaminated sites. Under UECA, an environmental covenant will be required whenever an engineering or institutional control is used to demonstrate the attainment of an Act 2 remediation standard for any cleanup conducted under an applicable Pennsylvania environmental law. This report demonstrates that site groundwater and soil have attained a combination of SHS and SSS as outlined in Act 2 for BTEX, MTBE, isopropylbenzene, and naphthalene for a non-residential, used aquifer. In order to maintain these standards, institutional controls are required to prohibit the future use of groundwater at the site for potable purposes and to maintain a land use that meets the definition of a non-residential property. Draft language for the environmental covenant for this site is included in **Appendix L**.

8.0 CONCLUSIONS

Results of characterization activities and subsequent attainment monitoring provided a comprehensive understanding of potential impacts to soil and groundwater at the site. The data obtained from these investigations formed the basis for comparing soil and groundwater quality to a combination of Statewide Health Standards and Site-Specific Standards, as well as evaluating the potential risks associated with residual concentrations of petroleum hydrocarbon compounds. The characterization and subsequent attainment monitoring established that the hydrocarbon components occur as adsorbed constituents in soil and dissolved constituents in groundwater. A review of all potential exposure pathways did not identify any open pathways for this site.

Additionally, the most recent groundwater analytical results indicated that the dissolved-phase hydrocarbon plumes are decreasing. As further support of the demonstration of attainment, fate and transport analysis was used to conservatively evaluate post-remediation site conditions with respect to dissolved-phase hydrocarbons, as well as to predict the off-site migration of dissolved-phase hydrocarbons and impact to nearby receptors. The results of the fate and transport analysis indicate that the maximum concentrations detected during historical groundwater monitoring will not be exceeded at the downgradient point-of-compliance in the future, and as a result, dissolved-phase hydrocarbon constituents will not impact any sensitive receptors. Furthermore, trend analyses were conducted to document changes in dissolved–phase hydrocarbon concentrations over time. The hydrocarbon graphs indicate that there are decreasing trends at each monitoring well that has exhibited an exceedance of a COC during historical groundwater monitoring and attainment sampling.

Considering the above, site groundwater and soil have been demonstrated to attain a combination of Statewide Health Standards and Site-Specific Standards as outlined in Act 2 for BTEX, MTBE, isopropylbenzene, and naphthalene. Based on the attainment of soil and groundwater standards and based on the findings of this report, Sunoco respectfully requests a Release of Liability for groundwater and soil conditions pertaining to the release of unleaded gasoline at this facility upon completion (signatures and recordation) of the Environmental Covenant.

9.0 REFERENCES

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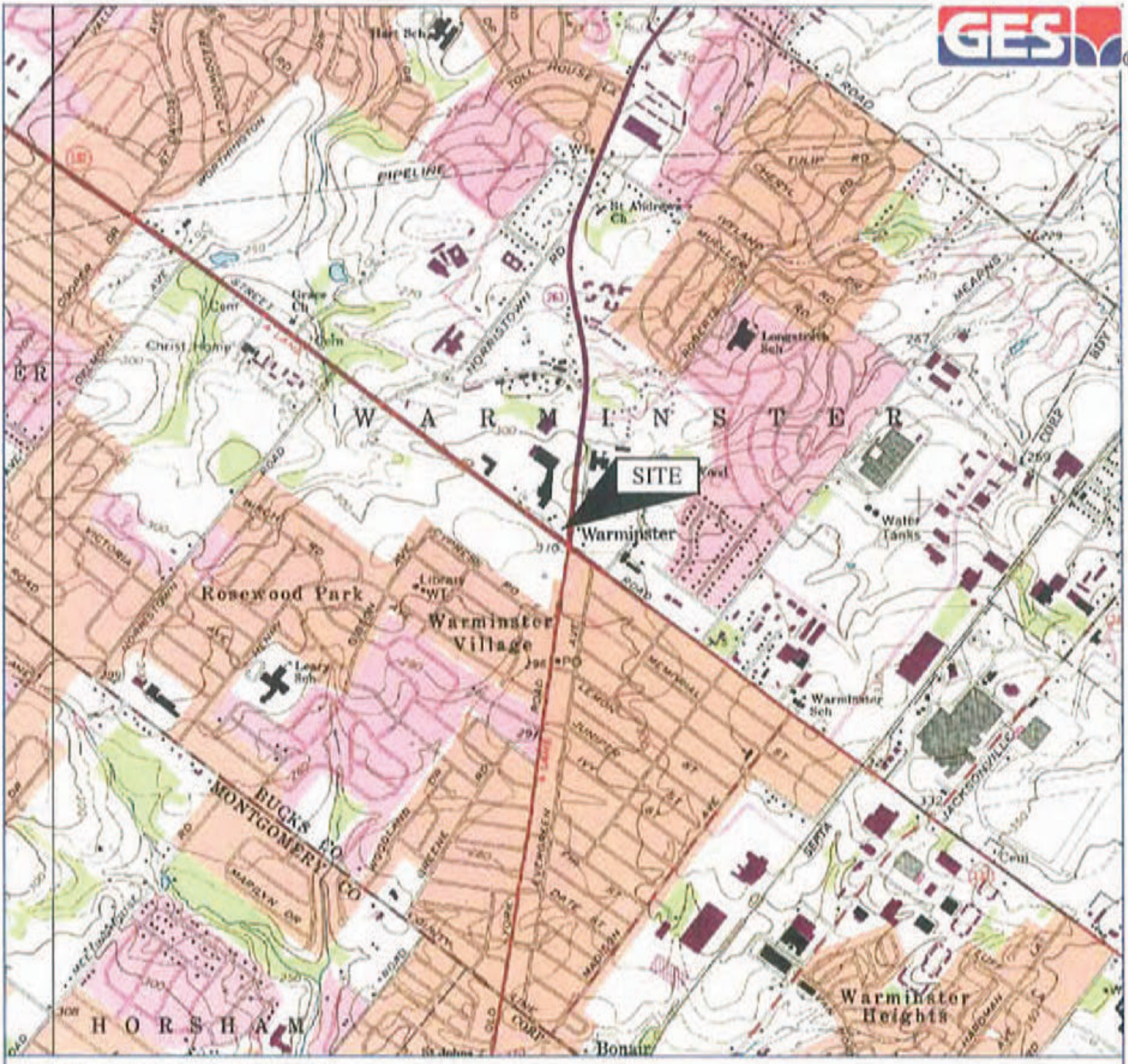
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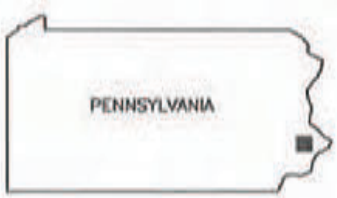
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Watershed Notebooks, Pennsylvania Department of Environmental Protection Website, accessed July 23, 2007, <*http://www.dep.state.pa.us/dep/deputate/watermgt/wc/Subjects/WSNoteBks/ws03f.htm*>

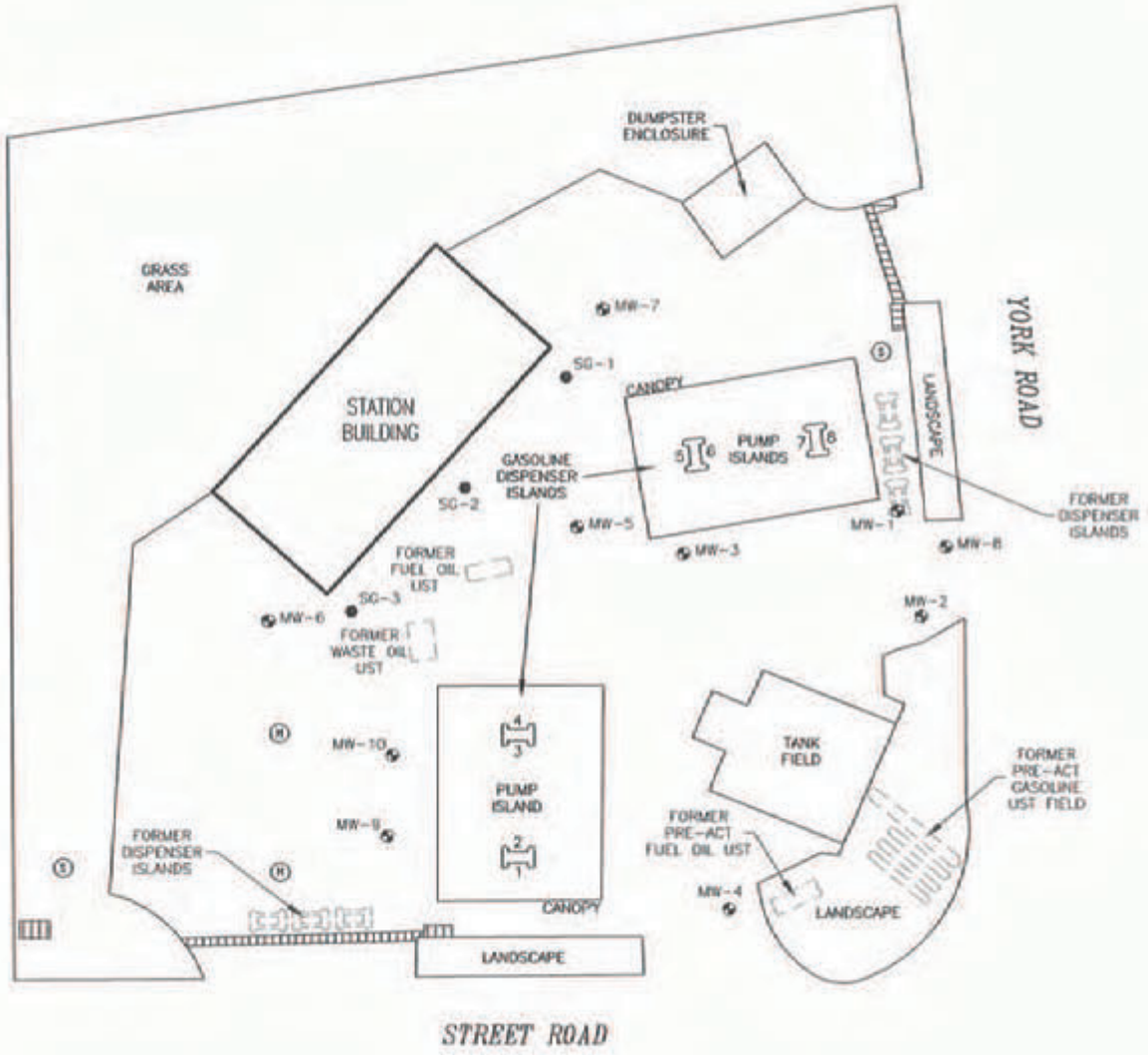


SOURCE: USGS 7.5 MINUTE SERIES
TOPOGRAPHIC QUADRANGLE
HATBORO, PA
CONTOUR INTERVAL = 10' 1966 (1983)



QUADRANGLE LOCATION

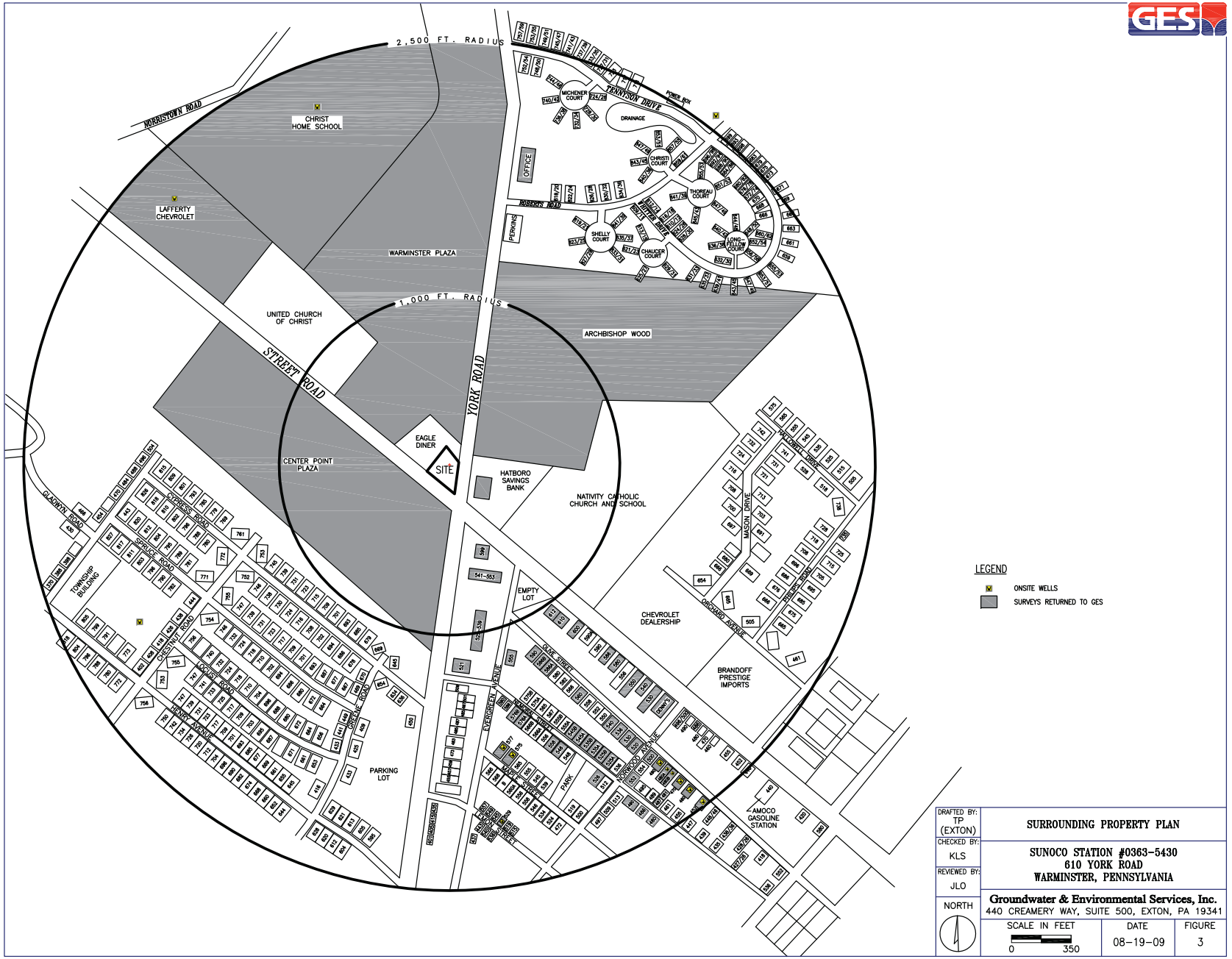
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REVIEWED BY: KLS	Groundwater & Environmental Services, Inc. 440 CREAMERY WAY, SUITE 500, EXTON, PA 19341
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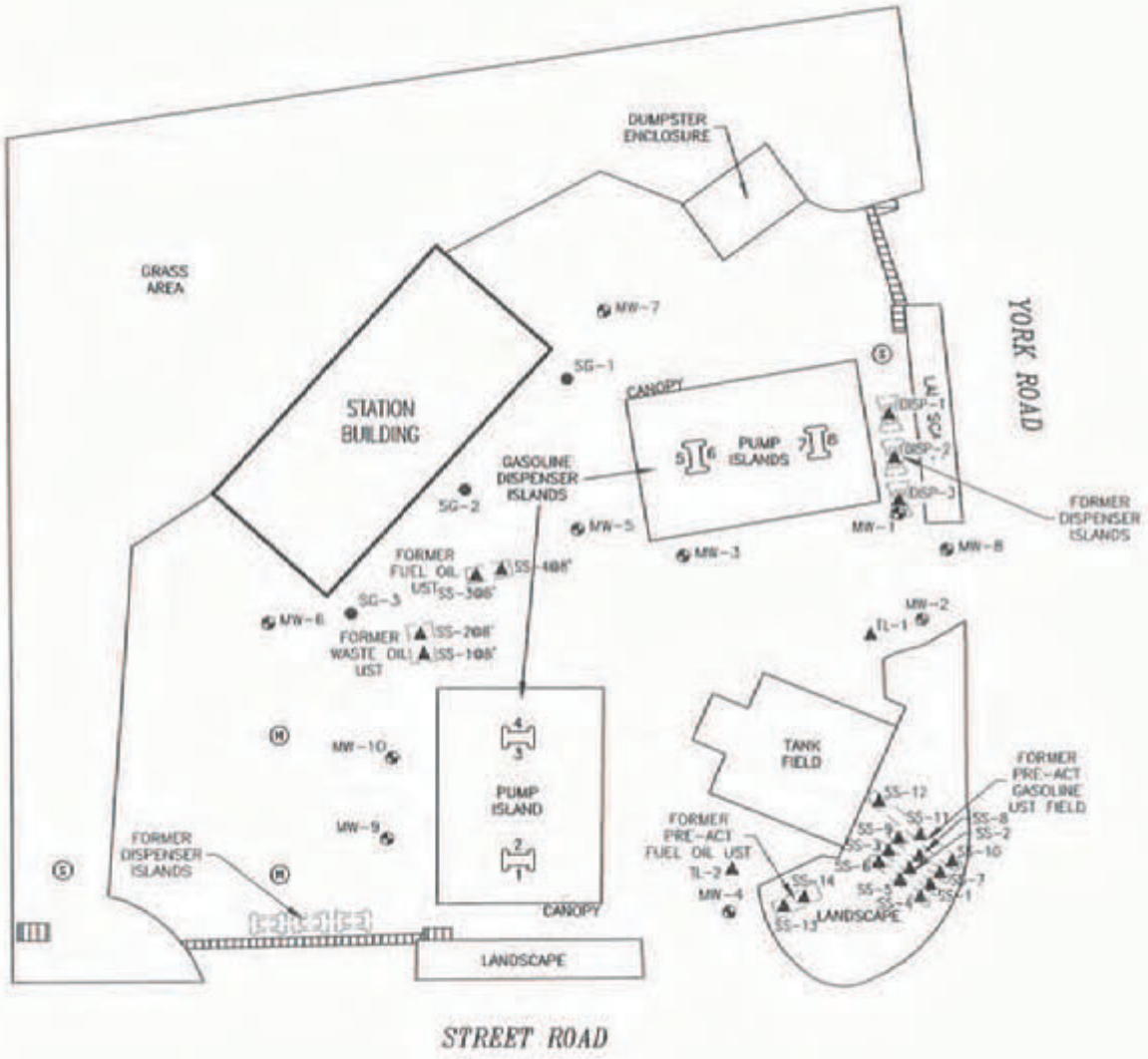
LEGEND

- MONITORING WELL
- SEWER MANHOLE
- MANHOLE
- STORM DRAINAGE
- SOIL GAS SURVEY POINT

DRAFTED BY: TP (EXTON)	SITE MAP
CHECKED BY: KLS	SUNOCO STATION #0363-5430 610 YORK ROAD WARMINSTER, PENNSYLVANIA
REVIEWED BY: JLO	Groundwater & Environmental Services, Inc. 440 CREAMERY WAY, SUITE 500, EXTON, PA 19341
NORTH	SCALE IN FEET: 0 30 / DATE: 08-19-09 / FIGURE: 2



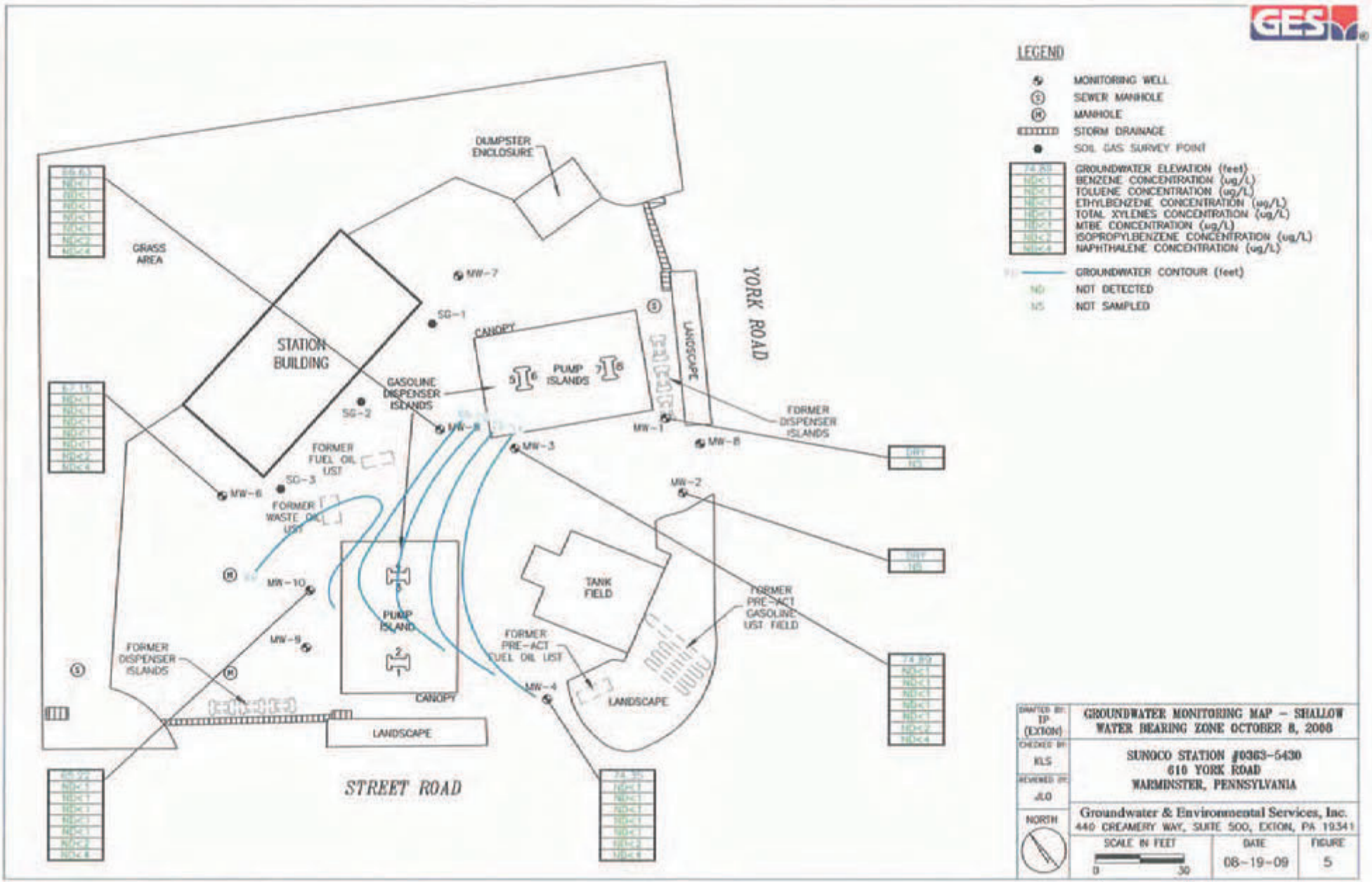
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REVIEWED BY: JLO	Groundwater & Environmental Services, Inc. 440 CREAMERY WAY, SUITE 500, EXTON, PA 19341
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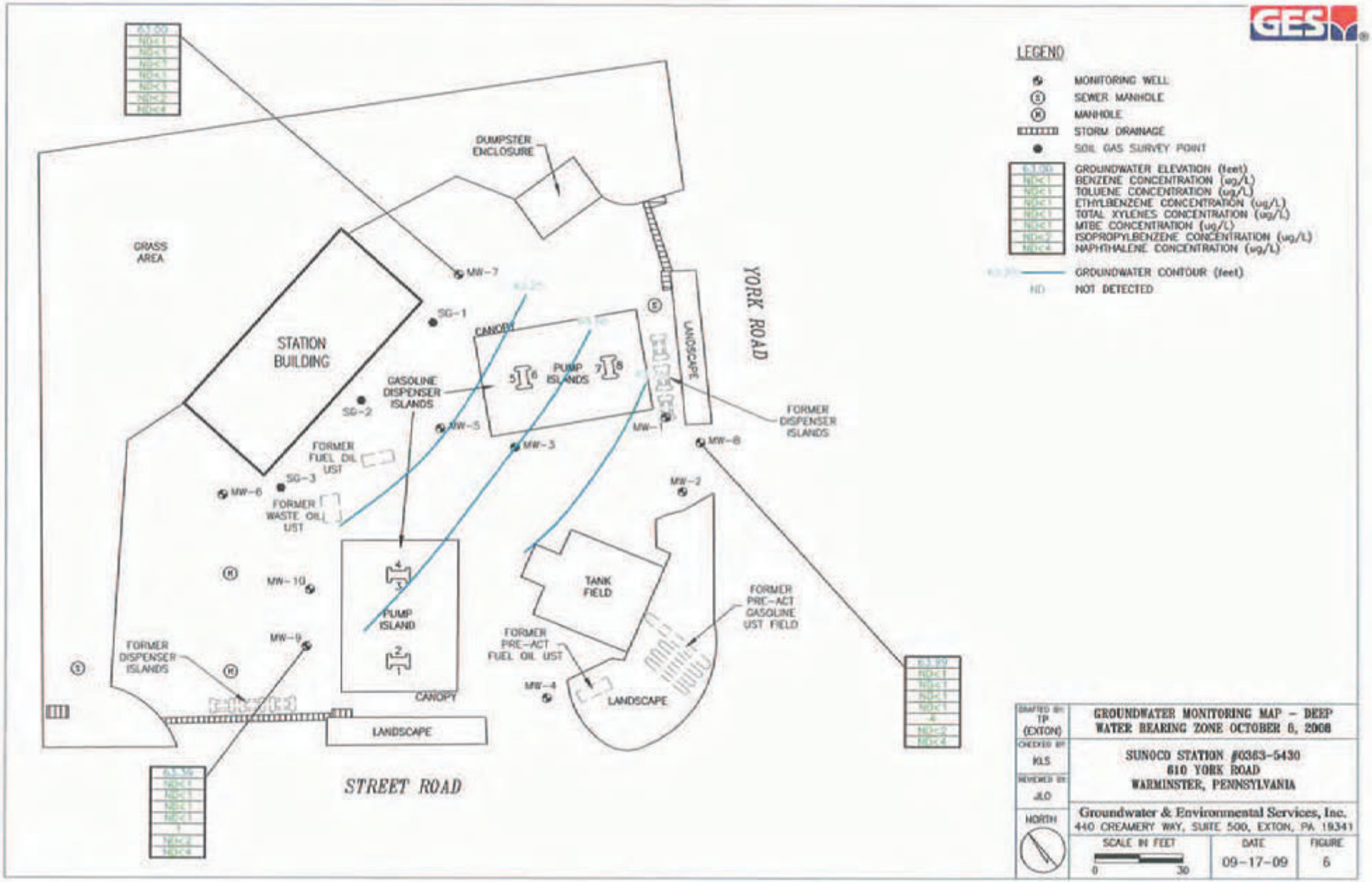


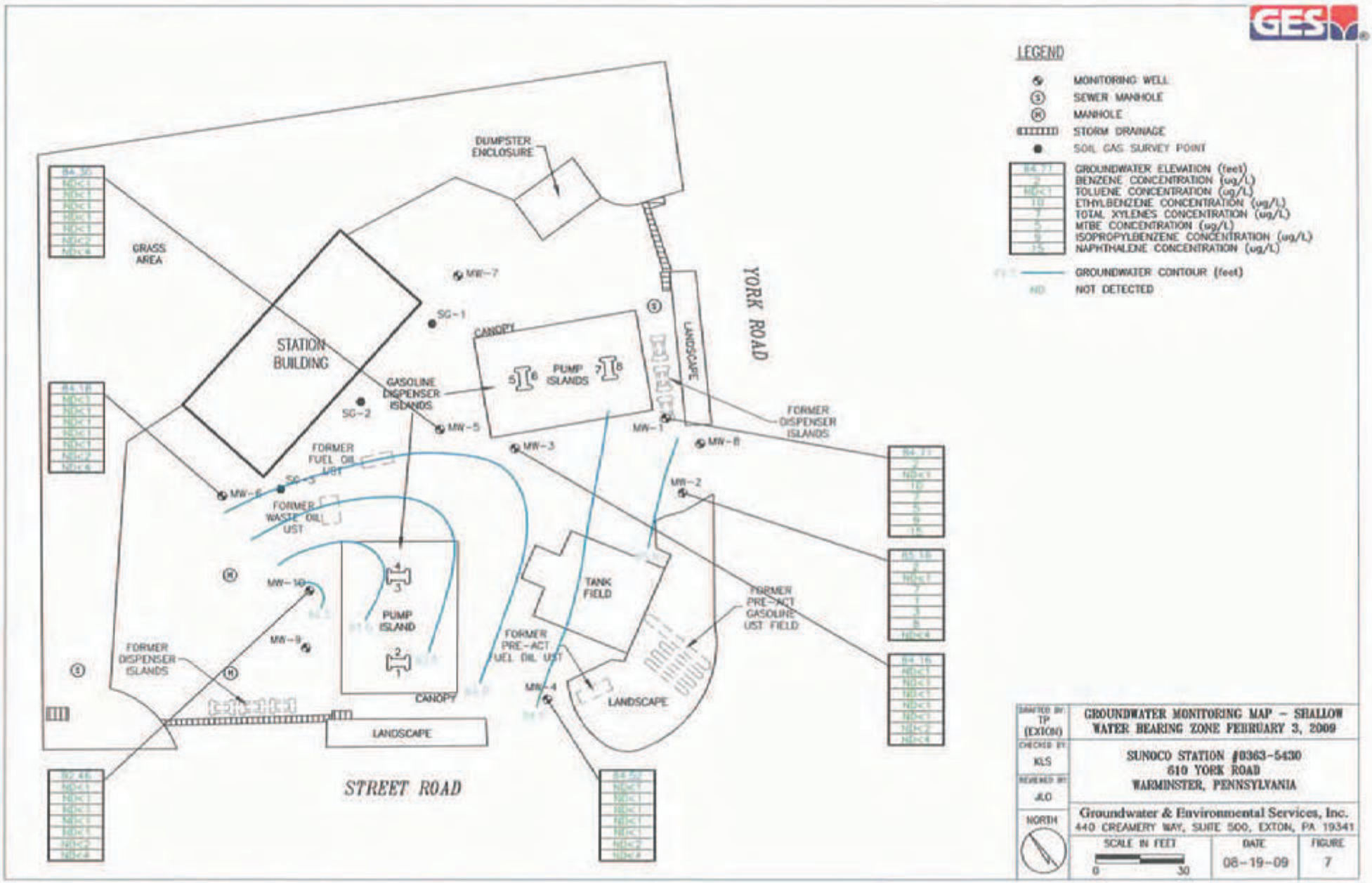
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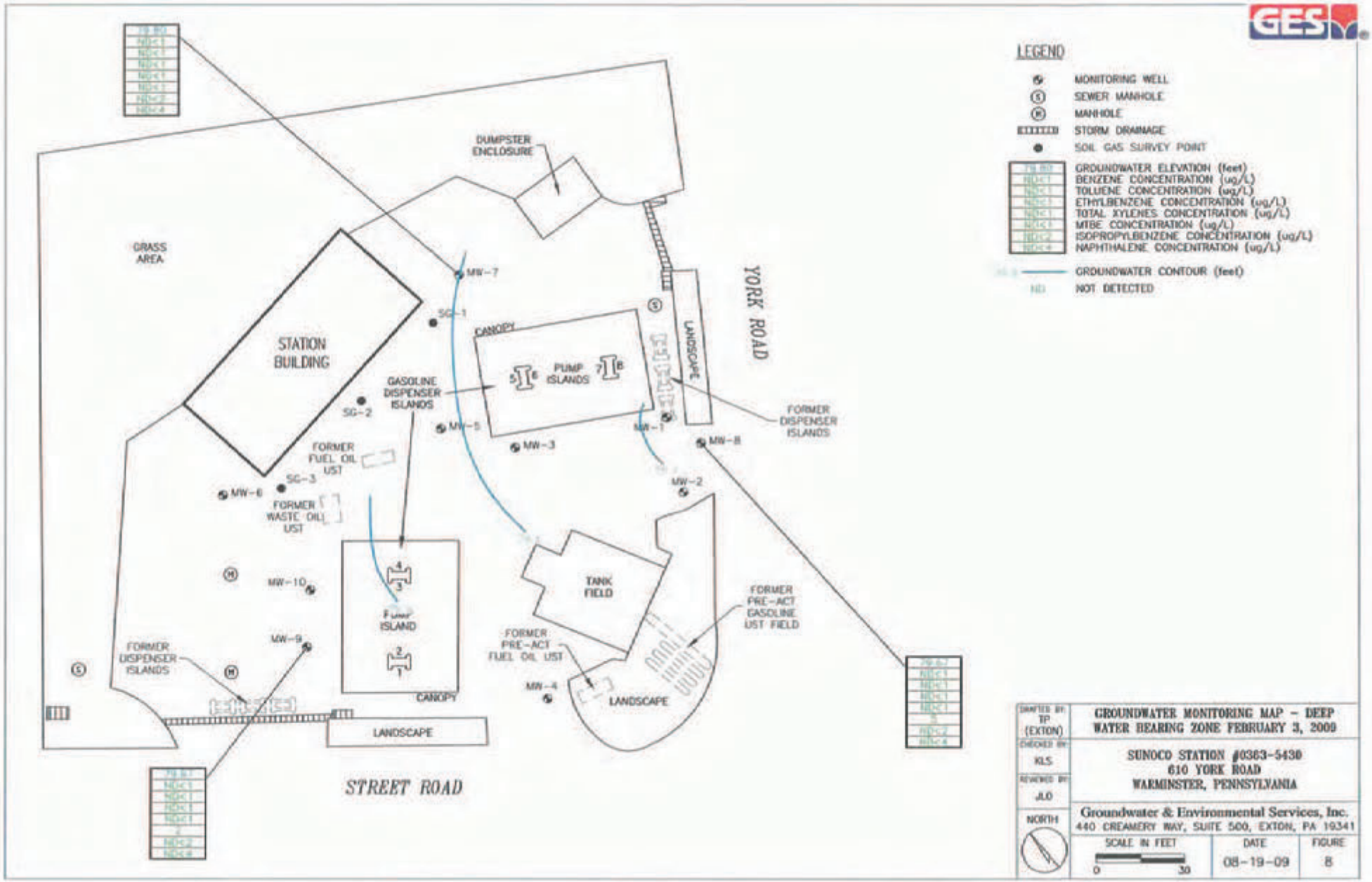
- MONITORING WELL
- SEWER MANHOLE
- MANHOLE
- STORM DRAINAGE
- SOIL GAS SURVEY POINT
- UST CLOSURE SOIL SAMPLE

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CHECKED BY: KLS	SUNOCO STATION #0363-5430 610 YORK ROAD WARMINSTER, PENNSYLVANIA
REVIEWED BY: JLO	Groundwater & Environmental Services, Inc. 440 CREAMERY WAY, SUITE 500, EXTON, PA 19341
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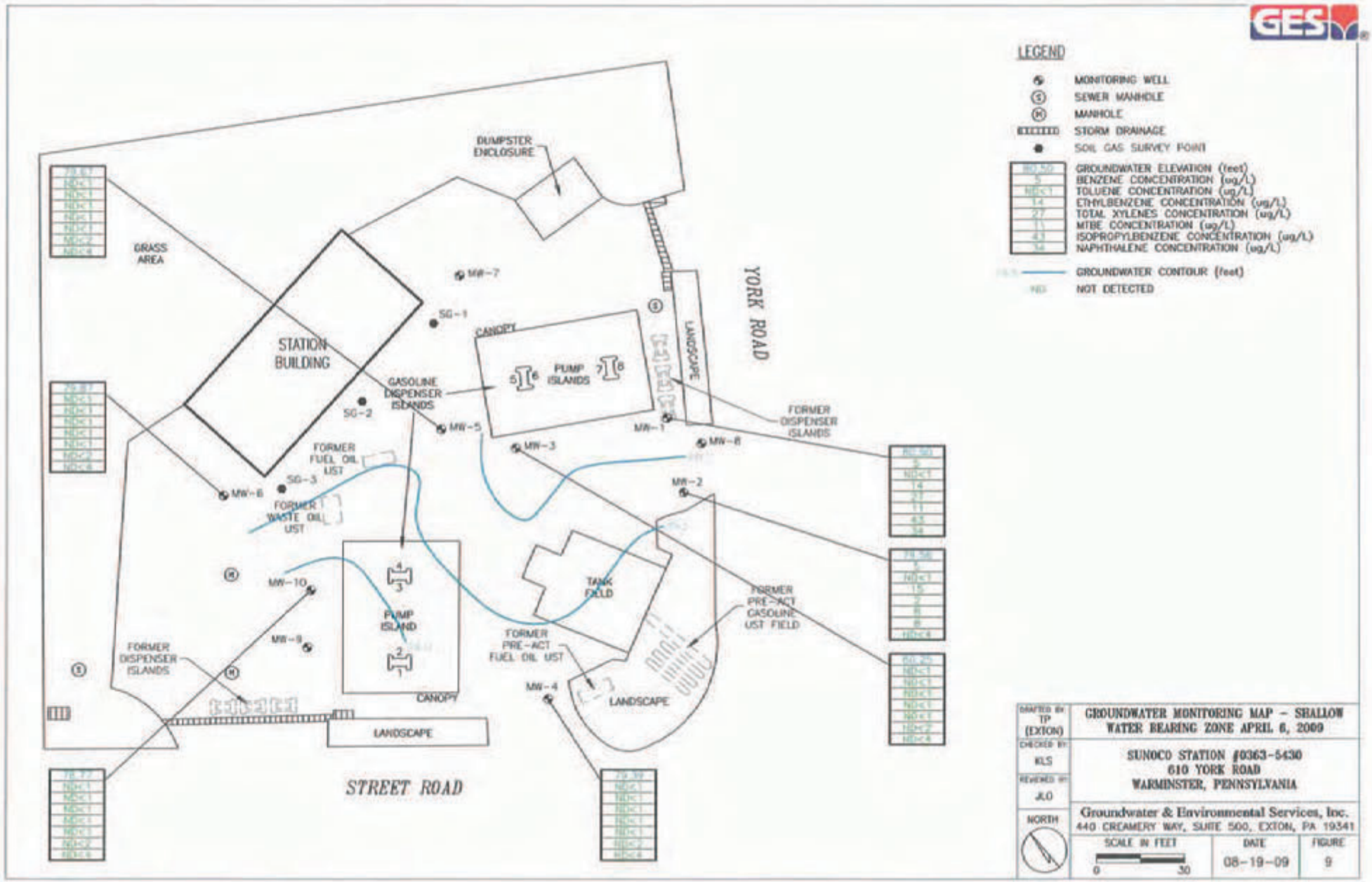

LEGEND
MONITORING WELL
SEWER MANHOLE
MANHOLE
STORM DRAINAGE
SOIL GAS SURVEY POINT
GROUNDWATER ELEVATION (feet)
BENZENE CONCENTRATION (ug/L)
TOLUENE CONCENTRATION (ug/L)
ETHYLBENZENE CONCENTRATION (ug/L)
TOTAL XYLENES CONCENTRATION (ug/L)
MTBE CONCENTRATION (ug/L)
ISOPROPYLBENZENE CONCENTRATION (ug/L)
NAPHTHALENE CONCENTRATION (ug/L)
GROUNDWATER CONTOUR (feet)
ND NOT DETECTED
NS NOT SAMPLED
DUMPSTER ENCLOSURE
GRASS AREA
STATION BUILDING
MW-7
SG-1
CANOPY
PUMP ISLANDS
GASOLINE DISPENSER ISLANDS
SG-2
MW-8
MW-3
MW-1
MW-5
FORMER DISPENSER ISLANDS
YORK ROAD
LANDSCAPE
FORMER FUEL OIL UST
SG-3
MW-6
FORMER WASTE OIL UST
MW-2
MW-10
TANK FIELD
FORMER PRE-ACT GASOLINE UST FIELD
PUMP ISLAND
MW-9
FORMER PRE-ACT FUEL OIL UST
MW-4
FORMER DISPENSER ISLANDS
CANOPY
LANDSCAPE
LANDSCAPE
STREET ROAD
DRAFTED BY: TP (EXTON)
CHECKED BY: KLS
REVIEWED BY: JLO
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GROUNDWATER MONITORING MAP - SHALLOW WATER BEARING ZONE OCTOBER 8, 2008
SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PENNSYLVANIA
Groundwater & Environmental Services, Inc.
440 CREAMERY WAY, SUITE 500, EXTON, PA 19341
SCALE IN FEET
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DATE
08-19-09
FIGURE
5

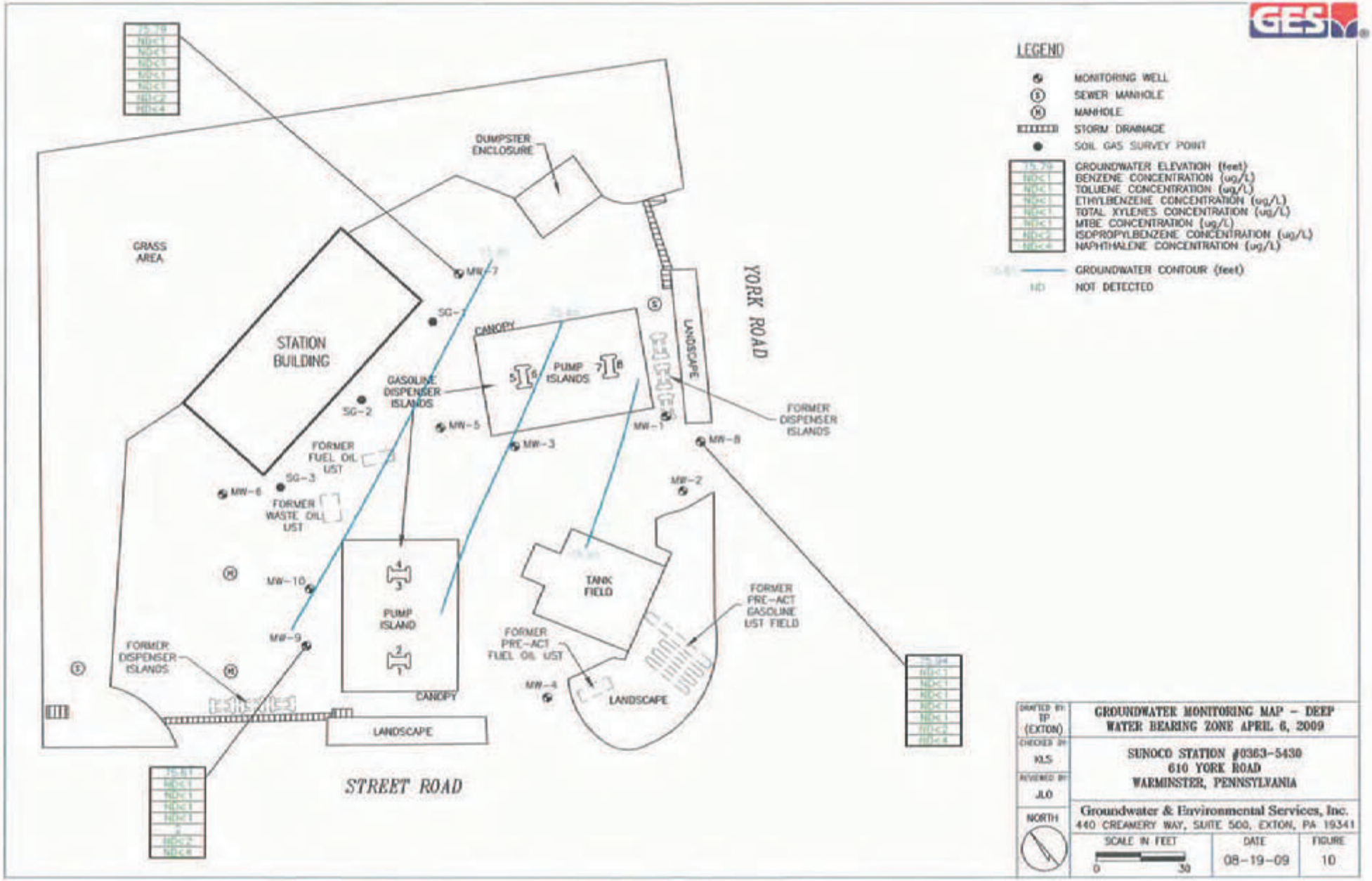

LEGEND
MONITORING WELL
SEWER MANHOLE
MANHOLE
STORM DRAINAGE
SOIL GAS SURVEY POINT
GROUNDWATER ELEVATION (feet)
BENZENE CONCENTRATION (ug/L)
TOLUENE CONCENTRATION (ug/L)
ETHYLBENZENE CONCENTRATION (ug/L)
TOTAL XYLENES CONCENTRATION (ug/L)
MTBE CONCENTRATION (ug/L)
ISOPROPYLBENZENE CONCENTRATION (ug/L)
NAPHTHALENE CONCENTRATION (ug/L)
GROUNDWATER CONTOUR (feet)
ND NOT DETECTED
DUMPSTER ENCLOSURE
GRASS AREA
STATION BUILDING
MW-7
SG-1
CANOPY
PUMP ISLANDS
GASOLINE DISPENSER ISLANDS
SG-2
MW-5
MW-3
FORMER FUEL OIL UST
SG-3
MW-6
FORMER WASTE OIL UST
MW-10
PUMP ISLAND
MW-9
FORMER DISPENSER ISLANDS
CANOPY
LANDSCAPE
YORK ROAD
LANDSCAPE
FORMER DISPENSER ISLANDS
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TANK FIELD
FORMER PRE-ACT GASOLINE UST FIELD
FORMER PRE-ACT FUEL OIL UST
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LANDSCAPE
STREET ROAD
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CHECKED BY: KLS
REVIEWED BY: JLO
NORTH
GROUNDWATER MONITORING MAP - DEEP WATER BEARING ZONE OCTOBER 6, 2008
SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PENNSYLVANIA
Groundwater & Environmental Services, Inc.
440 CREAMERY WAY, SUITE 500, EXTON, PA 19341
SCALE IN FEET
0
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DATE
09-17-09
FIGURE
6


LEGEND
MONITORING WELL
SEWER MANHOLE
MANHOLE
STORM DRAINAGE
SOIL GAS SURVEY POINT
GROUNDWATER ELEVATION (feet)
BENZENE CONCENTRATION (ug/L)
TOLUENE CONCENTRATION (ug/L)
ETHYLBENZENE CONCENTRATION (ug/L)
TOTAL XYLENES CONCENTRATION (ug/L)
MTBE CONCENTRATION (ug/L)
ISOPROPYLBENZENE CONCENTRATION (ug/L)
NAPHTHALENE CONCENTRATION (ug/L)
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ND NOT DETECTED
DUMPSTER ENCLOSURE
GRASS AREA
STATION BUILDING
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PUMP ISLANDS
GASOLINE DISPENSER ISLANDS
LANDSCAPE
YORK ROAD
FORMER DISPENSER ISLANDS
FORMER FUEL OIL UST
FORMER WASTE OIL UST
TANK FIELD
FORMER PRE-ACT GASOLINE UST FIELD
FORMER PRE-ACT UEL OIL UST
FORMER DISPENSER ISLANDS
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MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
MW-9
MW-10
SG-1
SG-2
SG-3
GROUNDWATER MONITORING MAP – SHALLOW WATER BEARING ZONE FEBRUARY 3, 2009
SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PENNSYLVANIA
Groundwater & Environmental Services, Inc.
440 CREAMERY WAY, SUITE 500, EXTON, PA 19341
DRAFTED BY: TP (EXTON)
CHECKED BY: KLS
REVIEWED BY: JLO
NORTH
SCALE IN FEET 0 30
DATE 08-19-09
FIGURE 7

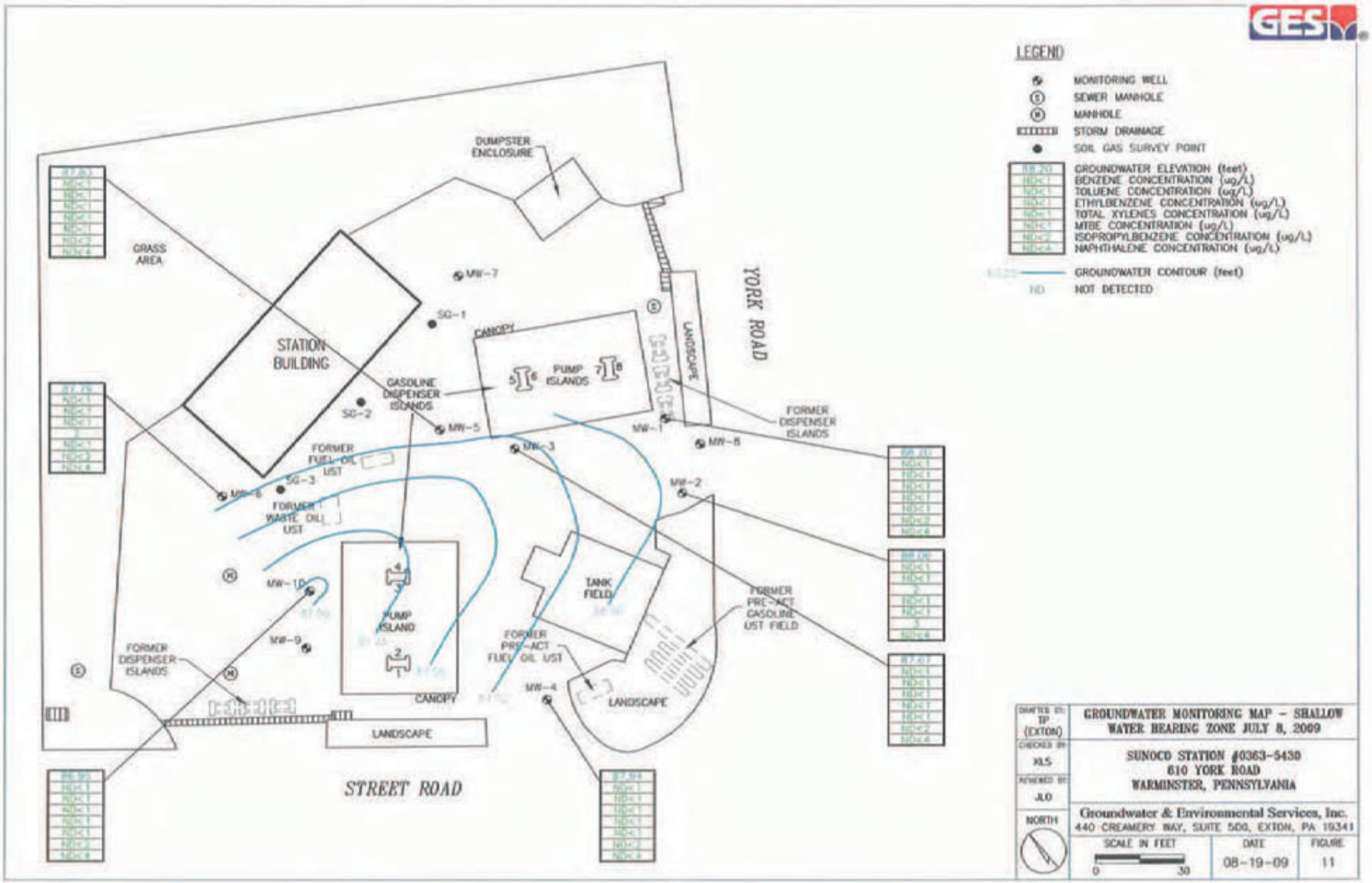


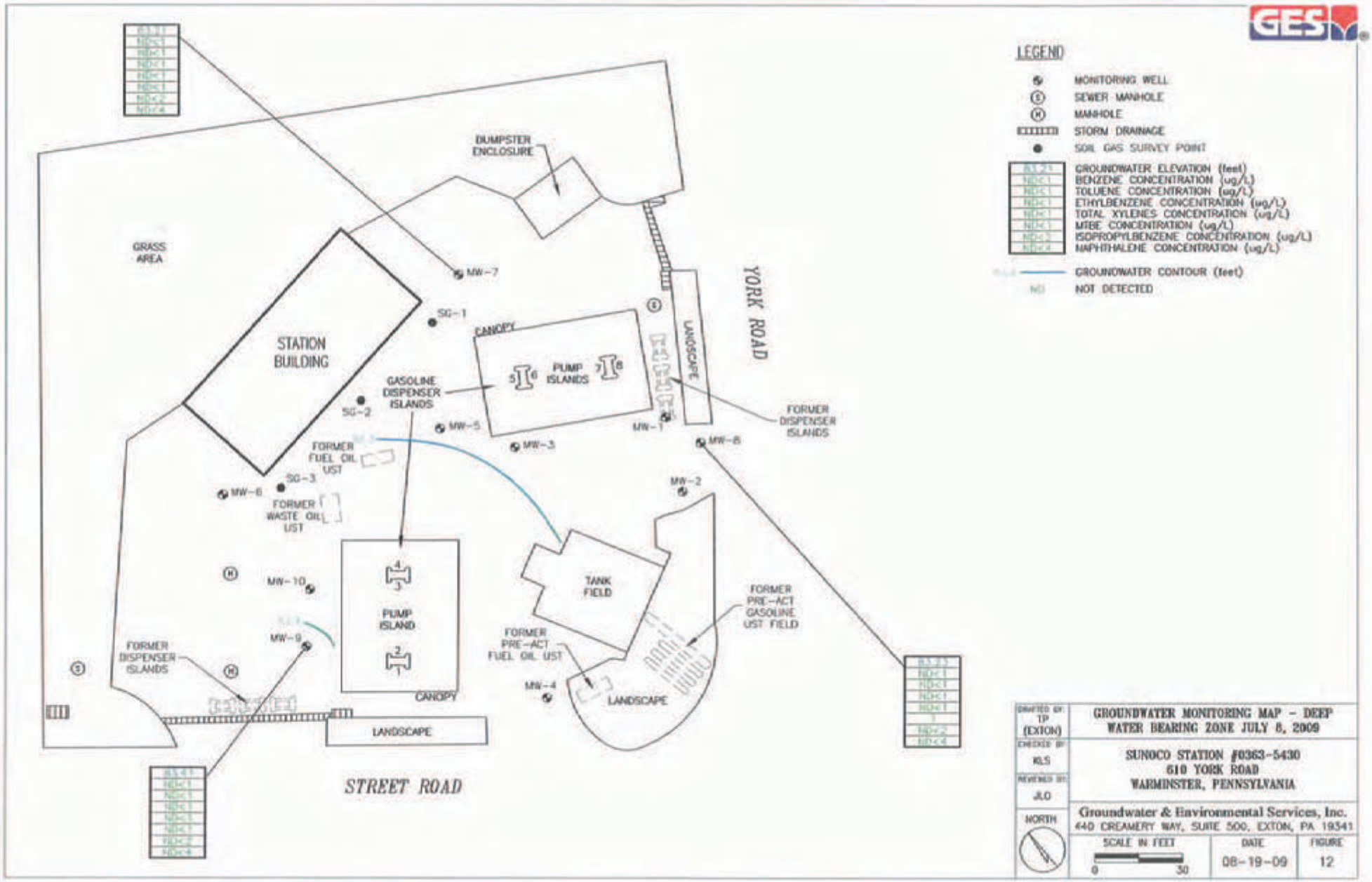
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REVIEWED BY: JLO	Groundwater & Environmental Services, Inc. 440 CREAMERY WAY, SUITE 500, EXTON, PA 19341
NORTH	SCALE IN FEET: 0 30 / DATE: 08-19-09 / FIGURE: 8


LEGEND
MONITORING WELL
SEWER MANHOLE
MANHOLE
STORM DRAINAGE
SOIL GAS SURVEY POINT
GROUNDWATER ELEVATION (feet)
BENZENE CONCENTRATION (ug/L)
TOLUENE CONCENTRATION (ug/L)
ETHYLBENZENE CONCENTRATION (ug/L)
TOTAL XYLENES CONCENTRATION (ug/L)
MTBE CONCENTRATION (ug/L)
ISOPROPYLBENZENE CONCENTRATION (ug/L)
NAPHTHALENE CONCENTRATION (ug/L)
GROUNDWATER CONTOUR (feet)
NOT DETECTED
DUMPSTER ENCLOSURE
GRASS AREA
STATION BUILDING
CANOPY
PUMP ISLANDS
GASOLINE DISPENSER ISLANDS
LANDSCAPE
YORK ROAD
FORMER DISPENSER ISLANDS
FORMER FUEL OIL UST
FORMER WASTE OIL UST
TANK FIELD
FORMER PRE-ACT GASOLINE UST FIELD
FORMER PRE-ACT FUEL OIL UST
FORMER DISPENSER ISLANDS
PUMP ISLAND
CANOPY
LANDSCAPE
LANDSCAPE
STREET ROAD
MW-1
MW-2
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MW-7
MW-8
MW-9
MW-10
SG-1
SG-2
SG-3
DRAFTED BY TP (EXTON)
CHECKED BY KLS
REVIEWED BY JLO
NORTH
GROUNDWATER MONITORING MAP - SHALLOW WATER BEARING ZONE APRIL 6, 2009
SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PENNSYLVANIA
Groundwater & Environmental Services, Inc.
440 CREAMERY WAY, SUITE 500, EXTON, PA 19341
SCALE IN FEET
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DATE
08-19-09
FIGURE
9

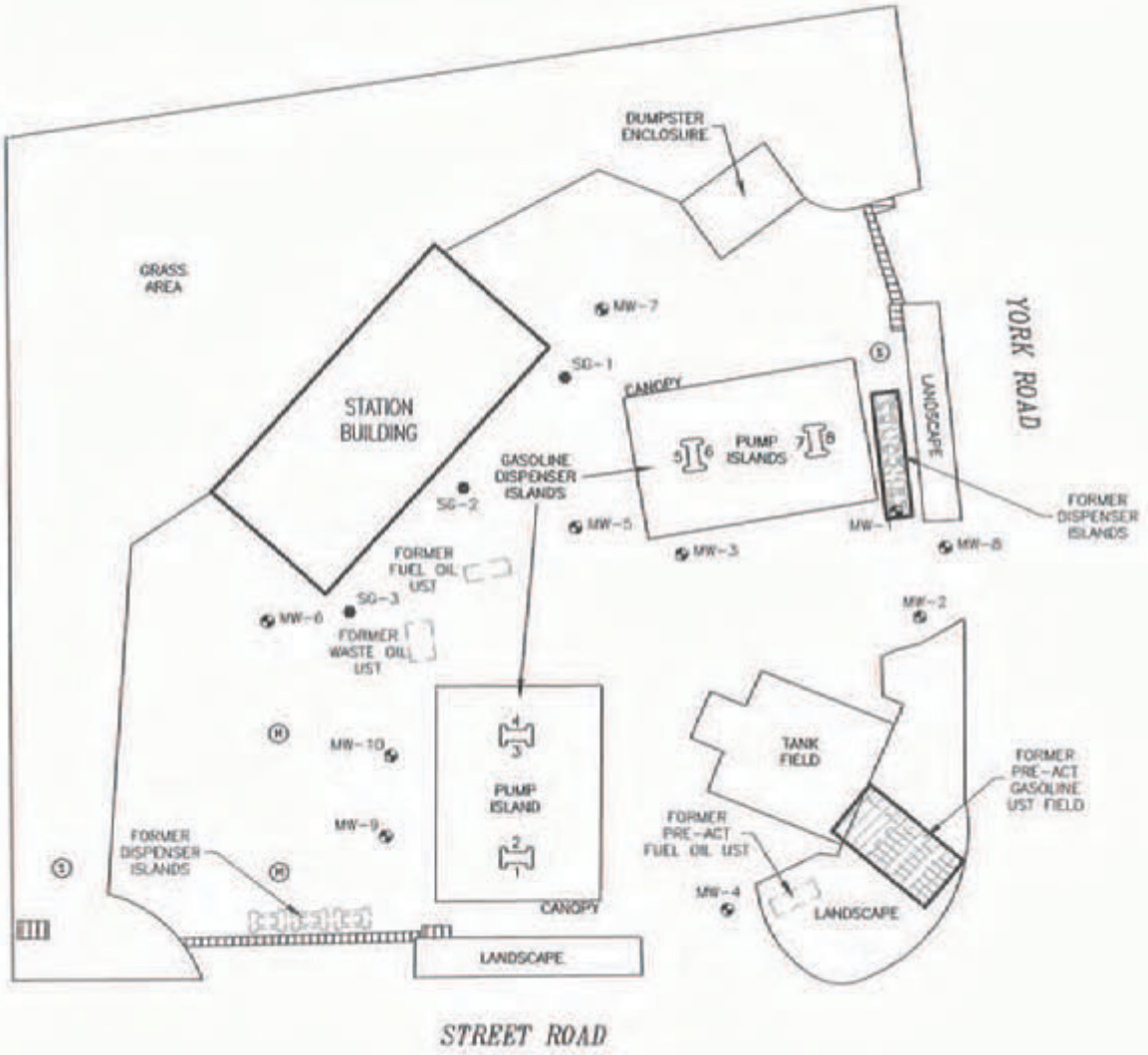


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REVIEWED BY: JLO	Groundwater & Environmental Services, Inc. 440 CREAMERY WAY, SUITE 500, EXTON, PA 19341
NORTH	SCALE IN FEET: 0 30 / DATE: 08-19-09 / FIGURE: 10


LEGEND
MONITORING WELL
SEWER MANHOLE
MANHOLE
STORM DRAINAGE
SOIL GAS SURVEY POINT
GROUNDWATER ELEVATION (feet)
BENZENE CONCENTRATION (ug/L)
TOLUENE CONCENTRATION (ug/L)
ETHYLBENZENE CONCENTRATION (ug/L)
TOTAL XYLENES CONCENTRATION (ug/L)
MTBE CONCENTRATION (ug/L)
ISOPROPYLBENZENE CONCENTRATION (ug/L)
NAPHTHALENE CONCENTRATION (ug/L)
GROUNDWATER CONTOUR (feet)
ND NOT DETECTED
DUMPSTER ENCLOSURE
GRASS AREA
STATION BUILDING
CANOPY
PUMP ISLANDS
GASOLINE DISPENSER ISLANDS
LANDSCAPE
YORK ROAD
FORMER DISPENSER ISLANDS
FORMER FUEL OIL UST
FORMER WASTE OIL UST
TANK FIELD
FORMER PRE-ACT GASOLINE UST FIELD
FORMER PRE-ACT FUEL OIL UST
FORMER DISPENSER ISLANDS
PUMP ISLAND
CANOPY
LANDSCAPE
LANDSCAPE
STREET ROAD
MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
MW-9
MW-10
SG-1
SG-2
SG-3
DRAFTED BY: TP (EXTON)
CHECKED BY: KLS
REVIEWED BY: JLO
NORTH
GROUNDWATER MONITORING MAP - SHALLOW WATER BEARING ZONE JULY 8, 2009
SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PENNSYLVANIA
Groundwater & Environmental Services, Inc.
440 CREAMERY WAY, SUITE 500, EXTON, PA 19341
SCALE IN FEET
0
30
DATE
08-19-09
FIGURE
11



DRAFTED BY: TP (EXTON)	GROUNDWATER MONITORING MAP - DEEP WATER BEARING ZONE JULY 8, 2009
CHECKED BY: KLS	SUNOCO STATION #0363-5430 610 YORK ROAD WARMINSTER, PENNSYLVANIA
REVIEWED BY: JLO	Groundwater & Environmental Services, Inc. 440 CREAMERY WAY, SUITE 500, EXTON, PA 19341
NORTH	SCALE IN FEET: 0 30 / DATE: 08-19-09 / FIGURE: 12



LEGEND

- MONITORING WELL
- SEWER MANHOLE
- MANHOLE
- STORM DRAINAGE
- SOIL GAS SURVEY POINT
- SOURCE AREA LOCATION

DRAFTED BY: TP (EXTON)	SOURCE AREA MAP		
CHECKED BY: KLS	SUNOCO STATION #0363-5430 610 YORK ROAD WARMINSTER, PENNSYLVANIA		
REVIEWED BY: JLO	Groundwater & Environmental Services, Inc. 440 CREAMERY WAY, SUITE 500, EXTON, PA 19341		
NORTH	SCALE IN FEET 0 30	DATE 08-19-09	FIGURE 13

Historical Maximum



July 2009



Note: Benzene concentrations above 5 µg/L were not observed.

DRAWN BY: MJL	Benzene Concentratioes Historical Maximum and July 2009
CHECKED BY: KLS	Sunoco Station #0363-5430 610 Old York Road Warminster, Pennsylvania
REVIEWED BY: JLO	Groundwater & Environmental Services, Inc. 440 Creamery Way, Suite 500, Exton, PA 19341
NORTH	SCALE IN FEET: 0 50 / DATE: 9-17-09 / FIGURE: 14

Historical Maximum



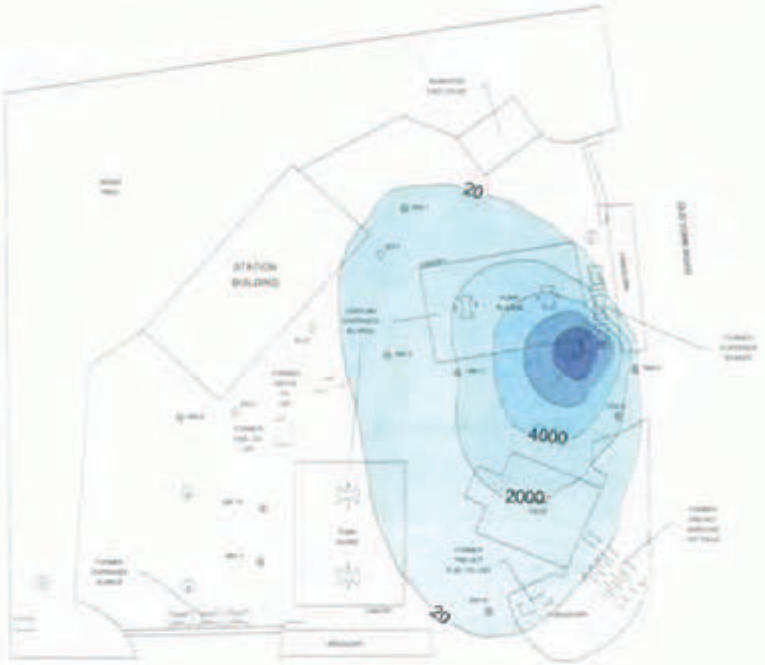
July 2009



Note: Ethylbenzene concentrations above 700 µg/L were not observed.

DRAFTED BY: MJL	Ethylbenzene Concentrations Historical Maximum and July 2009
CHECKED BY: KLS	Sunoco Station #0363-5430 610 Old York Road Warminster, Pennsylvania
REVIEWED BY: JLO	Groundwater & Environmental Services, Inc. 440 Creamery Way, Suite 500, Exton, PA 19341
NORTH	SCALE IN FEET: 0 50 / DATE: 9-17-09 / FIGURE: 15

Historical Maximum



July 2009



Note: MTBE concentrations above 20 µg/L were not observed.

DRAFTED BY: MJL	MTBE Concentrations Historical Maximum and July 2009
CHECKED BY: KLS	Sunoco Station #0363-5430 610 Old York Road Warminster, Pennsylvania
REVIEWED BY: JLO	Groundwater & Environmental Services, Inc. 440 Creamery Way, Suite 500, Exton, PA 19341
NORTH	SCALE IN FEET: 0 30 / DATE: 9-17-09 / FIGURE: 16

Historical Maximum



July 2009



Naphthalene Concentration (µg/L)

300

200

100

Note: Naphthalene concentrations above 100 µg/L were not observed

DRAFTED BY: MJL	Naphthalene Concentrations Historical Maximum and July 2009
CHECKED BY: KLS	Sunoco Station #0363-5430 610 Old York Road Warminster, Pennsylvania
REVIEWED BY: JLO	Groundwater & Environmental Services, Inc. 440 Creamery Way, Suite 500, Exton, PA 19341
NORTH	SCALE IN FEET: 0 50 / DATE: 9-17-09 / FIGURE: 17

TABLE 1
HISTORICAL SOIL ANALYTICAL DATA SUMMARY

SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PA

Sample ID		Depth (ft)	Sample Date	Benzene (µg/kg)	Toluene (µg/kg)	Ethylbenzene (µg/kg)	Total Xylenes (µg/kg)	MTBE (µg/kg)	Isopropyl benzene (µg/kg)	Naphthalene (µg/kg)	TPH-GRO (mg/kg)	TPH (mg/kg)
UST CLOSURE ACTIVITIES, 1995/1996	SS-1	8	12/28/1995	ND<6	<6	ND<6	<28	NA	NA	NA	NA	40
	SS-2	8	12/28/1995	ND<6	<6	ND<6	ND<28	NA	NA	NA	NA	570
	SS-3	8	12/28/1995	ND<6	<6	ND<6	<17	NA	NA	NA	NA	480
	SS-4	8	12/28/1995	ND<6	<6	ND<6	<17	NA	NA	NA	NA	180
	DISP-1	1	2/8/1996	100	3,600	3,000	21,000	NA	NA	NA	200	NA
	DISP-2	1	2/8/1996	**700**	51,000	41,000	250,000	NA	NA	NA	1,300	NA
	DISP-3	1	2/8/1996	260	14,000	10,000	63,000	NA	NA	NA	110	NA
	FL-1	1	2/13/1996	ND<5	ND<5	ND<5	ND<16	NA	NA	NA	ND<1	NA
	FL-2	1	2/13/1996	ND<100	800	2,500	19,000	NA	NA	NA	150	NA
	SS-1	12	2/27/1996	**1,000**	23,000	34,000	180,000	NA	NA	NA	1,100	NA
	SS-2	12	2/27/1996	**1,900**	33,000	26,000	160,000	NA	NA	NA	1,300	NA
	SS-3	12	2/27/1996	45	270	120	830	NA	NA	NA	6	NA
	SS-4	12	2/27/1996	ND<100	300	3,400	17,000	NA	NA	NA	200	NA
	SS-5	12	2/27/1996	<6	<6	<6	<19	NA	NA	NA	ND<1	NA
	SS-6	12	2/27/1996	31	450	900	2,900	NA	NA	NA	28	NA
	SS-7	12	2/27/1996	**1,900**	10,000	24,000	140,000	NA	NA	NA	1100	NA
	SS-8	12	2/27/1996	**ND<600**	800	6,400	21,000	NA	NA	NA	400	NA
	SS-9	12	2/27/1996	**<700**	<700	11,000	20,000	NA	NA	NA	1,300	NA
	SS-10	12	2/27/1996	**1,000**	11,000	12,000	85,000	NA	NA	NA	800	NA
	SS-11	12	2/27/1996	**ND<600**	4,600	15,000	93,000	NA	NA	NA	700	NA
	SS-12	12	2/27/1996	ND<100	500	4,200	9,800	NA	NA	NA	400	NA
	SS-13	8	2/27/1996	NA	NA	NA	NA	NA	NA	NA	NA	10
	SS-14	8	2/27/1996	NA	NA	NA	NA	NA	NA	NA	NA	90
PADEP Statewide Health Standard for Unsaturated and Saturated Soils in a Non-Residential, Used Aquifer				**500**	**100,000**	**70,000**	**1,000,000**	**2,000**	**1,600,000 / 250,000**	**25,000 / 10,000**	**N/A**	**N/A**

TABLE 1
HISTORICAL SOIL ANALYTICAL DATA SUMMARY

SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PA

Sample ID		Depth (ft)	Sample Date	Benzene (µg/kg)	Toluene (µg/kg)	Ethylbenzene (µg/kg)	Total Xylenes (µg/kg)	MTBE (µg/kg)	Isopropyl benzene (µg/kg)	Naphthalene (µg/kg)	TPH-GRO (mg/kg)	TPH (mg/kg)
Monitoring Well Installation, 1996	MW-1	5-7	3/13/1996	ND<6	ND<6	ND<6	ND<18	NA	NA	NA	ND<1	NA
	MW-2	5-7	3/13/1996	ND<6	<6	<6	<18	NA	NA	NA	ND<1	NA
	MW-3	5-7	3/13/1996	<6	<6	<6	<18	NA	NA	NA	ND<1	NA
Monitoring Well Installation, 1997	MW-4	-	10/23/1997	<6	<6	<6	<17	<20	<10	<20	NA	NA
Monitoring Well Installation, 2004	MW-5	25	10/18/2004	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5	NA	NA
	MW-6	15	10/18/2004	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5	NA	NA
Monitoring Well Installation, 2007	MW-8	5	2/22/2007	**<530**	<530	1,200	8,200	<530	<530	3,700	NA	NA
	MW-8	24	2/22/2007	**<520**	<520	<520	<520	<520	<520	<520	NA	NA
	MW-9	5	2/23/2007	<440	<440	<440	<440	<440	<440	720	NA	NA
	MW-9	15	2/23/2007	<480	<480	<480	<480	<480	<480	<480	NA	NA
	MW-10	15	2/23/2007	<480	<480	<480	<480	<480	<480	<480	NA	NA
PADEP Statewide Health Standard for Unsaturated and Saturated Soils in a Non-Residential, Used Aquifer				**500**	**100,000**	**70,000**	**1,000,000**	**2,000**	**1,600,000 / 250,000**	**25,000 / 10,000**	**N/A**	**N/A**

All results reported on a dry weight basis except samples SS-1 and SS-2 (collected on 2/23/1996). These samples were reported on an as received basis, due to laboratory error.

ND: Not Detected

NA: Not Analyzed

N/A: Not Applicable

MTBE: Methyl tert Butyl Ether

TPH: Total Petroleum Hydrocarbons

GRO: Gasoline Range Organics

mg/kg: milligrams per kilogram

µg/kg: micrograms per kilogram

TABLE 2
SOIL GAS SURVEY ANALYTICAL DATA SUMMARY

SUNOCO STATION # 0363-5430
610 YORK ROAD WARMINSTER, PA

Date	Sample ID	Sample Depth (ft)	Benzene (mg/m^3)	Toluene (mg/m^3)	Ethylbenzene (mg/m^3)	Total Xylenes (mg/m^3)	MTBE (mg/m^3)	Isopropyl benzene (mg/m^3)
3/8/2007	SG-1	4'	0.0042	0.0260	0.0086	0.0027	<0.0036	<0.0049
3/8/2007	SG-2	4'	<0.0032	0.0012	<0.0043	0.0043	0.0140	<0.0049
3/8/2007	SG-3	4'	<0.0032	0.0096	<0.0043	0.016	<0.0036	<0.0049
12/14/2007	SG-1	4'	<0.0032	0.0047	<0.0043	<0.0043	<0.0036	<0.0049
12/14/2007	SG-2	4'	<0.0032	<0.0038	<0.0043	0.013	0.0066	<0.0049
12/14/2007	SG-3	4'	<0.0032	0.0064	<0.0043	<0.0043	0.0038	<0.0049
PADEP Residential Indoor Air Criteria			**0.27**	**56**	**1.9**	**14**	**8.1**	**54**
PADEP Non-Residential Indoor Air Criteria			**1.1**	**120**	**7.3**	**30**	**31**	**110**
EPA Region III Risk-Based Concentration for Indoor Air			**0.22**	**42**	**110**	**730**	**310**	**40**

ND: Not Detected (# is Method Detection Limit)
MTBE: Methyl *tert*-butyl ether
mg/m^3: milligrams per cubic meter
ppmv: parts per million per volume
MSC_{SG}: medium specific concentration of soil gas (mg/m^3)
MSC_{IAQ}: medium specific concentration of indoor air quality (mg/m^3)
TF: transfer factor from soil gas to indoor air quality = 0.01
X ppm = (Y mg/m^3)(24.45)/(molecular weight)
Example for Benzene:
X (ppm) = (0.27 mg/m3)(24.45)/78.11
X = 0.08
$MSC_{SG} = MSC_{IAQ}/TF$

NOC = Not of concern

*VP-3 had to be sampled on a separate day due to a defective summa canister on 3/1/2007.

TABLE 3
HISTORICAL GROUNDWATER MONITORING DATA SUMMARY

SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PA

Monitoring Well	Date	Top of Casing (ft)	Depth to Water (ft)	GW Elevation (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Isopropyl Benzene (µg/L)	Naphthalene (µg/L)
MSCs for Used, Non-Res. Aquifer					5	1,000	700	10,000	20	2,300	100
MW-1	03/23/1996	96.79	8	88.79	ND< 1	ND< 1	ND	2	NA	NA	NA
	09/09/1996	96.79	12.5	84.29	**13**	ND< 10	340	1,060	**240**	NA	**150**
	11/07/1996	96.79	10.12	86.67	ND< 1	ND< 1	ND< 1	3	2	NA	ND< 5
	02/14/1997	96.79	8.47	88.32	ND< 1	ND< 1	ND	ND< 3	**88**	NA	ND< 5
	05/07/1997	96.79	9.58	87.21	ND	ND	ND	ND< 3	ND< 1	NA	ND< 5
	09/15/1997	96.79	DRY	-	NS	NS	NS	NS	NS	NS	NS
	11/11/1997	96.79	DRY	-	NS	NS	NS	NS	NS	NS	NS
	03/17/1998	96.79	8.75	88.04	ND	ND	ND	ND	ND<1	NA	ND<5
	06/15/1998	96.79	5.18	91.61	ND	ND	ND	ND	ND< 5	ND	ND
	06/17/1999	96.79	DRY	-	NS	NS	NS	NS	NS	NS	NS
	02/15/2000	96.79	10.19	86.60	**184**	530	87.4	379	**12,800**	ND	ND
	05/12/2000	96.79	10.16	86.63	2.7	ND	ND	2.8	**242**	ND	2.5
	10/16/2000	96.79	13.83	82.96	**79.8**	589	368	1,020	**957**	40.6	**280**
	03/23/2001	96.79	7.63	89.16	ND	ND	ND	ND	1.9	ND	ND
	06/14/2001	96.79	10.84	85.95	**20.3**	35.5	96.2	130	**221**	13.3	41.6
	09/18/2001	96.79	DRY	-	NS	NS	NS	NS	NS	NS	NS
	12/26/2001	96.79	DRY	-	NS	NS	NS	NS	NS	NS	NS
	03/26/2002	96.79	DRY	-	NS	NS	NS	NS	NS	NS	NS
	06/14/2002	96.79	12.51	84.28	**9.7**	25.5	294	513	**103**	35.3	**214**
	09/13/2002	96.79	DRY	-	NS	NS	NS	NS	NS	NS	NS
	10/30/2002	96.79	16.46	80.33	**23.5**	29.2	377	691	**84.0**	72.5	**297**
	03/05/2003	96.79	9.01	87.78	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5
	05/08/2003	96.79	9.58	87.21	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0
	08/06/2003	96.79	11.99	84.80	<1.0	<5.0	9.5	<10	<5.0	<5.0	5.5
	10/24/2003	96.79	DRY	-	NS	NS	NS	NS	NS	NS	NS
	01/16/2004	96.79	9.14	87.65	<1.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0
	04/14/2004	96.79	7.97	88.82	<1.0	<5.0	<5.0	<10	**68**	<5.0	<5.0
	07/15/2004	96.79	14.67	82.12	**6.0**	8.0	170	380	**610**	42	**160**
	10/04/2004	97.77	12.55	85.22	2	ND<3	38	35	**43**	16	52
	01/13/2005	97.77	9.31	88.46	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5
	04/20/2005	97.77	8.52	89.25	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	07/15/2005	97.77	14.31	83.46	2.0	8.0	227	445	**57.4**	49.6	**241**
	09/07/2005	97.77	DRY	-	NS	NS	NS	NS	NS	NS	NS
	09/20/2005	97.77	DRY	-	NS	NS	NS	NS	NS	NS	NS
	10/28/2005	97.77	12.02	85.75	**83.4**	241	140	812	**6,330**	22.2	**136**
	02/10/2006	97.77	9.08	88.69	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	05/15/2006	97.77	18.96	78.81	NS	NS	NS	NS	NS	NS	NS
	08/18/2006	97.77	DRY	-	NS	NS	NS	NS	NS	NS	NS
	11/15/2006	97.77	9.56	88.21	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	03/30/2007	97.77	8.90	88.87	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	05/17/2007	97.77	9.28	88.49	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	08/02/2007	97.77	DRY	-	NS	NS	NS	NS	NS	NS	NS
	10/04/2007	97.77	DRY	-	NS	NS	NS	NS	NS	NS	NS
	01/28/2008	97.77	13.13	84.64	2	ND<1	58	24	12	27	36
	04/07/2008	97.77	9.43	88.34	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/01/2008	97.77	14.20	83.57	2	ND<1	22	4	7	9	13
	10/08/2008	97.77	DRY	-	NS	NS	NS	NS	NS	NS	NS
	02/03/2009	97.77	13.06	84.71	2	ND<1	10	7	5	9	15
	04/06/2009	97.77	17.27	80.50	5	ND<1	14	27	11	43	34
	07/08/2009	97.77	9.57	88.20	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4

TABLE 3
HISTORICAL GROUNDWATER MONITORING DATA SUMMARY

SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PA

Monitoring Well	Date	Top of Casing (ft)	Depth to Water (ft)	GW Elevation (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Isopropyl Benzene (µg/L)	Naphthalene (µg/L)
MSCs for Used, Non-Res, Aquifer					5	1,000	700	10,000	20	2,300	100
MW-2	03/23/1996	97.43	8.6	88.83	**280**	130	160	1,150	NA	NA	NA
	09/09/1996	97.43	13.25	84.18	**180**	5	180	140	**170**	NA	49
	11/07/1996	97.43	11.25	86.18	**74**	3	85	79	**74**	NA	39
	02/14/1997	97.43	9.33	88.10	**36**	6	35	67	15	NA	18
	05/07/1997	97.43	10.15	87.28	**55**	4	75	81	**26**	NA	19
	09/15/1997	97.43	23.2	74.23	**430**	13	410	340	**140**	NA	**200**
	11/11/1997	97.43	24.3	73.13	NS	NS	NS	NS	NS	NS	NS
	03/17/1998	97.43	9.35	88.08	**58**	2	100	160	**35**	NA	43
	06/15/1998	97.43	9.86	87.57	**91**	9	240	930	10	27	**120**
	06/17/1999	97.43	21.41	76.02	**87**	ND	160	7	**280**	18	30
	02/15/2000	97.43	11.04	86.39	**91.3**	1.4	242	94.5	**274**	37.6	84.4
	05/12/2000	97.43	10.73	86.70	**21.2**	ND	59.6	9.8	**161**	8.9	12.6
	10/16/2000	97.43	13.4	84.03	**70.4**	27.3	276	123	**359**	49.7	91.4
	03/23/2001	97.43	8.24	89.19	2.1	ND	10.5	ND	8.8	ND	ND
	06/14/2001	97.43	14.37	83.06	**45.8**	2.1	197	45.8	**113**	29.5	56.8
	09/18/2001	97.43	DRY	-	NS	NS	NS	NS	NS	NS	NS
	12/26/2001	97.43	DRY	-	NS	NS	NS	NS	NS	NS	NS
	03/26/2002	97.43	21.74	75.69	**192**	4.3	410	182	**164**	42.1	**104**
	06/14/2002	97.43	13.35	84.08	**35.7**	ND<2.5	173	57.3	**57.2**	29.2	**111**
	09/13/2002	97.43	23.55	73.88	**82.4**	2.6	268	55.5	**123**	43.1	**153**
	10/30/2002	97.43	18.93	78.50	**171**	4.9	**886**	291	**155**	113	**344**
	03/05/2003	97.43	9.96	87.47	**27**	ND<1	160	24	**24**	25	59
	05/08/2003	97.43	10.53	86.90	4.3	<1.0	29	<5.0	<5.0	<5.0	13
	08/06/2003	97.43	13.08	84.35	**13**	<5.0	43	<10	15	8.7	20
	10/24/2003	97.43	20.57	76.86	**54**	<1.6	320	86	**43**	44	**140**
	01/16/2004	97.43	9.72	87.71	<1.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0
	04/14/2004	97.43	8.88	88.55	**10**	<5.0	72	12	**41**	12	21
	07/15/2004	97.43	17.40	80.03	**53**	31	370	160	**2,300**	56	**180**
	10/04/2004	98.31	13.24	85.07	**34**	ND<7	180	35	**190**	38	60
	01/13/2005	98.31	10.21	88.10	**6**	ND<1	59	5	**39**	14	20
	04/20/2005	98.31	9.08	89.23	ND<1.0	ND<1.0	9.3	ND<3.0	3.9	3.3	4.3
	07/15/2005	98.31	15.36	82.95	**38.1**	1.5	101	68.7	**89.9**	79.7	**142**
	09/07/2005	98.31	23.45	74.86	**10.0**	ND<1.0	18.5	ND<3.0	**59.5**	11.0	23.0
	09/20/2005	98.31	DRY	-	NS	NS	NS	NS	NS	NS	NS
	10/28/2005	98.31	12.81	85.50	**76.7**	51.8	195	67.3	**2,750**	80.8	**136**
	02/10/2006	98.31	10.68	87.63	4.7	1.0	30.3	4.1	**39.7**	10.8	8.4
	05/15/2006	98.31	20.04	78.27	**34.7**	7.6	108	46.5	**421**	31.0	43.3
	08/18/2006	98.31	20.68	77.63	**28.8**	1.8	106	8.6	**179**	48.2	31.8
	11/15/2006	98.31	10.39	87.92	**9.4**	ND<1.0	56.5	5.0	**25.1**	26.2	20.3
	03/30/2007	98.31	9.29	89.02	2	ND<1	12	2	5	7	5
	05/17/2007	98.31	9.99	88.32	2	ND<1	14	2	4	8	5
	08/02/2007	98.31	21.74	76.57	**7**	ND<1	15	3	**28**	12	ND<4
	10/04/2007	98.31	DRY	-	NS	NS	NS	NS	NS	NS	NS
	01/28/2008	98.31	13.42	84.89	**8**	ND<1	12	5	12	15	11
	04/07/2008	98.31	10.03	88.28	2	ND<1	11	2	3	9	5
	07/01/2008	98.31	14.85	83.46	ND<1	ND<1	1	ND<1	2	ND<2	ND<4
	10/31/2008	98.31	21.63	76.68	**15**	ND<1	39	11	8	41	11
	02/03/2009	98.31	13.15	85.16	2	ND<1	7	1	3	8	ND<4
	04/06/2009	98.31	18.75	79.56	5	ND<1	15	2	8	8	ND<4
	07/08/2009	98.31	10.25	88.06	ND<1	ND<1	2	ND<1	ND<1	3	ND<4

TABLE 3
HISTORICAL GROUNDWATER MONITORING DATA SUMMARY

SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PA

Monitoring Well	Date	Top of Casing (ft)	Depth to Water (ft)	GW Elevation (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Isopropyl Benzene (µg/L)	Naphthalene (µg/L)
MSCs for Used, Non-Res. Aquifer					5	1,000	700	10,000	20	2,300	100
MW-3	03/23/1996	98.08	9.35	88.73	12	ND< 1	2	3	NA	NA	NA
	09/09/1996	98.08	13.76	84.32	ND	ND	ND	ND	480	NA	ND
	11/07/1996	98.08	11.43	86.65	ND< 1	ND< 1	ND< 1	ND< 3	170	NA	ND< 5
	02/14/1997	98.08	10.18	87.90	2	ND< 1	ND	ND< 3	130	NA	ND< 5
	05/07/1997	98.08	10.9	87.18	ND	ND	ND	ND	99	NA	ND
	09/15/1997	98.08	23.68	74.40	NS	NS	NS	NS	NS	NS	NS
	11/11/1997	98.08	23.95	74.13	NS	NS	NS	NS	NS	NS	NS
	03/17/1998	98.08	10.25	87.83	ND<1	ND<1	ND<1	ND<3	22	NA	ND<5
	06/15/1998	98.08	10.56	87.52	ND	ND	ND	ND< 5	8	ND	ND<5
	06/17/1999	98.08	21.97	76.11	ND	ND	ND	ND	7	ND	ND
	02/15/2000	98.08	11.96	86.12	80	325	21.7	267	1,680	ND	ND
	05/12/2000	98.08	11.43	86.65	ND	ND	ND	ND	256	ND	ND
	10/16/2000	98.08	14.15	83.93	ND	ND	ND	ND	42.3	ND	ND
	03/23/2001	98.08	9.04	89.04	1.3	ND	ND	ND	55.2	ND	ND
	06/14/2001	98.08	12.1	85.98	ND<1	ND<1	ND<1	ND<5	44.9	ND<2	ND<5
	09/18/2001	98.08	DRY	-	NS	NS	NS	NS	NS	NS	NS
	12/26/2001	98.08	23.21	74.87	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<5
	03/26/2002	98.08	22.7	75.38	ND<1	ND<1	ND<1	ND<1.4	2.6	ND<2	ND<5
	06/14/2002	98.08	13.95	84.13	ND<1.0	ND<1.0	ND<1.0	ND<1.0	10.6	ND<2.0	ND<5.0
	09/13/2002	98.08	DRY	-	NS	NS	NS	NS	NS	NS	NS
	10/30/2002	98.08	18.45	79.63	ND<1.0	ND<1.0	ND<1.0	ND<1.0	1.8	ND<2.0	6.6
	03/05/2003	98.08	10.71	87.37	ND<1	ND<1	ND<1	ND<1	11	ND<5	ND<5
	05/08/2003	98.08	11.43	86.65	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0
	08/06/2003	98.08	13.51	84.57	<1.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0
	10/24/2003	98.08	20.74	77.34	<1.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0
	01/16/2004	98.08	10.53	87.55	<1.0	<5.0	<5.0	<10	28	<5.0	<5.0
	04/14/2004	98.08	9.83	88.25	<1.0	<5.0	<5.0	<10	20	<5.0	<5.0
	07/15/2004	98.08	17.05	81.03	<1.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0
	10/04/2004	98.78	13.92	84.86	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5
	01/13/2005	98.78	11.13	87.65	ND<1	ND<1	ND<1	ND<1	19	ND<5	ND<5
	04/20/2005	98.78	10.04	88.74	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	07/15/2005	98.78	15.71	83.07	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	09/07/2005	98.78	DRY	-	NS	NS	NS	NS	NS	NS	NS
	09/20/2005	98.78	23.75	75.03	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	10/28/2005	98.78	13.75	85.03	3.1	2.2	ND<1.0	26.0	749	ND<1.0	9.0
	02/10/2006	98.78	10.59	88.19	ND<1.0	ND<1.0	ND<1.0	ND<3.0	33.8	ND<1.0	ND<2.0
	05/15/2006	98.78	20.37	78.41	ND<1.0	ND<1.0	ND<1.0	ND<3.0	1.5	ND<1.0	ND<2.0
	08/18/2006	98.78	20.91	77.87	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	11/15/2006	98.78	11.32	87.46	ND<1.0	ND<1.0	ND<1.0	ND<3.0	2.6	ND<1.0	ND<2.0
	03/30/2007	98.78	10.28	88.50	ND<1	ND<1	ND<1	ND<1	2	ND<2	ND<4
	05/17/2007	98.78	10.82	87.96	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	08/02/2007	98.78	22.12	76.66	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/04/2007	98.78	DRY	-	NS	NS	NS	NS	NS	NS	NS
	01/28/2008	98.78	14.62	84.16	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/07/2008	98.78	11.81	86.97	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/01/2008	98.78	15.72	83.06	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/08/2008	98.78	23.89	74.89	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	02/03/2009	98.78	14.62	84.16	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/06/2009	98.78	18.53	80.25	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/08/2009	98.78	11.11	87.67	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4

TABLE 3
HISTORICAL GROUNDWATER MONITORING DATA SUMMARY

SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PA

Monitoring Well	Date	Top of Casing (ft)	Depth to Water (ft)	GW Elevation (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Isopropyl Benzene (µg/L)	Naphthalene (µg/L)
MSCs for Used, Non-Res, Aquifer					5	1,000	700	10,000	20	2,300	100
MW-4	11/11/1997	98.08	23.87	74.21	ND<1	ND<1	ND	ND<3	10	NA	ND<5
	03/17/1998	98.08	10.1	87.98	ND	ND	ND<1	ND<3	ND<1	NA	ND<5
	06/15/1998	98.08	10.32	87.76	ND	ND	ND	ND	ND	ND	ND
	06/17/1999	98.08	22.61	75.47	ND	ND	ND	ND	ND<5	ND	ND
	02/15/2000	98.08	11.91	86.17	ND	ND	ND	ND	15.8	ND	ND
	05/12/2000	98.08	11.41	86.67	ND	ND	ND	ND	9.5	ND	ND
	10/16/2000	98.08	14.03	84.05	ND	ND	ND	ND	**972**	ND	ND
	03/23/2001	98.08	8.94	89.14	ND	ND	ND	ND	ND	ND	ND
	06/14/2001	98.08	12.05	86.03	ND<1	ND<1	ND<1	ND<5	**31.6**	ND<2	ND<5
	09/18/2001	98.08	24.57	73.51	ND<1	ND<1	ND<1	ND<1	4.9	ND<2	ND<5
	12/26/2001	98.08	24.43	73.65	ND<1	ND<1	ND<1	ND<1	1.7	ND<2	ND<5
	03/26/2002	98.08	23.82	74.26	ND<1	ND<1	ND<1	ND<1.4	1.1	ND<2	ND<5
	06/14/2002	98.08	14.01	84.07	ND<1.0	ND<1.0	ND<1.0	ND<1.0	7.5	ND<2.0	ND<5.0
	09/13/2002	98.08	24.67	73.41	ND<1.0	ND<1.0	ND<1.0	ND<1.0	1.2	ND<2.0	ND<5.0
	10/30/2002	98.08	20.38	77.70	ND<1.0	ND<1.0	ND<1.0	ND<1.0	1.6	ND<2.0	ND<5.0
	03/05/2003	98.08	10.68	87.40	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5
	05/08/2003	98.08	11.25	86.83	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0
	08/06/2003	98.08	13.75	84.33	<1.0	<5.0	<5.0	<10	9.8	<5.0	<5.0
	10/24/2003	98.08	20.63	77.45	<1.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0
	01/16/2004	98.08	10.46	87.62	<1.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0
	04/14/2004	98.08	9.86	88.22	<1.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0
	07/15/2004	98.08	18.63	79.45	<1.0	<5.0	<5.0	<10	5.0	<5.0	<5.0
	10/04/2004	98.94	13.99	84.95	ND<3	ND<4	ND<4	ND<4	**100**	ND<5	ND<5
	01/13/2005	98.94	10.98	87.96	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5
	04/20/2005	98.94	9.81	89.13	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	07/15/2005	98.94	16.05	82.89	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	09/07/2005	98.94	24.61	74.33	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	09/20/2005	98.94	24.51	74.43	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	10/28/2005	98.94	13.81	85.13	ND<1.0	ND<1.0	ND<1.0	ND<3.0	**89.6**	ND<1.0	ND<2.0
	02/10/2006	98.94	10.46	88.48	ND<1.0	ND<1.0	ND<1.0	ND<3.0	7.4	ND<1.0	ND<2.0
	05/15/2006	98.94	21.19	77.75	ND<1.0	ND<1.0	ND<1.0	ND<3.0	2.2	ND<1.0	ND<2.0
	08/18/2006	98.94	21.72	77.22	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	11/15/2006	98.94	11.25	87.69	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	03/30/2007	98.94	10.11	88.83	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	05/17/2007	98.94	10.75	88.19	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	08/02/2007	98.94	23.45	75.49	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/04/2007	98.94	24.61	74.33	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	01/28/2008	98.94	14.36	84.58	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/07/2008	98.94	10.75	88.19	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/01/2008	98.94	15.57	83.37	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/08/2008	98.94	24.59	74.35	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	02/03/2009	98.94	14.42	84.52	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/06/2009	98.94	19.55	79.39	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/08/2009	98.94	11.00	87.94	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4

TABLE 3
HISTORICAL GROUNDWATER MONITORING DATA SUMMARY

SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PA

Monitoring Well	Date	Top of Casing (ft)	Depth to Water (ft)	GW Elevation (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Isopropyl Benzene (µg/L)	Naphthalene (µg/L)
MSCs for Used, Non-Res. Aquifer					5	1,000	700	10,000	20	2,300	100
MW-5	12/09/2004	99.55	12.52	87.03	ND<1	ND<1	ND<1	ND<1	5	ND<5	ND<5
	01/13/2005	99.55	11.77	87.78	ND<1	ND<1	ND<1	ND<1	14	ND<5	ND<5
	04/20/2005	99.55	10.55	89.00	ND<1.0	ND<1.0	ND<1.0	ND<3.0	5.0	ND<1.0	ND<2.0
	07/15/2005	99.55	16.22	83.33	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	09/07/2005	99.55	26.92	72.63	ND<1.0	ND<1.0	ND<1.0	ND<3.0	1.9	ND<1.0	ND<2.0
	09/20/2005	99.55	30.02	69.53	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	10/28/2005	99.55	14.32	85.23	ND<1.0	ND<1.0	ND<1.0	4.1	**648**	ND<1.0	ND<2.0
	02/10/2006	99.55	11.38	88.17	ND<1.0	ND<1.0	ND<1.0	ND<3.0	**34.0**	ND<1.0	ND<2.0
	05/15/2006	99.55	22.42	77.13	ND<1.0	ND<1.0	ND<1.0	ND<3.0	2.1	ND<1.0	ND<2.0
	08/18/2006	99.55	23.15	76.40	ND<1.0	ND<1.0	ND<1.0	ND<3.0	1.5	ND<1.0	ND<2.0
	11/15/2006	99.55	11.72	87.83	ND<1.0	ND<1.0	ND<1.0	ND<3.0	1.3	ND<1.0	ND<2.0
	03/30/2007	99.55	10.92	88.63	ND<1	ND<1	ND<1	ND<1	2	ND<2	ND<4
	05/17/2007	99.55	11.35	88.20	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	08/02/2007	99.55	24.65	74.90	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/04/2007	99.55	36.25	63.30	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	01/28/2008	99.55	15.32	84.23	ND<1	ND<1	ND<1	ND<1	1	ND<2	ND<4
	04/07/2008	99.55	11.66	87.89	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/01/2008	99.55	16.33	83.22	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/08/2008	99.55	32.92	66.63	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	02/03/2009	99.55	15.25	84.30	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/06/2009	99.55	19.88	79.67	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/08/2009	99.55	11.72	87.83	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
MW-6	12/09/2004	99.72	12.69	87.03	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5
	01/13/2005	99.72	11.85	87.87	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5
	04/20/2005	99.72	10.70	89.02	ND<1.0	ND<1.0	ND<1.0	ND<3.0	2.0	ND<1.0	ND<2.0
	07/15/2005	99.72	16.39	83.33	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	09/07/2005	99.72	27.10	72.62	NA	NA	NA	NA	NA	NA	NA
	09/20/2005	99.72	29.88	69.84	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	10/28/2005	99.72	14.47	85.25	ND<1.0	ND<1.0	ND<1.0	ND<3.0	13.8	ND<1.0	ND<2.0
	02/10/2006	99.72	11.40	88.32	ND<1.0	ND<1.0	ND<1.0	ND<3.0	2.3	ND<1.0	ND<2.0
	05/15/2006	99.72	21.25	78.47	ND<1.0	ND<1.0	ND<1.0	ND<3.0	8.7	ND<1.0	ND<2.0
	08/18/2006	99.72	22.29	77.43	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	11/15/2006	99.72	12.05	87.67	ND<1.0	ND<1.0	ND<1.0	ND<3.0	1.1	ND<1.0	ND<2.0
	03/30/2007	99.72	11.06	88.66	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	05/17/2007	99.72	11.52	88.20	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	08/02/2007	99.72	23.45	76.27	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/04/2007	99.72	36.06	63.66	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	01/28/2008	99.72	15.50	84.22	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/07/2008	99.72	11.68	88.04	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/01/2008	99.72	16.45	83.27	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/08/2008	99.72	32.57	67.15	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	02/03/2009	99.72	15.54	84.18	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/06/2009	99.72	19.85	79.87	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/08/2009	99.72	11.93	87.79	ND<1	ND<1	ND<1	2	ND<1	ND<2	ND<4

TABLE 3
HISTORICAL GROUNDWATER MONITORING DATA SUMMARY

SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PA

Monitoring Well	Date	Top of Casing (ft)	Depth to Water (ft)	GW Elevation (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Isopropyl Benzene (µg/L)	Naphthalene (µg/L)
MSCs for Used, Non-Res. Aquifer					5	1,000	700	10,000	20	2,300	100
MW-7	12/09/2004	99.20	15.39	83.81	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5
	01/13/2005	99.20	14.63	84.57	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5
	04/20/2005	99.20	14.48	84.72	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	07/15/2005	99.20	20.15	79.05	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	09/07/2005	99.20	29.81	69.39	NA	NA	NA	NA	NA	NA	NA
	09/20/2005	99.20	32.85	66.35	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	10/28/2005	99.20	18.81	80.39	ND<1.0	1.7	ND<1.0	ND<3.0	**60.8**	ND<1.0	ND<2.0
	02/10/2006	99.20	15.83	83.37	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	05/15/2006	99.20	25.99	73.21	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	08/18/2006	99.20	27.13	72.07	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	11/15/2006	99.20	15.85	83.35	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	03/30/2007	99.20	14.20	85.00	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	05/17/2007	99.20	16.23	82.97	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	08/02/2007	99.20	28.54	70.66	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/04/2007	99.20	38.36	60.84	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	01/28/2008	99.20	19.96	79.24	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/07/2008	99.20	16.03	83.17	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/01/2008	99.20	20.64	78.56	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/08/2008	99.20	36.20	63.00	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	02/03/2009	99.20	19.40	79.80	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/06/2009	99.20	23.41	75.79	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/08/2009	99.20	15.99	83.21	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
MW-8	03/30/2007	97.78	11.25	86.53	ND<1	ND<1	ND<1	ND<1	17	ND<2	ND<4
	05/17/2007	97.78	13.18	84.60	ND<1	ND<1	ND<1	ND<1	14	ND<2	ND<4
	08/02/2007	97.78	26.55	71.23	ND<1	ND<1	ND<1	ND<1	11	ND<2	ND<4
	10/04/2007	97.78	36.96	60.82	ND<1	ND<1	ND<1	ND<1	5	ND<2	ND<4
	01/28/2008	97.78	17.20	80.58	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/07/2008	97.78	13.62	84.16	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/01/2008	97.78	18.54	79.24	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/08/2008	97.78	34.12	63.66	ND<1	ND<1	ND<1	ND<1	4	ND<2	ND<4
	02/03/2009	97.78	18.11	79.67	ND<1	ND<1	ND<1	ND<1	5	ND<2	ND<4
	04/06/2009	97.78	21.84	75.94	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/08/2009	97.78	14.55	83.23	ND<1	ND<1	ND<1	ND<1	1	ND<2	ND<4

TABLE 3
HISTORICAL GROUNDWATER MONITORING DATA SUMMARY

SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PA

Monitoring Well	Date	Top of Casing (ft)	Depth to Water (ft)	GW Elevation (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Isopropyl Benzene (µg/L)	Naphthalene (µg/L)
MSCs for Used, Non-Res. Aquifer					5	1,000	700	10,000	20	2,300	100
MW-9	03/30/2007	98.68	11.45	87.23	ND<1	ND<1	ND<1	ND<1	7	ND<2	ND<4
	05/17/2007	98.68	13.80	84.88	ND<1	ND<1	ND<1	ND<1	6	ND<2	ND<4
	08/02/2007	98.68	27.02	71.66	ND<1	ND<1	ND<1	ND<1	2	ND<2	ND<4
	10/04/2007	98.68	37.70	60.98	ND<1	ND<1	ND<1	ND<1	5	ND<2	ND<4
	01/28/2008	98.68	18.56	80.12	ND<1	ND<1	ND<1	ND<1	3	ND<2	ND<4
	04/07/2008	98.68	14.48	84.20	ND<1	ND<1	ND<1	ND<1	4	ND<2	ND<4
	07/01/2008	98.68	19.51	79.17	ND<1	ND<1	ND<1	ND<1	3	ND<2	ND<4
	10/08/2008	98.68	35.29	63.39	ND<1	ND<1	ND<1	ND<1	1	ND<2	ND<4
	02/03/2009	98.68	18.71	79.97	ND<1	ND<1	ND<1	ND<1	2	ND<2	ND<4
	04/06/2009	98.68	22.87	75.81	ND<1	ND<1	ND<1	ND<1	2	ND<2	ND<4
	07/08/2009	98.68	15.27	83.41	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
MW-10	03/30/2007	98.44	10.64	87.80	ND<1	ND<1	ND<1	ND<1	2	ND<2	ND<4
	05/17/2007	98.44	11.09	87.35	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	08/02/2007	98.44	24.60	73.84	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/04/2007	98.44	36.03	62.41	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	01/28/2008	98.44	15.06	83.38	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/07/2008	98.44	11.22	87.22	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/01/2008	98.44	16.10	82.34	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/08/2008	98.44	33.22	65.22	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	02/03/2009	98.44	15.98	82.46	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/06/2009	98.44	19.67	78.77	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/08/2009	98.44	11.49	86.95	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4

<# = Less than the method detection limit of #
µg/L = Micrograms/liter
DRY = No water for sampling
MTBE = Methyl tertiary butyl ether
NA = Not Available or not analyzed for that specific compound
ND = Not detected (# is method detection limit)
NS = Not Sampled

APPENDIX A

PaGWIS Water Well Inventory Database Report

PaDWG Download [.pdf/A histograms & drawings: Survey/PaDWG
COMMA SEPARATED LIST OF WELLS
Email comments to Tom Gro

You have requested information on 14 Wells. Use your browser menu to save this page as a text file on your local hard drive. Delete all text except for the record list and import the list into your database or spreadsheet. The first row in the list is the field names.

PA Well ID	Well Order	Type of Activity	Abandonment Reason	Date Drilled	Drilling Method	Owner	Well Address	Zip code	County	Municipality	Quadrangle	Latitude	Longitude	Well Depth	Well Yield	Depth To Bedrock	Well Yield	Yield Measured Method	Static Water Level	Water Level after Test	Length Of Test	Well Use	Water Use	Sediment Bottom
4-15234	EICHELBERGER INC	Well Abandonment	Well was unused	12/17/2004		BRITISH PETROLEUM	960 OLIVE ST	18974	BUCKS	WARMINSTER TWP		40.2241667	-75.0764444	50									UNUSED	
4-15216	EICHELBERGERS INC	Well Abandonment	Well was unused	12/17/2004		BRITISH PETROLEUM	960 OLIVE ST	18974	BUCKS	WARMINSTER TWP		40.2255556	-75.0861667	50									UNUSED	
8300	JOHN WILEY			1/1/1932	CABLE TOOL	CHILDREN			BUCKS	WARMINSTER TWP	HATBORO	40.2112222	-75.1011111	200	OPEN HOLE			60				WITHDRAWAL	DOMESTIC	300
8382	JOHN O'DONNELL & SON			5/1/1918	CABLE TOOL	CHILDREN			BUCKS	WARMINSTER TWP	HATBORO	40.2727778	-75.1211111	181	OPEN HOLE				20			WITHDRAWAL	PUBLIC SUPPLY	181
69166	ALLEN H ZORN	New Well		11/29/1965		GALLAGHER TOM			BUCKS	WARMINSTER TWP	HATBORO	40.2319444	-75.2933333	100	OPEN HOLE		23	12 ESTIMATED		10	0.29	WITHDRAWAL	DOMESTIC	
9033	UNKNOWN			1/1/1935	CABLE TOOL	GRADWELL PARK			BUCKS	WARMINSTER TWP	HATBORO	40.2502222	-75.0677778	40	OPEN HOLE				2.78			WITHDRAWAL	DOMESTIC	40
8967						JONES , C			BUCKS	WARMINSTER TWP	HATBORO	40.2083333	-75.1125									WITHDRAWAL	DOMESTIC	
9036	F E BUEHLER & SON, INC			4/17/1970	AIR ROTARY	SMITH- ELMER			BUCKS	WARMINSTER TWP	HATBORO	40.2028	-75.0938888	55	OPEN HOLE							WITHDRAWAL	DOMESTIC	55
69172	F E BUEHLER & SON, INC	New Well		1/1/1970		SMITH- ELMER			BUCKS	WARMINSTER TWP	HATBORO	40.2033	-75.0933333	55	OPEN HOLE		10	UNKNOWN				WITHDRAWAL	DOMESTIC	55
3084	RAAB WELL DRILLING INC			2/9/1960	AIR ROTARY	WARMINSTER AUTH			BUCKS	WARMINSTER TWP	HATBORO	40.2128056	-75.0958333	400	OPEN HOLE							WITHDRAWAL	PUBLIC SUPPLY	800
1077	UNKNOWN			1/1/1924	CABLE TOOL	WARMINSTER AUTH			BUCKS	WARMINSTER TWP	HATBORO	40.205	-75.1075	300	OPEN HOLE				43			WITHDRAWAL	PUBLIC SUPPLY	300
3044	UNKNOWN			1/1/1938	CABLE TOOL	WARMINSTER HOMERY CO			BUCKS	WARMINSTER TWP	HATBORO	40.2097222	-75.1	90	OPEN HOLE							UNUSED	UNUSED	10
69164	RAAB WELL DRILLING INC	New Well		11/1/1965		WARMINSTER MUN AUTH			BUCKS	WARMINSTER TWP	HATBORO	40.2119444	-75.1077778	514	OPEN HOLE		6	80 VOLUMETRIC	WATCH & BUCKET		20	180	12 TEST	PUBLIC SUPPLY	
69165	RAAB WELL DRILLING INC	New Well		10/1/1965		WARMINSTER MUN AUTH			BUCKS	WARMINSTER TWP	HATBORO	40.2139	-75.1063111	370	OPEN HOLE		10	100 VOLUMETRIC	WATCH & BUCKET		9	168	24 TEST	PUBLIC SUPPLY	

Distance Calculator

Enter values | Find Answer

Site Location	
Latitude	Longitude
40.207222	-75.1

Well Locations				
Latitude	Longitude	Owner	Estimated Distance from Site (feet)	Direction from Site
40.20416667	-75.10194444	BRITISH PETROLEUM	1,241	SW
40.20555556	-75.09916667	BRITISH PETROLEUM	651	SE
40.21222222	-75.10111111	CHRIST'S HOME FOR CHILDREN	1,852	NW
40.21277778	-75.10111111	CHRIST'S HOME FOR CHILDREN	2,053	NW
40.20194444	-75.09333333	GALLAGHER TOM	2,678	SE
40.20222222	-75.09277778	GRADWELL , FRANK	2,719	SE
40.20833333	-75.1025	JONES , C	807	NW
40.2025	-75.09305556	SMITH , ELMER	2,593	SE
40.2025	-75.09333333	SMITH ELMER	2,536	SE
40.21305556	-75.09583333	WARMINSTER AUTH	2,427	NE
40.205	-75.1075	WARMINSTER AUTH	2,244	SW
40.20472222	-75.1	WARMINSTER HOSIERY CO	913	SW
40.21194444	-75.10777778	WARMINSTER MUN AUTH	2,771	NW
40.2125	-75.10861111	WARMINSTER MUN AUTH	3,080	NW

APPENDIX B

Site Photographs

DATE:
July 21, 2008

PHOTOGRAPHER:
Krista Snyder

LOCATION:
Central portion of the site

DIRECTION:
North



LOCATION OF DISPENSER ISLANDS IN RELATION TO THE STATION BUILDING.

DATE:
April 17, 2008

PHOTOGRAPHER:
Krista Snyder

LOCATION:
Central and southern portion of the site

DIRECTION:
South



LOCATION OF TANK FIELD AND LANDSCAPED AREA OVER THE FORMER TANK FIELD. IN THE BACKGROUND IS THE INTERSECTION OF OLD YORK ROAD AND STREET ROAD

SITE PHOTOGRAPHS

Sunoco Station #0363-5430
610 Old York Road
Warminster, Pennsylvania

GES PROJ: 02-03026
SCALE: NONE
DATE: 8/18/09
APPENDIX : B

DATE:
April 17, 2008

PHOTOGRAPHER:
Krista Snyder

LOCATION:
Western portion of the site

DIRECTION:
Northwest



LOCATION OF DISPENSER ISLANDS ALONG STREET ROAD.

DATE:
April 17, 2008

PHOTOGRAPHER:
Krista Snyder

LOCATION:
Central and eastern portion of the site

DIRECTION:
Northeast



LOCATION OF DISPENSER ISLANDS ALONG OLD YORK ROAD.

SITE PHOTOGRAPHS

Sunoco Station #0363-5430
610 Old York Road
Warminster, Pennsylvania

GES PROJ: 02-03026
SCALE: NONE
DATE: 8/13/09
APPENDIX : B

APPENDIX C

Soil Laboratory Analytical Reports

Analysis Request/Environmental Services Chain of Custody

Lancaster Laboratories
A Thermo Analytical Laboratory

JAN 05 1996

Acct. # 8475 For LLI use only Sample # 2440666-68

Please print. Instructions on reverse side correspond with circled numbers.

Client: SUN - GES Acct. #: 8475

Project Name/#: MT. LEBANON PWSID #:

Project Manager: MIKE SARGENTO P.O.#

Sampler: Ron Dean Ryan Quote #:

Name of state where samples were collected: PA

Sample Identification	Date Collected	Time Collected	(3) Grab	Composite	Matrix (4) Soil	Water	Potable	NPDES	Other	Total # of Containers	(5) Analyses Requested: BTEX 8021	TPH 418.1	Remarks	Temperature of samples upon receipt (if requested) (6)
SS-1	12/28/95	—	X	X						2	X	X	1-125 mL. HCl 1-500 mL. H2SO4	
SS-2		—	X	X						2	X	X	"	
SS-3		—	X	X						2	X	X	"	
SS-4		—	X	X						2	X	X	"	

1.7°C

Turnaround Time Requested (TAT) (please circle): Normal Rush (7)
(Rush TAT is subject to LLI approval and surcharge.)
Date results are needed: 1/2/96
Rush results requested by (please circle): Phone Fax
Phone #: Fax #:

Data Package Options (please circle if requested)
QC Summary Type VI
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)

SDG Complete? Yes No

Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

Relinquished by:	Date	Time	Received by:	Date	Time (9)
	12/28/95	1545		12/28/95	1530
	12/29/95	13:00		12/29/95	1300
	12/29/95	1745			

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 (717) 656-2300 Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client. 2102 Rev. 6/1/95

Analysis Report

Lancaster Laboratories
A Thermo Analytical Laboratory

LLI Sample No. SW 2440666
Collected: 12/28/95 by RDP

Submitted: 12/29/95 Reported: 1/ 3/96
Discard: 1/18/96

SS-1 Grab Soil Sample

ATL: Warminster, PA

Account No: 08475
SUN:Groundwater & Enviro. Svc.
410 Eagleview Blvd., Ste. 110
Exton PA 19341

P.O. WARMINSTER
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	AS RECEIVED LIMIT OF QUANTITATION	AS RECEIVED UNITS	DRY WEIGHT RESULTS	DRY WEIGHT LIMIT OF QUANTITATION
1562	Petroleum Hydrocarbons	40.	20.	mg/kg	40.	20.
	Petroleum hydrocarbons were detected in the method blank at a concentration of 1 mg/kg on an as received basis. This blank value was not subtracted from the analytical result. Due to the nature of this analysis, it is typical to have a result for the blank.					
6175	BTEX Scan (Total Xylenes) Soil					
2603	Benzene	N.D.	5.	ug/kg	N.D.	6.
2604	Toluene	< 5.	5.	ug/kg	< 6.	6.
2606	Ethylbenzene	N.D.	5.	ug/kg	N.D.	6.
5327	Total Xylenes	< 15.	15.	ug/kg	< 18.	18.
2111	Moisture	15.8	0.5	% by wt.		
	"Moisture" represents the loss in weight of the sample after drying with an infrared lamp at 150 degrees Celsius.					

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS DATE AND TIME	ANALYST
1562	Petroleum Hydrocarbons	EPA 418.1 (modified)	1	01/01/96 2030	Mark M. Cheyney
2111	Moisture	EPA 160.3 modified	1	01/02/96 0544	Lee L. Munro
6175	BTEX Scan (Total Xylenes) Soil	SW-846 5020A, Mod.	1	01/02/96 1120	Matthew E. Barton

) COPY TO SUN: Groundwater & Enviro. Sv ATTN: Mr. Mark Haslett

Questions? Contact your Client Services Representative
Eileen R. Hostetler at (717) 656-2300
05:46:15 D 0001 4 119586 498134
854 513.00 00011300 ASR000

Analysis Report

Lancaster Laboratories
A Thermo Analytical Laboratory

LLI Sample No. SW 2440667
Collected: 12/28/95 by RDP

Submitted: 12/29/95 Reported: 1/ 3/96
Discard: 1/18/96

SS-2 Grab Soil Sample

ATL: Warminster, PA

Account No: 08475
SUN: Groundwater & Enviro. Svc.
410 Eagleview Blvd., Ste. 110
Exton PA 19341

P.O. WARMINSTER
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	AS RECEIVED LIMIT OF QUANTITATION	AS RECEIVED UNITS	DRY WEIGHT RESULTS	DRY WEIGHT LIMIT OF QUANTITATION
1562	Petroleum Hydrocarbons	320.	40.	mg/kg	370.	50.
6175	BTEX Scan (Total Xylenes) Soil					
2603	Benzene	N.D.	5.	ug/kg	N.D.	6.
2604	Toluene	< 5.	5.	ug/kg	< 6.	6.
2606	Ethylbenzene	N.D.	5.	ug/kg	N.D.	6.
5327	Total Xylenes	N.D.	15.	ug/kg	N.D.	18.
2111	Moisture	15.2	0.5	% by wt.		

"Moisture" represents the loss in weight of the sample after drying with an infrared lamp at 150 degrees Celsius.

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS DATE AND TIME	ANALYST
1562	Petroleum Hydrocarbons	EPA 418.1 (modified)	1	01/01/96 2030	Mark M. Cheyney
2111	Moisture	EPA 160.3 modified	1	01/02/96 0556	Lee L. Munro
6175	BTEX Scan (Total Xylenes) Soil	SW-846 8020A, mod.	1	01/02/96 1153	Matthew E. Barton

1 COPY TO SUN: Groundwater & Enviro. Sv ATTN: Mr. Mark Haslett

Questions? Contact your Client Services Representative
Eileen R. Hostetler at (717) 656-2300
05:46:28 D 0001 4 119586 498134
854 113.00 00011300 ASRDDD

Analysis Report

Lancaster Laboratories
A Thermo Analytical Laboratory

LLI Sample No. SW 2440668
Collected: 12/28/95 by RDP

Submitted: 12/29/95 Reported: 1/ 3/96
Discard: 1/18/96

SS-3 Grab Soil Sample

ATL: Warminster, PA

Account No: 08475
SUN:Groundwater & Enviro. Svc.
410 Eagleview Blvd., Ste. 110
Exton PA 19341

P.O. WARMINSTER
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	AS RECEIVED LIMIT OF QUANTITATION	UNITS	DRY WEIGHT RESULTS	DRY WEIGHT LIMIT OF QUANTITATION
1562	Petroleum Hydrocarbons	430.	40.	mg/kg	480.	40.
6175	BTEX Scan (Total Xylenes) Soil					
2603	Benzene	N.D.	5.	ug/kg	N.D.	6.
2604	Toluene	< 5.	5.	ug/kg	< 6.	6.
2606	Ethylbenzene	N.D.	5.	ug/kg	N.D.	6.
5327	Total Xylenes	< 15.	15.	ug/kg	< 17.	17.
2111	Moisture	10.2	0.5	% by wt.		

"Moisture" represents the loss in weight of the sample after drying with an infrared lamp at 150 degrees Celsius.

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS DATE AND TIME	ANALYST
1562	Petroleum Hydrocarbons	EPA 418.1 (modified)	1	01/01/96 2030	Mark M. Cheyney
2111	Moisture	EPA 160.3 modified	1	01/02/96 0608	Lee L. Munro
6175	BTEX Scan (Total Xylenes) Soil	SW-846 8020A, mod.	1	01/02/96 1227	Matthew E. Barton

1 COPY TO SUN: Groundwater & Enviro. Sv ATTN: Mr. Mark Haslett

Questions? Contact your Client Services Representative
Eileen R. Hostetler at (717) 656-2300
05:46:40 D 0001 4 119586 498134
854 113.00 00011300 ASR000

Respectfully Submitted

Analysis Report

Lancaster Laboratories
A Thermo Analytical Laboratory

LLI Sample No. SW 2440669
Collected: 12/28/95 by RDP

Submitted: 12/29/95 Reported: 1/ 3/96
Discard: 1/18/96

SB-4 Grab Soil Sample

ATL: Warminster, PA

Account No: 08475
SUN:Groundwater & Enviro. Svc.
410 Eagleview Blvd., Ste. 110
Exton PA 19341

P.O. WARMINSTER
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	AS RECEIVED LIMIT OF QUANTITATION	AS RECEIVED UNITS	DRY WEIGHT RESULTS	DRY WEIGHT LIMIT OF QUANTITATION
1562	Petroleum Hydrocarbons	90.	20.	mg/kg	100.	20.
	Petroleum hydrocarbons were detected in the method blank at a concentration of 1 mg/kg on an as received basis. This blank value was not subtracted from the analytical result. Due to the nature of this analysis, it is typical to have a result for the blank.					
6175	BTEX Scan (Total Xylenes) Soil					
2603	Benzene	N.D.	5.	ug/kg	N.D.	6.
2604	Toluene	< 5.	5.	ug/kg	< 6.	6.
2606	Ethylbenzene	N.D.	5.	ug/kg	N.D.	6.
5327	Total Xylenes	< 15.	15.	ug/kg	< 17.	17.
2111	Moisture	14.1	0.5	% by wt.		
	"Moisture" represents the loss in weight of the sample after drying with an infrared lamp at 150 degrees Celsius.					

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS DATE AND TIME	ANALYST
1562	Petroleum Hydrocarbons	EPA 418.1 (modified)	1	01/01/96 2030	Mark M. Cheyney
2111	Moisture	EPA 160.3 modified	1	01/02/96 0615	Lee L. Munro
6175	BTEX Scan (Total Xylenes) Soil	SW-846 8020A, mod.	1	01/02/96 1300	Matthew E. Barton

1 COPY TO SUN: Groundwater & Enviro. Sv ATTN: Mr. Mark Haslett

Questions? Contact your Client Services Representative
Eileen R. Hostetler at (717) 656-2300
05:46:52 0 0001 4 119586 498134
854 113.00 00011300 ASR000

Lancaster Laboratories
A Thermo Analytical Laboratory

FEB 26 1996

For LLI use only
Acct. # 8475 Sample # 245891-93

Please print. Instructions on reverse side correspond with circled numbers.

(1) Client: SUN - GES | Acct. #: 8475
Project Name/#: PTL Lockbark Rd | PWSID #:
Project Manager: M. Haslett | P.O.#:
Sampler: B. Rider | Quote #:
Name of state where samples were collected: PA

(2) (3) Matrix (4) (5) Analyses Requested

Sample Identification	Date Collected	Time Collected	# of containers	Matrix: Soil	Matrix: Water	Matrix: Other	Total # of containers	BTEX/602	Remarks	(6) Temperature of sample upon receipt
Disp-1 @ 1'	2/8/96	835	X	X			1	X	1125 mL Jar	
Disp-2 @ 1'	↓	840	X	X			1	X	↓	
Disp-3 @ 1'	↓	845	X	X			1	X		

2.5 °C 2/9/96 HBS

(7) Turnaround Time Requested (TAT) (please circle): (Normal) Rush
(Rush TAT is subject to LLI approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax
Phone #: Fax #:

(8) Data Package Options (please circle if requested)
QC Summary | Type VI
Type I (Tier I) | GLP
Type II (Tier II) | Other
Type III (NJ Red. Del.)
Type IV (CLP)

SDG Complete? Yes No

Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)

Internal Chain of Custody required? (Yes) No

(9)

Relinquished by:	Date	Time	Received by:	Date	Time
	2/8/96	1200	Locked Refrigerator	2/8/96	1200
	2-9-96	945		2/9/96	9:45
	2/9/96	1700			

Analysis Report

Lancaster Laboratories
A Thermo Analytical Laboratory

LLI Sample No. SW 2458591
Collected: 2/ 8/96 at 08:35 by BR

Submitted: 2/ 9/96 Reported: 2/26/96
Discard: 3/12/96

Disp: 1 @ 1: Grab Soil Sample

Attn: 610 Old York Rd, PA

Account No: 08475
SUN:Groundwater & Enviro. Svc.
410 Eagleview Blvd., Ste. 110
Exton PA 19341

P.O. 610 OLD YORK RD
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	AS RECEIVED LIMIT OF QUANTITATION	AS RECEIVED UNITS	DRY WEIGHT RESULTS	DRY WEIGHT LIMIT OF QUANTITATION
5325	TPH-GRO API & BTEX (Soils)					
2603	Benzene	80.	50.	ug/kg	100.	60.
2604	Toluene	2,500.	50.	ug/kg	3,000.	60.
2606	Ethylbenzene	2,500.	50.	ug/kg	3,000.	60.
5327	Total Xylenes	17,000.	150.	ug/kg	21,000.	180.
5326	TPH by GC - GRO (Soils)	170.	10.	mg/kg	200.	10.
	According to the API Protocol, the quantitation for Gasoline Range Organics was performed using the total peak area of the sample pattern between 2-methylpentane and 1,2,4-trimethylbenzene.					
2111	Moisture	15.8	0.5	% by wt.		
	"Moisture" represents the loss in weight of the sample after drying with an infrared lamp at 150 degrees Celsius.					

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS DATE AND TIME	ANALYST
5325	TPH-GRO API & BTEX (Soils)	API Rev 6 / SW-846 8020A, mod.	1	02/12/96 1609	Dawn Boley
2111	Moisture	EPA 160.3 modified	1	02/21/96 0531	Lee L. Munro

1 COPY TO SUN:Groundwater & Enviro. Svc. ATTN: Mr. Mark Haslett

Questions? Contact your Client Services Representative
Eileen R. Hostetler at (717) 656-2300
04:52:33 D 0001 3 119586 502915
875 55.20 00005520 ASR000

Respectfully Submitted

Analysis Report

Lancaster Laboratories
A Thermo Analytical Laboratory

LLI Sample No. SW 2458592
Collected: 2/ 8/96 at 08:40 by BR

Submitted: 2/ 9/96 Reported: 2/26/96
Discard: 3/12/96

Disp-2 @ 1' Grab Soil Sample

Att: 610 Old York Rd, PA

Account No: 08475
SUN:Groundwater & Enviro. Svc.
410 Eagleview Blvd., Ste. 110
Exton PA 19341

P.O. 610 OLD YORK RD
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	AS RECEIVED LIMIT OF QUANTITATION	AS RECEIVED UNITS	DRY WEIGHT RESULTS	DRY WEIGHT LIMIT OF QUANTITATION
5325	TPH-GRO API & BTEX (Soils)					
2603	Benzene	600.	500.	ug/kg	700.	600.
2604	Toluene	43,000.	500.	ug/kg	51,000.	600.
2606	Ethylbenzene	34,000.	500.	ug/kg	41,000.	600.
5327	Total Xylenes	210,000.	1,500.	ug/kg	250,000.	1,800.
5326	TPH by GC - GRO (Soils)	1,100.	100.	mg/kg	1,300.	100.
	According to the API Protocol, the quantitation for Gasoline Range Organics was performed using the total peak area of the sample pattern between 2-methylpentane and 1,2,4-trimethylbenzene.					
2111	Moisture	16.4	0.5	% by wt.		
	"Moisture" represents the loss in weight of the sample after drying with an infrared lamp at 150 degrees Celsius.					

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS DATE AND TIME	ANALYST
5325	TPH-GRO API & BTEX (Soils)	API Rev 6 / SW-846 8020A, mod.	1	02/12/96 1902	Dawn Boley
2111	Moisture	EPA 160.3 modified	1	02/21/96 0554	Lee L. Muhrd

1 COPY TO SUN:Groundwater & Enviro. Svc. ATTN: Mr. Mark Haslett

Questions? Contact your Client Services Representative
Eileen R. Rostetter at (717) 656-2300
04:52:44 D 0001 3 119586 502915
575 55.20 00005520 ABR000

Analysis Report

Lancaster Laboratories
A Thermo Analytical Laboratory

LLI Sample No. SW 2458593
Collected: 2/ 8/96 at 08:45 by BR

Submitted: 2/ 9/96 Reported: 2/26/96
Discard: 3/12/96

Disp-3 @ 1: Grab Soil Sample

Att: 610 Old York Rd, PA

Account No: 08475
SUN:Groundwater & Enviro. Svc.
410 Eagleview Blvd., Ste. 110
Exton PA 19341

P.O. 610 OLD YORK RD
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	AS RECEIVED LIMIT OF QUANTITATION	AS RECEIVED UNITS	DRY WEIGHT RESULTS	DRY WEIGHT LIMIT OF QUANTITATION
5325	TPH-GRO API & BTEX (Soils)					
2603	Benzene	200.	100.	ug/kg	200.	100.
2604	Toluene	17,000.	100.	ug/kg	14,000.	100.
2606	Ethylbenzene	8,900.	100.	ug/kg	10,000.	100.
5327	Total Xylenes	54,000.	300.	ug/kg	65,000.	350.
5326	TPH by GC - GRO (Soils)	270.	20.	mg/kg	310.	20.
	According to the API Protocol, the quantitation for Gasoline Range Organics was performed using the total peak area of the sample pattern between 2-methylpentane and 1,2,4-trimethylbenzene.					
2111	Moisture	15.0	0.5	% by wt.		
	"Moisture" represents the loss in weight of the sample after drying with an infrared lamp at 150 degrees Celsius.					

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS DATE AND TIME	ANALYST
5325	TPH-GRO API & BTEX (Soils)	API Rev 6 / SW-846 8020A, mod.	1	02/12/96 1935	Dawn Boley
2111	Moisture	EPA 160.3 modified	1	02/21/96 0603	Lee L. Munro

1 COPY TO SUN:Groundwater & Enviro. Svc. ATTN: Mr. Mark Haslett

Questions? Contact your Client Services Representative
Eileen R. Hostetter at (717) 656-2300
04:52:55 @ 0001 3 119586 502915
875 55.20 00005520 ABR000

Lancaster Laboratories
A Thermo Analytical Laboratory

MAR 07 1996

For LLI use only
Acct. # 8475 Sample # 246411-12

Please print. Instructions on reverse side correspond with circled numbers.

Client: SUN - GES Acct. #: 8475
Project Name/#: ATC 610 Old York Rd PWSID #:
Project Manager: Mark Hustett P.O.#:
Sampler: Brian S. Ricker Quote #:
Name of state where samples were collected: PA

Sample Identification	Date Collected	Time Collected	(3) Grab	Composite	(4) Matrix: Soil	Water	Other	Total # Containers	(5) Analyses Requested: BTEX/EDB	Remarks	For LLI use only: Temperature (°C) upon receipt (if required) (6)
TL-1 @ 1'	2/13/96	1145	X		X			1	X	1 125 ml Jar	2.3°
TL-2 @ 1'	2/13/96	750	X		X			1	X	1 125 ml Jar	4

JSP 2/15/96

Turnaround Time Requested (TAT) (please circle): (Normal) Rush
(Rush TAT is subject to LLI approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax
Phone #: Fax #:

Data Package Options (please circle if requested)
QC Summary Type VI
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)

SDG Complete? Yes No

Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? (Yes) No

Relinquished by:	Date	Time	Received by:	Date	Time
	2/14/96	1500	Locked Refrigerator	2/14/96	1500 (9)
Relinquished by: Kerry Quay	2-15-96	1000		2/15/96	1000
Relinquished by:	2/15/96	1645	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	2/15/96	1645

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 (717) 656-2300 Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client. 2107 Rev. 6

Analysis Report

Lancaster Laboratories
A Thermo Analytical Laboratory

LLI Sample No. SW 2461411
Collected: 2/13/96 at 07:45 by BSR

Submitted: 2/15/96 Reported: 2/28/96
Discard: 3/14/96

TL-1 @ 1' Grab Soil Sample

Site: 810 Old Fort Rd. PA

Account No: 08475
SUN:Groundwater & Enviro. Svc.
410 Eagleview Blvd., Ste. 110
Exton PA 19341

P.O.
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	AS RECEIVED LIMIT OF QUANTITATION	AS RECEIVED UNITS	DRY WEIGHT RESULTS	DRY WEIGHT LIMIT OF QUANTITATION
5325	TPH-GRO API & BTEX (Soils)					
2602	Benzene	N.D.	5.	ug/kg	N.D.	5.
2604	Toluene	N.D.	5.	ug/kg	N.D.	5.
2606	Ethylbenzene	N.D.	5.	ug/kg	N.D.	5.
5327	Total Xylenes	N.D.	15.	ug/kg	N.D.	16.
5326	TPH by GC - GRO (Soils)	N.D.	1.	mg/kg	N.D.	1.
	According to the API Protocol, the quantitation for Gasoline Range Organics was performed using the total peak area of the sample pattern between 2-methylpentane and 1,2,4-trimethylbenzene.					
2111	Moisture	5.0	0.5	% by wt.		
	"Moisture" represents the loss in weight of the sample after drying with an infrared lamp at 150 degrees Celsius.					

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS DATE AND TIME	ANALYST
5325	TPH-GRO API & BTEX (Soils)	API Rev 6 / SW-846 8020A, mod.	1	02/22/96 1837	Dawn Boley
2111	Moisture	EPA 160.3 modified	1	02/27/96 0429	Lee L. Munro

1 COPY TO SUN:Groundwater & Enviro. Svc. ATTN: Mr. Mark Haslett

Questions? Contact your Client Services Representative
Eileen R. Hostetler at (717) 656-2300
03:52:24 D 0001 2 119586 585644
854 55.20 00005520 ASR000

Analysis Report

Lancaster Laboratories
A Thermo Analytical Laboratory

LLI Sample No. SW 2461412
Collected: 2/13/96 at 07:50 by BSR

Submitted: 2/15/96 Reported: 2/28/96
Discard: 3/14/96

TL-2 @ 1' Grab Soil Sample

ATL: 610 Old York Rd. PA

Account No: 06475
SUN:Groundwater & Enviro. Svc.
410 Eagleview Blvd., Ste. 110
Exton PA 19341

P.O.
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	AS RECEIVED LIMIT OF QUANTITATION	AS RECEIVED UNITS	DRY WEIGHT RESULTS	DRY WEIGHT LIMIT OF QUANTITATION
5325	TPH-GRO AFI & BTEX (Soils)					
2603	Benzene	N.D.	100.	ug/kg	N.D.	100.
2604	Toluene	700.	100.	ug/kg	800.	100.
2606	Ethylbenzene	1,800.	100.	ug/kg	2,100.	100.
5327	Total Xylenes	16,000.	300.	ug/kg	19,000.	350.
5326	TPH by GC - GRO (Soils)	120.	20.	mg/kg	150.	20.
	According to the API Protocol, the quantitation for Gasoline Range Organics was performed using the total peak area of the sample pattern between 2-methylpentane and 1,2,4-trimethylbenzene. Due to interferences from the sample matrix, the limit of quantitation for the benzene determination was increased.					
2111	Moisture	15.0	0.5	% by wt.		
	"Moisture" represents the loss in weight of the sample after drying with an infrared lamp at 150 degrees Celsius.					

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS DATE AND TIME	ANALYST
5325	TPH-GRO API & BTEX (Soils)	API Rev 6 / SW-846 8020A, mod.	1	02/22/96 2017	Dawn Boley
2111	Moisture	EPA 160.3 modified	1	02/27/96 0434	Lee L. Munro

1 COPY TO SUN:Groundwater & Enviro. Svc. ATTN: Mr. Mark Haslett

Questions? Contact your Client Services Representative
Eileen R. Hostetler at (717) 656-2300
03:52:37 D 0001 2 119586 503644
854 55.20 00005520 ABROOO

Analysis Request / Environmental Services Chain of Custody

Lancaster Laboratories
A Thermo Analytical Laboratory

APR 03 1995

For LLI use only
Acct. # 8475 Sample # 246982-75

Please print. Instructions on reverse side correspond with circled numbers.

(1)
Client: SUN - GES Acct. #: 8475
Project Name/#: ATL Sun: 610 Old York Rd. PWSID #:
Project Manager: MACK HASLETTE P.O.#:
Sampler: Ron Dean Powell Quote #:
Name of state where samples were collected: PA

(3) (4) (5) (6)

Sample Identification	Date Collected	Time Collected	Grab	Composite	Soil	Water	Other	Total # of containers	BTX 8020	GRO 8015	Analyses Requested	Remarks	For LLI use only
SS-1 (12')	2/27/96	1126	X	X				1	X	X		1-125 ml. Jar	2.3
SS-2 (12')		1130						1	X	X			
SS-3 (12')		1136						1	X	X			
SS-4 (12')		1340						1	X	X			
SS-5 (12')		1343						1	X	X			
SS-6 (12')		1346						1	X	X			
SS-7 (12')		1436						1	X	X			
SS-8 (12')		1440						1	X	X			
SS-9 (12')		1442						1	X	X			
SS-10 (12')		1536						1	X	X			

Turnaround Time Requested (TAT) (please circle): Normal Rush
(Rush TAT is subject to LLI approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax
Phone #: Fax #:

Relinquished by:	Date	Time	Received by:	Date	Time
	2/28/96	800		2/28/96	800
	2-28-96	1030		2/28/96	1030
	2/28/96	1345			
				2-28-96	1345

(9)

Data Package Options (please circle if requested)
QC Summary Type VI
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)

SDG Complete? Yes No

Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)

Internal Chain of Custody required? Yes No

Analysis Request / Environmental Services Chain of Custody

Lancaster Laboratories
A Thermo Analytical Laboratory

For LLI use only
Acct. # 8475 Sample # 2467872-5

APR 11 1996

Please print. Instructions on reverse side correspond with circled numbers.

(1) Client: SUN - GBS Acct #: 8475
Project Name/#: ATL. GAS 610 YORK RD PWSID #:
Project Manager: MARK HASLETT P.O.#:
Sampler: Ron Dean Reeves Quote #:
Name of state where samples were collected: PA

(2) Sample Identification | Date Collected | Time Collected | (3) Grab | Composite | (4) Matrix: Water | Other | Total # Containers | (5) Analyses Requested: BTEX 8020/602 8015 | TPH 418.1 | For LLI use only FSC: SCR #: | (6) Remarks | Preservation (Lab to complete) Lab use only / Sample Receipt (if requested)

Sample Identification	Date Collected	Time Collected	Grab	Composite	Water	Other	Total # Containers	BTEX 8020/602 8015	TPH 418.1	Remarks	Preservation
SS-11 (12')	2/27/96	1559	X		X		1	X		1-125 ML. JAR	2.3
SS-12 (12')		1601					1	X		1-125 ML. JAR	
SS-13 (8')		1615					1		X	1-500 ML. JAR	
SS-14 (8')	↓	1617	↓		↓		1		X	1-500 ML. JAR	↓
											2/28

Turnaround Time Requested (TAT) (please circle): (Normal) Rush
(Rush TAT is subject to LLI approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax
Phone #: Fax #:

Data Package Options (please circle if requested)
QC Summary Type VI
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)

SDG Complete? Yes No

Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)

Internal Chain of Custody required? (Yes) No

Relinquished by:	Date	Time	Received by:	Date	Time
	2/28/96	800		2/28/96	800
	2-28-96	1230		2/28/96	1630
	2/28/96	1345			

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 (717)656-2300 Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client 2102 Rev. 6/1/95

Lancaster Laboratories
A Thermo Analytical Laboratory
Where quality is a science

April 1, 1996

Mr. Mark Haslett
Groundwater & Environmental Services
410 Eagleview Boulevard Suite 110
Exton, PA 19341

Dear Mr. Haslett:

As we had discussed on March 26, 1996, we received soil samples from the Atlantic site at 610 Old York Road in Warminster, Pennsylvania. The samples were misplaced after BTEX/GRO was analyzed, and we have not located them for the moisture analysis. Therefore, these two, SS-1 (12') and SS-2 (12'), are reported only "as received" and not on a dry-weight basis. I apologize for the inconvenience this may have caused you.

Sincerely,

Eileen Hostetler

Eileen Hostetler
Project Management
Environmental Sciences

EH/clw

Analysis Report

Lancaster Laboratories
A Thermo Analytical Laboratory

LLI Sample No. SW 2467862
Collected: 2/27/96 at 11:26 by RDP

Submitted: 2/28/96 Reported: 3/27/96
Discard: 4/11/96

BS-1 (12') Grab Soil Sample

ATL: 610 Old York Rd., PA

Account No: 05475
SUN:Groundwater & Enviro. Svc.
410 Eagleview Blvd., Ste. 110
Exton PA 19341

P.O. 610 OLD YORK RD
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	LIMIT OF QUANTITATION	UNITS
5325	TPH-GRO API & BTEX (Soils)			
2603	Benzene	1,000.	500.	ug/kg
2604	Toluene	23,000.	500.	ug/kg
2606	Ethylbenzene	34,000.	500.	ug/kg
5327	Total Xylenes	180,000.	1,500.	ug/kg
5326	TPH by GC - GRO (Soils)	1,000.	100.	mg/kg

According to the API Protocol, the quantitation for Gasoline Range Organics was performed using the total peak area of the sample pattern between 2-methylpentane and 1,2,4-trimethylbenzene.

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS DATE AND TIME	ANALYST
5325	TPH-GRO API & BTEX (Soils)	API Rev 6 / SW-846 8020A, mod.	1	03/01/96 1252	Matthew E. Barton

1 COPY TO SUN:Groundwater & Enviro. Svc. ATTN: Mr. Mark Haslett

Questions? Contact your Client Services Representative
Eileen R. Rostetter at (717) 656-2300
03:14:46 D 0001 14 119586 505239
854 48.00 00004800 ASR000

Analysis Report

Lancaster Laboratories
A Thermo Analytical Laboratory

LLI Sample No. SW 2467863
Collected: 2/27/96 at 11:30 by RDP

Submitted: 2/28/96 Reported: 3/27/96
Discard: 4/11/96

SS-2 (12') Grab Soil Sample

ATL: 610 Old York Rd., PA

Account No: 00475
SUN:Groundwater & Enviro. Svc.
410 Eagleview Blvd., Ste. 110
Exton PA 19341

P.O. 610 OLD YORK RD
Rel.

AS RECEIVED

CAT NO.	ANALYSIS NAME	RESULTS	LIMIT OF QUANTITATION	UNITS
5325	TPH-GRO API & BTEX (Soils)			
2603	Benzene	1,900.	5.	ug/kg
2604	Toluene	33,000.	5.	ug/kg
2606	Ethylbenzene	26,000.	5.	ug/kg
5327	Total Xylenes	160,000.	15.	ug/kg
5326	TPH by GC - GRO (Soils)	1,100.	1.	mg/kg

According to the API Protocol, the quantitation for Gasoline Range Organics was performed using the total peak area of the sample pattern between 2-methylpentane and 1,2,4-trimethylbenzene.

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS DATE AND TIME	ANALYST
5325	TPH-GRO API & BTEX (Soils)	API Rev.6 / SW-846 8020A, mod.	1	03/01/96 1324	Matthew E. Barton

1 COPY TO SUN:Groundwater & Enviro. Svc. ATTN: Mr. Mark Haslett

Questions? Contact your Client Services Representative
Eileen R. Hostetler at (717) 656-2300
03:15:05 0 0001 14 119586 505239
854 48.00 00004800 ASR000

Analysis Report

Lancaster Laboratories
A Thermo Analytical Laboratory

LLI Sample No. SW 2467864
Collected: 2/27/96 at 11:36 by ROP

Submitted: 2/28/96 Reported: 3/27/96
Discard: 4/11/96

SS-3 (12') Grab Soil Sample

ATL: 610 Old York Rd., PA

Account No: 08475
SUN:Groundwater & Enviro. Svc.
410 Eagleview Blvd., Ste. 110
Exton PA 19341

P.O. 610 OLD YORK RD
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	AS RECEIVED LIMIT OF QUANTITATION	AS RECEIVED UNITS	DRY WEIGHT RESULTS	DRY WEIGHT LIMIT OF QUANTITATION
5325	TPH-GRO API & BTEX (Soils)					
2603	Benzene	35.	5.	ug/kg	45.	6.
2604	Toluene	210.	5.	ug/kg	270.	6.
2606	Ethylbenzene	94.	5.	ug/kg	120.	6.
5327	Total Xylenes	660.	15.	ug/kg	850.	19.
5326	TPH by GC - GRO (Soils)	5.	1.	mg/kg	6.	1.
	According to the API Protocol, the quantitation for Gasoline Range Organics was performed using the total peak area of the sample pattern between 2-methylpentane and 1,2,4-trimethylbenzene.					
2111	Moisture	21.0	0.5	% by wt.		
	"Moisture" represents the loss in weight of the sample after drying with an infrared lamp at 150 degrees Celsius.					

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS DATE AND TIME	ANALYST
5325	TPH-GRO API & BTEX (Soils)	API Rev 6 / SW-846 8020A, mod.	1	03/01/96 1324	Matthew E. Barron
2111	Moisture	EPA 160.3 modified	1	03/01/96 1623	Roxanne M. Roth

1 COPY TO SUN:Groundwater & Enviro. Svc. ATTN: Mr. Mark Haslett

Questions? Contact your Client Services Representative
Eileen R. Hostetler at (717) 656-2300
03:15:21 D 0001 14 119586 505239
854 55.20 00005520 ASROOD

Analysis Report

Lancaster Laboratories
A Thermo Analytical Laboratory

LLI Sample No. SW 2467865
Collected: 2/27/96 at 13:40 by RDP

Submitted: 2/28/96 Reported: 3/27/96
Discard: 4/11/96

SS-4 (12') Grab Soil Sample

ATL: 610 Old York Rd., PA

Account No: 08675
SUN:Groundwater & Enviro. Svc.
410 Eagleview Blvd., Ste. 110
Exton PA 19341

P.O. 610 OLD YORK RD
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	AS RECEIVED LIMIT OF QUANTITATION	AS RECEIVED UNITS	DRY WEIGHT RESULTS	DRY WEIGHT LIMIT OF QUANTITATION
5325	TPH-GRO API & BTEX (Soils)					
2603	Benzene	< 100.	100.	ug/kg	< 100.	100.
2604	Toluene	300.	100.	ug/kg	300.	100.
2606	Ethylbenzene	2,700.	100.	ug/kg	3,400.	100.
5327	Total Xylenes	14,000.	300.	ug/kg	17,000.	380.
5326	TPH by GC - GRO (Soils)	160.	20.	mg/kg	200.	30.
	According to the API Protocol, the quantitation for Gasoline Range Organics was performed using the total peak area of the sample pattern between 2-methylpentane and 1,2,4-trimethylbenzene. Due to interferences from the sample matrix, the limit of quantitation for the benzene determination was increased.					
2111	Moisture	20.6	0.5	% by wt.		
	"Moisture" represents the loss in weight of the sample after drying with an infrared lamp at 150 degrees Celsius.					

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS DATE AND TIME	ANALYST
5325	TPH-GRO API & BTEX (Soils)	API Rev 6 / SW-846 8020A, mod.	1	03/04/96 1220	Matthew E. Barton
2111	Moisture	EPA 160.3 modified	1	03/01/96 1655	Roxanne M. Roth

1 COPY TO SUN:Groundwater & Enviro. Svc. ATTN: Mr. Mark Haslett

Questions? Contact your Client Services Representative
Eileen R. Hostetler at (717) 656-2300
03:13:45 p 0001 14 119586 505239
854 55.20 00005520 ABR000

Analysis Report

Lancaster Laboratories
A Thermo Analytical Laboratory

LLI Sample No. SW 2467866
Collected: 2/27/96 at 13:43 by RDP

Submitted: 2/28/96 Reported: 3/27/96
Discard: 4/11/96

SB-5 (12') Grab Soil Sample

ATL: 610 Old York Rd., PA

Account No: 05475
SUN:Groundwater & Enviro. Svc.
410 Eagleview Blvd., Ste. 110
Exton PA 19341

P.O. 610 OLD YORK RD
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	AS RECEIVED LIMIT OF QUANTITATION	AS RECEIVED UNITS	DRY WEIGHT RESULTS	DRY WEIGHT LIMIT OF QUANTITATION
5325	TPH-GRO API & BTEX (Soils)					
2603	Benzene	< 5.	5.	ug/kg	< 6.	6.
2604	Toluene	< 5.	5.	ug/kg	< 6.	6.
2606	Ethylbenzene	< 5.	5.	ug/kg	< 6.	6.
5327	Total Xylenes	< 15.	15.	ug/kg	< 19.	19.
5326	TPH by GC - GRO (Soils)	N.D.	1.	mg/kg	N.D.	1.
	According to the API Protocol, the quantitation for Gasoline Range Organics was performed using the total peak area of the sample pattern between 2-methylpentane and 1,2,4-trimethylbenzene.					
2111	Moisture	21.6	0.5	% by wt.		
	"Moisture" represents the loss in weight of the sample after drying with an infrared lamp at 150 degrees Celsius.					

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS DATE AND TIME	ANALYST
5325	TPH-GRO API & BTEX (Soils)	API Rev 6 / SW-846 8020A, mod.	1	03/01/96 1436	Matthew E. Barton
2111	Moisture	EPA 160.3 modified	1	03/01/96 1710	Roxanne M. Roth

1 COPY TO SUN:Groundwater & Enviro. Svc. ATTN: Mr. Mark Haslett

Questions? Contact your Client Services Representative
Eileen R. Hostetter at (717) 656-2300
03:16:04 D 0001 14 119586 505239
854 55.20 00005520 ASR000

Analysis Report

Lancaster Laboratories
A Thermo Analytical Laboratory

LLI Sample No. SW 2467867
Collected: 2/27/96 at 13:46 by RDP

Submitted: 2/28/96 Reported: 3/27/96
Discard: 4/11/96

SS-6 (12') Grab Soil Sample

ATL: 610 Old York Rd., PA

Account No: 08475
SUN:Groundwater & Enviro. Svc.
410 Eagleview Blvd., Ste. 110
Exton PA 19341

P.O. 610 OLD YORK RD
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	AS RECEIVED LIMIT OF QUANTITATION	UNITS	DRY WEIGHT RESULTS	DRY WEIGHT LIMIT OF QUANTITATION
5325	TPH-GRO API & BTEX (Soils)					
2603	Benzene	25.	5.	ug/kg	31.	6.
2604	Toluene	370.	5.	ug/kg	450.	6.
2606	Ethylbenzene	400.	5.	ug/kg	500.	6.
5327	Total Xylenes	2,300.	15.	ug/kg	2,800.	19.
5326	TPH by GC - GRO (Soils)	23.	1.	mg/kg	28.	1.
	According to the API Protocol, the quantitation for Gasoline Range Organics was performed using the total peak area of the sample pattern between 2-methylpentane and 1,2,4-trimethylbenzene.					
2111	Moisture	19.4	0.5	% by wt.		
	"Moisture" represents the loss in weight of the sample after drying with an infrared lamp at 150 degrees Celsius.					

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS DATE AND TIME	ANALYST
5325	TPH-GRO API & BTEX (Soils)	API Rev 6 / SW-846 8020A, mod.	1	03/04/96 1253	Matthew E. Barton
2111	Moisture	EPA 160.3,modified	1	03/01/96 1726	Roxanne M. Roth

1 COPY TO SUN:Groundwater & Enviro. Svc. ATTN: Mr. Mark Haslett

Questions? Contact your Client Services Representative
Eileen N. Hostetler at (717) 656-2300
03:16:24 D 0001 14 110586 505239
854 55 20 00005520 ASR000

Analysis Report

Lancaster Laboratories
A Thermo Analytical Laboratory

LLI Sample No. SW 2467868
Collected: 2/27/96 at 14:36 by RDP

Submitted: 2/28/96 Reported: 3/27/96
Discard: 4/11/96

SB-7 (12') Grab Soil Sample

ATL: 610 Old York Rd., PA

Account No: 08475
SUN:Groundwater & Enviro. Svc.
410 Eagleview Blvd., Ste. 110
Exton PA 19341

P.O. 610 OLD YORK RD
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	AS RECEIVED LIMIT OF QUANTITATION	AS RECEIVED UNITS	DRY WEIGHT RESULTS	DRY WEIGHT LIMIT OF QUANTITATION
5325	TPH-GRO API & BTEX (Soils)					
2603	Benzene	1,400.	500.	ug/kg	1,900.	700.
2604	Toluene	8,000.	500.	ug/kg	10,000.	700.
2606	Ethylbenzene	18,000.	500.	ug/kg	24,000.	700.
5327	Total Xylenes	110,000.	1,500.	ug/kg	140,000.	2,000.
5326	TPH by GC - GRO (Soils)	800.	100.	mg/kg	1,100.	100.
	According to the API Protocol, the quantitation for Gasoline Range Organics was performed using the total peak area of the sample pattern between 2-methylpentane and 1,2,4-trimethylbenzene.					
2111	Moisture	23.7	0.5	% by wt.		
	"Moisture" represents the loss in weight of the sample after drying with an infrared lamp at 150 degrees Celsius.					

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS DATE AND TIME	ANALYST
5325	TPH-GRO API & BTEX (Soils)	API Rev 6 / SW-846 8020A, mod.	1	03/04/96 1325	Matthew E. Barton
2111	Moisture	EPA 160.3 modified	1	03/01/96 1747	Roxanne K. Roth

1 COPY TO SUN:Groundwater & Enviro. Svc. ATTN: Mr. Mark Haslett

Questions? Contact your Client Services Representative
Eileen R. Hostetler at (717) 656-2300
03:16:42 D 0001 14 119586 505239
856 55.20 00005520 ASR000

Analysis Report

Lancaster Laboratories
A Thermo Analytical Laboratory

LLI Sample No. SW 2467869
Collected: 2/27/96 at 14:40 by RDP

Submitted: 2/28/96 Reported: 3/27/96
Discard: 4/11/96

SS-8 (12') Grab Soil Sample

ATL: 610 Old York Rd., PA

Account No: 08475
SUN:Groundwater & Enviro. Svc.
410 Eagleview Blvd., Ste. 110
Exton PA 19341

P.O. 610 OLD YORK RD
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	AS RECEIVED LIMIT OF QUANTITATION	AS RECEIVED UNITS	DRY WEIGHT RESULTS	DRY WEIGHT LIMIT OF QUANTITATION
5325	TPH-GRO API & BTEX (Soils)					
2603	Benzene	N.D.	500.	ug/kg	N.D.	600.
2604	Toluene	700.	500.	ug/kg	900.	600.
2606	Ethylbenzene	4,900.	500.	ug/kg	6,400.	600.
5327	Total Xylenes	17,000.	1,500.	ug/kg	21,000.	1,900.
5326	TPH by GC - GRO (Soils)	400.	100.	mg/kg	500.	100.

According to the API Protocol, the quantitation for Gasoline Range Organics was performed using the total peak area of the sample pattern between 2-methylpentane and 1,2,4-trimethylbenzene.
Due to interferences from the sample matrix, the limit of quantitation for the benzene determination was increased.

2111	Moisture	22.9	0.5	% by wt.		

"Moisture" represents the loss in weight of the sample after drying with an infrared lamp at 150 degrees Celsius.

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS DATE AND TIME	ANALYST
5325	TPH-GRO API & BTEX (Soils)	API Rev 6 / SW-846 8020A, mod.	1	03/04/96 1358	Matthew E. Barton
2111	Moisture	EPA 160.3 modified	1	03/01/96 1810	Roxanne N. Roth

1 COPY TO SUN:Groundwater & Enviro. Svc. ATTN: Mr. Mark Haslett

Questions? Contact your Client Services Representative
Eileen R. Hostetter at (717) 656-2300
03:17:02 p 0001 14 119586 505239
R54 55.20 00005520 A8R000

Analysis Report

Lancaster Laboratories
A Thermo Analytical Laboratory

LLI Sample No. SW 2467870
Collected: 2/27/96 At 14:42 by RDP

Submitted: 2/28/96 Reported: 3/27/96
Discard: 4/11/96

SS-9 (12') Grab Soil Sample

ATL: 610 Old York Rd., PA

Account No: 08475
SUN:Groundwater & Enviro. Svc.
410 Eagleview Blvd., Ste. 110
Exton PA 19341

P.O. 610 OLD YORK RD
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	AS RECEIVED LIMIT OF QUANTITATION	AS RECEIVED UNITS	DRY WEIGHT RESULTS	DRY WEIGHT LIMIT OF QUANTITATION
5325	TPH-GRO API & BTEX (Soils)					
2603	Benzene	< 500.	500.	ug/kg	< 700.	700.
2604	Toluene	< 500.	500.	ug/kg	< 700.	700.
2606	Ethylbenzene	7,900.	500.	ug/kg	11,000.	700.
5327	Total Xylenes	15,000.	1,500.	ug/kg	20,000.	2,000.
5326	TPH by GC - GRO (Soils)	800.	100.	mg/kg	1,100.	100.

According to the API Protocol, the quantitation for Gasoline Range Organics was performed using the total peak area of the sample pattern between 2-methylpentane and 1,2,4-trimethylbenzene.
Due to interferences from the sample matrix, the limits of quantitation for the benzene and toluene determinations were increased.

2111	Moisture	25.5	0.5	% by wt.

"Moisture" represents the loss in weight of the sample after drying with an infrared lamp at 150 degrees Celsius.

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS DATE AND TIME	ANALYST
5325	TPH-GRO API & BTEX (Soils)	API Rev 6 / SW-846 8020A, mod.	1	03/04/96 1324	Matthew E. Burton
2111	Moisture	EPA 160.3 modified	1	03/01/96 1054	Roxanne M. Roth

1 COPY TO SUN:Groundwater & Enviro. Svc. ATTN: Mr. Mark Haslett

Questions? Contact your Client Services Representative
Eileen R. Hostetler at (717) 656-2300
03:17:22 0 0001 14 119586 505239
854 55.20 00005520 ASR000

Analysis Report

Lancaster Laboratories
A Thermo Analytical Laboratory

LLI Sample No. SW 2467871
Collected: 2/27/96 at 15:56 by RDP

Submitted: 2/28/96 Reported: 3/27/96
Discard: 4/11/96

SS-10 (12') Grab Soil Sample

ATL: 610 Old York Rd., PA

Account No: 08475
SUN:Groundwater & Enviro. Svc.
610 Eagleview Blvd., Ste. 110
Exton PA 19341

P.O. 610 OLD YORK RD
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	AS RECEIVED LIMIT OF QUANTITATION	AS RECEIVED UNITS	DRY WEIGHT RESULTS	DRY WEIGHT LIMIT OF QUANTITATION
5325	TPH-GRO API & BTEX (Soils)					
2603	Benzene	800.	500.	ug/kg	1,000.	600.
2604	Toluene	8,800.	500.	ug/kg	15,000.	600.
2606	Ethylbenzene	10,000.	500.	ug/kg	12,000.	600.
5327	Total Xylenes	71,000.	1,500.	ug/kg	85,000.	1,800.
5326	TPH by GC - GRO (Soils)	600.	100.	mg/kg	800.	100.
	According to the API Protocol, the quantitation for Gasoline Range Organics was performed using the total peak area of the sample pattern between 2-methylpentane and 1,2,4-trimethylbenzene.					
2111	Moisture	16.1	0.5	% by wt.		
	"Moisture" represents the loss in weight of the sample after drying with an infrared lamp at 150 degrees Celsius.					

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS DATE AND TIME	ANALYST
5325	TPH-GRO API & BTEX (Soils)	API Rev 6 / SW-846 8020A, mod.	1	03/04/96 1356	Matthew E. Barton
2111	Moisture	EPA 160.3 modified	1	03/01/96 1914	Roxanne M. Roth

1 COPY TO SUN:Groundwater & Enviro. Svc. ATTN: Mr. Mark Haslett

Questions? Contact your Client Services Representative
Eileen R. Hostetler at (717) 656-2300
03:17:41 D 0001 14 119586 505239
854 53.20 00005520 ASR000

Analysis Report

Lancaster Laboratories
A Thermo Analytical Laboratory

LLI Sample No. SW 2467872
Collected: 2/27/96 at 15:59 by RDP

Submitted: 2/28/96 Reported: 3/27/96
Discard: 4/11/96

SS-11 (12') Grab Soil Sample

ATL: 610 Old York Rd., PA

Account No: 05475
SUN:Groundwater & Enviro. Svc.
410 Eagleview Blvd., Ste. 110
Exton PA 19341

P.O. 610 OLD YORK RD
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	AS RECEIVED LIMIT OF QUANTITATION	UNITS	DRY WEIGHT RESULTS	DRY WEIGHT LIMIT OF QUANTITATION
5325	TPH-GRO API & BTEX (Soils)					
2603	Benzene	N.D.	500.	ug/kg	N.D.	600.
2604	Toluene	3,800.	500.	ug/kg	4,600.	600.
2605	Ethylbenzene	12,000.	500.	ug/kg	15,000.	600.
5327	Total Xylenes	77,000.	1,500.	ug/kg	93,000.	1,800.
5326	TPH by GC - GRO (Soils)	500.	100.	mg/kg	700.	100.

According to the API Protocol, the quantitation for Gasoline Range Organics was performed using the total peak area of the sample pattern between 2-methylpentane and 1,2,4-trimethylbenzene.
Due to interferences from the sample matrix, the limit of quantitation for the benzene determination was increased.

2111	Moisture	17.7	0.5	% by wt.

"Moisture" represents the loss in weight of the sample after drying with an infrared lamp at 150 degrees Celsius.

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS DATE AND TIME	ANALYST
5325	TPH-GRO API & BTEX (Soils)	API Rev 6 / SW-846 8020A, mod.	1	03/04/96 1429	Matthew E. Barton
2111	Moisture	EPA 160.3 modified	1	03/01/96 1933	Roxanne M. Roth

1 COPY TO SUN:Groundwater & Enviro. Svc. ATTN: Mr. Mark Haslett

Questions? Contact your Client Services Representative
Eileen R. Hostetter at (717) 656-2300
03:17:59 b 0001 14 119586 505259
854 55.20 00005520 ABROOD

Analysis Report

Lancaster Laboratories
A Thermo Analytical Laboratory

LLI Sample No. SW 2467873
Collected: 2/27/96 at 16:01 by RDP

Submitted: 2/28/96 Reported: 3/27/96
Discard: 4/11/96

SS-12 (12') Grab Soil Sample

ATL: 610 Old York Rd., PA

Account No: 08475
SUN:Groundwater & Enviro. Svc.
410 Eagleview Blvd., Ste. 110
Exton PA 19341

P.O. 610 OLD YORK RD
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	AS RECEIVED LIMIT OF QUANTITATION	UNITS	DRY WEIGHT RESULTS	DRY WEIGHT LIMIT OF QUANTITATION
5325	TPH-GRO API & BTEX (Soils)					
2603	Benzene	N.D.	100.	ug/kg	N.D.	100.
2604	Toluene	400.	100.	ug/kg	500.	100.
2606	Ethylbenzene	3,400.	100.	ug/kg	4,200.	100.
5327	Total Xylenes	8,000.	300.	ug/kg	9,800.	370.
5326	TPH by GC - GRO (Soils)	250.	20.	mg/kg	300.	20.

According to the API Protocol, the quantitation for Gasoline Range Organics was performed using the total peak area of the sample pattern between 2-methylpentane and 1,2,4-trimethylbenzene.
Due to interferences from the sample matrix, the limit of quantitation for the benzene determination was increased.

2111	Moisture	19.0	0.5	% by wt.

"Moisture" represents the loss in weight of the sample after drying with an infrared lamp at 150 degrees Celsius.

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS DATE AND TIME	ANALYST
5325	TPH-GRO API & BTEX (Soils)	API Rev 6 / SW-846 8020A, mod.	1	03/04/96 1430	Matthew E. Barton
2111	Moisture	EPA 160.3 modified	1	03/01/96 1954	Roxanne M. Roth

1 COPY TO SUN:Groundwater & Enviro. Svc. ATTN: Mr. Mark Haslett

Questions? Contact your Client Services Representative
Eileen R. Hostetler at (717) 656-2300
03:18:20 D 0001 14 119586 505239
854 55 20 00005520 ASR000

Analysis Report

Lancaster Laboratories
A Thermo Analytical Laboratory

LLI Sample No. SW 2467874
Collected: 2/27/96 at 16:15 by RDP

Submitted: 2/28/96 Reported: 3/27/96
Discard: 4/11/96

SS-13 (8') Grab Soil Sample

ATL: 610 Old York Rd., PA

Account No: 05475
SUN:Groundwater & Enviro. Svc.
410 Eagleview Blvd., Ste. 110
Exton PA 19341

P.O. 610 OLD YORK RD
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	AS RECEIVED LIMIT OF QUANTITATION	UNITS	DRY WEIGHT RESULTS	DRY WEIGHT LIMIT OF QUANTITATION
0111	Moisture	19.4	0.5	% by wt.		
	"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius.					
1562	Petroleum Hydrocarbons	30.	20.	mg/kg	30.	20.
	Petroleum hydrocarbons were detected in the method blank at a concentration of 5 mg/kg on an as received basis. This blank value was not subtracted from the analytical result. Due to the nature of this analysis, it is typical to have a result for the blank.					

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS DATE AND TIME	ANALYST
0111	Moisture	EPA 160.3 (modified)	1	03/01/96 1549	Susan A. Engle
1562	Petroleum Hydrocarbons	EPA 418.1 (modified)	1	03/07/96 2130	Mark M. Cheyney

1 COPY TO SUN:Groundwater & Enviro. Svc. ATTN: Mr. Mark Haslett

Questions? Contact your Client Services Representative
Eileen R. Hostetler at (717) 656-2300
03:10:38 D 0001 14 119586 505239
854 45.70 00004570 ASR000

Analysis Report

Lancaster Laboratories
A Thermo Analytical Laboratory

LLI Sample No. SW 2467875
Collected: 2/27/96 at 16:17 by RDP

Submitted: 2/28/96 Reported: 3/27/96
Discard: 4/11/96

SS-14 (8') Grab Soil Sample

ATL: 610 Old York Rd., PA

Account No: 08475
SUN:Groundwater & Enviro. Svc.
410 Eagleview Blvd., Ste. 110
Exton PA 19341

P.O. 610 OLD YORK RD
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	AS RECEIVED LIMIT OF QUANTITATION	AS RECEIVED UNITS	DRY WEIGHT RESULTS	DRY WEIGHT LIMIT OF QUANTITATION
0111	Moisture "Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius.	17.8	0.5	% by wt.		
1562	Petroleum Hydrocarbons Petroleum hydrocarbons were detected in the method blank at a concentration of 5 mg/kg on an as received basis. This blank value was not subtracted from the analytical result. Due to the nature of this analysis, it is typical to have a result for the blank.	70.	20.	mg/kg	90.	20.

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS DATE AND TIME	ANALYST
0111	Moisture	EPA 160.3 (modified)	1	03/01/96 1549	Susan A. Engle
1562	Petroleum Hydrocarbons	EPA 418.1 (modified)	1	03/07/96 2130	Mark M. Cheyney

1 COPY TO SUN:Groundwater & Enviro. Svc. ATTN: Mr. Mark Haslett

Questions? Contact your Client Services Representative
Eileen R. Hostetler at (717) 656-2300
03:18:52 0 0001 14 119586 505239
854 45.70 00004570 ASR000

Analysis Request/Environmental Services Chain of Custody

Lancaster Laboratories
Where quality is a science.

For LLI use only
Acct. # 5620 Sample # 2476759-1

Please print. Instructions on reverse side correspond with circled numbers.

(1)
Client: Handex — Acct. #:
Project Name/#: Sun : Warminster — PWSID #:
Project Manager: Jeff Goudswaard — P.O.#
Sampler: JG — Quote #:
Name of state where samples were collected: PA

(2) (3) (4) (5) (6)

Sample Identification	Date Collected	Time Collected	Grab (3)	Composite (3)	Matrix (4): Soil	Water (Potable / NPDES)	Other	Total # of containers	TPH-GRO (8015) (5)	BTEX (8020) (5)	Remarks	Temperature of samples upon receipt (if requested) (6)
MW-1 (5-7)	3/13/96	0925	✓		✓			2	✓	✓		
MW-2 (5-7)	3/13/96	1035	✓		✓			2	✓	✓		
MW-3 (5-7)	3/13/96	1135	✓		✓			2	✓	✓		
											Cooler Temp 6.4°C	

For LLI use only
FSC:
SCR #:

(7) **Turnaround Time Requested** (TAT) (please circle): (Normal) Rush
(Rush TAT is subject to LLI approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone (Fax)
Phone #: Fax #: 610-650-4004

(8) **Data Package Options** (please circle if requested)
QC Summary — Type I (Tier I) — Type II (Tier II) — Type III (NJ Red. Del.) — Type IV (CLP) — GLP — Other
SDG Complete? Yes No
Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

(9)

Relinquished by:	Date	Time	Received by:	Date	Time
	3/13/96	1720		3/13/96	1730
	3/14/96	AM			
				3/14/96	1500

Analysis Report

Lancaster Laboratories
A Thermo Analytical Laboratory

LLI Sample No. SW 2476789
Collected: 3/13/96 at 09:25 by JG

Submitted: 3/14/96 Reported: 3/28/96
Discard: 4/12/96

MW-1 (5-7) Grab Soil Sample

SUN: Warminster, PA

Account No: 05620
SUN: Handex of PA
136 Greentree Road
PO Box 835
Oaks PA 19456-0835

P.O. WARMINSTER
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	AS RECEIVED LIMIT OF QUANTITATION	AS RECEIVED UNITS	DRY WEIGHT RESULTS	DRY WEIGHT LIMIT OF QUANTITATION
2213	BTEX Scan (8020)					
2603	Benzene	N.D.	5.	ug/kg	N.D.	6.
2604	Toluene	N.D.	5.	ug/kg	N.D.	6.
2606	Ethylbenzene	N.D.	5.	ug/kg	N.D.	6.
2608	o-Xylene	N.D.	5.	ug/kg	N.D.	6.
2609	m-Xylene	N.D.	5.	ug/kg	N.D.	6.
2610	p-Xylene	N.D.	5.	ug/kg	N.D.	6.
5323	TPH-GRO API (Soils)	N.D.	1.	mg/kg	N.D.	1.
	According to the API Protocol, the quantitation for Gasoline Range Organics was performed using the total peak area of the sample pattern between 2-methylpentane and 1,2,4-trimethylbenzene.					
2111	Moisture	13.5	0.5	% by wt.		
	"Moisture" represents the loss in weight of the sample after drying with an infrared lamp at 150 degrees Celsius.					

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS DATE AND TIME	ANALYST
2213	BTEX Scan (8020)	SW-846 8020A, mod.	1	03/18/96 1707	Dawn Boley
5323	TPH-GRO API (Soils)	API/EPA proposed, Revision 6	1	03/18/96 1006	Matthew E. Barton
2111	Moisture	EPA 160.3 modified	1	03/25/96 1923	Roxanne M. Roth

1 COPY TO SUN: Handex of PA ATTN: Mr. Jeff Goodsward

Questions? Contact your Client Services Representative
Laura S. Shepler-Moore at (717) 656-2300
03:58:56 D 0001 3 119586 507547
875 82.20 00005220 ASR000

Lancaster Laboratories
A Thermo Analytical Laboratory

LLI Sample No. SW 2476790
Collected: 3/13/96 at 10:35 by JC

Submitted: 3/14/96 Reported: 3/20/96
Discard: 4/12/96

MW-2 (5-7) Grab Soil Sample

SUN: Warminster, PA

Account No: 05620
SUN: Handex of PA
136 Greentree Road
PO Box 835
Oaks PA 19456-0835

P.O. WARMINSTER
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	AS RECEIVED LIMIT OF QUANTITATION	AS RECEIVED UNITS	DRY WEIGHT RESULTS	DRY WEIGHT LIMIT OF QUANTITATION
2213	BTEX Scan (8020)					
2603	Benzene	N.D.	5.	ug/kg	N.D.	6.
2604	Toluene	< 5.	5.	ug/kg	< 6.	6.
2606	Ethylbenzene	< 5.	5.	ug/kg	< 6.	6.
2608	o-Xylene	< 5.	5.	ug/kg	< 6.	6.
2609	m-Xylene	< 5.	5.	ug/kg	< 6.	6.
2610	p-Xylene	< 5.	5.	ug/kg	< 6.	6.
5323	TPH-GRO API (Soils)	N.D.	1.	mg/kg	N.D.	1.
	According to the API Protocol, the quantitation for Gasoline Range Organics was performed using the total peak area of the sample pattern between 2-methylpentane and 1,2,4-trimethylbenzene.					
2111	Moisture	15.3	0.5	% by wt.		
	"Moisture" represents the loss in weight of the sample after drying with an infrared lamp at 150 degrees Celsius.					

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS DATE AND TIME	ANALYST
2213	BTEX Scan (8020)	SW-846 8020A, mod.	1	03/18/96 1930	Dawn Boley
5323	TPH-GRO API (Soils)	API/EPA proposed, Revision 6	1	03/19/96 1218	Matthew E. Barton
2111	Moisture	EPA 160.3 modified	1	03/25/96 1939	Roxanne M. Roth

* COPY TO SUN: Handex of PA ATTN: Mr. Jeff Goudsward

Questions? Contact your Client Services Representative
Laura S. Shepler-Moore at (717) 656-2300
03:59:24 0 0001 3 119586 507547
875 82.20 00008220 ABN000

Analysis Report

Lancaster Laboratories
A Thermo Analytical Laboratory

LLI Sample No. SW 2476791
Collected: 3/13/96 at 11:35 by JG

Submitted: 3/14/96 Reported: 3/20/96
Discard: 4/12/96

MW-3 (5-7) Grab Soil Sample

SUN: Warminster, PA

Account No: 05620
SUN: Handex of PA
136 Greentree Road
PO Box 835
Oaks PA 19456-0835

P.O. WARMINSTER
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	AS RECEIVED LIMIT OF QUANTITATION	AS RECEIVED UNITS	DRY WEIGHT RESULTS	DRY WEIGHT LIMIT OF QUANTITATION
2213	BTEX Scan (8020)					
2603	Benzene	N.D.	5.	ug/kg	N.D.	6.
2604	Toluene	N.D.	5.	ug/kg	N.D.	6.
2606	Ethylbenzene	N.D.	5.	ug/kg	N.D.	6.
2608	o-Xylene	N.D.	5.	ug/kg	N.D.	6.
2609	m-Xylene	N.D.	5.	ug/kg	N.D.	6.
2610	p-Xylene	N.D.	5.	ug/kg	N.D.	6.
5323	TPH-GRO API (Soils)	N.D.	1.	mg/kg	N.D.	1.
	According to the API Protocol, the quantitation for Gasoline Range Organics was performed using the total peak area of the sample pattern between 2-methylpentane and 1,2,4-trimethylbenzene.					
2111	Moisture	20.6	0.5	% by wt.		
	"Moisture" represents the loss in weight of the sample after drying with an infrared lamp at 150 degrees Celsius.					

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS DATE AND TIME	ANALYST
2213	BTEX Scan (8020)	SW-846 8020A, mod.	1	03/18/96 2018	Dawn Holey
5323	TPH-GRO API (Soils)	API/EPA proposed, Revision 6	1	03/19/96 1250	Matthew E. Barton
2111	Moisture	EPA 160.3 modified	1	03/25/96 1947	Roxanne M. Roth

COPY TO SUN: Handex of PA ATTN: Mr. Jeff Goudsward

Questions? Contact your Client Services Representative
Laura S. Shepler-Moore at (717) 656-2300
03:50:50 0 0001 3 119586 507547
875 62.20 D0008220 ASR000

Analysis Request / Environmental Services Chain of Custody

Lancaster Laboratories
A division of Thermo Analytical Inc.

NOV 10 1997

For Lancaster Laboratories use only
Acct. # 8475 Sample # 2507883

Please print. Instructions on reverse side correspond with circled numbers.

(1) Client: SUN-GES (JAMESTOWN) Acct. #: 8475
Project Name/#: Sun-610 old York Rd PWSID #:
Project Manager: J. Goodsward P.O.#:
Sampler: B Peterka Quote #:
Name of state where samples were collected: PA

(2) Sample Identification	Date Collected	Time Collected	(3) Grab	Composite	(4) Matrix: Soil	Water (Potable / NPDES applicable)	Other	Total # of Containers	(5) Analyses Requested: SIM - Naphthalene - 8270	Remarks	For lab use only: Temperature of samples upon receipt (if requested) (6)
MW-4	10-27-97	1100	X		X			2	X	2-125ml jars	1.5C
											KBE
											10/27/97

(7) Turnaround Time Requested (TAT) (please circle): Normal / Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax
Phone #: Fax #:

(8) Data Package Options (please circle if requested)
QC Summary / Type VI (Raw Data) / SDG Complete? Yes / No
Type I (Tier I) / GLP
Type II (Tier II) / Other
Type III (NJ Red. Del.)
Type IV (CLP)
Site-specific QC required? Yes / No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes / No

Relinquished by:	Date	Time	Received by:	Date	Time
	10-27-97	1500	Locked Fridge	10.27.97	1520
Locked Refrig	10-27-97	1600		10-27-97	1620
	10-27-97	1715			
			Joseph B. Fine	10/27/97	1915

(9)

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 (717) 656-2300 Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client. 2100 Rev. 7/1/95

Analysis Report

Lancaster Laboratories
A division of Thermo Analytical Inc.

LLI Sample No. SW 2807893
Collected: 10/27/97 at 11:00 by BP

Submitted: 10/27/97 Reported: 11/ 7/97
Discard: 11/22/97

MW-4 Grab Soil Sample

SUN: 610 Old York Rd. - PA

Account No: 09475
SUN: Groundwater & Enviro. Svc
410 Eagleview Blvd.
Suite 110
Exton PA 19341

P.O. 610 OLD YORK RD
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	AS RECEIVED LIMIT OF QUANTITATION	UNITS	DRY WEIGHT RESULTS	DRY WEIGHT LIMIT OF QUANTITATION
0111	Moisture	14.2	0.50	% by wt.		
	"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius.					
1837	BTEX/Isopropylbenz/MTBE/Napth					
0787	Methyl t-butyl ether	< 20.	20.	ug/kg	< 20.	20.
2603	Benzene	< 5.	5.	ug/kg	< 6.	6.
2604	Toluene	< 5.	5.	ug/kg	< 6.	6.
2606	Ethylbenzene	< 5.	5.	ug/kg	< 6.	6.
5327	Total Xylenes	< 15.	15.	ug/kg	< 17.	17.
0786	Isopropylbenzene	< 10.	10.	ug/kg	< 10.	10.
0788	Naphthalene	< 20.	20.	ug/kg	< 20.	20.

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS ID	DATE AND TIME	ANALYST
0111	Moisture	EPA 160.3 modified	1		10/29/97 1913	Sandra Jean Miller
1837	BTEX/Isopropylbenz/MTBE/Napth	SW-846 8021A, modified	1		10/28/97 0424	Stephanie A. Selis

1 COPY TO SUN:Groundwater & Environ Svc ATTN: Mr. Jeff Goudsward

Questions? Contact your Client Services Representative
De Brooks at (717) 656-2300
13:07:59 D 0001 1 126345 588098
320 0.00 00007020 ASR000

Respectfully Submitted

Analysis Request / Environmental Services Chain of Custody

Lancaster Laboratories
Where quality is a science

For Lancaster Laboratories use only
Acct. # 11234 Group# 916952 Sample # 4381915-16

COC # 0062792

Please print. Instructions on reverse side correspond with circled numbers. cooler temp 2.1°C

Client: Sunoco Acct. #:
Project Name/#: Warminster PWSID #:
Project Manager: Jen O'Reilly P.O.#:
Sampler: Kristen Snyder Quote #:
Name of state where samples were collected: PA

(1) Sample Identification	Date Collected	Time Collected	(3) Grab	Composite	Matrix: Soil	Water	Other	(4) Total # of Containers	(5) Analyses Requested: 8260B BTEX MTBE Cumene Naphthalene	Moisture	Remarks	(6) Temperature of samples upon receipt (if requested)
mw-5-25	10/18/04	15:00	X		X			4	X	X	*low level	
mw-6-15	10/18/04	15:00	X		X			4	X	X	excels	

Matrix: Potable / NPDES (Check if Applicable)

For Lab Use Only
FSC:
SCR #:

RECEIVED NOV 01 2004

Turnaround Time Requested (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

Data Package Options (please circle if required)
QC Summary Type VI (Raw Data)
Type I (Tier I) GLP
Type II (Tier II) Other
Type III (NJ Red. Del.)
Type IV (CLP)

SDG Complete? Yes No
Site-specific QC required? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes No

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	10/18/04	19:00	[signature]		
[signature]	10/19/04	09:00	[signature]	10/19/04	09:00
[signature]	10/19/04	16:30	[signature]		
			[signature]	10/20/04	11:40

(9)

Lancaster Laboratories

Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 (717-656-2300 Fax 717-656-2681 www.lancasterlabs.com

ANALYTICAL RESULTS

Prepared for:

SUN Retail:/GES
410 Eagleview Blvd
Suite 110
Exton PA 19341
610-458-1077

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 916952. Samples arrived at the laboratory on Tuesday, October 19, 2004. The PO# for this group is WARMINSTER-610 OLD Y.

Client Description	Lancaster Labs Number
MW-5-25 Grab Soil Sample	4381915
MW-6-15 Grab Soil Sample	4381916

1 COPY TO	Lancaster Labs	Attn: Sandy Patton
ELECTRONIC COPY TO	SUN Retail:/GES	Attn: Ms. Connie Johnson

Lancaster Laboratories

Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax 717-656-2681 • www.lancasterlabs.com

Questions? Contact your Client Services Representative
Sandra L Patton at (717) 656-2300.

Respectfully Submitted,

Robin C. Runkle
Senior Chemist

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Lancaster Laboratories Sample No. SW 4381915

MW-5-25 Grab Soil Sample
Station ID# 0363-5430 Job# 02-01682
SUN: 510 Old York Road - Warminster, PA
Collected:10/18/2004 13:00 by KS

Account Number: 11224

Submitted: 10/19/2004 16:00
Reported: 10/27/2004 at 22:13
Discard: 11/04/2004

SUN Retail:/GES
410 Eagleview Blvd
Suite 110
Exton PA 19341

OYR05

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	8.1	0.50	%	1
	"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.					
02304	UST-Unleaded Soils by 8260B					
02016	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	5.	ug/kg	0.95
05460	Benzene	71-43-2	N.D.	1.	ug/kg	0.95
05466	Toluene	108-88-3	N.D.	1.	ug/kg	0.95
05474	Ethylbenzene	100-41-4	N.D.	1.	ug/kg	0.95
05479	Isopropylbenzene	98-82-8	N.D.	5.	ug/kg	0.95
05498	Naphthalene	91-20-3	N.D.	5.	ug/kg	0.95
08301	Xylene (Total)	1330-20-7	N.D.	1.	ug/kg	0.95

Commonwealth of Pennsylvania Lab Certification No. 36-037

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	10/20/2004 17:50	Scott W Preisher	1
02304	UST-Unleaded Soils by 8260B	SW-846 8260B	1	10/25/2004 17:19	Roy B Mellott Jr	0.95
08388	Low/High Encore Prep Tracking	SW-846 5035	1	10/19/2004 18:32	Medina A Long	n.a.
08389	Low/High Encore Prep Tracking	SW-846 5035	2	10/19/2004 18:33	Medina A Long	n.a.
08389	Low/High Encore Prep Tracking	SW-846 5035	3	10/19/2004 18:34	Medina A Long	n.a.

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. SW 4381916

MW-6-15 Grab Soil Sample
Station ID# 0363-5430 Job# 02-01682
SUN: 610 Old York Road - Warminster, PA
Collected:10/18/2004 15:00 by KS

Account Number: 11224

Submitted: 10/19/2004 16:00
Reported: 10/27/2004 at 22:13
Discard: 11/04/2004

SUN Retail:/GES
410 Eagleview Blvd
Suite 110
Exton PA 19341

OYR06

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit	Units	Dilution Factor
00111	Moisture	n.a.	8.6	0.50	%	1
	"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.					
02304	UST-Unleaded Soils by 8260B					
02016	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	5.	ug/kg	1
05460	Benzene	71-43-2	N.D.	1.	ug/kg	1
05466	Toluene	108-88-3	N.D. B	1.	ug/kg	1
05474	Ethylbenzene	100-41-4	N.D. B	1.	ug/kg	1
05479	Isopropylbenzene	98-82-8	N.D.	5.	ug/kg	1
05490	Naphthalene	91-20-3	N.D.	5.	ug/kg	1
06301	Xylene (Total)	1330-20-7	N.D. B	1.	ug/kg	1

Commonwealth of Pennsylvania Lab Certification No. 36-037

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	10/20/2004 17:50	Scott W Preisher	1
02304	UST-Unleaded Soils by 8260B	SW-846 8260B	1	10/25/2004 18:05	Roy R Mellott Jr	1
08389	Low/High Encore Prep Tracking	SW-846 5035	1	10/19/2004 18:36	Medina A Long	n.a.
08389	Low/High Encore Prep Tracking	SW-846 5035	2	10/19/2004 18:37	Medina A Long	n.a.
08389	Low/High Encore Prep Tracking	SW-846 5035	3	10/19/2004 18:38	Medina A Long	n.a.

Lancaster Laboratories

2425 New Holland Pike. PO Box 12425. Lancaster, PA 17605-2425 • 717-656-2300 Fax:717-656-2681 • www.lancasterlabs.com

Analysis Report

Quality Control Summary

Client Name: SUN Retail:/GES
Reported: 10/27/04 at 10:13 PM

Group Number: 916952

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 042948200028	Sample number(s): 4381915-4381916							
Moisture				100		99-101		
Batch number: X042981AB	Sample number(s): 4381915-4381916							
Methyl Tertiary Butyl Ether	N.D.	5.	ug/kg	95	95	75-125	1	30
Benzene	N.D.	1.	ug/kg	92	90	77-119	2	30
Toluene	N.D.	1.	ug/kg	90	88	81-116	2	30
Ethylbenzene	N.D.	1.	ug/kg	91	89	82-115	2	30
Isopropylbenzene	N.D.	5.	ug/kg	91	90	79-117	2	30
Naphthalene	N.D.	5.	ug/kg	68	70	58-114	2	30
Xylene (Total)	N.D.	1.	ug/kg	92	89	82-117	3	30

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 042948200028	Sample number(s): 4381915-4381916								
Moisture						8.1	7.8	4	15
Batch number: X042981AB	Sample number(s): 4381915-4381916								
Methyl Tertiary Butyl Ether	86		49-140						
Benzene	88		58-126						
Toluene	86		55-125						
Ethylbenzene	83		50-127						
Isopropylbenzene	79		60-124						
Naphthalene	62		11-142						
Xylene (Total)	82		54-123						

Surrogate Quality Control

Analysis Name: UST-Unleaded Soils by 8260B
Batch number: X042981AB

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4381915	95	95	93	87
4381916	94	91	93	86
Blank	98	94	92	87
LCS	95	94	93	87

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Quality Control Summary

Client Name: SUN Retail:/GES
Reported: 10/27/04 at 10:13 PM

Group Number: 916952

Surrogate Quality Control

LCSD	96	92	93	88
MS	95	94	94	88
Limits:	70-129	70-121	70-130	70-128

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

ANALYTICAL RESULTS

Prepared for:

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

610-458-1077

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 1027014. Samples arrived at the laboratory on Monday, February 26, 2007. The PO# for this group is WARMINSTER.

Client Description			Lancaster Labs Number
MW-8 @ 5	Grab	Soil	4991313
MW-8 @ 24	Grab	Soil	4991314
MW-9 @ 5	Grab	Soil	4991315
MW-9 @ 15	Grab	Soil	4991316
MW-10 @ 15	Grab	Soil	4991317

ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Connie Johnson
ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Cris Altman
ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Heather Nelson
ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Patrick Crawford
ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Bonnie Cobb
ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Krista Snyder
ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Keith Montone

Lancaster Laboratories

Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Questions? Contact your Client Services Representative
Lynn M Frederiksen at (717) 656-2300

Respectfully Submitted,

Marla S. Lord
Senior Specialist

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Lancaster Laboratories Sample No. SW 4991313

MW-8 @ 5 Grab Soil
610 York Rd-Warminster, PA
DUNS# 03635430 COC: 0144045 MW-8 @ 5
Collected:02/22/2007 13:05 by KM

Account Number: 11224

Submitted: 02/26/2007 16:30
Reported: 03/07/2007 at 15:15
Discard: 05/07/2007

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

MW8-5

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation	Units	Dilution Factor
00111	Moisture	n.a.	12.9	0.50	%	1
	"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.					
02304	UST-Unleaded Soils by 8260B					
02016	Methyl Tertiary Butyl Ether	1634-04-4	< 530.	530.	ug/kg	91.74
05460	Benzene	71-43-2	< 530.	530.	ug/kg	91.74
05466	Toluene	108-88-3	< 530.	530.	ug/kg	91.74
05474	Ethylbenzene	100-41-4	1,200.	530.	ug/kg	91.74
05479	Isopropylbenzene	98-82-8	< 530.	530.	ug/kg	91.74
05498	Naphthalene	91-20-3	3,700.	530.	ug/kg	91.74
06301	Xylene (Total)	1330-20-7	8,200.	530.	ug/kg	91.74

Commonwealth of Pennsylvania Lab Certification No. 36-037

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	02/27/2007 16:17	Justin M Bowers	1
02304	UST-Unleaded Soils by 8260B	SW-846 8260B	1	03/01/2007 04:54	Lauren C Marzario	91.74
00405	GC/MS - Field Preserved MeOH	SW-846 5035	1	02/22/2007 13:05	Client Supplied	n.a.

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. SW 4991314

MW-8 @ 24 Grab Soil
610 York Rd-Warminster, PA
DUNS# 03635430 COC: 0144045 MW-8 @ 24
Collected:02/22/2007 13:15 by KM

Account Number: 11224

Submitted: 02/26/2007 16:30
Reported: 03/07/2007 at 15:15
Discard: 05/07/2007

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

MW824

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation	Units	Dilution Factor
00111	Moisture	n.a.	12.1	0.50	%	1
	"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.					
02304	UST-Unleaded Soils by 8260B					
02016	Methyl Tertiary Butyl Ether	1634-04-4	< 520.	520.	ug/kg	92.25
05460	Benzene	71-43-2	< 520.	520.	ug/kg	92.25
05466	Toluene	108-88-3	< 520.	520.	ug/kg	92.25
05474	Ethylbenzene	100-41-4	< 520.	520.	ug/kg	92.25
05479	Isopropylbenzene	98-82-8	< 520.	520.	ug/kg	92.25
05498	Naphthalene	91-20-3	< 520.	520.	ug/kg	92.25
06301	Xylene (Total)	1330-20-7	< 520.	520.	ug/kg	92.25

Commonwealth of Pennsylvania Lab Certification No. 36-037

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	02/27/2007 16:17	Justin M Bowers	1
02304	UST-Unleaded Soils by 8260B	SW-846 8260B	1	03/01/2007 05:43	Lauren C Marzario	92.25
00405	GC/MS - Field Preserved MeOH	SW-846 5035	1	02/22/2007 13:15	Client Supplied	n.a.

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. SW 4991315

MW-9 @ 5 Grab Soil
610 York Rd-Warminster, PA
DUNS# 03635430 COC: 0144045 **MW-9 @ 5**
Collected:02/23/2007 10:50 by KM

Account Number: 11224

Submitted: 02/26/2007 16:30
Reported: 03/07/2007 at 15:15
Discard: 05/07/2007

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

MW9-5

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation	Units	Dilution Factor
00111	Moisture	n.a.	11.4	0.50	%	1
	"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.					
02304	UST-Unleaded Soils by 8260B					
02016	Methyl Tertiary Butyl Ether	1634-04-4	< 440.	440.	ug/kg	78.62
05460	Benzene	71-43-2	< 440.	440.	ug/kg	78.62
05466	Toluene	108-88-3	< 440.	440.	ug/kg	78.62
05474	Ethylbenzene	100-41-4	< 440.	440.	ug/kg	78.62
05479	Isopropylbenzene	98-82-8	< 440.	440.	ug/kg	78.62
05498	Naphthalene	91-20-3	720.	440.	ug/kg	78.62
06301	Xylene (Total)	1330-20-7	< 440.	440.	ug/kg	78.62

Commonwealth of Pennsylvania Lab Certification No. 36-037

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	02/27/2007 16:17	Justin M Bowers	1
02304	UST-Unleaded Soils by 8260B	SW-846 8260B	1	03/01/2007 06:06	Lauren C Marzario	78.62
00405	GC/MS - Field Preserved MeOH	SW-846 5035	1	02/23/2007 10:50	Client Supplied	n.a.

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Analysis Report

Lancaster Laboratories Sample No. SW 4991316

MW-9 @ 15 Grab Soil
610 York Rd-Warminster, PA
DUNS# 03635430 COC: 0144045 MW-9 @ 15
Collected:02/23/2007 11:00 by KM

Account Number: 11224

Submitted: 02/26/2007 16:30
Reported: 03/07/2007 at 15:15
Discard: 05/07/2007

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

MW915

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation	Units	Dilution Factor
00111	Moisture	n.a.	6.7	0.50	%	1
	"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.					
02304	UST-Unleaded Soils by 8260B					
02016	Methyl Tertiary Butyl Ether	1634-04-4	< 480.	480.	ug/kg	89.13
05460	Benzene	71-43-2	< 480.	480.	ug/kg	89.13
05466	Toluene	108-88-3	< 480.	480.	ug/kg	89.13
05474	Ethylbenzene	100-41-4	< 480.	480.	ug/kg	89.13
05479	Isopropylbenzene	98-82-8	< 480.	480.	ug/kg	89.13
05498	Naphthalene	91-20-3	< 480.	480.	ug/kg	89.13
06301	Xylene (Total)	1330-20-7	< 480.	480.	ug/kg	89.13

Commonwealth of Pennsylvania Lab Certification No. 36-037

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	02/27/2007 16:17	Justin M Bowers	1
02304	UST-Unleaded Soils by 8260B	SW-846 8260B	1	03/01/2007 06:29	Lauren C Marzario	89.13
00405	GC/MS - Field Preserved MeOH	SW-846 5035	1	02/23/2007 11:00	Client Supplied	n.a.

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. SW 4991317

MW-10 @ 15 Grab Soil
610 York Rd-Warminster, PA
DUNS# 03635430 COC: 0144045 MW-10 @ 15
Collected:02/23/2007 15:00 by KM

Account Number: 11224

Submitted: 02/26/2007 16:30
Reported: 03/07/2007 at 15:15
Discard: 05/07/2007

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

M1015

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation	Units	Dilution Factor
00111	Moisture	n.a.	6.8	0.50	%	1
	"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.					
02304	UST-Unleaded Soils by 8260B					
02016	Methyl Tertiary Butyl Ether	1634-04-4	< 480.	480.	ug/kg	89.45
05460	Benzene	71-43-2	< 480.	480.	ug/kg	89.45
05466	Toluene	108-88-3	< 480.	480.	ug/kg	89.45
05474	Ethylbenzene	100-41-4	< 480.	480.	ug/kg	89.45
05479	Isopropylbenzene	98-82-8	< 480.	480.	ug/kg	89.45
05498	Naphthalene	91-20-3	< 480.	480.	ug/kg	89.45
06301	Xylene (Total)	1330-20-7	< 480.	480.	ug/kg	89.45

Commonwealth of Pennsylvania Lab Certification No. 36-037

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	02/27/2007 16:17	Justin M Bowers	1
02304	UST-Unleaded Soils by 8260B	SW-846 8260B	1	03/01/2007 06:51	Lauren C Marzario	89.45
00405	GC/MS - Field Preserved MeOH	SW-846 5035	1	02/23/2007 15:00	Client Supplied	n.a.

Quality Control Summary

Client Name: Sunoco Retail c/o GES Exton
Reported: 03/07/07 at 03:15 PM

Group Number: 1027014

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 070588200028	Sample number(s): 4991313-4991317							
Moisture				100		99-101		
Batch number: Q070593AA	Sample number(s): 4991313-4991317							
Methyl Tertiary Butyl Ether	< 250.	250.	ug/kg	97	97	72-117	0	30
Benzene	< 250.	250.	ug/kg	91	91	84-115	0	30
Toluene	< 250.	250.	ug/kg	92	91	81-116	1	30
Ethylbenzene	< 250.	250.	ug/kg	89	89	82-115	1	30
Isopropylbenzene	< 250.	250.	ug/kg	85	83	82-110	3	30
Naphthalene	< 250.	250.	ug/kg	80	79	52-121	1	30
Xylene (Total)	< 250.	250.	ug/kg	91	90	82-117	1	30

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 070588200028	Sample number(s): 4991313-4991317					BKG: 4991314			
Moisture						12.1	11.8	2	15

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: UST-Unleaded Soils by 8260B
Batch number: Q070593AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4991313	84	86	78	79
4991314	85	85	80	78
4991315	83	82	76	78
4991316	86	88	79	78
4991317	87	85	81	77
Blank	87	90	81	78
LCS	89	91	87	86
LCSD	90	92	87	86
Limits:	71-114	70-109	70-123	70-111

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Quality Control Summary

Client Name: Sunoco Retail c/o GES Exton Group Number: 1027014
Reported: 03/07/07 at 03:15 PM

Surrogate Quality Control

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Analysis Request/ Environmental Services Chain of Custody

Lancaster Laboratories

For Lancaster Laboratories use only

Acct. # 11724 Group# 1027014 Sample # 4991313-17

COC # 0144045

Please print. Instructions on reverse side correspond with circled numbers.

(1) Client: GES Acct. #:

Project Name/#: Sun Warminster PWSID #:

Project Manager: Patrick Crawford P.O.#:

Sampler: Keith Monroe Quote #:

Name of state where samples were collected: PA

For Lab Use Only
FSC:
SCR#: 396062

Preservation Codes
H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 O=Other

(6) Temperature of samples (recorded on receipt)

(2) Sample Identification	Date Collected	Time Collected	(3) Grab	Composite	(4) Matrix: Soil	Water	Other	Total # of Containers	(5) Analyses Requested: Preservation Codes MeOH	None	8260 BTEX, MTBE, Cumene, Naphthalene	MOISTURE	Remarks
MW-8 @ 5'	2/22/07	13:05	X		X			2	1	1			temp 2.1°C
MW-8 @ 24'	2/22/07	13:15	X		X			2	1	1			
MW-9 @ 5'	2/23/07	10:50	X		X			2	1	1			
MW-9 @ 15'	2/23/07	11:00	X		X			2	1	1			
MW-10 @ 15'	2/23/07	13:00	X		X			2	1	1			

(7) **Turnaround Time Requested (TAT)** (please circle): (Normal) Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

(8) **Data Package Options** (please circle if required)
Type I (validation/NJ Reg)
Type II (Tier II)
Type III (Reduced NJ)
Type IV (CLP SOW)
Type VI (Raw Data Only)
TX TRRP-13
MA MCP CT RCP
SDG Complete? Yes No
Site-specific QC (MS/MSD/Dup)? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal COC Required? Yes / No

Relinquished by:	Date	Time	Received by:	Date	Time
Battle Storage 02	2007	0711		02/2007	0711
	02/2007	0920	Ruth Schaut	2/24/07	10:04
Ruth Schaut	2/24/07	1900	GES FRIDGE	2/24	1900
	2-26-07	09:35		02/26/07	0935
	02/26/07	1630		2/26/07	1630

(9)

Lancaster Laboratories, Inc., 2425 New Holland Pike, Lancaster, PA 17601 (717) 656-2300 Fax: (717) 656-6766
Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client.

2102.03

Lancaster Laboratories
Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
Cal	(diet) calories	**lb.**	pound(s)
meq	milliequivalents	**kg**	kilogram(s)
g	gram(s)	**mg**	milligram(s)
ug	microgram(s)	**l**	liter(s)
ml	milliliter(s)	**ul**	microliter(s)
m3	cubic meter(s)	**fib >5 um/ml**	fibers greater than 5 microns in length per ml

< less than – The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million – One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture.

U.S. EPA data qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quatitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
J	Estimated value
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike amount not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

WARRANTY AND LIMITS OF LIABILITY – In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL LANCASTER LABORATORIES BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF LANCASTER LABORATORIES AND (B) WHETHER LANCASTER LABORATORIES HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Lancaster Laboratories which includes any conditions that vary from the Standard Terms and Conditions of Lancaster Laboratories and we hereby object to any conflicting terms contained in any acceptance or order submitted by client.

APPENDIX D

Notice of Reportable Release

TH OF PENNSYLVANIA
ENVIRONMENTAL RESOURCES

ER-BWQ-32: 2/94
BUREAU OF WATER QUALITY MANAGEMENT

NOTIFICATION OF REPORTABLE RELEASE *(Owners and Operators)*
NOTIFICATION OF CONTAMINATION *(Certified Installers and Inspectors)*

NOTIFICATION OF REPORTABLE RELEASE *(Owners and Operators)*

On August 21, 1993, the Storage Tank Program's Corrective Action Process (CAP) regulations became effective. These regulations establish release reporting requirements for owners and operators of storage tanks and storage tank facilities.

Subsection 245.305(a) of the regulations requires owners or operators to notify the appropriate regional office of the Department as soon as practicable, but no later than 2 hours, after the confirmation of a reportable release.

Subsection 245.305(d) requires owners or operators to provide written notification to the appropriate regional office and to the local municipality, within 15 days of the notice required by Subsection 245.305(a). This form may be used to comply with Subsection 245.305(d).

OWNERS AND OPERATORS (O/O)
PLEASE COMPLETE SECTIONS I, II, IIIA, IIIB, IV, V, VII and VIII.

NOTIFICATION OF CONTAMINATION *(Certified Installers and Inspectors)*

On September 21, 1991, the Storage Tank Program's Certification regulations became effective. These regulations establish standards of performance for certified installers and inspectors of storage tanks and storage tank facilities.

Subsection 245.132(a)(4) of the regulations requires certified installers and inspectors to report to the Department a release of a regulated substance or confirmed or suspected contamination of soil, surface or groundwater from regulated substances observed while performing services as a certified installer or inspector.

This form may be used to comply with Subsection 245.132(a)(4). The Department expects submission of the form within 48 hours of observing suspected or confirmed contamination. Where there is a reportable release, the form may be submitted jointly by the owner, operator, certified installer and certified inspector. In this instance, the form must be received by the appropriate regional office within 15 days of the notice required by Subsection 245.305(a).

CERTIFIED INSTALLERS AND INSPECTORS (I/I)
PLEASE COMPLETE SECTIONS I, II, IIIA, IIIC, VI, VII and VIII.

INSTRUCTIONS

I. **FACILITY INFORMATION** - Record the name, I.D. number and physical location (not P.O. Box) of the facility at which a reportable release has been confirmed or at which suspected or confirmed contamination has been observed. Include the name and phone number of a person to contact at the facility.

II. **OWNER INFORMATION** - Record the name, business address and phone number of the owner of the facility identified in Section I.

III. **REGULATED SUBSTANCE INFORMATION** - Indicate to the best of your knowledge: A) the type of product or products involved; B) the quantity of product or products released; and C) whether the contamination is suspected or confirmed.

IV. **REPORTABLE RELEASE INFORMATION** - Record the date of confirmation of the reportable release, e.g., "08/21/93"; the date and regional office notified; and the date the local municipality (provide name of municipality) was sent a copy of this form. Indicate to the best of your knowledge the extent of contamination resulting from the release of the regulated substance.

V. **INTERIM REMEDIAL ACTIONS** - Indicate the interim remedial actions planned, initiated or completed.

VI. **SUSPECTED/CONFIRMED CONTAMINATION INFORMATION** - Record the date of observation of the suspected or confirmed contamination, e.g., "01/01/94". Indicate to the best of your knowledge the indications of a suspected release or extent of confirmed contamination resulting from the release of the regulated substance.

VII. **ADDITIONAL INFORMATION** - Provide any additional, relevant, available information concerning the reportable release or suspected or confirmed contamination. Include in this section a brief description of the activity that was being conducted when the reportable release was confirmed by the owner or operator or when the suspected/confirmed contamination was observed by the certified installer or inspector, e.g., during a(n) installation, repair or upgrade, removal from service or routine inspection.

VIII. **CERTIFICATION** - Please print your name, and provide your signature and date of signature. If a certified installer/inspector, provide certification number and company certification number.

PLEASE SEND COMPLETED ORIGINAL FORM TO:

PA Department of Environmental Resources
Environmental Cleanup Program
Storage Tank Section
(and the appropriate address below, depending on where the FACILITY is located)

Southeast Region	Northeast Region	Southcentral Region	Northcentral Region	Southwest Region	Northwest Region
Lee Park, Suite 6010 555 North Lane Conshohocken, PA 19428 FAX: 610-832-6259/6260	Cross Valley Centre 667 North River Street Plains, PA 18705 FAX: 717-826-5848	One Ararat Boulevard Harrisburg, PA 17110 FAX: 717-540-7492	208 Pine Street Williamsport, PA 17701 FAX: 717-327-3565	400 Waterfront Drive Pittsburgh, PA 15222 FAX: 412-442-4194	1012 Water Street Meadville, PA 16335 FAX: 814-332-6831
Counties Bucks, Chester, Delaware, Montgomery, Philadelphia	**Counties** Carbon, Lackawanna, Lehigh, Luzerne, Monroe, Northampton, Pike, Schuylkill, Susquehanna, Wayne, Wyoming	**Counties** Adams, Bedford, Berks, Blair, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Juniata, Lancaster, Lebanon, Mifflin, Perry, York	**Counties** Bradford, Cameron, Centre, Clinton, Clearfield, Columbia, Lycoming, Montour, Northumberland, Potter, Snyder, Sullivan, Tioga, Union	**Counties** Allegheny, Armstrong, Beaver, Cambria, Fayette, Greene, Indiana, Somerset, Washington, Westmoreland	**Counties** Butler, Clarion, Crawford, Elk, Erie, Forest, Jefferson, Lawrence, McKean, Mercer, Venango, Warren

I. FACILITY INFORMATION (Both O/O and I/I)

Facility Name: FORMER ATLANTIC SERVICESTATION
Facility I.D. Number: 100549
Street Address (P.O. Box not acceptable): 610 OLD YORK RD
City: WARMINSTER
State: PA
Zip Code:
County: BUCKS
Municipality: WARMINSTER
Contact Person: BRAD FISH
Phone Number: (610) 859-5701

II. OWNER INFORMATION (Both O/O and I/I)

Owner Name: SUN COMPANY INC
Address: 4041 MARKET ST
City: ASTON
State: PA
Zip Code: 19014
Phone Number: (610) 859-5701

ER-BWQ-32: 2/94

III. REGULATED SUBSTANCE INFORMATION

A. Type of Product(s) Involved (Mark All That Apply ☒): Both O/O and I/I		B. Quantity (Gallons) of Product(s) Released: O/O Only	C. Contamination Suspected [S] or Confirmed [C]: I/I Only	
Leaded Gasoline	☐		[S]	[C]
Unleaded Gasoline	☒	UNKNOWN	[S]	[C]
Aviation Gasoline	☐		[S]	[C]
Kerosene	☐		[S]	[C]
Jet Fuel	☐		[S]	[C]
Diesel Fuel	☐		[S]	[C]
New Motor Oil	☐		[S]	[C]
Used Motor Oil	☐		[S]	[C]
Fuel Oil No. 1	☐		[S]	[C]
Fuel Oil No. 2	☐		[S]	[C]
Fuel Oil No. 4	☐		[S]	[C]
Fuel Oil No. 5	☐		[S]	[C]
Fuel Oil No. 6	☐		[S]	[C]
Other (Specify) _____	☐		[S]	[C]
Unknown	☐		[S]	[C]

IV. REPORTABLE RELEASE INFORMATION (O/O Only)

Date Reportable Release was Confirmed: 2 / 27 / 96 (m d y)

Date Owner/Operator Verbally Notified Appropriate Regional Office of Reportable Release and Office Notified:

Date 2 / 28 / 96 (m d y) Office SOUTH EAST

Date Owner/Operator Sent Copy of this Written Notification to Local Municipality and Name of Municipality Notified:

Date 2 / 29 / 96 (m d y) Municipality WARMINSTER TWP

Environmental Impacts (Mark All That Apply ☒):

Soil	☒
Sediment	☐
Surface Water	☐
Ground Water	☐
Water Supplies	☐

V. INTERIM REMEDIAL ACTIONS (O/O Only)

(Mark All That Apply ☒):

	Planned	Initiated	Completed	Not Applicable
Regulated Substance Removed from Storage Tanks	☐	☐	☒	☐
Fire, Explosion and Safety Hazards Mitigated	☐	☐	☒	☐
Contaminated Soil Excavated	☐	☒	☐	☐
Free Product Recovered	☐	☐	☐	☒
Temporary Water Supplies Provided	☐	☐	☐	☒
Other (Specify) _____	☐	☐	☐	☐

VI. SUSPECTED / CONFIRMED CONTAMINATION INFORMATION (I/I Only)

Date of Observation of Suspected/Confirmed Contamination: 2 / 27 / 96 (m d y)

Indication of Suspected Contamination (Mark All That Apply ☒):

Unusual Level of Vapors	☒
Erratic Behavior of Product Dispensing Equipment	☐
Release Detection Results Indicate a Release	☐
Discovery of Holes in the Storage Tank	☐
Other (Specify) _____	☐

Extent of Confirmed Contamination (Mark All That Apply ☒):

Product Stained or Product Saturated Soil or Backfill	☒
Ponded Product	☐
Free Product or Sheen on Ponded Water	☐
Free Product or Sheen on the Ground Water Surface	☐
Free Product or Sheen on Surface Water	☐
Other (Specify) _____	☐

VII. ADDITIONAL INFORMATION (Both O/O and I/I)

Include a brief description of the activity that was being conducted when the reportable release was confirmed by the owner or operator or when the suspected/confirmed contamination was observed by the certified installer or inspector, e.g., during a(n) installation, repair or upgrade, removal from service or routine inspection.

WHILE PERFORMING STATION UPGRADE ACTIVITIES 4 CLOSED-IN-PLACE USTs WERE FOUND ALONG WITH AN ABANDONED 550 GALLON HEATING OIL TANK. ALL TANKS WERE REMOVED AND CONFIRMATORY SAMPLES WERE COLLECTED. STRONG VAPORS AND STAINED SOILS WERE OBSERVED DURING EXCAVATION ACTIVITIES. EXCAVATED SOILS WERE PROPERLY DISPOSED OF IN AN APPROVED LANDFILL.

VIII. CERTIFICATION (Both O/O and I/I)

I, JOHN C. KETCHUM, hereby certify, under penalty of law as provided in 18 Pa. C.S.A. (Print Name)

§4904(relating to unsworn falsification to authorities) that I am the owner or operator of the above referenced storage tank facility and that the information provided by me in this notification is true, accurate and complete to the best of my knowledge and belief.

John C. Ketchum (for Sun Co.) — Signature of Owner or Operator

2-29-96 — Date

I, _____, hereby certify, under penalty of law as provided in 18 Pa. C.S.A. (Print Name)

§4904 (relating to unsworn falsification to authorities) that I am the certified installer who performed tank handling activities at the above referenced storage tank facility and that the information provided by me in this notification is true, accurate and complete to the best of my knowledge and belief.

_____ Signature of Certified Installer

_____ Date

_____ Installer Certification Number

_____ Company Certification Number

I, _____, hereby certify, under penalty of law as provided in 18 Pa. C.S.A. (Print Name)

§4904 (relating to unsworn falsification to authorities) that I am the certified inspector who performed inspection activities at the above referenced storage tank facility and that the information provided by me in this notification is true, accurate and complete to the best of my knowledge and belief.

_____ Signature of Certified Inspector

_____ Date

_____ Inspector Certification Number

_____ Company Certification Number

Recycled Paper

APPENDIX E

Subsurface Drilling Logs

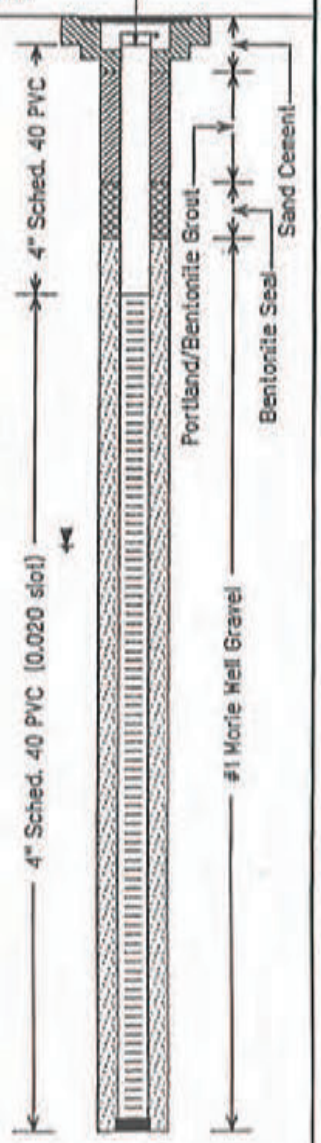
Handex of E. Pennsylvania

WELL LOG: MW-1

Permit #: *N/A*	Drill Date: *3/13/98*	Use: *Monitoring*
Location: *610 York Rd., Warminster, PA*		Owner Loc #: *0363-5430*
Owner: *Sun Company Inc.*		Handex Loc #: *111332-02*
Owner Address: *1801 Market St., Phil., PA*	BORING - Depth: *20 ft.*	Diameter: *4 in.*
Drilling Method: *Air Rotary*	CASING - Length: *4.5 ft.*	Diameter: *4 in.*
Sampling Method: *Split-Spoon/Drill Cuttings*	SCREEN - Length: *15 ft.*	Diameter: *4 in.*
Static Water Level: *9 ft.* *(from TOC 3/13/98)*	WELL - Depth: *20 ft.*	

Depth (ft.)	Sample ID	Sample Depth	Blows/6 in.	P.I.D.	Graphic Log	Geologic Description
						GRAVEL and SAND
						Medium to fine SAND with some Gravel
5	SS-1M	☒	6,8,5,7	<1		SILT and SAND
						Weathered BEDROCK
						Competent red/brown SHALE
10	SS-2			5		
15	SS-3			7		
20						

Well Diagram



NOTES: M = Sample analyzed at laboratory; ☒ = Sample interval/recovery; ⧩ = Static Water Level (from TOC)

Geologist: J. Goudsward

Driller: B.L. Myers

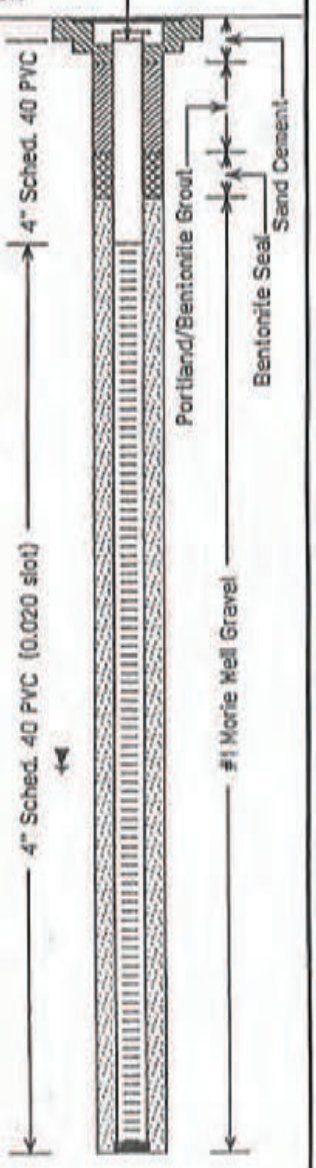
Handex of E. Pennsylvania

WELL LOG: MW-2

Permit #: *N/A*	Drill Date: *3/13/98*	Use: *Monitoring*
Location: *610 York Rd., Warminster, PA*		Owner Loc #: *0383-5430*
Owner: *Sun Company Inc.*		Handex Loc #: *111332-02*
Owner Address: *1801 Market St., Phil., PA*	BORING - Depth: *25 ft.*	Diameter: *4 in.*
Drilling Method: *Air Rotary*	CASING - Length: *4.5 ft.*	Diameter: *4 in.*
Sampling Method: *Split-Spoon/Drill Cuttings*	SCREEN - Length: *20 ft.*	Diameter: *4 in.*
Static Water Level: *18 ft.* *(from TOC 3/13/98)*	WELL - Depth: *25 ft.*	

Depth (ft.)	Sample ID	Sample Depth	Blows/6 in.	P.I.D.	Graphic Log	Geologic Description
5	SS-1ж	☒	6,6,7,7	<1		GRAVEL and SAND Medium to fine SAND and Silt with gravel
						SILT and SAND
						Weathered BEDROCK
10	SS-2			2		Competent red/brown SHALE
15	SS-3			3		
20	SS-4			5		
25						

Well Diagram



NOTES: ж = Sample analyzed at laboratory; ☒ = Sample interval/recovery; ⧩ = Static Water Level (from TOC)

Geologist: J. Goudsward	Driller: B.L. Myers

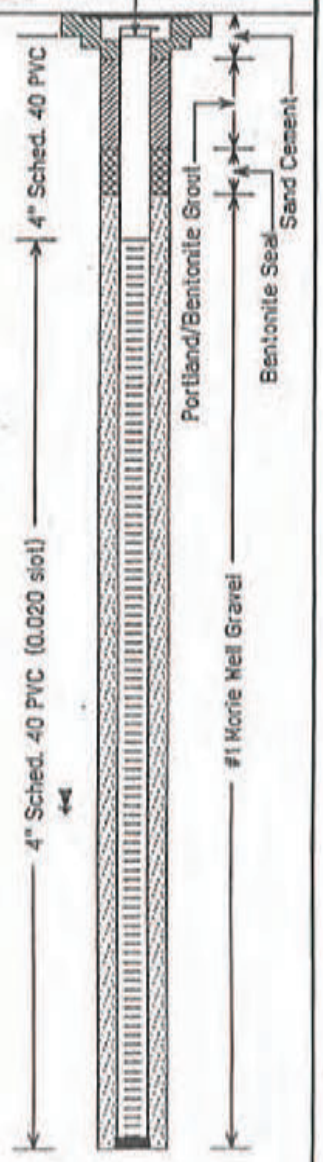
Handex of E. Pennsylvania

WELL LOG: MW-3

Permit #: *N/A*	Drill Date: *3/13/96*	Use: *Monitoring*
Location: *810 York Rd., Warminster, PA*		Owner Loc #: *0363-5430*
Owner: *Sun Company Inc.*		Handex Loc #: *111332-02*
Owner Address: *1801 Market St., Phil., PA*	BORING - Depth: *25 ft.*	Diameter: *4 in.*
Drilling Method: *Air Rotary*	CASING - Length: *4.5 ft.*	Diameter: *4 in.*
Sampling Method: *Split-Spoon/Drill Cuttings*	SCREEN - Length: *20 ft.*	Diameter: *4 in.*
Static Water Level: *17 ft.* *(from TOC 3/13/96)*	WELL - Depth: *25 ft.*	

Depth (ft.)	Sample ID	Sample Depth	Blows/6 in.	P.I.D.	Graphic Log	Geologic Description
5	SS-1H	☒	6,3,6,7	<1		GRAVEL and SAND
						Fine SAND and Silt with some gravel
						Fine SAND and SILT
						Weathered BEDROCK
10	SS-2			<1		Competent SHALE
15	SS-3			5		
20	SS-4			<1		
25						

Well Diagram



NOTES: H = Sample analyzed at laboratory; ☒ = Sample interval/recovery; ⧩ = Static Water Level (from TOC)

Geologist: J. Goudsward

Driller: B.L. Myers

BORING LOG

BOREHOLE NO. MW-4

Groundwater and Environmental Services, Inc.

PROJECT: Sun Warminster
ADDRESS: 610 Old York Road

TOTAL DEPTH: 25 feet
BOREHOLE DIA: 10 inch

Logged By: Brian Peterka
Dates Drilled: October 27, 1997
Drilling Company: Lutz Environmental
Drill Rig Type:

Drilling Method:
Sampling Method: Split Spoon
Soil Class. System: Unified Soil Classification System (USCS)
Field Screening: PID

Depth (feet)	Sample Interval	Field Screen (ppm)	Recovery	SAMPLE LITHOLOGY (USCS)	Stratigraphy	Comments	COMPLETION DETAILS
0				FILL: (0'-1') Asphalt and subbase	FILL		Flush mount well vault, locking cap, GES well lock
				CL: (1'-5') Red-brown to dark brown clay, moist, no odors	CL	(0'-5') Hand auger to clear utilities	Type 2 Portland cement (0'-2')
5		1 ppm	18" 75%	CL: (5'-10') Dark brown clay, moist, density increasing with depth, no odors			Hydrated bentonite (2'-3')
		2 ppm	18" 75%				
		2 ppm	12" 100%				
10		2 ppm		CL: (10'-15') Light brown and red-brown clay layers, moist zone at 13', consolidated from 13'-15', no odor			4-inch diameter PVC riser (0'-5')
							No. 2 Sand (3'-25')
15		2 ppm		MUDSTONE: (15'-17') Red-brown consolidated mudstone, moist, no odors	MUDSTONE		4-inch diameter PVC 0.020" slotted screen (5'-25')
				MUDSTONE: (17'-20') Light brown and red-brown mudstone layers, moist zone at 19'			
20		2 ppm		MUDSTONE: (20'-25') Red-brown mudstone, moist at 20' and 22'-23', no odors		Monitoring well boring terminated at 25'	
25							

General Comments:
SAA - Same as above
A soil sample at an unknown depth was submitted for laboratory analysis

Symbol Key:
Apparent Water Level
Lab Sample Location

MONITORING WELL LOG MW-5

Groundwater and Environmental Services, Inc.

PROJECT:	Sun Warminster	SURFACE ELEV.:	NA	TOTAL DEPTH:	50 feet
ADDRESS:	610 Old York Road	WATER DEPTH	42 feet	CASING EL.:	
		BOREHOLE DIA.:	8 inch	WELL DIA.:	4 inch

Logged By:	Krista Snyder	Drilling Method:	Air Rotary
Dates Drilled:	10/18/04	Sampling Method:	Cuttings
Drilling Company:	Eichelberger's	Soil Class. System:	Unified Soil Classification System (USCS)
Drill Rig Type:		Field Screening:	Q-Rae Plus Model 2000 (results in ppm)

Depth (feet)	Sample Interval	Field Screen	SAMPLE LITHOLOGY (USCS)	Stratigraphy	Comments	COMPLETION DETAILS
0	0'-4'	0.3	ASPHALT: (0'-0.5') Asphalt	ASPHALT	0' - 4' Air knife and vacuum extraction for utility clearance	Completed with locking cap and flush mount
5	4'-6'		SAND AND SILT: (0.5'-6') Brown silt and fine to medium sand with sparse angular gravel, dry, no odor	SAND AND SILT		Bentonite seal from 1'-3'
	6'-10'		SHALE: (6'-50') Shale bedrock	SHALE		
10		2.0				Sand pack, pea gravel and gravel from 5'-50'
	10'-15'					
15		1.7				
						Schedule 40 PVC screen (0.020 slot) 10'-50'
20	15'-25'					
25		3.3			Sample MW-5-25' submitted for Laboratory Analysis	
30	25'-35'					
35		1.6			Shale bedrock at 6'	
40	35-43'				Water at 42'	
					Well casing set at 50'	
45					Borehole completed to 50'	
50						

Location:

Northing/Latitude: NA

Easting/Longitude: NA

General Comments:

Symbols:

Apparent Water Level

Fracture

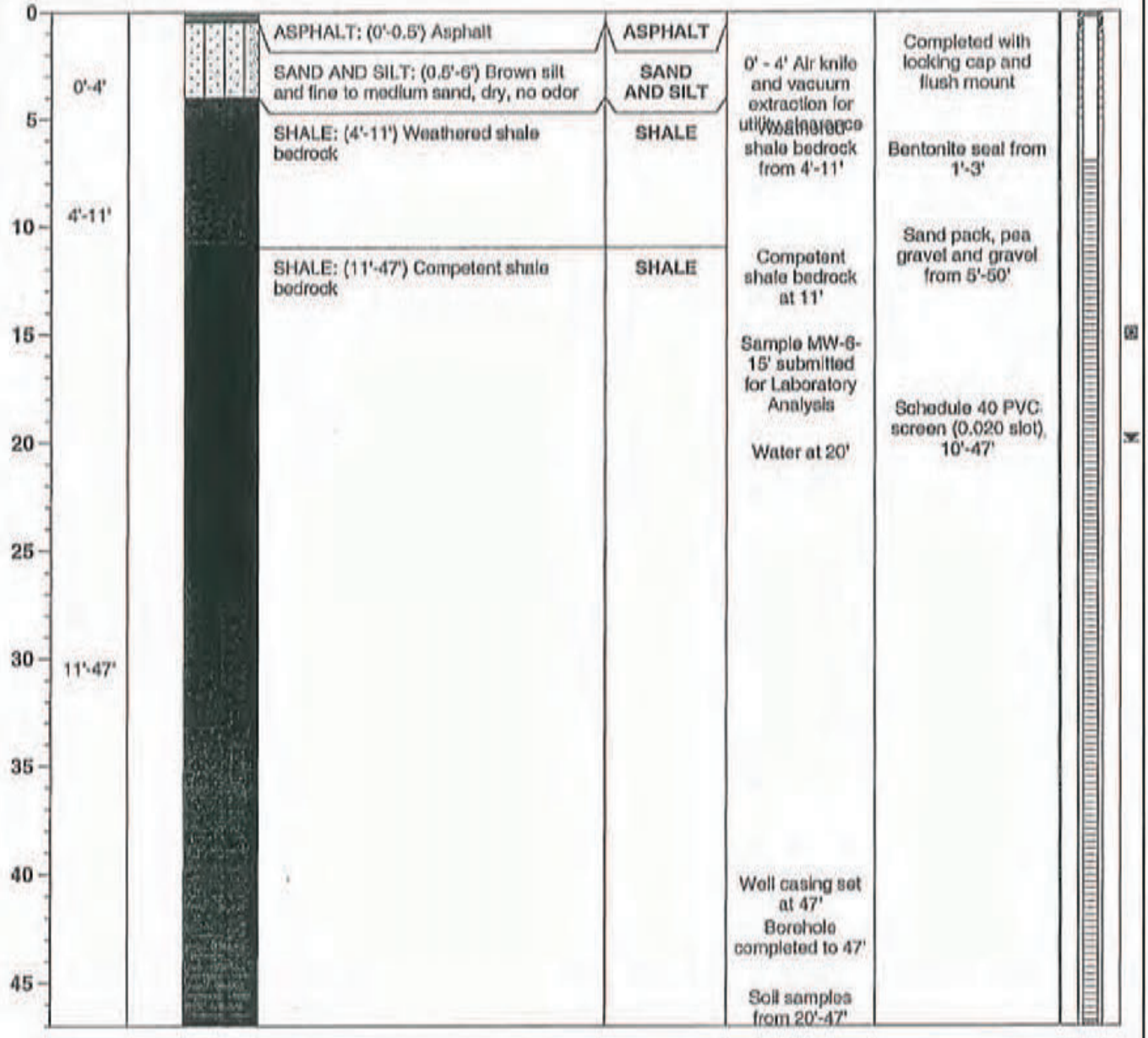
Lab Sample Location

MONITORING WELL LOG MW-6

Groundwater and Environmental Services, Inc.

PROJECT:	Sun Warminster	SURFACE ELEV.:	NA	TOTAL DEPTH:	47 feet
ADDRESS:	610 Old York Road	WATER DEPTH	20 feet	CASING EL.:	
		BOREHOLE DIA.:	8 inch	WELL DIA.:	4 inch

Logged By:	Krista Snyder	Drilling Method:	Air Rotary
Dates Drilled:	10/18/04	Sampling Method:	Cuttings
Drilling Company:	Eichelberger's	Soil Class. System:	Unified Soil Classification System (USCS)
Drill Rig Type:		Field Screening:	Q-Rae Plus Model 2000 (results in ppm)



Location:

Northing/Latitude: NA

Easting/Longitude: NA

General Comments:

Symbols:

Apparent Water Level

Fracture

Lab Sample Location

MONITORING WELL LOG MW-7

Groundwater and Environmental Services, Inc.

PROJECT:	Sun Warminster	SURFACE ELEV.:	N/A	TOTAL DEPTH:	100 feet
ADDRESS:	610 Old York Road	WATER DEPTH	15.39 feet	CASING EL.:	99.20 feet
		BOREHOLE DIA.:	8 inches	WELL DIA.:	2 inches

Logged By:	P. Crawford	Drilling Method:	Air Rotary
Dates Drilled:	11/23/04	Sampling Method:	N/A
Drilling Company:	Eichelbergers	Soil Class. System:	USCS
Drill Rig Type:	N/A	Field Screening:	PID

Depth (feet)	Sample Interval	Field Screen	SAMPLE LITHOLOGY (USCS)	Stratigraphy	Comments	COMPLETION DETAILS
0			SILTY SAND: Tan, with asphalt chips	SM		(0'-1') Concrete flush-mount cover with locking well cap
5						
10			SANDSTONE: Maroon Arkosic, with purple siltstone lenses, abundant rounded quartz cobbles less than or equal to 1/8" diameter.	SANDSTONE		
15						
20			Increased quartz cobbles at 50', diameter increases to greater than 1/4"			(1'-3') Bentonite hole plug
25					Encountered noticeable water at 23' with <1gpm yield	
30						
35						(60'-100') Sand packed
40						
45						
50						(0'-60') 6" Steel Casing
55						
60						
65						(60'-100') 2" Schedule 40 PVC slotted 0.020"
70						
75			SILTSTONE: Tan to buff, no quartz cobbles observed	SILTSTONE		
80						
85						
90					End of Monitoring well boring at 100'. Water starts to fill in very slowly at bottom.	
95						
100						

Location:

Northing/Latitude: N/A

Easting/Longitude: N/A

General Comments:

No detectable readings observed with PID

Symbols:

Apparent Water Level

Fracture

Lab Sample Location

MONITORING WELL LOG MW-8

Groundwater and Environmental Services, Inc.

PROJECT:	SUN - Warminster	SURFACE ELEV.:	NA	TOTAL DEPTH:	100 feet
ADDRESS:	610 York Road	WATER DEPTH		CASING EL.:	
		BOREHOLE DIA.:	8 inch	WELL DIA.:	2 inch

Logged By:	Keith Montone	Drilling Method:	Air Rotary
Dates Drilled:	2/22/07 and 2/26/07	Sampling Method:	Grab
Drilling Company:	B.L. Myers Bros	Soil Class. System:	Unified Soil Classification System (USCS)
Drill Rig Type:	Scramm Air Rotary	Field Screening:	PID

Depth (feet)	Sample Interval	Field Screen	SAMPLE LITHOLOGY (USCS)	Stratigraphy	Comments	COMPLETION DETAILS
0			ASPHALT: (0-2') Asphalt, large rocks and ballast	ASPHALT	Steel Casing grouted in place	Cement/Flushmount (0-1')
5	Sample collected for Lab Analysis	2189 ppm	SANDY SILT: (2'-7') Light brown to tan silty sand, strong hydrocarbon odor coming from borehole, slightly moist.	SANDY SILT		
10		175 ppm		SILTSTONE		
15		75 ppm	SILTSTONE: (7'-22') Siltstone bedrock encountered at 7' bgs, reddish brown, slight odor, dry, quarter size rock frags samples from drill rig			2" Riser (0 -60')
20		150 ppm		SAND AND SILT		Steel Casing (0'-60')
25	Sample collected for Lab Analysis	1259 ppm	SAND AND SILT: (22'-25') SOFT SPOT, Light brown tan silty sand, mild odor, moist samples.	SILTSTONE		
30		82 ppm	SILTSTONE: (25'-30') Change back to competent siltstone rock, Reddish brown siltstone, water starting to come from rig, slight odor.			
35				SILTSTONE		
40						#2 Sand pack (57'-100')
45			SILTSTONE: (35'-100') Very wet reddish brown siltstone, 25gpm, noticable water bearing zone at 73'			
50						
55						Bentonite seal (54'-57')
60						
65						
70						
75						
80						PVC Screen 0.0200 Slot (60' - 100')
85						
90						
95						
100						

Location:

Northing/Latitude: NA

Easting/Longitude: NA

General Comments:

Symbols:

Apparent Water Level

Fracture

Lab Sample Location

MONITORING WELL LOG MW-9

Groundwater and Environmental Services, Inc.

PROJECT:	SUN - Warminster	SURFACE ELEV.:	NA	TOTAL DEPTH:	89 Feet
ADDRESS:	610 York Road	WATER DEPTH		CASING EL.:	
		BOREHOLE DIA.:	8 inch	WELL DIA.:	2 inch

Logged By:	Keith Montone	Drilling Method:	Air Rotary
Dates Drilled:	2/23/07 and 2/26/07	Sampling Method:	Grab
Drilling Company:	B.L. Myers Bros	Soil Class. System:	Unified Soil Classification System (USCS)
Drill Rig Type:	Scramm Air Rotary	Field Screening:	PID

Depth (feet)	Sample Interval	Field Screen	SAMPLE LITHOLOGY (USCS)	Stratigraphy	Comments	COMPLETION DETAILS
0			ASPHALT: (0-2') Asphalt, large rocks and ballast	ASPHALT		Cement/Flushmount (0-1')
5	Sample collected for Lab Analysis	55 ppm		SILT		
10		2.0 ppm	SILT: (2'-7') Dark brown silt, no hydrocarbon odor, slightly moist.	SILT		
15	Sample collected for Lab Analysis	0.0 ppm	SILT: (7'-16') Brown/Red silt, dry, no odor, no rock frags, soft drilling		Steel Casing grouted in place	Steel Casing (0'-60')
20		0.7 ppm	SILTSTONE: (16'-23') Brownish red siltstone rock encountered, hard, quarter size recovery samples, dry no odor	SILTSTONE		
25		0.0 ppm	SILTSTONE: (23'-38') Large broken pieces reddish brown siltstone, <5 gpm, no odor			2" Riser (0 -59')
30						
35						Bentonite seal (28'-53')
40			SILTSTONE: (38'-60') SAA brown/red siltstone bedrock, water bearing fracture at 38' 15 gpm	SILTSTONE		
45						
50						
55						
60			SILTSTONE: (60'-89') SAA, additional fractures at 72' and 78', large volume of water 30 gpm	SILTSTONE		#2 Sand pack (53'-89')
65						
70						
75						PVC Screen 0.0200 Slot (59' - 89')
80						
85						

Location:

Northing/Latitude: NA

Easting/Longitude: NA

General Comments:

Symbols:

Apparent Water Level

Fracture

Lab Sample Location

MONITORING WELL LOG MW-10

Groundwater and Environmental Services, Inc.

PROJECT:	SUN - Warminster	SURFACE ELEV.:	NA	TOTAL DEPTH:	50 feet
ADDRESS:	610 York Road	WATER DEPTH		CASING EL.:	
		BOREHOLE DIA.:	8 inch	WELL DIA.:	4 inch

Logged By:	Keith Montone	Drilling Method:	Air Rotary
Dates Drilled:	2/23/2007	Sampling Method:	Grab
Drilling Company:	B.L. Myers Bros	Soil Class. System:	Unified Soil Classification System (USCS)
Drill Rig Type:	Scramm Air Rotary	Field Screening:	PID

Depth (feet)	Sample Interval	Field Screen	SAMPLE LITHOLOGY (USCS)	Stratigraphy	Comments	COMPLETION DETAILS
0			ASPHALT: (0-2') Asphalt, large rocks and ballast	ASPHALT		Cement/Flushmount (0-1')
			SILT: (2'-5') Dark brown silt, slightly moist, no odor, no rocks, soft	SILT		
5		2.9 ppm	SILT: (7'-17') Dark brown/red silt, slightly moist, no odor, no rock frags, soft	SILT		Bentonite seal (2'-7')
10		1.4 ppm				4" Riser (0 -10')
15	Sample collected for Lab Analysis	0.0 ppm				
20		0.0 ppm	SILTSTONE: (17'-24') Brown/red siltstone, dry, no odor	WEATHERED SHALE		
25		0.0 ppm	SILTSTONE: (24'-30') Encountered water at 24' bgs SAA	SILTSTONE		#2 Sand pack (7'-50')
30			SILTSTONE: (30'-50') Very wet reddish brown siltstone, 25gpm, noticable water bearing zones at 38' and 47'	SILTSTONE		
35						PVC Screen 0.0200 Slot (10' - 50')
40						
45						
50						

Location:

Northing/Latitude: NA

Easting/Longitude: NA

General Comments:

Symbols:

Apparent Water Level

Fracture

Lab Sample Location

SOIL VAPOR POINT

BOREHOLE NO SG-1

Groundwater and Environmental Services, Inc.

PROJECT: Sunoco Station 0363-5430

ADDRESS: 610 York Road Warminster, PA

TOTAL DEPTH: 4 feet

Logged By: Keith Montone

Dates Drilled: February 9, 2007

Drilling Company: Odyssey Environmental

Drill Rig Type: Vacmasters 1000

Drilling Method: Vactron

Soil Class. System: Unified Soil Classification System (USCS)

Field Screening: PID

Depth (feet)	Sample Interval	Field Screen (ppm)	Rec-overy	SAMPLE LITHOLOGY (USCS)	Stratigraphy	Comments	COMPLETION DETAILS
0				ASPHALT: (0' - 1.5') Asphalt, sub base gravel, and stone	ASPHALT		4" Flush mount well vault (0'-1') Concrete
				SILT: (1.5' - 4.0') Light tanish brown silt, dry, no odor	SILT		(1' - 3') Hydrated Bentonite (3'- 4') No. 2 Sand (3.5' - 4') Stainless steel screened vapor implant



General Comments:

Symbol Key:

Apparent Water Level

Lab Sample Location

SOIL VAPOR POINT

BOREHOLE NO SG-2

Groundwater and Environmental Services, Inc.

PROJECT: **Sunoco Station 0363-5430**

TOTAL DEPTH: **4 feet**

ADDRESS: **610 York Road Warminster, PA**

Logged By:	Keith Montone	Drilling Method:	Vactron
Dates Drilled:	February 9, 2007	Soil Class. System:	Unified Soil Classification System (USCS)
Drilling Company:	Odyssey Environmental	Field Screening:	PID
Drill Rig Type:	Vacmasters 1000		

Depth (feet)	Sample Interval	Field Screen (ppm)	Rec-overy	SAMPLE LITHOLOGY (USCS)	Stratigraphy	Comments	COMPLETION DETAILS
0				ASPHALT: (0' - 1.5') Asphalt, sub base gravel, and stone	ASPHALT		4" Flush mount well vault (0'-1') Concrete
				SILT: (1.5' - 4.0') Light tanish brown silt, dry, no odor	SILT		(1' - 3') Hydrated Bentonite (3'- 4') No. 2 Sand (3.5' - 4') Stainless steel screened vapor implant



General Comments:

Symbol Key:

Apparent Water Level

Lab Sample Location

SOIL VAPOR POINT

BOREHOLE NO SG-3

Groundwater and Environmental Services, Inc.

PROJECT: Sunoco Station 0363-5430

ADDRESS: 610 York Road Warminster, PA

TOTAL DEPTH: 4 feet

Logged By: Keith Montone

Dates Drilled: February 9, 2007

Drilling Company: Odyssey Environmental

Drill Rig Type: Vacmasters 1000

Drilling Method: Vactron

Soil Class. System: Unified Soil Classification System (USCS)

Field Screening: PID

Depth (feet)	Sample Interval	Field Screen (ppm)	Rec-overy	SAMPLE LITHOLOGY (USCS)	Stratigraphy	Comments	COMPLETION DETAILS
0				ASPHALT: (0' - 1.5') Asphalt, sub base gravel, and stone	ASPHALT		4" Flush mount well vault (0'-1') Concrete
				SILT: (1.5' - 4.0') Light tanish brown silt, dry, no odor	SILT		(1' - 3') Hydrated Bentonite (3'- 4') No. 2 Sand (3.5' - 4') Stainless steel screened vapor implant



General Comments:

Symbol Key:

Apparent Water Level

Lab Sample Location

APPENDIX F

Domestic Well Survey Results

TABLE 1
DOMESTIC WELL SURVEY

SUNOCO STATION #0363-5430
618 OLD YORK ROAD
WARMINSTER, PENNSYLVANIA

PROPERTY OWNER OR RETAIL/LEASEE NAME	PROPERTY USAGE	ADDRESS NO.	STREET	WMA CUSTOMER? YES	WMA CUSTOMER? NO	SUPPLY WELL? YES	SUPPLY WELL? NO	SURVEY NOT RETURNED	WELL SAMPLED	COMMENTS
Warminster Water Authority	Commercial	415	Gibson Avenue	√		√				215-675-3301
	Residential	529	Lenape Street	√		√				Information from PADEP file review
	Residential	575	Maple Street	√		√				Information from PADEP file review
	Residential	577	Maple Street	√		√				Information from PADEP file review
Robert A. Thomas	Residential	480	Memorial Street	√			√			
Jeff Walsh	Residential	481	Memorial Street	√			√			
Anthony and Helen Bongermino	Residential	486	Memorial Street	√			√			
	Residential	489	Memorial Street					√		
George and Kathleen D Krajci	Residential	490	Memorial Street	√			√			
McHugh	Residential	495	Memorial Street					√		
	Residential	512	Memorial Street					√		
	Residential	513	Memorial Street					√		
Nelson Mesty	Residential	525 A/B	Memorial Street	√			√			
Harold Van Sant	Residential	526	Memorial Street	√			√			
Montes	Residential	536	Memorial Street					√		
	Residential	535 A/B	Memorial Street	√			√			
Jane E. Gibson	Residential	545 A/B	Memorial Street	√			√			
Gabor	Residential	546	Memorial Street	√			√			
	Residential	548	Memorial Street					√		
	Residential	555 A/B	Memorial Street					√		
	Residential	556 A/B	Memorial Street					√		
Denise M. Guzzelli	Residential	558	Memorial Street	√			√			
	Residential	565	Memorial Street					√		
	Residential	566 A/B	Memorial Street					√		
	Residential	567	Memorial Street					√		
	Residential	575 A/B	Memorial Street					√		
No Name	Residential	576 A/B	Memorial Street	√			√			
	Residential	588	Memorial Street					√		
Jim Dugan	Residential	590	Memorial Street	√			√			
Donald P. Pfister	Residential	452	Olive Street	√		√				Well not in use
Moore	Residential	460	Olive Street	√		√				Well not in use
	Residential	470	Olive Street			√				Information from PADEP file review
O'Neill	Residential	480 A/B	Olive Street			√				Information from PADEP file review
	Residential	490	Olive Street			√				Information from PADEP file review
Adam and Helen Sobol	Residential	500	Olive Street	√			√			
William Reichert	Residential	520	Olive Street	√			√			
Dorothy Brundage	Residential	530	Olive Street	√			√			
Mirack	Residential	536	Olive Street	√			√			
McDonnell	Residential	540	Olive Street					√		
Emil Krauss	Residential	550	Olive Street	√			√			
	Residential	552	Olive Street					√		

TABLE 1
DOMESTIC WELL SURVEY

SUNOCO STATION #0363-5430
410 OLD YORK ROAD
WARMINSTER, PENNSYLVANIA

PROPERTY OWNER OR RETAIL/LEASEE NAME	PROPERTY USAGE	ADDRESS NO.	STREET	WMA CUSTOMER? YES	WMA CUSTOMER? NO	SUPPLY WELL? YES	SUPPLY WELL? NO	SURVEY NOT RETURNED	WELL SAMPLED	COMMENTS
	Residential	556	Olive Street					√		
Richard Stein	Residential	560	Olive Street	√			√			
	Residential	566	Olive Street					√		
	Residential	580	Olive Street					√		
	Residential	582	Olive Street					√		
Robert M. Kraft	Residential	586 A/B	Olive Street	√			√			
	Residential	590	Olive Street	√			√			
Warminster Municipal Authority	Commercial		Roberts Road			√				Pump Station
David Stein (National Auto Sales)	Commercial	330	W. Street Rd	√			√			
Rysone Plaza II	Commercial	530	W. Street Rd	√			√			
Denny's	Commercial	520	W. Street Rd	√			√			
Kinkade (Tree House Flowers)	Commercial	540	W. Street Rd	√			√			
	Commercial	550	W. Street Rd	√			√			
	Commercial	556	W. Street Rd					√		
Burger King	Commercial	580	W. Street Rd	√			√			
Warminster Electronics (Eugene Poinsi)	Commercial	586	W. Street Rd	√			√			
The Dove Bar	Commercial	590	W. Street Rd					√		
	Residential	590A	W. Street Rd					√		
Penwil (Jiffy Lube)	Commercial	600	W. Street Rd	√			√			
Ted (Steak & Hoagie factory)	Commercial	610	W. Street Rd	√			√			
Eagle Diner	Commercial		W. Street Rd					√		
United Church of Christ	Commercial	785	W. Street Rd					√		
Lafferty Chevrolet	Commercial	829	W. Street Rd		√	√			30-May-01	Well is main source of water
Center Point Plaza (Walters & Assoc.)	Commercial		W. Street Rd	√			√			(610-444-6000)
Christ's House (retirement village)	Residential	1220	W. Street Rd	√		√			1-Jun-01	Well supplies one permanently unoccupied residence
John Mayer (office space)	Commercial	755	Old York Rd	√			√			
Pathmark Stores	Commercial	700	Old York Rd	√			√			
Archbishop Wood	Commercial	655	Old York Rd	√			√			
Warminster Plaza	Commercial		Old York Rd	√			√			
Hatboro Federal Savings	Commercial	609	Old York Rd	√			√			
Drug Emporium	Commercial	599	Old York Rd	√			√			
John Mayer (stores)	Commercial	541-553	Old York Rd	√			√			
Delafrontelo (stores)	Commercial	525-539	Old York Rd	√			√			
PNC Bank	Commercial	521	Old York Rd	√			√			
Warminster Ambulance Corp	Commercial	555	Evergreen Ave	√			√			
	Residential	552	Norwood Ave	√			√			
	Residential	554	Norwood Ave					√		
	Residential	512	Norwood Ave							

ACCUTEST.

06/12/01

RECEIVED JUN 1 8 2001

Technical Report for

Groundwater & Environmental Services

Sun, 610 Old York Road, Warminster, PA 0363-5430

Accutest Job Number: E92327

Report to:

Groundwater & Environmental Services
410 Eagleview Blvd.
Suite 110
Exton, PA 19341

ATTN: Mike Sarcinello

Total number of pages in report: 4

nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Vincent J. Pugliese
President

Certifications: NJ(12129), NY(10983), CA, CT, DE, FL, MA, MD, NC, PA, RI, SC, VA

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories

Accutest Laboratories

Sample Summary

Groundwater & Environmental Services

Job No: E92327

Sun, 610 Old York Road, Warminster, PA 0363-5430

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
E92327-1	06/01/01	14:20	BB	06/04/01	DW	Drinking Water	CHRIST'S HOME

Accutest Laboratories

Report of Analysis

Client Sample ID:	CHRIST'S HOME		
Lab Sample ID:	E92327-1	**Date Sampled:**	06/01/01
Matrix:	DW - Drinking Water	**Date Received:**	06/04/01
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	Sun, 610 Old York Road, Warminster, PA 0363-5430		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	A45687.D	1	06/08/01	MRD	n/a	n/a	VA1195
Run #2							

VOA Special List

CAS No.	Compound	Result	MCL	RL	Units	Q
71-43-2	Benzene	ND	5.0	1.0	ug/l	
108-88-3	Toluene	ND	1000	1.0	ug/l	
100-41-4	Ethylbenzene	ND	700	1.0	ug/l	
1330-20-7	Xylene (total)	ND	10000	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND		1.0	ug/l	
91-20-3	Naphthalene	ND		5.0	ug/l	
98-82-8	Isopropylbenzene	ND		2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		81-118%
17060-07-0	1,2-Dichloroethane-D4	105%		68-124%
2037-26-5	Toluene-D8	100%		85-119%
460-00-4	4-Bromofluorobenzene	106%		75-127%

ND = Not detected
MCL = Maximum Contamination Level (40 CFR 141)
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

BJ

ACCUTEST.

CHAIN OF CUSTODY

FRESH PONDS CORPORATE VILLAGE, BUILDING B
2235 ROUTE 130, DAYTON, NJ 08810
732-329-0200 FAX: 732-329-3499/3480

ACCUTEST JOB #: E 52027

ACCUTEST QUOTE #:

CLIENT INFORMATION

NAME: GES, Inc
ADDRESS: 410 Eagleview blvd, Soite 110
CITY: Exton STATE: Pa ZIP: 19341
SEND REPORT TO: Mike Sarcinello
PHONE #: 610-458-1077 ext 157

FACILITY INFORMATION

PROJECT NAME: Sun - Warminster
LOCATION: Gro - Old York Rd
PROJECT NO.: # 0363 - 5430
FAX #:

ANALYTICAL INFORMATION

BTEX 15 - BTEX + MTBE + Naphthalene

MATRIX CODES

DW - DRINKING WATER
GW - GROUND WATER
WW - WASTE WATER
SO - SOIL
SL - SLUDGE
OI - OIL
LIQ - OTHER LIQUID
SOL - OTHER SOLID

ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	COLLECTION DATE	COLLECTION TIME	SAMPLED BY:	MATRIX	# OF BOTTLES	PRESERVATION HCl	HNO3	H2SO4	NONE		LAB USE ONLY
-1	Christ's Home	6/1/01	1420	BB	GW	3	X				X	951

DATA TURNAROUND INFORMATION

- [X] 21 DAYS STANDARD
- [ ] 14 DAYS *RUSH*
- [ ] 7 DAYS *EMERGENCY*
- [ ] OTHER

APPROVED BY:

21 DAY TURNAROUND HARDCOPY. EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED

DATA DELIVERABLE INFORMATION

- [ ] NJ REDUCED
- [ ] NJ Full
- [ ] FULL CLP
- [ ] DISK DELIVERABLE
- [ ] OTHER (SPECIFY)
- [ ] COMMERCIAL "A"
- [ ] COMMERCIAL "B"
- [ ] STATE FORMS

COMMENTS/REMARKS

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESION, INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER:	DATE TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
1. B. Blum	6/1/01 1545	1.	2.	6/1/01 11:25	2. Bert Allen
RELINQUISHED BY: 3. Bert Allen	DATE TIME: 6/1/01 1756	RECEIVED BY: 3.	4.	DATE TIME:	RECEIVED BY: 4.
RELINQUISHED BY: 5.	DATE TIME:	RECEIVED BY: 5.	SEAL #	PRESERVE WHERE APPLICABLE ☑	ON ICE ☑ TEMPERATURE 5 °C

4

TRS

ACCUTEST.

06/11/01

RECEIVED JUN 13 2001

Technical Report for

Groundwater & Environmental Services

Sun, 610 Old York Road, Warminster, PA 0363-5430

Accutest Job Number: E92225

Report to:

Groundwater & Environmental Services
410 Eagleview Blvd.
Suite 110
Exton, PA 19341

ATTN: Mike Sarcinello

Total number of pages in report: 4

nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Vincent J. Pugliese
President

Certifications: NJ(12129), NY(10983), CA, CT, DE, FL, MA, MD, NC, PA, RI, SC, VA

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Accutest Laboratories

Sample Summary

Groundwater & Environmental Services

Job No: E92225

Sun, 610 Old York Road, Warminster, PA 0363-5430

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
E92225-1	05/31/01	13:50	BB	06/01/01	AQ	Ground Water	LAFFERTY CHEVROLET

Accutest Laboratories

Report of Analysis

Client Sample ID:	LAFFERTY CHEVROLET		
Lab Sample ID:	E92225-1	**Date Sampled:**	05/31/01
Matrix:	AQ - Ground Water	**Date Received:**	06/01/01
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	Sun, 610 Old York Road, Warminster, PA 0363-5430		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	O41737.D	1	06/08/01	NM	n/a	n/a	VO2286
Run #2							

VOA Special List

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		81-118%
17060-07-0	1,2-Dichloroethane-D4	97%		68-124%
2037-26-5	Toluene-D8	99%		85-119%
460-00-4	4-Bromofluorobenzene	100%		75-127%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

CHAIN OF CUSTODY

ACCUTEST

FRESH PONDS CORPORATE VILLAGE, BUILDING B
2235 ROUTE 130, DAYTON, NJ 08810
732-329-0200 FAX: 732-329-3499/3480

GW

ACCUTEST JOB #: E92225
ACCUTEST QUOTE #:

CLIENT INFORMATION

NAME: GES, Inc
ADDRESS: 910 Eaglerock Blvd, Suite 110
CITY: Exton STATE: Pa ZIP: 19341
SEND REPORT TO: Lisa Holderbach
PHONE #: 610-458-1077 ext 110

FACILITY INFORMATION

PROJECT NAME: Sun Walmsley
LOCATION: 910 Old York Rd #0363-5430
PROJECT NO.:
FAX #:

ANALYTICAL INFORMATION

6 BTEX, MTBE

MATRIX CODES

DW - DRINKING WATER
GW - GROUND WATER
WW - WASTE WATER
SO - SOIL
SL - SLUDGE
OI - OIL
LIQ - OTHER LIQUID
SOL - OTHER SOLID

ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	COLLECTION DATE	COLLECTION TIME	SAMPLED BY:	MATRIX	# OF BOTTLES	PRESERVATION HCl	PRESERVATION NaOH	PRESERVATION HNO3	PRESERVATION H2SO4	PRESERVATION NONE	LAB USE ONLY
-1	Lafferty chevrolet	5/31/01	1350	BB	GW	3	Y					939

DATA TURNAROUND INFORMATION

- [x] 21 DAYS STANDARD
- [ ] 14 DAYS *RUSH*
- [ ] 7 DAYS *EMERGENCY*
- [ ] OTHER

APPROVED BY:

21 DAY TURNAROUND HARDCOPY. EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED

DATA DELIVERABLE INFORMATION

- [ ] NJ REDUCED
- [ ] NJ Full
- [ ] FULL CLP
- [ ] DISK DELIVERABLE
- [ ] OTHER (SPECIFY)
- [ ] COMMERCIAL "A"
- [ ] COMMERCIAL "B"
- [ ] STATE FORMS

COMMENTS/REMARKS

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER:	DATE TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
1. B Bliss	5/31/01 1600	1. GES Fridge	2. Dawn Gotham	6/1/01 10:00	2.
RELINQUISHED BY:	DATE TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
3.	6/1/01 1305	3.	4.		4.
RELINQUISHED BY:	DATE TIME:	RECEIVED BY:	SEAL #	PRESERVE WHERE APPLICABLE	ON ICE	TEMPERATURE
5.		5.			☑	2 °C

TRS

APPENDIX G

Soil Gas Laboratory Analytical Reports

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax 717-656-2681 • www.lancasterlabs.com

Analysis Report

ANALYTICAL RESULTS

Prepared for:

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

610-458-1077

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 1028771. Samples arrived at the laboratory on Friday, March 09, 2007. The PO# for this group is WARMINSTER and the release number is 0202577-0600-61.

Client Description		Lancaster Labs Number
SG-1	Air	5001822
SG-2	Air	5001823
SG-3	Air	5001824

ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Connie Johnson
ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Patrick Crawford
ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Heather Nelson
ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Bonnie Cobb
ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Cris Altman
ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Keith Montone
ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Krista Snyder

Lancaster Laboratories

Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax 717-656-2681 • www.lancasterlabs.com

Questions? Contact your Client Services Representative
Lynn M Frederiksen at (717) 656-2300

Respectfully Submitted,

Michele J. Smith

Michele J. Smith
Group Leader

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Lancaster Laboratories Sample No. AQ 5001822

SG-1 Air
Summa #0201 610 York Rd-Warminster, PA
DUNS# 03635430 COC: NA SG-1

Collected:03/08/2007 15:15 by KM

Account Number: 11224

Submitted: 03/09/2007 17:45
Reported: 03/19/2007 at 06:59
Discard: 05/19/2007

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

CAT No.	Analysis Name	CAS Number	As Received Final Result	LOQ	Units	As Received Final Result	LOQ	Units	DF
00015	TO-15 VOA special compounds								
00018	Methyl tert-butyl Ether	1634-04-4	< 0.0036	0.0036	mg/m3	< 0.00100	0.00100	ppm(v)	1
00019	Benzene	71-43-2	0.0042	0.0032	mg/m3	0.0013	0.00100	ppm(v)	1
00020	Toluene	108-88-3	0.026	0.0038	mg/m3	0.0070	0.00100	ppm(v)	1
00021	Ethylbenzene	100-41-4	0.0086	0.0043	mg/m3	0.0020	0.00100	ppm(v)	1
00022	m/p-Xylenes	n.a.	0.027	0.0043	mg/m3	0.0062	0.00100	ppm(v)	1
00023	o-Xylene	95-47-6	0.015	0.0043	mg/m3	0.0035	0.00100	ppm(v)	1
00031	Cumene	98-82-8	< 0.0049	0.0049	mg/m3	< 0.00100	0.00100	ppm(v)	1

Commonwealth of Pennsylvania Lab Certification No. 36-037

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

LOQ = Limit of Quantitation

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00015	TO-15 VOA special compounds	EPA TO-15	1	03/15/2007 04:52	Fanella S Zamcho	1

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax:717-656-2681 • www.lancasterlabs.com

Analysis Report

Lancaster Laboratories Sample No. AQ 5001823

SG-2 Air
Summa #0524 610 York Rd-Warminster, PA
DUNS# 03635430 COC: NA SG-2

Collected:03/08/2007 14:40 by KM

Account Number: 11224

Submitted: 03/09/2007 17:45
Reported: 03/19/2007 at 06:59
Discard: 05/19/2007

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

CAT No.	Analysis Name	CAS Number	As Received Final Result	LOQ	Units	As Received Final Result	LOQ	Units	DF
00015	TO-15 VOA special compounds								
00018	Methyl tert-butyl Ether	1634-04-4	0.014	0.0036	mg/m3	0.0040	0.00100	ppm(v)	1
00019	Benzene	71-43-2	< 0.0032	0.0032	mg/m3	< 0.00100	0.00100	ppm(v)	1
00020	Toluene	108-88-3	0.012	0.0038	mg/m3	0.0033	0.00100	ppm(v)	1
00021	Ethylbenzene	100-41-4	< 0.0043	0.0043	mg/m3	< 0.00100	0.00100	ppm(v)	1
00022	m/p-Xylenes	n.a.	0.020	0.0043	mg/m3	0.0045	0.00100	ppm(v)	1
00023	o-Xylene	95-47-6	0.0061	0.0043	mg/m3	0.0014	0.00100	ppm(v)	1
00031	Cumene	98-82-8	< 0.0049	0.0049	mg/m3	< 0.00100	0.00100	ppm(v)	1

Commonwealth of Pennsylvania Lab Certification No. 36-037

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

LOQ = Limit of Quantitation

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00015	TO-15 VOA special compounds	EPA TO-15	1	03/15/2007 05:38	Fanella S Zamcho	1

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Lancaster Laboratories Sample No. AQ 5001824

SG-3 Air
Summa #0046 610 York Rd-Warminster, PA
DUNS# 03635430 COC: NA SG-3

Collected:03/08/2007 14:25 by KM

Account Number: 11224

Submitted: 03/09/2007 17:45
Reported: 03/19/2007 at 06:59
Discard: 05/19/2007

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

CAT No.	Analysis Name	CAS Number	As Received Final Result	LOQ	Units	As Received Final Result	LOQ	Units	DF
00015	TO-15 VOA special compounds								
00018	Methyl tert-butyl Ether	1634-04-4	< 0.0036	0.0036	mg/m3	< 0.00100	0.00100	ppm(v)	1
00019	Benzene	71-43-2	< 0.0032	0.0032	mg/m3	< 0.00100	0.00100	ppm(v)	1
00020	Toluene	108-88-3	0.0096	0.0038	mg/m3	0.0026	0.00100	ppm(v)	1
00021	Ethylbenzene	100-41-4	< 0.0043	0.0043	mg/m3	< 0.00100	0.00100	ppm(v)	1
00022	m/p-Xylenes	n.a.	0.016	0.0043	mg/m3	0.0036	0.00100	ppm(v)	1
00023	o-Xylene	95-47-6	0.0063	0.0043	mg/m3	0.0014	0.00100	ppm(v)	1
00031	Cumene	98-82-8	< 0.0049	0.0049	mg/m3	< 0.00100	0.00100	ppm(v)	1

Commonwealth of Pennsylvania Lab Certification No. 36-037

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

LOQ = Limit of Quantitation

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
00015	TO-15 VOA special compounds	EPA TO-15	1	03/15/2007 06:31	Fanella S Zamcho	1

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Quality Control Summary

Client Name: Sunoco Retail c/o GES Exton
Reported: 03/19/07 at 06:59 AM

Group Number: 1028771

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: E0707330A	Sample number(s): 5001822-5001824							
Methyl tert-butyl Ether	< 0.0036	0.0036	mg/m3	88	88	69-144	0	20
Benzene	< 0.0032	0.0032	mg/m3	79	87	53-157	10	20
Toluene	< 0.0038	0.0038	mg/m3	91	93	67-138	1	20
Ethylbenzene	< 0.0043	0.0043	mg/m3	88	88	57-139	0	20
m/p-Xylenes	< 0.0043	0.0043	mg/m3	85	86	56-135	1	20
o-Xylene	< 0.0043	0.0043	mg/m3	86	87	57-137	0	20
Cumene	< 0.0049	0.0049	mg/m3	92	94	60-143	2	20

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

UU07 11LL4 gw 'UL8771 # 500182L2-L4

Chain of Custody Record

On-site Time:	Temp 0.0
Off-site Time:	Temp 0.0
Sky Conditions:	
Meteorological Events:	
Wind Speed: 0.0	Direc

Sunoco DUNS #: 0363-5430
Region: Northeast
State or Lead Regulatory Agency: PADEP - Southeast Region
Requested Due Date (mm/dd/yy): Standard TAT
COC Tracking Number:

Lab Name:	Lancaster Laboratories	Facility Address:	610 York Road	Consultant/Contractor:	GES, Inc.
Address:	2425 New Holland Pike	Facility City, State:	Warminster PA	Address:	440 Creamery Way, Suite 500
	Lancaster, PA 12425	Site Lat/Long:	0.0 0.0		Exton, PA 19341
Lab PM:	Lynn Frederiksen	Sunoco PM Contact:	Marty Liebhardt	Consultant/Contractor Project No.:	0202577-0600-61
Tele/Fax:	(717) 656-2308 / (717) 656-6766	Address:	350 Eagleview Blvd. Suite 300	Consultant/Contractor PM:	Patrick Crawford
E-mail EDD To:	bcobb@gesonline.com		Exton, Pennsylvania 19341	Tele/Fax:	(610) 458-1077x3038 / (610) 458-2300
E-mail EDD To:	SunocoENFOS@deltaenv.com	Tele/Fax:	(610) 450-5345 / (610) 450-5252	Invoice to:	Bonnie Cobb

Report Type & QC Level:

Item No.	Sample Description	Time	Date	Matrix: AIR	Laboratory No. summa canister#	No. of Containers	Preservative: None	Requested Analysis: TO-15 (BTEX, MTBE and Cumene)	Sample Point Lat/Long and Comments
1	SG-1	1515	3/8/07	X	201	1	X	X	Detection Limits must meet
2	SG-2	1440	3/8/07	X	524	1	X	X	PADEP Statewide Health
3	SG-3	1425	3/8/07	X	046	1	X	X	Standards for all samples
4									
5									
6									
7									
8									
9									
10									

Sampler's Name:	Keith Mostone	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company:	GES, Inc.	Keith S. Mostone / GES	3/7/07	1700	GES Warehouse	3/8/07	1700
Shipment Date:		[illegible]	3/8/07	0930	[illegible]	3/9/07	0930
Shipment Method:	Laboratory Courier	[illegible]	3/9/07	1745			
Shipment Tracking No:					[illegible]	3/9/07	1745

Special Instructions:

Custody Seals In Place Yes (No) Temp Blank Yes (No) Cooler Temperature on Receipt ~~OF~~/C Trip Blank Yes (No)

Lancaster Laboratories
Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
Cal	(diet) calories	**lb.**	pound(s)
meq	milliequivalents	**kg**	kilogram(s)
g	gram(s)	**mg**	milligram(s)
ug	microgram(s)	**l**	liter(s)
ml	milliliter(s)	**ul**	microliter(s)
m3	cubic meter(s)	**fib >5 um/ml**	fibers greater than 5 microns in length per ml

< less than – The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million – One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture.

U.S. EPA data qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quatitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
J	Estimated value
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike amount not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

WARRANTY AND LIMITS OF LIABILITY – In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL LANCASTER LABORATORIES BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF LANCASTER LABORATORIES AND (B) WHETHER LANCASTER LABORATORIES HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Lancaster Laboratories which includes any conditions that vary from the Standard Terms and Conditions of Lancaster Laboratories and we hereby object to any conflicting terms contained in any acceptance or order submitted by client.

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

ANALYTICAL RESULTS

Prepared for:

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

610-458-1077

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 1070065. Samples arrived at the laboratory on Monday, December 17, 2007. The PO# for this group is WARMINSTER and the release number is 0202577-0600-61.

Client Description	Lancaster Labs Number
SG-1 Grab Air	5238424
SG-2 Grab Air	5238425
SG-3 Grab Air	5238426

ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Connie Johnson
ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Heather Nelson
ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Bonnie Cobb
ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Cris Altman
ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Krista Snyder
ELECTRONIC COPY TO	LLI.	Attn: EDD Group

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax 717-656-2681 • www.lancasterlabs.com

Questions? Contact your Client Services Representative
Lynn M Frederiksen at (717) 656-2300

Respectfully Submitted,

Chad A. Moline
Group Leader

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2360 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Lancaster Laboratories Sample No. 5238424 AQ Group No. 1070065

SG-1 Grab Air
610 Old York Road - Warminster, PA
DUNS# 03635430 COC: 0166074 SG-1

Collected:12/14/2007 by SP

Account Number: 11224

Submitted: 12/17/2007 16:45
Reported: 01/09/2008 at 09:18
Discard: 03/10/2008

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

CAT No.	Analysis Name	CAS Number	As Received Final Result	LOQ	Units	As Received Final Result	LOQ	Units	DF
05298	TO 15 VOA Ext. List								
07225	Methyl t-Butyl Ether	1634-04-4	< 0.0036	0.0036	mg/m3	< 0.0010	0.0010	ppm(v)	1
07238	Benzene	71-43-2	< 0.0032	0.0032	mg/m3	< 0.0010	0.0010	ppm(v)	1
07250	Toluene	108-88-3	0.0047	0.0038	mg/m3	0.0013	0.0010	ppm(v)	1
07261	Ethylbenzene	100-41-4	< 0.0043	0.0043	mg/m3	< 0.0010	0.0010	ppm(v)	1
07262	m/p-Xylene	n.a.	< 0.0043	0.0043	mg/m3	< 0.0010	0.0010	ppm(v)	1
07263	o-Xylene	95-47-6	< 0.0043	0.0043	mg/m3	< 0.0010	0.0010	ppm(v)	1
07266	Cumene	98-82-8	< 0.0049	0.0049	mg/m3	< 0.0010	0.0010	ppm(v)	1

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/08

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

LOQ = Limit of Quantitation

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
05298	TO 15 VOA Ext. List	EPA TO-15	1	12/31/2007 15:44	Jonathan K Nardelli	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. 5238425 AQ Group No. 1070065

SG-2 Grab Air
610 Old York Road - Warminster, PA
DUNS# 03635430 COC: 0166074 SG-2

Collected:12/14/2007 by SP

Account Number: 11224

Submitted: 12/17/2007 16:45
Reported: 01/09/2008 at 09:18
Discard: 03/10/2008

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

CAT No.	Analysis Name	CAS Number	As Received Final Result	LOQ	Units	As Received Final Result	LOQ	Units	DF
05298	TO 15 VOA Ext. List								
07225	Methyl t-Butyl Ether	1634-04-4	0.0066	0.0036	mg/m3	0.0018	0.0010	ppm(v)	1
07238	Benzene	71-43-2	< 0.0032	0.0032	mg/m3	< 0.0010	0.0010	ppm(v)	1
07250	Toluene	108-88-3	< 0.0038	0.0038	mg/m3	< 0.0010	0.0010	ppm(v)	1
07261	Ethylbenzene	100-41-4	< 0.0043	0.0043	mg/m3	< 0.0010	0.0010	ppm(v)	1
07262	m/p-Xylene	n.a.	0.013	0.0043	mg/m3	0.0031	0.0010	ppm(v)	1
07263	o-Xylene	95-47-6	< 0.0043	0.0043	mg/m3	< 0.0010	0.0010	ppm(v)	1
07266	Cumene	98-82-8	< 0.0049	0.0049	mg/m3	< 0.0010	0.0010	ppm(v)	1

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/08

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

LOQ = Limit of Quantitation

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
05298	TO 15 VOA Ext. List	EPA TO-15	1	12/31/2007 16:27	Jonathan K Nardelli	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. 5238426 AQ Group No. 1070065

SG-3 Grab Air
610 Old York Road - Warminster, PA
DUNS# 03635430 COC: 0166074 SG-3

Collected:12/14/2007 by SP

Account Number: 11224

Submitted: 12/17/2007 16:45
Reported: 01/09/2008 at 09:18
Discard: 03/10/2008

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

CAT No.	Analysis Name	CAS Number	As Received Final Result	LOQ	Units	As Received Final Result	LOQ	Units	DF
05298	TO 15 VOA Ext. List								
07225	Methyl t-Butyl Ether	1634-04-4	0.0038	0.0036	mg/m3	0.0011	0.0010	ppm(v)	1
07238	Benzene	71-43-2	< 0.0032	0.0032	mg/m3	< 0.0010	0.0010	ppm(v)	1
07250	Toluene	108-88-3	0.0064	0.0038	mg/m3	0.0017	0.0010	ppm(v)	1
07261	Ethylbenzene	100-41-4	< 0.0043	0.0043	mg/m3	< 0.0010	0.0010	ppm(v)	1
07262	m/p-Xylene	n.a.	< 0.0043	0.0043	mg/m3	< 0.0010	0.0010	ppm(v)	1
07263	o-Xylene	95-47-6	< 0.0043	0.0043	mg/m3	< 0.0010	0.0010	ppm(v)	1
07266	Cumene	98-82-8	< 0.0049	0.0049	mg/m3	< 0.0010	0.0010	ppm(v)	1

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/08

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

LOQ = Limit of Quantitation

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
05298	TO 15 VOA Ext. List	EPA TO-15	1	12/31/2007 17:11	Jonathan K Nardelli	1

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Quality Control Summary

Client Name: Sunoco Retail c/o GES Exton
Reported: 01/09/08 at 09:18 AM

Group Number: 1070065

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: A0736530A	Sample number(s): 5238424-5238426							
Methyl t-Butyl Ether	< 0.0036	0.0036	mg/m3					
Benzene	< 0.0032	0.0032	mg/m3	78	78	54-135	1	20
Toluene	< 0.0038	0.0038	mg/m3	79	77	58-147	2	20
Ethylbenzene	< 0.0043	0.0043	mg/m3	76	72	63-140	6	20
m/p-Xylene	< 0.0043	0.0043	mg/m3	77	73	63-136	6	20
o-Xylene	< 0.0043	0.0043	mg/m3	79	77	62-160	3	20
Cumene	< 0.0049	0.0049	mg/m3					

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Analysis Request/ Environmental Services Chain of Custody

Lancaster Laboratories
02025 77-0660-61

For Lancaster Laboratories use only
Acct. # 11224 Group# 1070065 Sample # 5238424-26

COC # 0166074

Please print. Instructions on reverse side correspond with circled numbers.

(1)
Client: Sun-Warminster Acct. #:
610 Old York Rd 3
Project Name/#: 0363-5430 PWSID #:
Project Manager: Cris Altman P.O.#:
Sampler: Sergio Pereira Quote #:
Name of state where samples were collected: PA

(4) Matrix

(5) Analyses Requested
Preservation Codes

For Lab Use Only
FSC:
SCR#:

Preservation Codes
H=HCl T=Thiosulfate
N=HNO_3 B=NaOH
S=H_2SO_4 O=Other

(6)

temp = 34 °F

(2) Sample Identification	Date Collected	Time Collected	(3) Grab	Composite	Soil	Water	Other	# of Containers	TO-15: BTEX, MTBE, Carbons	Remarks
SG-1	12/14/07		X				X	1	X	Summa # 419
SG-2	12/14/07		X				X	1	X	Summa # 199
SG-3	12/14/07		X				X	1	X	Summa # 102
										6-liter summa canisters

(7) **Turnaround Time Requested (TAT)** (please circle): (Normal) Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

Relinquished by:	Date	Time	Received by:	Date	Time
Sergio P.	12-14-07	17:00	CES Fridge	12-14	17:01
	12/17/07	8:50		12/17/07	8:50
	12/20/07	16:45			

(8) **Data Package Options** (please circle if required)
Type I (validation/NJ Reg)
Type II (Tier II)
Type III (Reduced NJ)
Type IV (CLP SOW)
Type VI (Raw Data Only)
TX TRRP-13
MA MCP CT RCP
Site-specific QC (MS/MSD/Dup)? Yes No
Internal COC Required? Yes / No

SDG Complete? Yes No

Relinquished by:	Date	Time	Received by:	Date	Time
			Renias Diller	12/21/07	16:45

(9)

Lancaster Laboratories, Inc., 2425 New Holland Pike, Lancaster, PA 17601 (717) 656-2300 Fax: (717) 656-6766
Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client.

Lancaster Laboratories
Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
Cal	(diet) calories	**lb.**	pound(s)
meq	milliequivalents	**kg**	kilogram(s)
g	gram(s)	**mg**	milligram(s)
ug	microgram(s)	**l**	liter(s)
ml	milliliter(s)	**ul**	microliter(s)
m3	cubic meter(s)	**fib >5 um/ml**	fibers greater than 5 microns in length per ml

< less than – The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million – One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture.

U.S. EPA data qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quatitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
J	Estimated value
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike amount not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

WARRANTY AND LIMITS OF LIABILITY – In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL LANCASTER LABORATORIES BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF LANCASTER LABORATORIES AND (B) WHETHER LANCASTER LABORATORIES HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Lancaster Laboratories which includes any conditions that vary from the Standard Terms and Conditions of Lancaster Laboratories and we hereby object to any conflicting terms contained in any acceptance or order submitted by client.

APPENDIX H

PADEP Letter Dated June 9, 2006

Pennsylvania Department of Environmental Protection

2 East Main Street
Norristown, PA 19401
June 9, 2006

Southeast Regional Office

Phone: 484-250-5960
Fax: 484-250-5961

RECEIVED
JUN 14 2006

Mr. Martin D. Liebhardt, P.G.
Sunoco Marketing
350 Eagleview Boulevard, Suite 300
Exton, PA 19341

Re: Storage Tank Program
Site Characterization Report/Remedial Action
Plan Approval with Modifications
Sunoco SS No. 0363-5430
Facility ID No. 09-30778
Incident No. 7112
610 Old York Road
Warminster Township
Bucks County

Dear Mr. Liebhardt:

Your Site Characterization Report/Remedial Action Plan (SCR/RAP) submitted by Groundwater & Environmental Services, Inc. (GES), dated January 2006, for the above referenced facility, is hereby approved with modifications, as provided for in Chapter 245, Sections 245.310(c)(2) and Section 245.311(c)(2) of the Department of Environmental Protection's (Department) Corrective Action Regulations. Modifications to the report are listed below:

> Due to the variability of groundwater flow direction and the characteristics of the Stockton Formation, the Department requests that in addition to the proposed activities outlined in Section 10.0, you should install additional wells within the shallow and deep aquifers. We request installation of two additional deep wells and one additional shallow well. One deep well north of the former dispenser island in the location of the proposed shallow well and a deep and shallow well west of the pump island adjacent to Street Road.

The RAP is approved based upon site characterization information provided by you and or by your environmental consultant. The goal of a RAP is to identify an approach to remove or eliminate contamination resulting from the release, to prevent further groundwater degradation, and to restore groundwater affected by the release. Cleanup levels required by the Department will be based upon remediation standards identified by you. We have reviewed your plan based upon pursuit of the Statewide Health and Site-Specific Standard. These standards were identified by you in either your SCR/RAP or by contact with either you or your consultant.

If at any time you wish to modify any part of this SCR/RAP, you must prepare and submit a new or modified SCR/RAP to include the selection of a new remediation standard, if applicable.

This letter does not waive any rights of the Commonwealth of Pennsylvania to take enforcement action under applicable law for the conditions discussed in this letter.

Thank you for your cooperation in working with the Department toward the remediation of this site. If you need additional information or have any questions, please call me at 484-250-5783.

Sincerely,

Lauren T. Mapleton
Geologic Specialist
Environmental Cleanup

James R. Burke, P.G.
Licensed Professional Geologist
Environmental Cleanup

cc: Ms. Kunsch - DEP
Ms. McClennen - DEP
Ms. Warren - DEP
Mr. Crawford - GES
Warminster Township
Bucks County Health Department
Re 30 (GJS06ECP)160-1

APPENDIX I

Groundwater Laboratory Analytical Reports, October 2008 – July 2009

Lancaster Laboratories

2425 New Holland Pike. PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax 717-656-2681 • www.lancasterlabs.com

Analysis Report

ANALYTICAL RESULTS

Prepared for:

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

610-458-1077

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

July 19, 2009

SAMPLE GROUP

The sample group for this submittal is 1152814. Samples arrived at the laboratory on Thursday, July 09, 2009. The PO# for this group is WARMINSTER and the release number is 0203026-0600-60.

Client Description	Lancaster Labs Number
MW-1 Water	5719715
MW-2 Water	5719716
MW-3 Water	5719717
MW-4 Water	5719718
MW-5 Water	5719719
MW-6 Water	5719720
MW-7 Water	5719721
MW-8 Water	5719722
MW-9 Water	5719723
MW-10 Water	5719724

METHODOLOGY

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Heather Nelson
ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Bonnie Cobb

Lancaster Laboratories

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Analysis Report

ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Krista Snyder
ELECTRONIC COPY TO	LLI	Attn: EDD Group

Questions? Contact your Client Services Representative
Lynn M Frederiksen at (717) 656-2300

Respectfully Submitted,

Christine Dulaney
Senior Specialist

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 5719715

Group No. 1152814
PA

MW-1 Water
610 Old York Rd-Warminster, PA
DUNS# 03635430 COC: MW-1

Collected: 07/08/2009 10:25 by LS

Account Number: 11224

Submitted: 07/09/2009 15:45
Reported: 07/19/2009 at 21:45
Discard: 09/18/2009

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

15430

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
SW-846 8260B	GC/MS Volatiles		ug/l	ug/l	
02300	Benzene	71-43-2	< 1	1	1
02300	Ethylbenzene	100-41-4	< 1	1	1
02300	Isopropylbenzene	98-82-8	< 2	2	1
02300	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	1
02300	Naphthalene	91-20-3	< 4	4	1
02300	Toluene	108-88-3	< 1	1	1
02300	Xylene (Total)	1330-20-7	< 1	1	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/10

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01161	GC/MS VOA Water Prep	SW-846 5030B	1	P091941AA	07/13/2009 19:25	Kelly E Brickley	1
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	P091941AA	07/13/2009 19:25	Kelly E Brickley	1

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Analysis Report

Lancaster Laboratories Sample No. WW 5719716

Group No. 1152814
PA

MW-2 Water
610 Old York Rd-Warminster, PA
DUNS# 03635430 COC: MW-2

Collected: 07/08/2009 11:10 by LS

Account Number: 11224

Submitted: 07/09/2009 15:45
Reported: 07/19/2009 at 21:45
Discard: 09/18/2009

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

25430

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
SW-846 8260B	GC/MS Volatiles		ug/l	ug/l	
02300	Benzene	71-43-2	< 1	1	1
02300	Ethylbenzene	100-41-4	2	1	1
02300	Isopropylbenzene	98-82-8	3	1	1
02300	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	1
02300	Naphthalene	91-20-3	< 4	4	1
02300	Toluene	108-88-3	< 1	1	1
02300	Xylene (Total)	1330-20-7	< 1	1	1

General Sample Comments

PA DEP Lab Certification ID #36-00037, Expiration Date: 1/31/10

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	P091941AA	07/13/2009 19:46	Kelly E Brickley	1
02300	DRT-Unleaded Waters by 8260B	SW-846 8260B	1	P091941AA	07/13/2009 19:46	Kelly E Brickley	1

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Analysis Report

Lancaster Laboratories Sample No. WW 5719717

Group No. 1152814
PA

MW-3 Water
610 Old York Rd-Warminster, PA
DUNS# 03635430 COC: MW-3

Collected: 07/08/2009 11:45 by LS

Account Number: 11224

Submitted: 07/09/2009 15:45
Reported: 07/19/2009 at 21:45
Discard: 09/18/2009

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

35430

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
SW-846 8260B	GC/MS Volatiles		ug/l	ug/l	
02100	Benzene	71-43-2	< 1	1	1
02100	Ethylbenzene	100-41-4	< 1	1	1
02100	Isopropylbenzene	98-82-8	< 2	2	1
02100	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	1
02100	Naphthalene	91-20-3	< 4	4	1
02100	Toluene	108-88-3	< 1	1	1
02100	Xylene (Total)	1330-20-7	< 1	1	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/10

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	P091941AA	07/13/2009 20:08	Kelly E Brickley	1
02100	UST-Unleaded Waters by 8260B	SW-846 8260B	1	P091941AA	07/13/2009 20:08	Kelly E Brickley	1

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Analysis Report

Lancaster Laboratories Sample No. WW 5719718

Group No. 1152814
PA

MW-4 Water
610 Old York Rd-Warminster, PA
DUNS# 03635430 COC: MW-4

Collected: 07/08/2009 12:00 by LS

Account Number: 11224

Submitted: 07/09/2009 15:45
Reported: 07/19/2009 at 21:45
Discard: 09/18/2009

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

45430

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
SW-846 8260B	GC/MS Volatiles		ug/l	ug/l	
02300	Benzene	71-43-2	< 1	1	1
02300	Ethylbenzene	100-41-4	< 1	1	1
02300	Isopropylbenzene	98-82-8	< 2	2	1
02300	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	1
02300	Naphthalene	91-20-3	< 4	4	1
02300	Toluene	108-88-3	< 1	1	1
02300	Xylene (Total)	1330-20-7	< 1	1	1

General Sample Comments

PA DEP Lab Certification ID 36-00037. Expiration Date: 1/31/10

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	F091941AA	07/13/2009 20:29	Kelly E Brickley	1
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	F091941AA	07/13/2009 20:29	Kelly E Brickley	1

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Analysis Report

Lancaster Laboratories Sample No. WW 5719719

Group No. 1152814
PA

MW-5 Water
610 Old York Rd-Warminster, PA
DUNS# 03635430 COC: MW-5

Collected: 07/08/2009 11:30 by LS

Account Number: 11224

Submitted: 07/09/2009 15:45
Reported: 07/19/2009 at 21:48
Discard: 09/18/2009

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

55430

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
SW-846 8260B	GC/MS Volatiles		ug/l	ug/l	
02300	Benzene	71-43-2	< 1	1	1
02300	Ethylbenzene	100-41-4	< 1	1	1
02300	Isopropylbenzene	98-82-8	< 1	1	1
02300	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	1
02300	Naphthalene	91-20-3	< 4	4	1
02300	Toluene	108-88-3	< 1	1	1
02300	Xylene (Total)	1330-20-7	< 1	1	1

General Sample Comments

PA DEP Lab Certification ID 36-00037. Expiration Date: 1/31/10

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	FC91941AA	07/13/2009 20:50	Kelly S Brickley	1
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	FC91941AA	07/13/2009 20:50	Kelly S Brickley	1

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Analysis Report

Lancaster Laboratories Sample No. WW 5719720

Group No. 1152814
PA

MW-6 Water
610 Old York Rd-Warminster, PA
DUNS# 03635430 COC: MW-6

Collected: 07/08/2009 13:10 by LS

Account Number: 11224

Submitted: 07/09/2009 15:45
Reported: 07/18/2009 at 21:45
Discard: 09/18/2009

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

65430

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
SW-846 8260B	GC/MS Volatiles		ug/l	ug/l	
02300	Benzene	71-43-2	< 1	1	1
02300	Ethylbenzene	100-41-4	< 1	1	1
02300	Isopropylbenzene	98-82-8	< 2	2	1
02300	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	1
02300	Naphthalene	91-20-3	< 4	4	1
02300	Toluene	108-88-3	< 1	1	1
02300	Xylene (Total)	1330-20-7	2	1	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/10

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	F091941AA	07/13/2009 21:12	Kelly E Brickley	1
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	F091941AA	07/13/2009 21:12	Kelly E Brickley	1

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Analysis Report

Lancaster Laboratories Sample No. WW 5719721

Group No. 1152814
PA

MW-7 Water
610 Old York Rd-Warminster, PA
DUNS# 03635430 COC: MW-7

Collected: 07/08/2009 10:10 by LS

Account Number: 11224

Submitted: 07/09/2009 15:45
Reported: 07/19/2009 at 21:45
Discard: 09/18/2009

Sunocc Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

75430

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
SW-846 8260B	GC/MS Volatiles		ug/l	ug/l	
02300	Benzene	71-43-2	< 1	1	1
02300	Ethylbenzene	100-41-4	< 1	1	1
02300	Isopropylbenzene	98-82-8	< 2	2	1
02300	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	1
02300	Naphthalene	91-20-3	< 4	4	1
02300	Toluene	108-88-3	< 1	1	1
02300	Xylene (Total)	1330-20-7	< 1	1	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/10

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	F091941AA	07/13/2009 21:22	Kelly E Brickley	1
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	F091941AA	07/13/2009 21:32	Kelly E Brickley	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 5719722

Group No. 1152814
PA

MW-8 Water
610 Old York Rd-Warminster, PA
DUNS# 03635430 COC: MW-8

Collected: 07/08/2009 10:50 by LS

Account Number: 11224

Submitted: 07/09/2009 15:45
Reported: 07/19/2009 at 21:45
Discard: 09/18/2009

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

85430

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
SW-846 8260B	GC/MS Volatiles		ug/l	ug/l	
02100	Benzene	71-43-2	< 1	1	1
02100	Ethylbenzene	100-41-4	< 1	1	1
02100	Isopropylbenzene	98-82-8	< 2	2	1
02100	Methyl Tertiary Butyl Ether	1634-04-4	1	1	1
02100	Naphthalene	91-20-3	< 4	4	1
02100	Toluene	108-88-3	< 1	1	1
02100	Xylene (Total)	1330-20-7	< 1	1	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/10

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	P091941AA	07/13/2009 21:54	Kelly E Brickley	1
02100	UST-Unleaded Waters by 8260B	SW-846 8260B	1	P091941AA	07/13/2009 21:54	Kelly E Brickley	1

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Analysis Report

Lancaster Laboratories Sample No. WW 5719723

Group No. 1152814
PA

MW-9 Water
610 Old York Rd-Warminster, PA
DUNS# 03635430 COC: MW-9

Collected: 07/08/2009 12:15 by LS

Account Number: 11224

Submitted: 07/09/2009 15:45
Reported: 07/19/2009 at 21:45
Discard: 09/18/2009

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

95430

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
SW-846 8260B	GC/MS Volatiles		ug/l	ug/l	
02100	Benzene	71-43-2	< 1	1	1
02300	Ethylbenzene	100-41-4	< 1	1	1
02100	Isopropylbenzene	98-82-8	< 2	2	1
02300	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	1
02100	Naphthalene	91-20-3	< 4	4	1
02300	Toluene	108-88-3	< 1	1	1
02300	Xylene (Total)	1330-20-7	< 1	1	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/10

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	F091941AA	07/13/2009 22:18	Kelly E Brickley	1
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	F091941AA	07/13/2009 22:18	Kelly E Brickley	1

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Analysis Report

Lancaster Laboratories Sample No. WW 5719724

Group No. 1152814
PA

MW-10 Water
610 Old York Rd-Warminster, PA
DUNS# 03635430 COC: MW-10

Collected: 07/08/2009 12:45 by LS

Account Number: 11224

Submitted: 07/09/2009 15:45
Reported: 07/19/2009 at 21:45
Discard: 09/18/2009

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

10430

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
SW-846 8260B	GC/MS Volatiles		ug/l	ug/l	
02300	Benzene	71-43-2	< 1	1	1
02300	Ethylbenzene	100-41-4	< 1	1	1
02300	Isopropylbenzene	98-82-8	< 2	2	1
02300	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	1
02300	Naphthalene	91-20-3	< 4	4	1
02300	Toluene	108-88-3	< 1	1	1
02300	Xylene (Total)	1330-20-7	< 1	1	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/10

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01163	GC/MS VOA Water Prep	SW-846 5030B	1	F091942AA	07/14/2009 00:31	Kelly E Brickley	1
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	F091942AA	07/14/2009 00:31	Kelly E Brickley	1

Quality Control Summary

Client Name: Sunoco Retail c/o GES Exton
Reported: 07/19/09 at 09:45 PM

Group Number: 1152814

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: F091941AA	Sample number(s): 5719715-5719723							
Benzene	< 1	1.	ug/l	92	94	80-116	2	30
Ethylbenzene	< 1	1.	ug/l	93	94	80-113	1	30
Isopropylbenzene	< 2	2.	ug/l	94	96	79-113	2	30
Methyl Tertiary Butyl Ether	< 1	1.	ug/l	90	92	78-117	2	30
Naphthalene	< 4	4.	ug/l	90	97	61-115	7	30
Toluene	< 1	1.	ug/l	95	95	80-115	0	30
Xylene (Total)	< 1	1.	ug/l	94	95	81-114	1	30
Batch number: F091942AA	Sample number(s): 5719724							
Benzene	< 1	1.	ug/l	91		80-116		
Ethylbenzene	< 1	1.	ug/l	92		80-113		
Isopropylbenzene	< 2	2.	ug/l	94		79-113		
Methyl Tertiary Butyl Ether	< 1	1.	ug/l	90		78-117		
Naphthalene	< 4	4.	ug/l	88		61-115		
Toluene	< 1	1.	ug/l	93		80-115		
Xylene (Total)	< 1	1.	ug/l	94		81-114		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: F091941AA	Sample number(s): 5719715-5719723 UNSPK: P720609								
Benzene	96		80-126						
Ethylbenzene	97		77-125						
Isopropylbenzene	99		75-128						
Methyl Tertiary Butyl Ether	91		72-126						
Naphthalene	95		52-125						
Toluene	97		80-125						
Xylene (Total)	98		79-125						
Batch number: F091942AA	Sample number(s): 5719724 UNSPK: P720737								
Benzene	121	117	80-126	2	30				
Ethylbenzene	188*	180*	77-125	2	30				
Isopropylbenzene	109	108	75-128	1	30				
Methyl Tertiary Butyl Ether	97	96	72-126	0	30				
Naphthalene	231*	208*	52-125	5	30				
Toluene	102	102	80-125	1	30				
Xylene (Total)	214*	208*	79-125	1	30				

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Sunoco Retail c/o GES Exton
Reported: 07/19/09 at 09:45 PM

Group Number: 1152814

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: UST-Unleaded Waters by 8260B
Batch number: F091941AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
5719715	85	86	87	96
5719716	85	87	86	96
5719717	85	86	96	95
5719718	85	90	88	96
5719719	87	87	88	96
5719720	88	90	88	99
5719721	86	87	87	96
5719722	88	87	88	99
5719723	86	87	88	98
Blank	88	88	89	97
LCS	87	89	87	97
LCSD	87	88	86	98
MS	86	89	86	96
Limits:	80-116	77-113	80-113	78-113

Analysis Name: UST-Unleaded Waters by 8260B
Batch number: F091942AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
5719724	82	83	85	95
Blank	85	86	86	95
LCS	86	84	85	95
MS	85	87	85	97
MSD	84	84	85	96
Limits:	80-116	77-113	80-113	78-113

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

11224/115284/ 5719715-25

Chain of Custody Record

On-site Time:	Temp 0.0
Off-site Time:	Temp 0.0
Sky Conditions:	
Meteorological Events:	
Wind Speed: 0.0	Direc

Sunoco DUNS #: 0363-5430
Region: Northeast
State or Lead Regulatory Agency: PADEP - Southeast Region
Requested Due Date (mm/dd/yy): Standard TAT
COC Tracking Number:

Lab Name:	Lancaster Laboratories	Facility Address:	610 Old York Road	Consultant/Contractor:	GES, Inc.
Address:	2425 New Holland Pike	Facility City, State:	Warminster PA	Address:	440 Creamery Way, Suite 500
	Lancaster, PA 12425	Site Lat/Long:	0.0 0.0		Exton, PA 19341
Lab PM:	Lynn Frederiksen	Sunoco PM Contact:	Marty Liebhardt	Consultant/Contractor Project No.:	02-03026-0600-60
Tele/Fax:	(717) 656-2308 / (717) 656-6766	Address:	350 Eagleview Blvd. Suite 300	Consultant/Contractor PM:	Krista Snyder
E-mail EDD To:	bcobb@gesonline.com		Exton, Pennsylvania 19341	Tele/Fax:	(610) 458-1077x3068 / (610) 458-2300
E-mail EDD To:	SunocoENFOS@deltaenv.com	Tele/Fax:	(610) 450-5345 / (610) 450-5252	Invoice to:	Bonnie Cobb

Report Type & QC Level:

Item No.	Sample Description	Time	Date	Matrix: Liquid	Laboratory No.	No. of Containers	Preservative: HCL	Requested Analysis: 8260B (BTEX, MTBE, Cumene & Napthalene)	Sample Point Lat/Long and Comments
1	MW-1	10:25	7-8-09	X		3	X	X	Detection Limits must meet
2	MW-2	11:10	7-8-09	X		3	X	X	PADEP Statewide Health
3	MW-3	11:45	7-8-09	X		3	X	X	Standards for all samples
4	MW-4	12:00	7-8-09	X		3	X	X	
5	MW-5	11:30	7-8-09	X		3	X	X	
6	MW-6	13:10	7-8-09	X		3	X	X	
7	MW-7	10:40	7-8-09	X		3	X	X	
8	MW-8	10:50	7-8-09	X		3	X	X	Hold Trip Blank Analysis
9	MW-9	12:15	7-8-09	X		3	X	X	Pending GES Notification
10	MW-10	12:45	7-8-09	X		3	X	X	
11	Trip Blank	10:00	7-8-09	X		2	X		

		Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Name:	Luke Side	Luke Side	7-8-09	14:15	GES Fridge	7-8-09	14:15
Sampler's Company:	GES, Inc.		7-9-09	0900		7-9-09	0900
Shipment Date:			7-9-09	1045		7/9/09	1515
Shipment Method:	Laboratory Courier						
Shipment Tracking No:							

Special Instructions:

Custody Seals In Place Yes (No) Temp Blank (Yes) No Cooler Temperature on Receipt OF 2.5°C Trip Blank Yes ✓ No

Lancaster Laboratories
Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
Cal	(diet) calories	**lb.**	pound(s)
meq	milliequivalents	**kg**	kilogram(s)
g	gram(s)	**mg**	milligram(s)
ug	microgram(s)	**l**	liter(s)
ml	milliliter(s)	**ul**	microliter(s)
m3	cubic meter(s)	**fib >5 um/ml**	fibers greater than 5 microns in length per ml

< less than – The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million – One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture.

U.S. EPA data qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quatitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
J	Estimated value
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike amount not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

610-458-1077

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

April 15, 2009

SAMPLE GROUP

The sample group for this submittal is 1139377. Samples arrived at the laboratory on Tuesday, April 07, 2009. The PO# for this group is WARMINSTER and the release number is 02-03026-0600.

Client Description	Lancaster Labs Number
MW-1 Water	5640582
MW-2 Water	5640583
MW-3 Water	5640584
MW-4 Water	5640585
MW-5 Water	5640586
MW-6 Water	5640587
MW-7 Water	5640588
MW-8 Water	5640589
MW-9 Water	5640590
MW-10 Water	5640591

ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Heather Nelson
ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Bonnie Cobb
ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Krista Snyder
ELECTRONIC COPY TO	LLI	Attn: EDD Group

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Analysis Report

Questions? Contact your Client Services Representative
Lynn M Frederiksen at (717) 656-2300

Respectfully Submitted,

Marla S. Lord
Senior Specialist

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 5640582

Group No. 1139377
PA

MW-1 Water
610 Old York Rd-Warminster, PA
DUNS# 03635430 COC: MW-1

Collected: 04/06/2009 12:10 by KR

Account Number: 11224

Submitted: 04/07/2009 15:45
Reported: 04/15/2009 at 12:56
Discard: 06/15/2009

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

15430

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
SW-846 8260B	GC/MS Volatiles		ug/l	ug/l	
02300	Benzene	71-43-2	5	1	1
02300	Ethylbenzene	100-41-4	14	1	1
02300	Isopropylbenzene	98-82-8	43	2	1
02300	Methyl Tertiary Butyl Ether	1634-04-4	11	1	1
02300	Naphthalene	91-20-3	34	4	1
02300	Toluene	108-88-3	< 1	1	1
02300	Xylene (Total)	1330-20-7	27	1	1

General Sample Comments

PA DEP Lab Certification ID 36-00037. Expiration Date: 1/31/10

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	PG90983AA	04/09/2009 04:37	Kelly E Brickley	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	PG90983AA	04/09/2009 04:37	Kelly E Brickley	1

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Analysis Report

Lancaster Laboratories Sample No. WW 5640583

Group No. 1139377
PA

MW-2 Water
610 Old York Rd-Warminster, PA
DUNS# 03635430 COC: MW-2

Collected: 04/06/2009 11:30 by KR

Account Number: 11224

Submitted: 04/07/2009 15:45
Reported: 04/15/2009 at 12:56
Discard: 06/15/2009

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

25430

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
SW-846 8260B	GC/MS Volatiles		ug/l	ug/l	
02300	Benzene	71-43-2	[illegible]	[illegible]	[illegible]
02300	Ethylbenzene	100-41-4	[illegible]	[illegible]	[illegible]
02300	Isopropylbenzene	98-82-8	[illegible]	[illegible]	[illegible]
02300	Methyl Tertiary Butyl Ether	1634-04-4	[illegible]	[illegible]	[illegible]
02300	Naphthalene	91-20-3	[illegible]	[illegible]	[illegible]
02300	Toluene	108-88-3	[illegible]	[illegible]	[illegible]
02300	Xylene (Total)	1330-20-7	[illegible]	[illegible]	[illegible]

General Sample Comments

PA DEP Lab Certification ID 36-00037. Expiration Date: 1/31/10

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	P090983AA	04/08/2009 05:03	Kelly E Brickley	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	P090983AA	04/08/2009 05:03	Kelly E Brickley	1

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Analysis Report

Lancaster Laboratories Sample No. WW 5640584

Group No. 1139377
PA

MW-3 Water
610 Old York Rd-Warminster, PA
DUNS# 03635430 COC: MW-3

Collected: 04/06/2009 13:00 by KR

Account Number: 11224

Submitted: 04/07/2009 15:45
Reported: 04/15/2009 at 12:56
Discard: 06/15/2009

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

35430

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
SW-846 8260B	GC/MS Volatiles		ug/l	ug/l	
02300	Benzene	71-43-2	< 1	1	1
02300	Ethylbenzene	100-41-4	< 1	1	1
02300	Isopropylbenzene	98-82-8	< 2	2	1
02300	Methyl Tertiary Butyl Ether	1634-04-4	< 1	5	1
02300	Naphthalene	91-20-3	< 4	4	1
02300	Toluene	108-88-3	< 1	1	1
02300	Xylene (Total)	1330-20-7	< 1	1	1

General Sample Comments

PA DEP Lab Certification ID 36-00037. Expiration Date: 1/31/10

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	P090983AA	04/09/2009 05:30	Kelly B Brickley	1
02163	GC/MS VOA Water Prep	SW-846 5030B	1	P090983AA	04/09/2009 05:30	Kelly B Brickley	1

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Analysis Report

Lancaster Laboratories Sample No. WW 5640585

Group No. 1139377
PA

MW-4 Water
610 Old York Rd-Warminster, PA
DUNS# 03635430 COC: MW-4

Collected: 04/06/2009 10:55 by KR

Account Number: 11224

Submitted: 04/07/2009 15:45
Reported: 04/15/2009 at 12:56
Discard: 06/15/2009

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

45430

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
SW-846 8260B	GC/MS Volatiles		ug/l	ug/l	
02300	Benzene	71-43-2	< 1	1	1
02300	Ethylbenzene	100-41-4	< 1	1	1
02300	Isopropylbenzene	98-82-8	< 2	2	1
02300	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	1
02300	Naphthalene	91-20-3	< 4	4	1
02300	Toluene	108-88-3	< 1	1	1
02300	Xylene (Total)	1330-20-7	< 1	1	1

General Sample Comments

PA DEP Lab Certification ID 36-00037. Expiration Date: 1/31/10

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02302	UST-Unleaded Waters by 8260b	SW-846 8260B	1	P090983AA	04/09/2009 05:57	Kelly S Brickley	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	P090982AA	04/09/2009 05:57	Kelly S Brickley	1

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Analysis Report

Lancaster Laboratories Sample No. WW 5640586

Group No. 1139377
PA

MW-5 Water
610 Old York Rd-Warminster, PA
DUNS# 03635430 COC: MW-5

Collected: 04/06/2009 13:30 by KR

Account Number: 11224

Submitted: 04/07/2009 15:45
Reported: 04/15/2009 at 12:56
Discard: 06/15/2009

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

55430

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
SW-846 8260B	GC/MS Volatiles		ug/l	ug/l	
02300	Benzene	71-43-2	< 1	1	1
02300	Ethylbenzene	100-41-4	< 1	1	1
02300	Isopropylbenzene	98-82-8	< 2	2	1
02300	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	1
02300	Naphthalene	91-20-3	< 4	4	1
02300	Toluene	108-88-3	< 1	1	1
02300	Xylene (Total)	1330-20-7	< 1	1	1

General Sample Comments

PA DEP Lab Certification ID 36-00037. Expiration Date: 1/31/10

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	9090983AA	04/09/2009 06:24	Kelly E Brickley	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	9090983AA	04/09/2009 06:24	Kelly E Brickley	1

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Analysis Report

Lancaster Laboratories Sample No. WW 5640587

Group No. 1139377
PA

MW-6 Water
610 Old York Rd-Warminster, PA
DUNS# 03635430 COC: MW-6

Collected: 04/06/2009 10:20 by KR

Account Number: 11224

Submitted: 04/07/2009 15:45
Reported: 04/15/2009 at 12:56
Discard: 06/15/2009

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

65430

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
SW-846 8260B	GC/MS Volatiles		ug/l	ug/l	
02300	Benzene	71-43-2	< 1	1	1
02300	Ethylbenzene	100-41-4	< 1	1	1
02300	Isopropylbenzene	98-82-8	< 2	2	1
02300	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	1
02300	Naphthalene	91-20-3	< 4	4	1
02300	Toluene	108-88-3	< 1	1	1
02300	Xylene (Total)	1330-20-7	< 1	1	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/10

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	P090983AA	04/08/2009 06:51	Kelly E Brickley	1
11163	GC/MS VOA Water Prep	SW-846 5030B	1	P090983AA	04/08/2009 06:51	Kelly E Brickley	1

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Analysis Report

Lancaster Laboratories Sample No. WW 5640588

Group No. 1139377
PA

MW-7 Water
610 Old York Rd-Warminster, PA
DUNS# 03635430 COC: MW-7

Collected: 04/06/2009 12:39 by KR

Account Number: 11224

Submitted: 04/07/2009 15:45
Reported: 04/15/2009 at 12:56
Discard: 06/15/2009

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

75430

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
SW-846 8260B	GC/MS Volatiles		ug/l	ug/l	
02300	Benzene	71-43-2	< 1	1	1
02300	Ethylbenzene	100-41-4	< 1	1	1
02300	Isopropylbenzene	98-82-8	< 2	2	1
02300	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	1
02300	Naphthalene	91-20-3	< 4	4	1
02300	Toluene	108-88-3	< 1	1	1
02300	Xylene (Total)	1330-20-7	< 1	1	1

General Sample Comments

PA DEP Lab Certification ID 36-00037. Expiration Date: 1/31/10

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	P090983AA	04/09/2009 07:18	Kelly E Brickley	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	P090983AA	04/09/2009 07:18	Kelly E Brickley	1

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Analysis Report

Lancaster Laboratories Sample No. WW 5640589

Group No. 1139377
PA

MW-8 Water
610 Old York Rd-Warminster, PA
DUNS# 03635430 COC: MW-8

Collected: 04/06/2009 11:50 by KR

Account Number: 11224

Submitted: 04/07/2009 15:45
Reported: 04/15/2009 at 12:56
Discard: 06/15/2009

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

85430

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
SW-846 8260B	GC/MS Volatiles		ug/l	ug/l	
02300	Benzene	71-43-2	< 1	1	1
02300	Ethylbenzene	100-41-4	< 1	1	1
02300	Isopropylbenzene	98-82-8	< 2	2	1
02300	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	1
02300	Naphthalene	91-20-3	< 4	4	1
02300	Toluene	108-88-3	< 1	1	1
02300	Xylene (Total)	1330-20-7	< 1	1	1

General Sample Comments

PA DEP Lab Certification ID 36-00037. Expiration Date: 1/31/10

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	P090983AA	04/09/2009 07:44	Kelly E Brickley	1
05163	GC/MS VOA Water Prep	SW-846 5030B	1	P090983AA	04/09/2009 07:44	Kelly E Brickley	1

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Analysis Report

Lancaster Laboratories Sample No. WW 5640590

Group No. 1139377
PA

MW-9 Water
610 Old York Rd-Warminster, PA
DUNS# 03635430 COC: MW-9

Collected: 04/06/2009 10:40 by KR

Account Number: 11224

Submitted: 04/07/2009 15:45
Reported: 04/15/2009 at 12:56
Discard: 06/15/2009

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

95430

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
SW-846 8260B	GC/MS Volatiles		ug/l	ug/l	
02300	Benzene	71-43-2	< 1	1	1
02300	Ethylbenzene	100-41-4	< 1	1	1
02300	Isopropylbenzene	98-82-8	< 2	2	1
02300	Methyl Tertiary Butyl Ether	1634-04-4	2	1	1
02300	Naphthalene	91-20-3	< 4	4	1
02300	Toluene	108-88-3	< 1	1	1
02300	Xylene (Total)	1330-20-7	< 1	1	1

General Sample Comments

PA DEP Lab Certification ID 36-00037. Expiration Date: 1/31/10

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02300	VOC-Unleaded Waters by 8260B	SW-846 8260B	1	P090983AA	04/09/2009 08:11	Kelly E Brickley	1
C1163	GC/MS VOA Water Prep	SW-846 5030B	1	P090983AA	04/09/2009 08:11	Kelly E Brickley	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 5640591

Group No. 1139377
PA

MW-10 Water
610 Old York Rd-Warminster, PA
DUNS# 03635430 COC: MW-10

Collected: 04/06/2009 11:15 by KR

Account Number: 11234

Submitted: 04/07/2009 15:45
Reported: 04/15/2009 at 12:56
Discard: 06/15/2009

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

10543

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
SW-846 8260B	GC/MS Volatiles		ug/l	ug/l	
02300	Benzene	71-43-2	< 1	1	1
02300	Ethylbenzene	100-41-4	< 1	1	1
02300	Isopropylbenzene	98-82-8	< 2	2	1
02300	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	1
02300	Naphthalene	91-20-3	< 4	4	1
02300	Toluene	108-88-3	< 1	1	1
02300	Xylene (Total)	1330-20-7	< 1	1	1

General Sample Comments

PA DEP Lab Certification ID 36-00037. Expiration Date: 1/31/10

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	P090983AA	04/09/2009 08:38	Kelly E Brickley	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	P090983AA	04/09/2009 08:38	Kelly E Brickley	1

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Analysis Report

Quality Control Summary

Client Name: Sunoco Retail c/o GES Exton
Reported: 04/15/09 at 12:56 PM

Group Number: 1139377

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: P090983AA	Sample number(s): 5640582-5640591							
Benzene	< 1	1.	ug/l	89	90	80-116	1	30
Ethylbenzene	< 1	1.	ug/l	85	87	80-113	2	30
Isopropylbenzene	< 2	2.	ug/l	86	87	79-113	1	30
Methyl Tertiary Butyl Ether	< 1	1.	ug/l	91	91	78-117	0	30
Naphthalene	< 4	4.	ug/l	80	81	61-115	1	30
Toluene	< 1	1.	ug/l	86	87	80-115	1	30
Xylene (Total)	< 1	1.	ug/l	86	87	81-114	1	30

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: P090983AA	Sample number(s): 5640582-5640591 UNSPK: P639775								
Benzene	95		80-126						
Ethylbenzene	91		77-125						
Isopropylbenzene	91		75-128						
Methyl Tertiary Butyl Ether	106		72-126						
Naphthalene	105		52-125						
Toluene	91		80-125						
Xylene (Total)	90		79-125						

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: UST-Unleaded Waters by 8260B
Batch number: P090983AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
5640582	98	95	92	90
5640583	99	93	91	87
5640584	96	93	91	85
5640585	96	93	91	88
5640586	97	94	91	85
5640587	97	94	91	86
5640588	97	91	91	84

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Sunoco Retail c/o GES Exton
Group Number: 1139377
Reported: 04/15/09 at 12:56 PM

Surrogate Quality Control

5640589	98	94	91	85
5640590	97	94	91	86
5640591	98	92	91	85
Blank	99	93	91	84
LCS	98	96	90	86
LCSD	97	94	90	86
MS	89	98	91	89
Limits:	80-116	77-113	80-113	78-113

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

11224 / 113932 / 5040582-92

Chain of Custody Record

Page 1 of 1

On-site Time:	9:40	Temp 0.0	50
Off-site Time:	14:00	Temp 0.0	50
Sky Conditions:	RAIN	THUNDERSTORM	
Meteorological Events:	"	"	
Wind Speed:	— 0.0	Direc	—

Sunoco DUNS #: 0363-5430
Region: Northeast
State or Lead Regulatory Agency: PADEP - Southeast Region
Requested Due Date (mm/dd/yy): Standard TAT
COC Tracking Number:

Lab Name:	Lancaster Laboratories	Facility Address:	610 Old York Road	Consultant/Contractor:	GES, Inc.
Address:	2425 New Holland Pike	Facility City, State:	Warminster PA	Address:	440 Creamery Way, Suite 500
	Lancaster, PA 12425	Site Lat/Long:	0.0 0.0		Exton, PA 19341
Lab PM:	Lynn Frederiksen	Sunoco PM Contact:	Marty Liebhardt	Consultant/Contractor Project No.:	02-03026-8600-60
Tele/Fax:	(717) 656-2308 / (717) 656-6766	Address:	350 Eagleview Blvd. Suite 300	Consultant/Contractor PM:	Krista Snyder
E-mail EDD To:	bcobb@gesonline.com		Exton, Pennsylvania 19341	Tele/Fax:	(610) 458-1077x3068 / (610) 458-2300
E-mail EDD To:	SunocoENFOS@deltaenv.com	Tele/Fax:	(610) 450-5345 / (610) 450-5252	Invoice to:	Bonnie Cobb

Report Type & QC Level:

Item No.	Sample Description	Time	Date	Matrix: Liquid	Laboratory No.	No. of Containers	Preservative: HCL	Requested Analysis: 8260B (BTEX, MTBE, Cumene & Naphthalene)	Sample Point Lat/Long and Comments
1	MW-1	12:10	4/6/09	X		3	X	X	Detection Limits must meet
2	MW-2	11:30	4/6/09	X		3	X	X	PADEP Statewide Health
3	MW-3	13:00	4/6/09	X		3	X	X	Standards for all samples
4	MW-4	10:55	4/6/09	X		3	X	X	
5	MW-5	13:30	4/6/09	X		3	X	X	
6	MW-6	10:20	4/6/09	X		3	X	X	
7	MW-7	12:35	4/6/09	X		3	X	X	
8	MW-8	11:50	4/6/09	X		3	X	X	Hold Trip Blank Analysis
9	MW-9	10:40	4/6/09	X		3	X	X	Pending GES Notification
10	MW-10	11:15	4/6/09	X		3	X	X	
11	Trip Blank	-	4/6/09	X		2	X		

Sampler's Name:	KURT KOBAN	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company:	GES, Inc.		4/7/09	06:20	GES COURIER		
Shipment Date:			4/7/09	0853		4/7/09	0853
Shipment Method:	Laboratory Courier		4/7/09	1048			
Shipment Tracking No:					Kate Nathan	4/7/09	15:45

Special Instructions:

Custody Seals In Place Yes (No) Temp Blank (Yes) No Cooler Temperature on Receipt 0.0 °C Trip Blank (Yes) No

Lancaster Laboratories
Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	BMQL	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	MPN	Most Probable Number
IU	International Units	CP Units	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	NTU	nephelometric turbidity units
C	degrees Celsius	F	degrees Fahrenheit
Cal	(diet) calories	lb.	pound(s)
meq	milliequivalents	kg	kilogram(s)
g	gram(s)	mg	milligram(s)
ug	microgram(s)	l	liter(s)
ml	milliliter(s)	ul	microliter(s)
m3	cubic meter(s)	fib >5 um/ml	fibers greater than 5 microns in length per ml

< less than – The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million – One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture.

U.S. EPA data qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quatitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
J	Estimated value
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike amount not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

610-458-1077

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 1130824. Samples arrived at the laboratory on Wednesday, February 04, 2009. The PO# for this group is WARMINSTER and the release number is 0203026-0600-60.

Client Description	Lancaster Labs Number
MW-1 Water	5592522
MW-2 Water	5592523
MW-3 Water	5592524
MW-4 Water	5592525
MW-5 Water	5592526
MW-6 Water	5592527
MW-7 Water	5592528
MW-8 Water	5592529
MW-9 Water	5592530
MW-10 Water	5592531

ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Connie Johnson
ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Heather Nelson
ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Bonnie Cobb
ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Krista Snyder
ELECTRONIC COPY TO	LLL	Attn: EDD Group

Lancaster Laboratories

Analysis Report

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Questions? Contact your Client Services Representative
Lynn M Frederiksen at (717) 656-2300

Respectfully Submitted,

Dorothy M Love

Dorothy M Love
Group Leader

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW5592522 Group No. 1130824

MW-1 Water
610 Old York Rd-Warminster, PA
DUNS# 03635430 COC: MW-1
Collected:02/03/2009 14:05 by KS

Account Number: 11224

Submitted: 02/04/2009 16:30
Reported: 02/10/2009 at 23:18
Discard: 04/12/2009

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

WAR01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Units	Dilution Factor
02300	UST-Unleaded Waters by 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	5	1	ug/l	1
05401	Benzene	71-43-2	2	1	ug/l	1
05407	Toluene	108-88-3	< 1	1	ug/l	1
05415	Ethylbenzene	100-41-4	10	1	ug/l	1
05420	Isopropylbenzene	98-82-8	9	2	ug/l	1
05439	Naphthalene	91-20-3	15	4	ug/l	1
06310	Xylene (Total)	1330-20-7	7	1	ug/l	1

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/10

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	02/09/2009 14:51	Daniel H Heller	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	02/09/2009 14:51	Daniel H Heller	1

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Analysis Report

Lancaster Laboratories Sample No. WW5592523 Group No. 1130824

MW-2 Water
610 Old York Rd-Warminster, PA
DUNS# 03635430 COC: MW-2
Collected:02/03/2009 14:30 by KS

Account Number: 11224

Submitted: 02/04/2009 16:30
Reported: 02/10/2009 at 23:18
Discard: 04/12/2009

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

WAR02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Units	Dilution Factor
02300	UST-Unleaded Waters by 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	3	1	ug/l	1
05401	Benzene	71-43-2	2	1	ug/l	1
05407	Toluene	108-88-3	< 1	1	ug/l	1
05415	Ethylbenzene	100-41-4	7	1	ug/l	1
05420	Isopropylbenzene	98-82-8	8	2	ug/l	1
05439	Naphthalene	91-20-3	< 4	4	ug/l	1
06310	Xylene (Total)	1330-20-7	1	1	ug/l	1

PA DEP Lab Certification ID 36-00037. Expiration Date: 1/31/10

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	02/09/2009 15:18	Daniel H Heller	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	02/09/2009 15:18	Daniel H Heller	1

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Analysis Report

Lancaster Laboratories Sample No. WW5592524 Group No. 1130824

MW-3 Water
610 Old York Rd-Warminster, PA
DUNS# 03635430 COC: MW-3
Collected:02/03/2009 15:00 by KS

Account Number: 11224

Submitted: 02/04/2009 16:30
Reported: 02/10/2009 at 23:18
Discard: 04/12/2009

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

WAR03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Units	Dilution Factor
02300	UST-Unleaded Waters by 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	ug/l	1
05401	Benzene	71-43-2	< 1	1	ug/l	1
05407	Toluene	108-88-3	< 1	1	ug/l	1
05415	Ethylbenzene	100-41-4	< 1	1	ug/l	1
05420	Isopropylbenzene	98-82-8	< 2	2	ug/l	1
05439	Naphthalene	91-20-3	< 4	4	ug/l	1
06310	Xylene (Total)	1330-20-7	< 1	1	ug/l	1

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/10

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	02/09/2009 15:45	Daniel R Heller	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	02/09/2009 15:45	Daniel R Heller	1

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Analysis Report

Lancaster Laboratories Sample No. WW5592525 Group No. 1130824

MW-4 Water
610 Old York Rd-Warminster, PA
DUNS# 03635430 COC: MW-4
Collected:02/03/2009 15:29 by KS

Account Number: 11224

Submitted: 02/04/2009 16:30
Reported: 02/10/2009 at 23:18
Discard: 04/12/2009

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

WAR04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Units	Dilution Factor
02300	UST-Unleaded Waters by 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	ug/l	1
05401	Benzene	71-43-2	< 1	1	ug/l	1
05407	Toluene	108-88-3	< 1	1	ug/l	1
05415	Ethylbenzene	100-41-4	< 1	1	ug/l	1
05420	Isopropylbenzene	98-82-8	< 2	2	ug/l	1
05439	Naphthalene	91-20-3	< 4	4	ug/l	1
06310	Xylene (Total)	1330-20-7	< 1	1	ug/l	1

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/10

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	02/09/2009 16:12	Daniel H Heller	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	02/09/2009 16:12	Daniel H Heller	1

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Analysis Report

Lancaster Laboratories Sample No. WW5592526 Group No. 1130824

MW-5 Water
610 Old York Rd-Warminster, PA
DUNS# 03635430 COC: MW-5
Collected:02/03/2009 11:00 by KS

Account Number: 11224

Submitted: 02/04/2009 16:30
Reported: 02/10/2009 at 23:18
Discard: 04/12/2009

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

WAR05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Units	Dilution Factor
02300	UST-Unleaded Waters by 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	ug/l	1
05401	Benzene	71-43-2	< 1	1	ug/l	1
05407	Toluene	108-88-3	< 1	1	ug/l	1
05415	Ethylbenzene	100-41-4	< 1	1	ug/l	1
05420	Isopropylbenzene	98-82-8	< 2	2	ug/l	1
05439	Naphthalene	91-20-3	< 4	4	ug/l	1
06310	Xylene (Total)	1330-20-7	< 1	1	ug/l	1

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/10

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	02/09/2009 16:38	Daniel H Heller	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	02/09/2009 16:38	Daniel H Heller	1

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Analysis Report

Lancaster Laboratories Sample No. WW5592527 Group No. 1130824

MW-6 Water
610 Old York Rd-Warminster, PA
DUNS# 03635430 COC: MW-6
Collected:02/03/2009 12:55 by KS

Submitted: 02/04/2009 16:30
Reported: 02/10/2009 at 23:18
Discard: 04/12/2009

WAR06

Account Number: 11224

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Units	Dilution Factor
02300	UST-Unleaded Waters by 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	ug/l	1
05401	Benzene	71-43-2	< 1	1	ug/l	1
05407	Toluene	108-88-3	< 1	1	ug/l	1
05415	Ethylbenzene	100-41-4	< 1	1	ug/l	1
05420	Isopropylbenzene	98-82-8	< 2	2	ug/l	1
05439	Naphthalene	91-20-3	< 4	4	ug/l	1
06310	Xylene (Total)	1330-20-7	< 1	1	ug/l	1

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/10

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	02/09/2009 17:05	Daniel H Heller	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	02/09/2009 17:05	Daniel H Heller	1

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Analysis Report

Lancaster Laboratories Sample No. WW5592528 Group No. 1130824

MW-7 Water
610 Old York Rd-Warminster, PA
DUNS# 03635430 COC: MW-7
Collected:02/03/2009 10:16 by KS

Account Number: 11224

Submitted: 02/04/2009 16:30
Reported: 02/10/2009 at 23:18
Discard: 04/12/2009

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

WAR07

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Units	Dilution Factor
02300	UST-Unleaded Waters by 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	ug/l	1
05401	Benzene	71-43-2	< 1	1	ug/l	1
05407	Toluene	108-88-3	< 1	1	ug/l	1
05415	Ethylbenzene	100-41-4	< 1	1	ug/l	1
05420	Isopropylbenzene	98-82-8	< 2	2	ug/l	1
05439	Naphthalene	91-20-3	< 4	4	ug/l	1
06310	Xylene (Total)	1330-20-7	< 1	1	ug/l	1

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/10

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	02/09/2009 17:32	Daniel H Heller	1
01161	QC/MS VOA Water Prep	SW-846 5030B	1	02/09/2009 17:32	Daniel H Heller	1

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Analysis Report

Lancaster Laboratories Sample No. WW5592529 Group No. 1130824

MW-8 Water
610 Old York Rd-Warminster, PA
DUNS# 03635430 COC: MW-8
Collected:02/03/2009 13:29 by KS

Account Number: 11224

Submitted: 02/04/2009 16:30
Reported: 02/10/2009 at 23:18
Discard: 04/12/2009

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

WAR08

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Units	Dilution Factor
02300	UST-Unleaded Waters by 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	5	1	ug/l	1
05401	Benzene	71-43-2	< 1	1	ug/l	1
05407	Toluene	108-88-3	< 1	1	ug/l	1
05415	Ethylbenzene	100-41-4	< 1	1	ug/l	1
05420	Isopropylbenzene	98-82-8	< 2	2	ug/l	1
05439	Naphthalene	91-20-3	< 4	4	ug/l	1
06310	Xylene (Total)	1330-20-7	< 1	1	ug/l	1

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/10

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	02/09/2009 17:59	Daniel H Heller	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	02/09/2009 17:59	Daniel H Heller	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW5592530 Group No. 1130824

MW-9 Water
610 Old York Rd-Warminster, PA
DUNS# 03635430 COC: MW-9
Collected:02/03/2009 11:42 by KS

Account Number: 11224

Submitted: 02/04/2009 16:30
Reported: 02/10/2009 at 23:18
Discard: 04/12/2009

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

WAR09

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Units	Dilution Factor
02300	UST-Unleaded Waters by 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	2	1	ug/l	1
05401	Benzene	71-43-2	< 1	1	ug/l	1
05407	Toluene	108-88-3	< 1	1	ug/l	1
05415	Ethylbenzene	100-41-4	< 1	1	ug/l	1
05420	Isopropylbenzene	98-82-8	< 2	2	ug/l	1
05439	Naphthalene	91-20-3	< 4	4	ug/l	1
06310	Xylene (Total)	1330-20-7	< 1	1	ug/l	1

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/10

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	02/09/2009 12:23	Daniel H Heller	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	02/09/2009 12:23	Daniel H Heller	1

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW5592531 Group No. 1130824

MW-10 Water
610 Old York Rd-Warminster, PA
DUNS# 03635430 COC: MW-10
Collected:02/03/2009 12:17 by KS

Account Number: 11224

Submitted: 02/04/2009 16:30
Reported: 02/10/2009 at 23:18
Discard: 04/12/2009

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

WAR10

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Units	Dilution Factor
02300	UST-Unleaded Waters by 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	ug/l	1
05401	Benzene	71-43-2	< 1	1	ug/l	1
05407	Toluene	108-88-3	< 1	1	ug/l	1
05415	Ethylbenzene	100-41-4	< 1	1	ug/l	1
05420	Isopropylbenzene	98-82-8	< 2	2	ug/l	1
05439	Naphthalene	91-20-3	< 4	4	ug/l	1
06310	Xylene (Total)	1330-20-7	< 1	1	ug/l	1

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/10

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	02/09/2009 12:52	Daniel H Heller	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	02/09/2009 12:52	Daniel H Heller	1

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Analysis Report

Quality Control Summary

Client Name: Sunoco Retail c/o GES Exton
Reported: 02/10/09 at 11:18 PM

Group Number: 1130824

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: P090401AA	Sample number(s): 5592530-5592531							
Methyl Tertiary Butyl Ether	< 1	1.	ug/l	90	88	73-119	1	30
Benzene	< 1	1.	ug/l	87	87	78-119	0	30
Toluene	< 1	1.	ug/l	90	89	85-115	1	30
Ethylbenzene	< 1	1.	ug/l	89	87	82-119	2	30
Isopropylbenzene	< 2	2.	ug/l	86	88	80-113	0	30
Naphthalene	< 4	4.	ug/l	89	88	61-116	2	30
Xylene (Total)	< 1	1.	ug/l	88	88	83-113	0	30
Batch number: P090402AA	Sample number(s): 5592522-5592529							
Methyl Tertiary Butyl Ether	< 1	1.	ug/l	91	93	73-119	2	30
Benzene	< 1	1.	ug/l	88	90	78-119	2	30
Toluene	< 1	1.	ug/l	89	90	85-115	1	30
Ethylbenzene	< 1	1.	ug/l	88	90	82-119	2	30
Isopropylbenzene	< 2	2.	ug/l	90	90	80-113	1	30
Naphthalene	< 4	4.	ug/l	87	87	61-116	0	30
Xylene (Total)	< 1	1.	ug/l	88	90	83-113	2	30

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: P090401AA	Sample number(s): 5592530-5592531 UNSPK: 5592531								
Methyl Tertiary Butyl Ether	88		69-127						
Benzene	87		83-128						
Toluene	87		83-127						
Ethylbenzene	87		82-129						
Isopropylbenzene	87		81-130						
Naphthalene	91		57-125						
Xylene (Total)	87		82-130						
Batch number: P090402AA	Sample number(s): 5592522-5592529 UNSPK: P592469								
Methyl Tertiary Butyl Ether	129*		69-127						
Benzene	171*		83-128						
Toluene	101		83-127						
Ethylbenzene	89		82-129						
Isopropylbenzene	102		81-130						
Naphthalene	100		57-125						
Xylene (Total)	97		82-130						

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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Analysis Report

Quality Control Summary

Client Name: Sunoco Retail c/o GES Exton
Group Number: 1130824
Reported: 02/10/09 at 11:18 PM

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: UST-Unleaded Waters by 8260B
Batch number: P090401AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
5592530	88	86	88	83
5592531	88	86	89	84
Blank	89	89	89	85
LCS	88	89	88	85
LCSD	88	88	89	85
MS	89	91	88	84
Limits:	80-116	77-113	80-113	78-113

Analysis Name: UST-Unleaded Waters by 8260B
Batch number: P090402AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
5592522	96	97	94	90
5592523	96	97	95	90
5592524	96	97	95	88
5592525	96	95	94	87
5592526	95	96	94	87
5592527	95	96	94	87
5592528	95	96	94	88
5592529	96	96	94	87
Blank	96	95	94	87
LCS	96	98	94	89
LCSD	95	100	94	88
MS	96	95	94	92
Limits:	80-116	77-113	80-113	78-113

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

acct 11224 grp 1130824 # 5592522-32

Chain of Custody Record

On-site Time:	Temp 0.0
Off-site Time:	Temp 0.0
Sky Conditions:	
Meteorological Events:	
Wind Speed: 0.0	Direc

Sunoco DUNS #: 0363-5430
Region: Northeast
State or Lead Regulatory Agency: PADEP - Southeast Region
Requested Due Date (mm/dd/yy): Standard TAT
COC Tracking Number:

Lab Name:	Lancaster Laboratories	Facility Address:	610 Old York Road	Consultant/Contractor:	GES, Inc.
Address:	2425 New Holland Pike	Facility City, State:	Warminster PA	Address:	440 Creamery Way, Suite 500
	Lancaster, PA 12425	Site Lat/Long:	0.0 0.0		Exton, PA 19341
Lab PM:	Lynn Frederiksen	Sunoco PM Contact:	Marty Liebhardt	Consultant/Contractor Project No.:	02-03826-8600-60
Tele/Fax:	(717) 656-2308 / (717) 656-6766	Address:	350 Eagleview Blvd. Suite 300	Consultant/Contractor PM:	Krista Snyder
E-mail EDD To:	bcobb@gesonline.com		Exton, Pennsylvania 19341	Tele/Fax:	(610) 458-1077x3068 / (610) 458-2300
E-mail EDD To:	SunocoENFOS@deltaenv.com	Tele/Fax:	(610) 450-5345 / (610) 450-5252	Invoice to:	Bonnie Cobb

Report Type & QC Level:

Item No.	Sample Description	Time	Date	Matrix: Liquid	Laboratory No.	No. of Containers	Preservative: HCL	Requested Analysis: 8260B (BTEX, MTBE, Cumene & Napthalene)	Sample Point Lat/Long and Comments
1	MW-1	4:05	2/13/09	X		3	X	X	Detection Limits must meet
2	MW-2	4:30	2/13/09	X		3	X	X	PADEP Statewide Health
3	MW-3	5:00	2/13/09	X		3	X	X	Standards for all samples
4	MW-4	5:25	2/13/09	X		3	X	X	
5	MW-5	11:00	2/13/09	X		3	X	X	
6	MW-6	12:55	2/13/09	X		3	X	X	
7	MW-7	10:16	2/13/09	X		3	X	X	
8	MW-8	9:29	2/13/09	X		3	X	X	Hold Trip Blank Analysis
9	MW-9	11:43	2/13/09	X		3	X	X	Pending GES Notification
10	MW-10	12:17	2/13/09	X		3	X	X	
11	Trip Blank	/	2/13/09	X		2	X		

Sampler's Name:	Kyle Slatik	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company:	GES, Inc.	Kyle Slatik	2/13/09	17:00	GES Fidgell	2/13/09	17:00
Shipment Date:			2/14/09	08:45		2/14/09	08:45
Shipment Method:	Laboratory Courier		2/14/09	1623			
Shipment Tracking No:					Kate Nolan-Hoke	2/14/09	16:30

Special Instructions:

Custody Seals In Place Yes (No) Temp Blank (Yes) No Cooler Temperature on Receipt 1.9 °C Trip Blank (Yes) No

Lancaster Laboratories
Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
Cal	(diet) calories	**lb.**	pound(s)
meq	milliequivalents	**kg**	kilogram(s)
g	gram(s)	**mg**	milligram(s)
ug	microgram(s)	**l**	liter(s)
ml	millliliter(s)	**ul**	microliter(s)
m3	cubic meter(s)	**fib >5 um/ml**	fibers greater than 5 microns in length per ml

< less than – The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million – One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture.

U.S. EPA data qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quatitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
J	Estimated value
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike amount not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

Sunoco Retail c/o GES Exton
Sume 500
440 Creamery Way
Exton PA 19341

610-458-1077

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 1118132. Samples arrived at the laboratory on Monday, November 03, 2008. The PO# for this group is WARMINSTER and the release number is 0202922-0600-60.

Client Description	Lancaster Labs Number
MW-2 Water	5516527

ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Connie Johnson
ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Heather Nelson
ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Bonnie Cobb
ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Krista Snyder
ELECTRONIC COPY TO	LLI	Attn: EDD Group

Lancaster Laboratories

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Analysis Report

Questions? Contact your Client Services Representative
Lynn M Frederiksen at (717) 656-2300

Respectfully Submitted,

Susan M. Goshert
Group Leader

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW5516527 Group No. 1118132

MW-2 Water
610 Old York Rd-Warminster, PA
DUNS# 03635430 COC: MW-2
Collected:10/31/2008 09:50 by KR

Account Number: 11324

Submitted: 11/03/2008 14:05
Reported: 11/11/2008 at 14:59
Discard: 01/11/2009

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

WAR02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Units	Dilution Factor
02300	UST-Unleaded Waters by 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	8	1	ug/l	1
05401	Benzene	71-43-2	15	1	ug/l	1
05407	Toluene	108-88-3	< 1	1	ug/l	1
05415	Ethylbenzene	100-41-4	39	1	ug/l	1
05420	Isopropylbenzene	98-82-8	41	2	ug/l	1
05439	Naphthalene	91-20-3	11	4	ug/l	1
06310	Xylene (Total)	1330-20-7	11	1	ug/l	1

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/09

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trials	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	11/10/2008 18:52	Daniel H Keller	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	11/10/2008 18:52	Daniel H Keller	1

Lancaster Laboratories

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Analysis Report

Quality Control Summary

Client Name: Sunoco Retail c/o GES Exton
Group Number: 1118132
Reported: 11/11/08 at 02:59 PM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: P083152AA	Sample number(s): 5516527							
Methyl Tertiary Butyl Ether	< 1	1.	ug/l	89	92	73-119	3	30
Benzene	< 1	1.	ug/l	90	91	78-118	1	30
Toluene	< 1	1.	ug/l	89	90	85-115	0	30
Ethylbenzene	< 1	1.	ug/l	89	89	82-119	0	30
Isopropylbenzene	< 2	2.	ug/l	92	91	80-113	1	30
Naphthalene	< 4	4.	ug/l	86	88	61-116	1	30
Xylene (Total)	< 1	1.	ug/l	93	93	83-113	1	30

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: P083152AA	Sample number(s): 5516527 UNSPK: P519880								
Methyl Tertiary Butyl Ether	95		69-127						
Benzene	96		83-128						
Toluene	96		83-127						
Ethylbenzene	96		82-129						
Isopropylbenzene	99		81-130						
Naphthalene	92		57-125						
Xylene (Total)	99		82-130						

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: UST-Unleaded Waters by 8260B
Batch number: P083152AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
5516527	92	92	87	90
Blank	93	93	89	87
LCS	92	96	88	86
LCSD	92	95	90	88
MS	92	95	87	87
Limits:	80-116	77-113	80-113	78-111

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Sunoco Retail c/o GES Exton Group Number: 1118132
Reported: 11/11/08 at 02:59 PM

Surrogate Quality Control

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

acct 11224 grp 111832 # 5516527-28

Chain of Custody Record

On-site Time:	9:30	Temp 0.0	45
Off-site Time:	10:40	Temp 0.0	46
Sky Conditions:	CLEAR		
Meteorological Events:	NONE		
Wind Speed:	0	0.0	Direc 0

Sunoco DUNS #: 0363-5430
Region: Northeast
State or Lead Regulatory Agency: PADEP - Southeast Region
Requested Due Date (mm/dd/yy): Standard TAT
COC Tracking Number:

Lab Name:	Lancaster Laboratories	Facility Address:	610 Old York Road	Consultant/Contractor:	GES, Inc.
Address:	2425 New Holland Pike	Facility City, State:	Warminster PA	Address:	440 Creamery Way, Suite 500
	Lancaster, PA 12425	Site Lat/Long:	0.0 0.0		Exton, PA 19341
Lab PM:	Lynn Frederiksen	Sunoco PM Contact:	Marty Liebhardt	Consultant/Contractor Project No.:	02-02922-0600-60
Tele/Fax:	(717) 656-2308 / (717) 656-6766	Address:	350 Eagleview Blvd. Suite 300	Consultant/Contractor PM:	Krista Snyder
E-mail EDD To:	btobb@gesonline.com		Exton, Pennsylvania 19341	Tele/Fax:	(610) 458-1077x3068 / (610) 458-2300
E-mail EDD To:	SunocoENFOS@deltaenv.com	Tele/Fax:	(610) 450-5345 / (610) 450-5252	Invoice to:	Bonnie Cobb

Report Type & QC Level:

Item No.	Sample Description	Time	Date	Matrix: Liquid	Laboratory No.	No. of Containers	Preservative: HCL	Requested Analysis: 8260B (BTEX, MTBE, Cumene & Napthalene)	Sample Point Lat/Long and Comments
1	~~MW-1~~			X		3	X	X	Detection Limits must meet
2	MW-2	9:50	10/31/08	X		3	X	X	PADEP Statewide Health
3	~~MW-3~~			X		3	X	X	Standards for all samples
4	~~MW-4~~			X		3	X	X	
5	~~MW-5~~			X		3	X	X	
6	~~MW-6~~			X		3	X	X	
7	~~MW-7~~			X		3	X	X	
8	~~MW-8~~			X		3	X	X	Hold Trip Blank Analysis
9	~~MW-9~~			X		3	X	X	Pending GES Notification
10	~~MW-10~~			X		3	X	X	
11	Trip Blank	-	10/31/08	X		2	X		

Sampler's Name:	KURT RUBERSON	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company:	GES, Inc.	GES	10/31/08	17:30	GES CUSTODY		
Shipment Date:			11-3-08			11/4/08	
Shipment Method:	Laboratory Courier		11/3/08	1405		11/3/08	1405
Shipment Tracking No:							

Special Instructions:

Custody Seals In Place Yes (No) Temp Blank (Yes) No Cooler Temperature on Receipt Ok (Ø) Trip Blank (Yes) No

2.6C

Lancaster Laboratories
Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
Cal	(diet) calories	**lb.**	pound(s)
meq	milliequivalents	**kg**	kilogram(s)
g	gram(s)	**mg**	milligram(s)
ug	microgram(s)	**l**	liter(s)
ml	milliliter(s)	**ul**	microliter(s)
m3	cubic meter(s)	**fib >5 um/ml**	fibers greater than 5 microns in length per ml

< less than – The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million – One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture.

U.S. EPA data qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quatitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
J	Estimated value
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike amount not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Analysis Report

ANALYTICAL RESULTS

Prepared for:

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

610-458-1077

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 1114359. Samples arrived at the laboratory on Thursday, October 09, 2008. The PO# for this group is WARMINSTER and the release number is 0202922060060.

Client Description	Lancaster Labs Number
MW-3 Water	5494515
MW-4 Water	5494516
MW-5 Water	5494517
MW-6 Water	5494518
MW-7 Water	5494519
MW-8 Water	5494520
MW-9 Water	5494521
MW-10 Water	5494522

ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Connie Johnson
ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Heather Nelson
ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Bonnie Cobb
ELECTRONIC COPY TO	Sunoco Retail c/o GES	Attn: Krista Snyder
ELECTRONIC COPY TO	LLI.	Attn: EDD Group

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Analysis Report

Questions? Contact your Client Services Representative
Lynn M Frederiksen at (717) 656-2300

Respectfully Submitted,

Marla S. Lord

Marla S. Lord
Senior Specialist

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW5494515 Group No. 1114359

MW-3 Water
DUNS# 03635430 COC: MW-3

Collected:10/08/2008 11:55 by VM

Account Number: 11224

Submitted: 10/09/2008 15:45
Reported: 10/18/2008 at 23:53
Discard: 12/18/2008

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

--M3-

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Units	Dilution Factor
02300	UST-Unleaded Waters by 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	ug/l	1
05401	Benzene	71-43-2	< 1	1	ug/l	1
05407	Toluene	108-88-3	< 1	1	ug/l	1
05415	Ethylbenzene	100-41-4	< 1	1	ug/l	1
05420	Isopropylbenzene	98-82-8	< 2	2	ug/l	1
05439	Naphthalene	91-20-3	< 4	4	ug/l	1
06310	Xylene (Total)	1330-20-7	< 1	1	ug/l	1

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/09

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	10/12/2008 20:35	Florida A Cimino	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	10/12/2008 20:35	Florida A Cimino	1

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Analysis Report

Lancaster Laboratories Sample No. WW5494516 Group No. 1114359

MW-4 Water
DUNS# 03635430 COC: MW-4

Collected:10/08/2008 11:35 by VM

Account Number: 11224

Submitted: 10/09/2008 15:45
Reported: 10/18/2008 at 23:53
Discard: 12/18/2008

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

--M4-

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Units	Dilution Factor
02300	UST-Unleaded Waters by 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	ug/l	1
05401	Benzene	71-43-2	< 1	1	ug/l	1
05407	Toluene	108-88-3	< 1	1	ug/l	1
05415	Ethylbenzene	100-41-4	< 1	1	ug/l	1
05420	Isopropylbenzene	98-82-8	< 2	2	ug/l	1
05439	Naphthalene	91-20-3	< 4	4	ug/l	1
06310	Xylene (Total)	1330-20-7	< 1	1	ug/l	1

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/09

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	10/12/2008 20:56	Florida A Cimino	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	10/12/2008 20:56	Florida A Cimino	1

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Analysis Report

Lancaster Laboratories Sample No. WW5494517 Group No. 1114359

MW-5 Water
DUNS# 03635430 COC: MW-5

Collected:10/08/2008 10:35 by VM

Account Number: 11224

Submitted: 10/09/2008 15:45
Reported: 10/18/2008 at 23:53
Discard: 12/18/2008

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

---MS

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Units	Dilution Factor
02300	UST-Unleaded Waters by 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	ug/l	1
05401	Benzene	71-43-2	< 1	1	ug/l	1
05407	Toluene	108-88-3	< 1	1	ug/l	1
05415	Ethylbenzene	100-41-4	< 1	1	ug/l	1
05420	Isopropylbenzene	98-82-8	< 2	2	ug/l	1
05439	Naphthalene	91-20-3	< 4	4	ug/l	1
06310	Xylene (Total)	1330-20-7	< 1	1	ug/l	1

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/09

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	10/12/2008 21:38	Florida A Cimino	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	10/12/2008 21:38	Florida A Cimino	1

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Analysis Report

Lancaster Laboratories Sample No. WW5494518 Group No. 1114359

MW-6 Water
DUNS# 03635430 COC: MW-6

Collected:10/08/2008 11:00 by VM

Account Number: 11224

Submitted: 10/09/2008 15:45
Reported: 10/18/2008 at 23:53
Discard: 12/18/2008

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

--M6-

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Units	Dilution Factor
02300	UST-Unleaded Waters by 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	ug/l	1
05401	Benzene	71-43-2	< 1	1	ug/l	1
05407	Toluene	108-88-3	< 1	1	ug/l	1
05415	Ethylbenzene	100-41-4	< 1	1	ug/l	1
05420	Isopropylbenzene	98-82-8	< 2	2	ug/l	1
05439	Naphthalene	91-20-3	< 4	4	ug/l	1
06310	Xylene (Total)	1330-20-7	< 1	1	ug/l	1

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/09

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	10/12/2008 21:59	Florida A Cimino	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	10/12/2008 21:59	Florida A Cimino	1

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Analysis Report

Lancaster Laboratories Sample No. WW5494519 Group No. 1114359

MW-7 Water
DUNS# 03635430 COC: MW-7

Collected:10/08/2008 09:15 by VM

Account Number: 11224

Submitted: 10/09/2008 15:45
Reported: 10/18/2008 at 23:53
Discard: 12/18/2008

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

-M7--

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Units	Dilution Factor
02300	UST-Unleaded Waters by 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	ug/l	1
05401	Benzene	71-43-2	< 1	1	ug/l	1
05407	Toluene	108-88-3	< 1	1	ug/l	1
05415	Ethylbenzene	100-41-4	< 1	1	ug/l	1
05420	Isopropylbenzene	98-82-8	< 2	2	ug/l	1
05439	Naphthalene	91-20-3	< 4	4	ug/l	1
06310	Xylene (Total)	1330-20-7	< 1	1	ug/l	1

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/09

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	10/12/2008 22:20	Florida A Cimino	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	10/12/2008 22:20	Florida A Cimino	1

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Analysis Report

Lancaster Laboratories Sample No. WW5494520 Group No. 1114359

MW-8 Water
DUNS# 03635430 COC: MW-8

Collected:10/08/2008 09:40 by VM

Account Number: 11224

Submitted: 10/09/2008 15:45
Reported: 10/18/2008 at 23:53
Discard: 12/18/2008

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

-M8--

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Units	Dilution Factor
02300	UST-Unleaded Waters by 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	4	1	ug/l	1
05401	Benzene	71-43-2	< 1	1	ug/l	1
05407	Toluene	108-88-3	< 1	1	ug/l	1
05415	Ethylbenzene	100-41-4	< 1	1	ug/l	1
05420	Isopropylbenzene	98-82-8	< 2	2	ug/l	1
05439	Naphthalene	91-20-3	< 4	4	ug/l	1
06310	Xylene (Total)	1330-20-7	< 1	1	ug/l	1

PA DEP Lab Certification ID 36-00037. Expiration Date: 1/31/09

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	10/12/2008 22:40	Florida A Cimino	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	10/12/2008 22:40	Florida A Cimino	1

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Analysis Report

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Lancaster Laboratories Sample No. WW5494521 Group No. 1114359

MW-9 Water
DUNS# 03635430 COC: MW-9

Collected:10/08/2008 10:15 by VM

Account Number: 11224

Submitted: 10/09/2008 15:45
Reported: 10/18/2008 at 23:53
Discard: 12/18/2008

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

9--M-

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Units	Dilution Factor
02300	UST-Unleaded Waters by 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	1	1	ug/l	1
05401	Benzene	71-43-2	< 1	1	ug/l	1
05407	Toluene	108-88-3	< 1	1	ug/l	1
05418	Ethylbenzene	100-41-4	< 1	1	ug/l	1
05420	Isopropylbenzene	98-82-8	< 2	2	ug/l	1
05439	Naphthalene	91-20-3	< 4	4	ug/l	1
06310	Xylene (Total)	1330-20-7	< 1	1	ug/l	1

PA DEP Lab Certification ID 36-00037. Expiration Date: 1/31/09

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	10/12/2008 23:02	Florida A Cimino	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	10/12/2008 23:02	Florida A Cimino	1

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Analysis Report

Lancaster Laboratories Sample No. WW5494522 Group No. 1114359

MW-10 Water
DUNS# 03635430 COC: MW-10

Collected:10/08/2008 11:20 by VM

Account Number: 11224

Submitted: 10/09/2008 15:45
Reported: 10/18/2008 at 23:53
Discard: 12/18/2008

Sunoco Retail c/o GES Exton
Suite 500
440 Creamery Way
Exton PA 19341

-10M-

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Units	Dilution Factor
02300	UST-Unleaded Waters by 8260B					
02010	Methyl Tertiary Butyl Ether	1634-04-4	< 1	1	ug/l	1
05401	Benzene	71-43-2	< 1	1	ug/l	1
05407	Toluene	108-88-3	< 1	1	ug/l	1
05415	Ethylbenzene	100-41-4	< 1	1	ug/l	1
05420	Isopropylbenzene	98-82-8	< 2	2	ug/l	1
05439	Naphthalene	91-20-3	< 4	4	ug/l	1
06310	Xylene (Total)	1330-20-7	< 1	1	ug/l	1

PA DEP Lab Certification ID 36-00037. Expiration Date: 1/31/09

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
02300	UST-Unleaded Waters by 8260B	SW-846 8260B	1	10/12/2008 23:23	Florida A Cimino	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	10/12/2008 23:23	Florida A Cimino	1

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Analysis Report

Quality Control Summary

Client Name: Sunoco Retail c/o GES Exton
Group Number: 1114359
Reported: 10/18/08 at 11:53 PM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: F082861AA	Sample number(s): 5494515-5494522							
Methyl Tertiary Butyl Ether	< 1	1.	ug/l	92	91	71-118	1	30
Benzene	< 1	1.	ug/l	91	91	78-119	1	30
Toluene	< 1	1.	ug/l	93	94	85-115	1	30
Ethylbenzene	< 1	1.	ug/l	96	95	82-119	1	30
Isopropylbenzene	< 2	2.	ug/l	96	95	80-113	1	30
Naphthalene	< 4	4.	ug/l	101	98	61-116	3	30
Xylene (Total)	< 1	1.	ug/l	96	96	83-113	0	30

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: F082861AA	Sample number(s): 5494515-5494522 UNSPK: 5494516								
Methyl Tertiary Butyl Ether	94		69-127						
Benzene	95		83-128						
Toluene	100		83-127						
Ethylbenzene	99		82-129						
Isopropylbenzene	99		81-130						
Naphthalene	94		57-135						
Xylene (Total)	99		82-130						

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: UST-Unleaded Waters by 8260B
Batch number: F082861AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
5494515	99	100	99	100
5494516	103	102	103	104
5494517	97	101	98	99
5494518	97	97	98	98
5494519	101	100	100	101
5494520	100	101	102	101
5494521	99	100	100	101

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: Sunoco Retail c/o GES Exton Group Number: 1114359
Reported: 10/18/08 at 11:53 PM

Surrogate Quality Control

5494522	96	97	98	98
Blank	100	100	100	102
LCS	98	100	98	101
LCSD	100	102	100	102
MS	102	103	103	106
Limits:	80-116	77-113	80-113	78-113

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

11224/1114359/549515-23

Chain of Custody Record

Sunoco DUNS #: 0363-5430
Region: Northeast
State or Lead Regulatory Agency: PADEP - Southeast Region
Requested Due Date (mm/dd/yy): Standard TAT
COC Tracking Number:

On-site Time:	Temp 0.0
Off-site Time:	Temp 0.0
Sky Conditions:	
Meteorological Events:	
Wind Speed: 0.0	Direc

Lab Name:	Lancaster Laboratories	Facility Address:	610 Old York Road	Consultant/Contractor:	GES, Inc.
Address:	2425 New Holland Pike	Facility City, State:	Warminster PA	Address:	440 Creamery Way, Suite 500
	Lancaster, PA 12425	Site Lat/Long:	0.0 0.0		Exton, PA 19341
Lab PM:	Lynn Frederiksen	Sunoco PM Contact:	Marty Liebhardt	Consultant/Contractor Project No.:	02-02922-0600-60
Tele/Fax:	(717) 656-2308 / (717) 656-6766	Address:	350 Eagleview Blvd. Suite 300	Consultant/Contractor PM:	Krista Snyder
E-mail EDD To:	bcobb@gesonline.com		Exton, Pennsylvania 19341	Tele/Fax:	(610) 458-1077x3068 / (610) 458-2300
E-mail EDD To:	SunocoENFOS@deltaenv.com	Tele/Fax:	(610) 450-5345 / (610) 450-5252	Invoice to:	Bonnie Cobb

Report Type & QC Level:

Item No.	Sample Description	Time	Date	Matrix: Liquid	Laboratory No.	No. of Containers	Preservative: HCL	Requested Analysis: 8260B (BTEX, MTBE, Cumene & Napthalene)	Sample Point Lat/Long and Comments
1	~~MW-1~~			X		3	X	X	Detection Limits must meet
2	~~MW-2~~			X		3	X	X	PADEP Statewide Health
3	MW-3	11:50	10-8-08	X		3	X	X	Standards for all samples
4	MW-4	11:35	10-8-08	X		3	X	X	
5	MW-5	10:35	10-8-08	X		3	X	X	
6	MW-6	11:00	10-8-08	X		3	X	X	
7	MW-7	11:15	10-8-08	X		3	X	X	
8	MW-8	11:40	10-8-08	X		3	X	X	Hold Trip Blank Analysis
9	MW-9	10:15	10-8-08	X		3	X	X	Pending GES Notification
10	MW-10	11:20	10-8-08	X		3	X	X	
11	Trip Blank	-	10-8-08	X		2	X		

Sampler's Name: Victor Morales	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company: GES, Inc.		10-8-08	1330			
Shipment Date:		10-9-08	09:18			
Shipment Method: Laboratory Courier		10-9-08	1700		10/9/08	1545
Shipment Tracking No:						

Special Instructions:

Custody Seals In Place Yes (No) Temp Blank (Yes) No Cooler Temperature on Receipt 0°C Trip Blank (Yes) No

2.1°C LF

Lancaster Laboratories
Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
Cal	(diet) calories	**lb.**	pound(s)
meq	milliequivalents	**kg**	kilogram(s)
g	gram(s)	**mg**	milligram(s)
ug	microgram(s)	**l**	liter(s)
ml	milliliter(s)	**ul**	microliter(s)
m3	cubic meter(s)	**fib >5 um/ml**	fibers greater than 5 microns in length per ml

< less than – The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million – One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture.

U.S. EPA data qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quatitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
J	Estimated value
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike amount not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

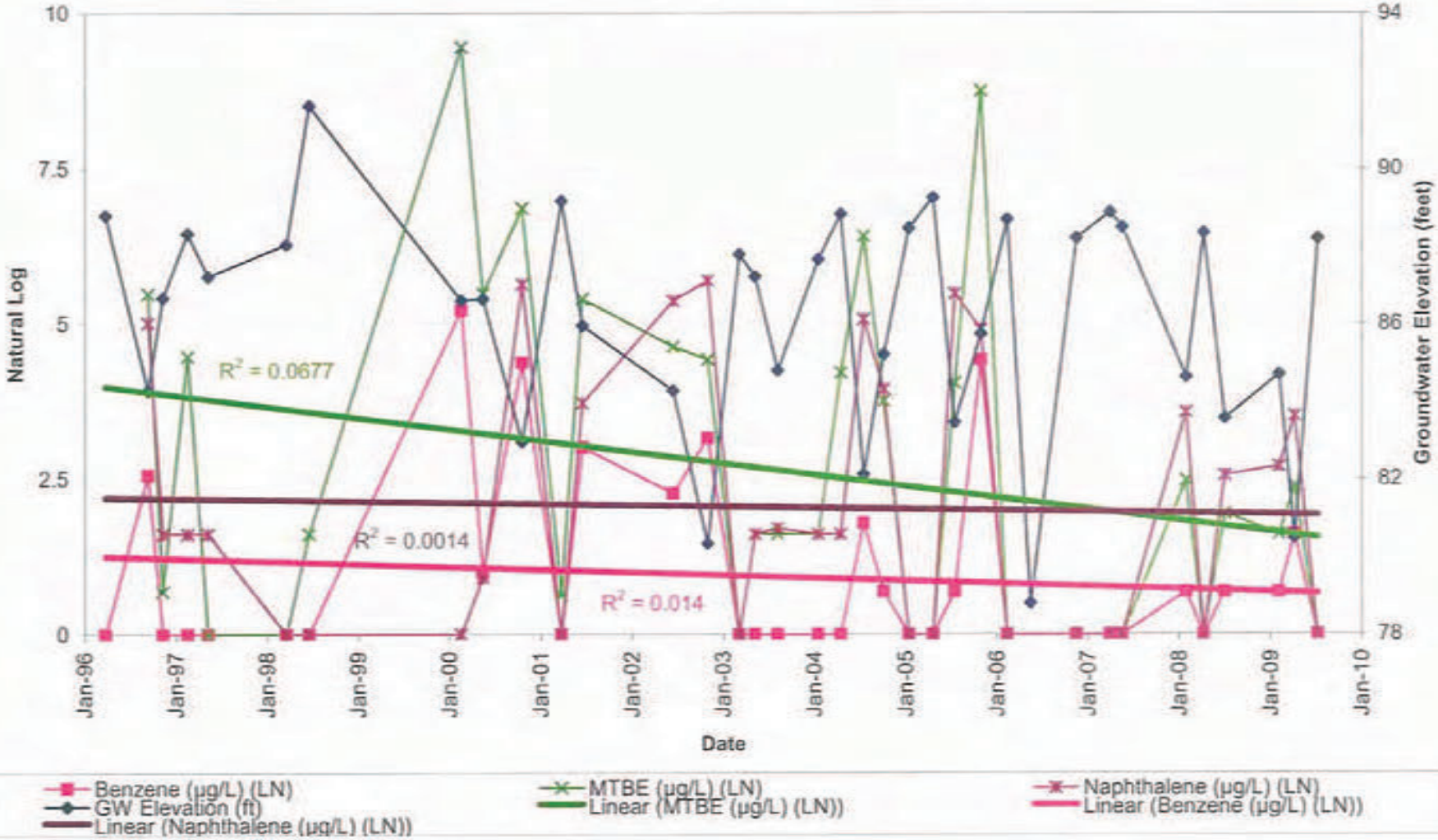
Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

WARRANTY AND LIMITS OF LIABILITY – In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL LANCASTER LABORATORIES BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF LANCASTER LABORATORIES AND (B) WHETHER LANCASTER LABORATORIES HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Lancaster Laboratories which includes any conditions that vary from the Standard Terms and Conditions of Lancaster Laboratories and we hereby object to any conflicting terms contained in any acceptance or order submitted by client.

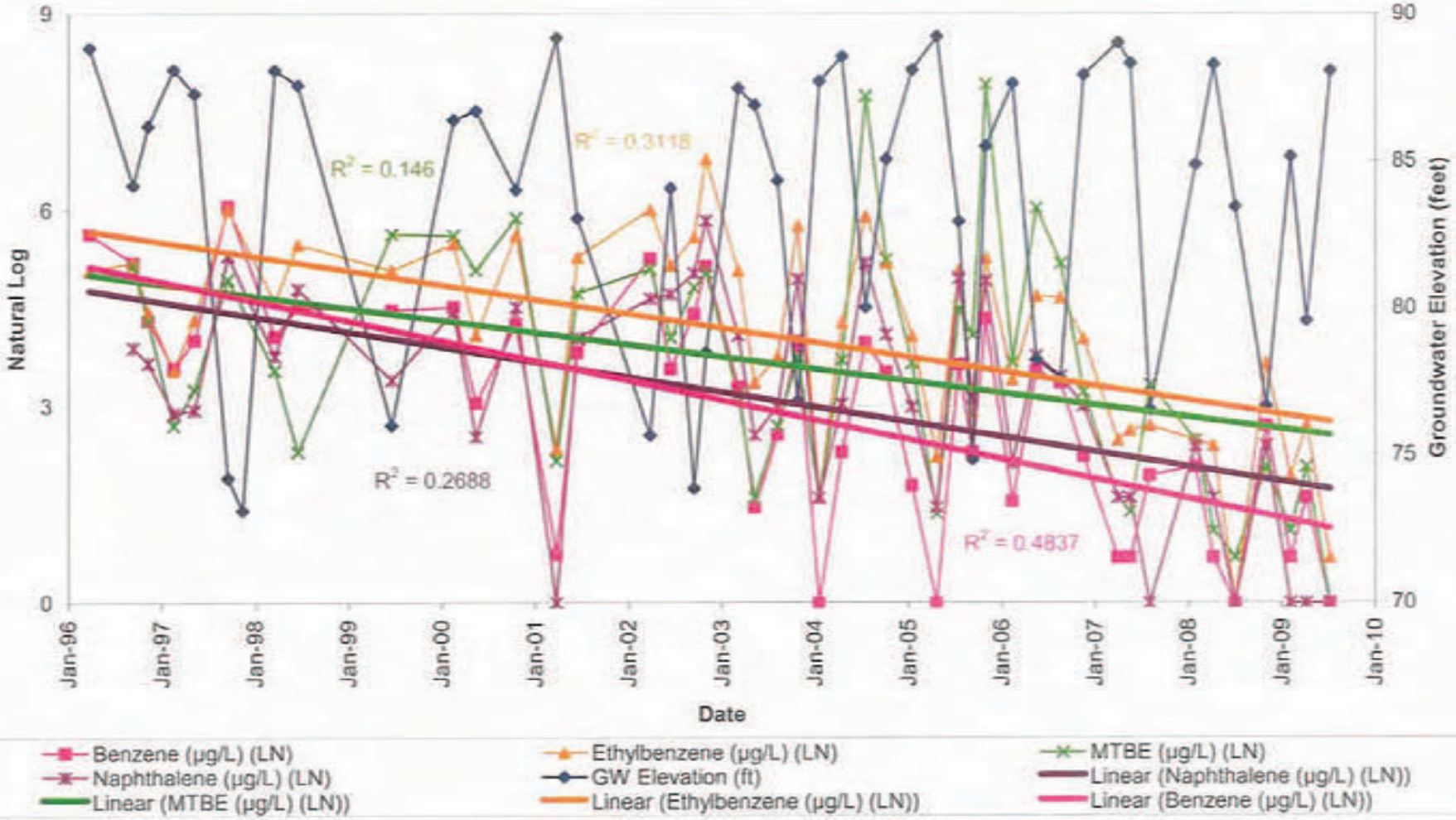
APPENDIX J

Dissolved Phase Hydrocarbon Trend Graphs

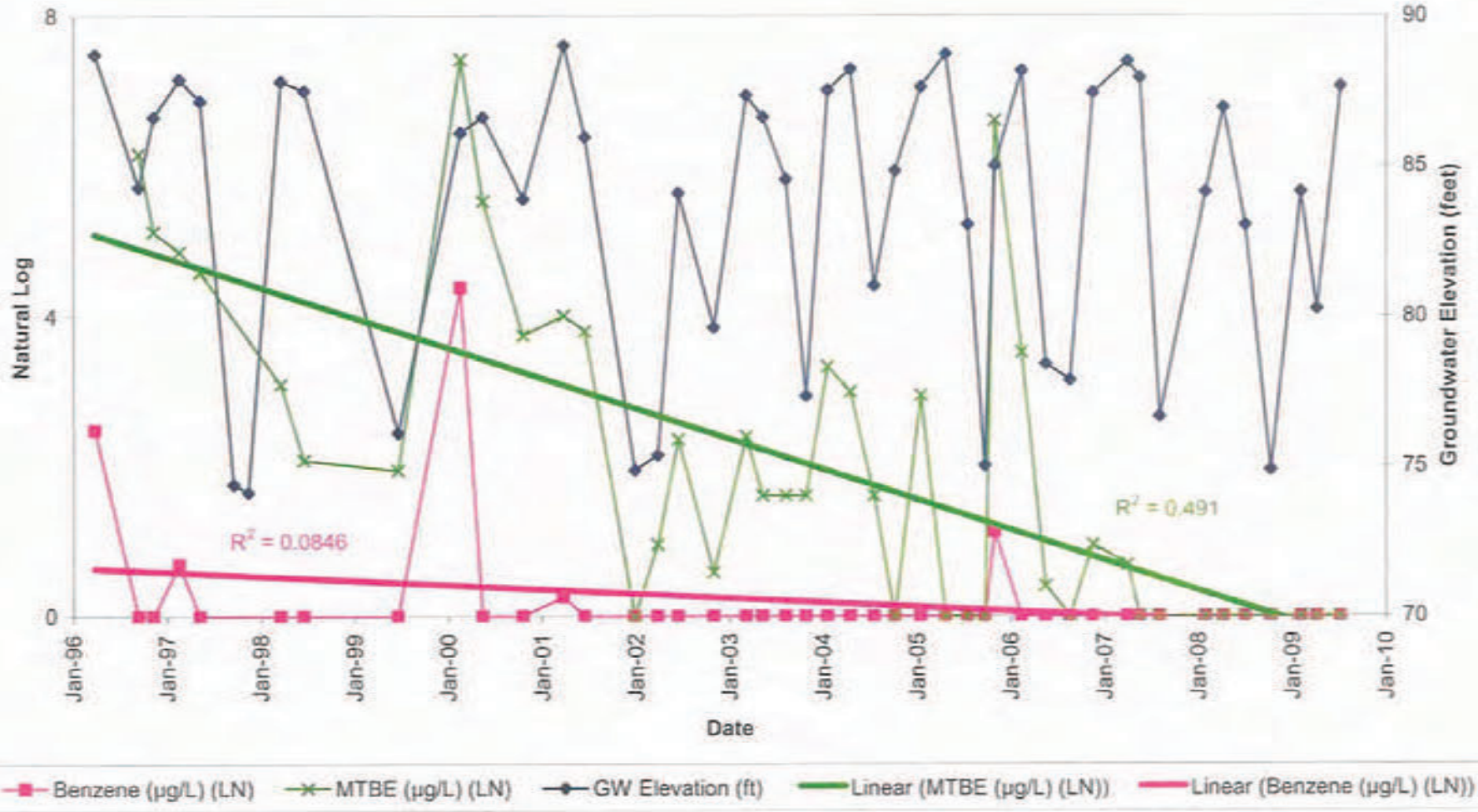
Sunoco Station #0363-5430
610 Old York Road, Warminster, PA
Groundwater Elevation and Natural log of Benzene, MTBE, and Naphthalene in MW-1
All Historical Data



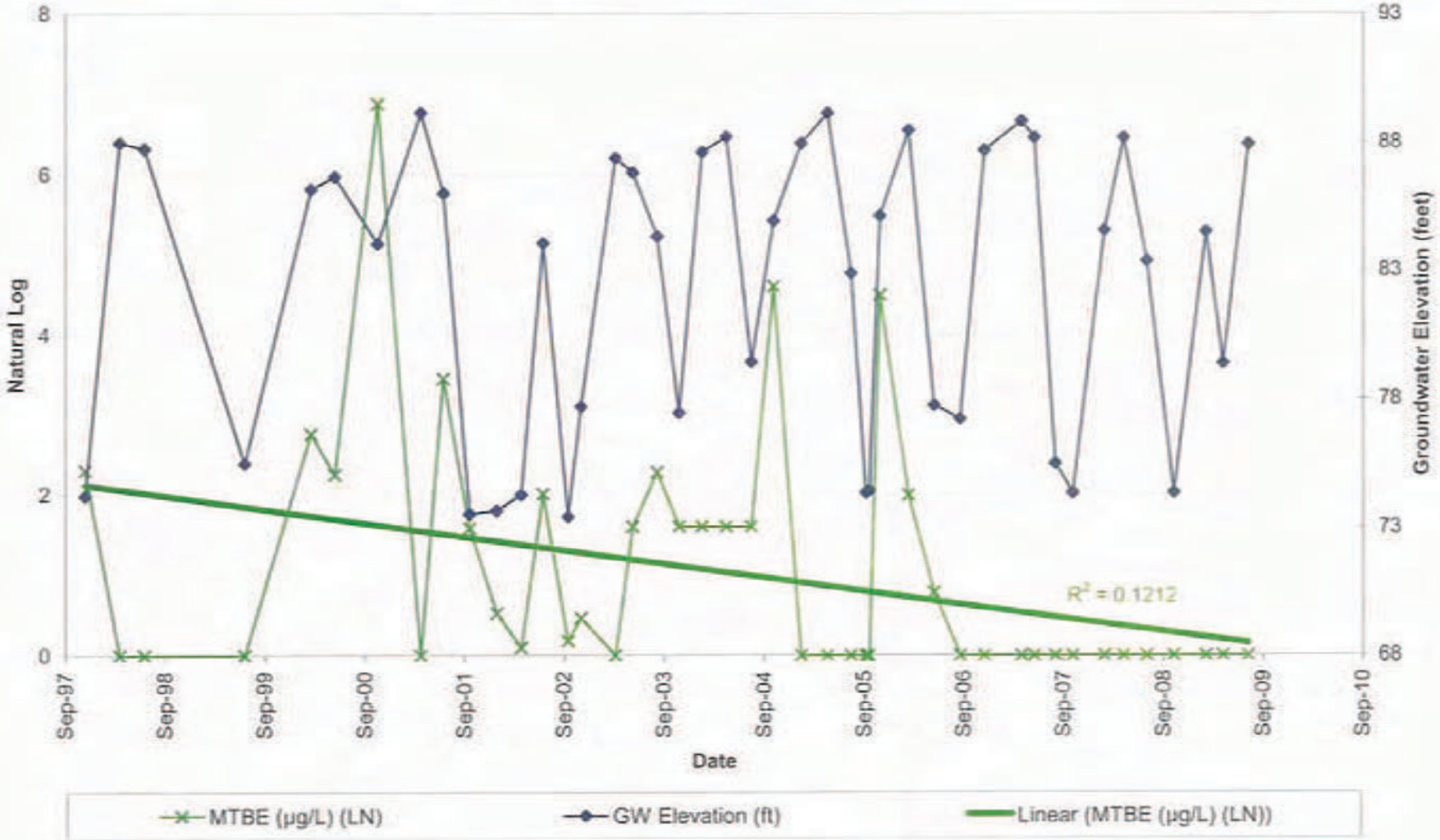
Sunoco Station #0363-5430
610 Old York Road, Warminster, PA
Groundwater Elevation and Natural log of Benzene, Ethylbenzene, MTBE, and Naphthalene in MW-2
All Historical Data



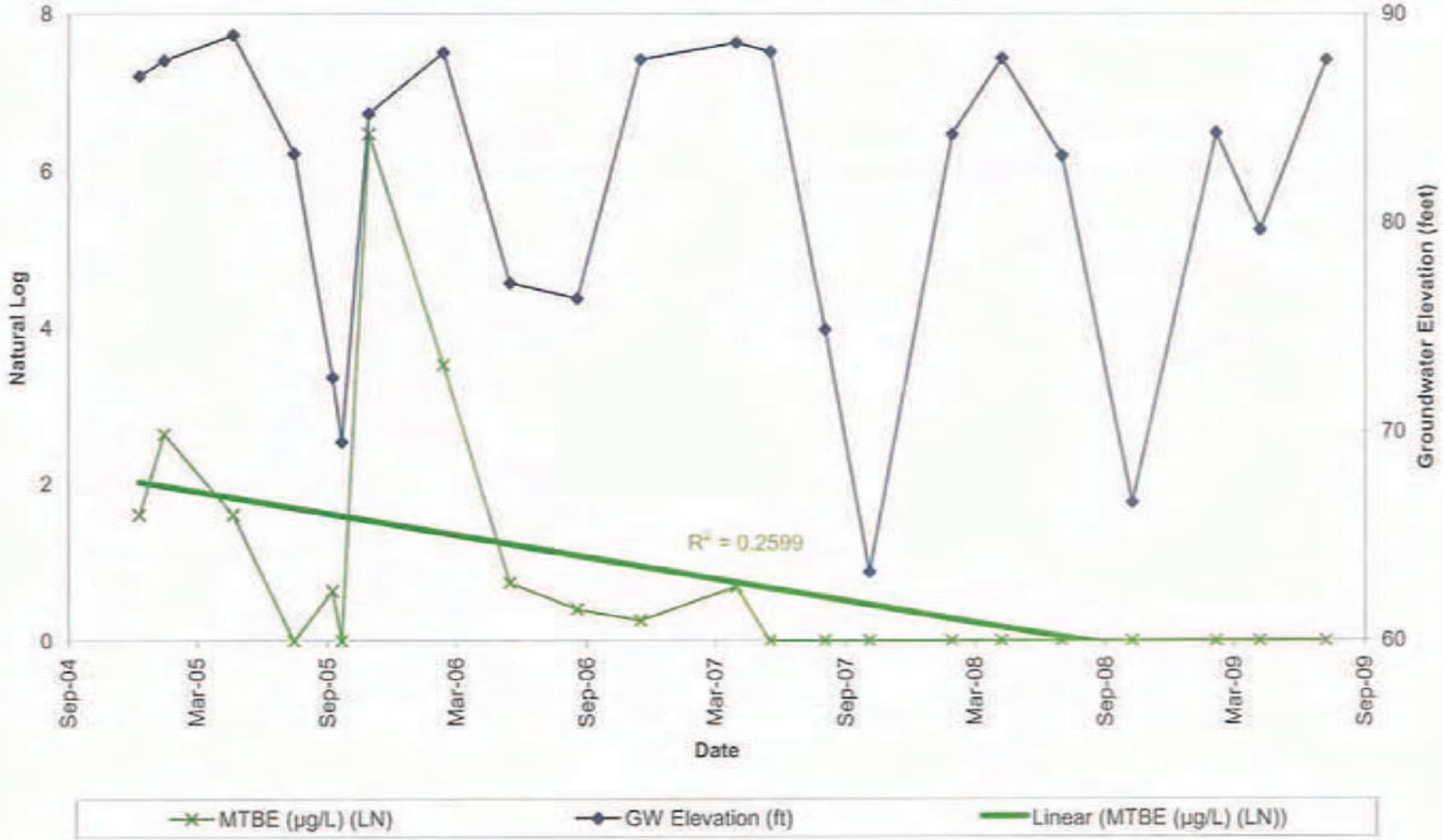
Sunoco Station #0363-5430
610 Old York Road, Warminster, PA
Groundwater Elevation and Natural log of Benzene and MTBE in MW-3
All Historical Data



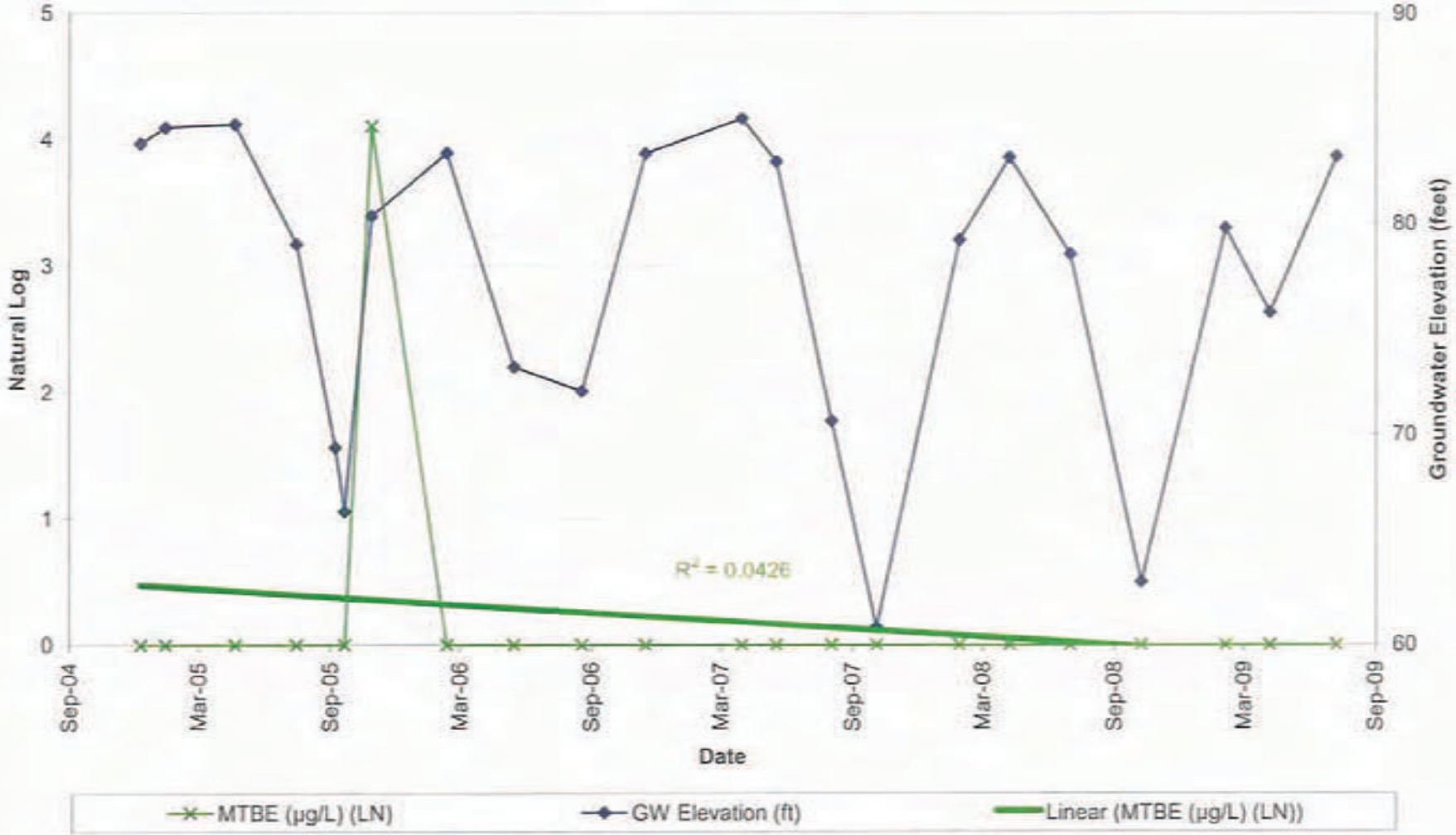
Sunoco Station #0363-5430
610 Old York Road, Warminster, PA
Groundwater Elevation and Natural log of MTBE in MW-4
All Historical Data



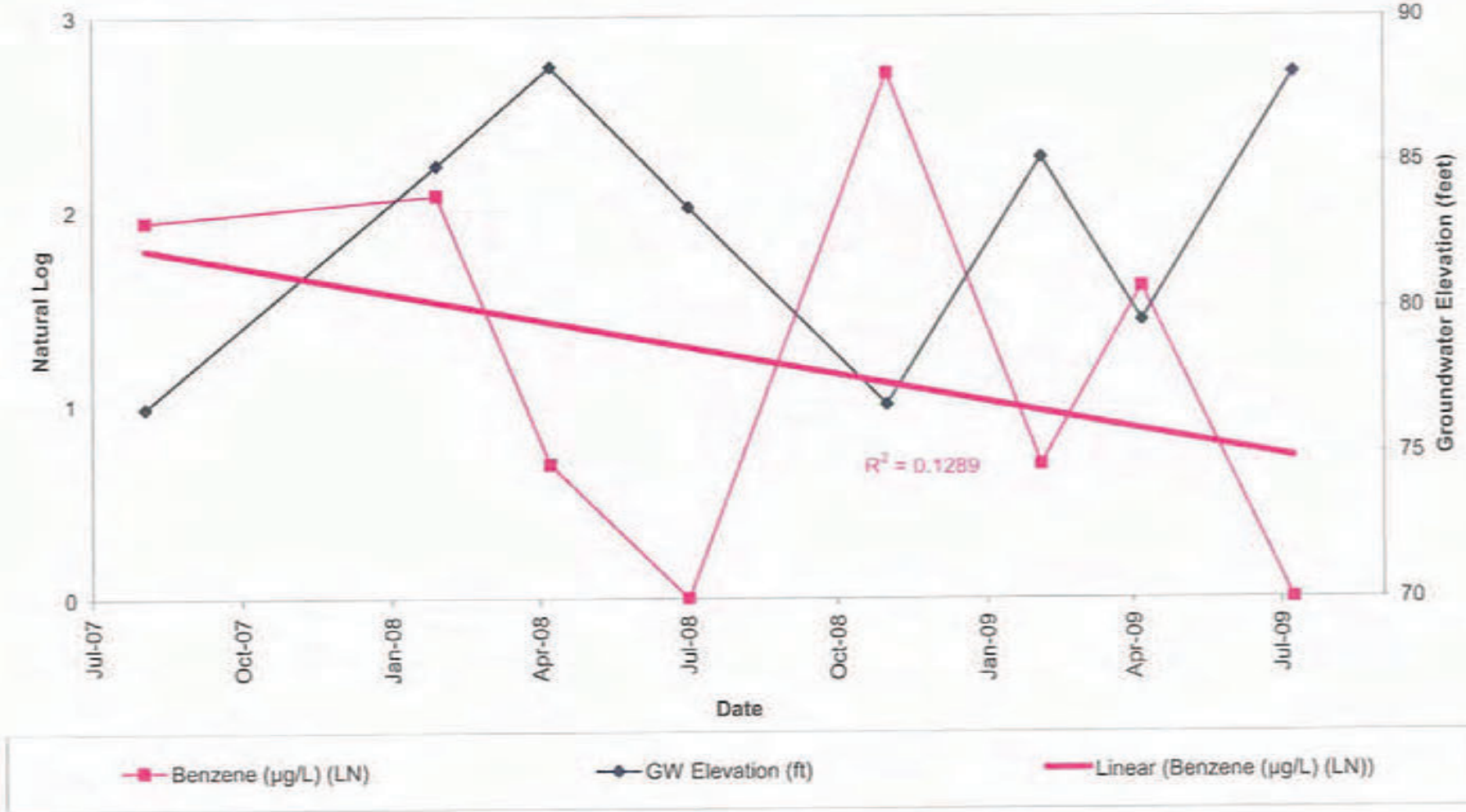
Sunoco Station #0363-5430
610 Old York Road, Warminster, PA
Groundwater Elevation and Natural log of MTBE in MW-5
All Historical Data



Sunoco Station #0363-5430
610 Old York Road, Warminster, PA
Groundwater Elevation and Natural log of MTBE in MW-7
All Historical Data



Sunoco Station #0363-5430
610 Old York Road, Warminster, PA
Groundwater Elevation and Natural log of Benzene in MW-2
During Groundwater Attainment Sampling



APPENDIX K

BIOTRANS Model Documentation

Fate and Transport Modeling

for Sunoco Station #0363-5430
610 Old York Road
Warminster, Pennsylvania

prepared for

Groundwater & Environmental Services, Inc.
410 Eagleview Blvd., Suite 110
Exton, Pennsylvania 19341

by

Environmental Systems & Technologies
A Division of Groundwater & Environmental Services, Inc.
1750 Kraft Drive, Suite 2700
Blacksburg, Virginia 24060

1300319-02
December 2005

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Figure 4. Initial MTBE concentration distribution and model-predicted MTBE concentration distributions at 5, 10, 15, 20 and 30 years.

Figure 5. Initial naphthalene concentration distribution and model-predicted naphthalene concentration distributions at 5, 10, 15, 20 and 30 years.

1. Introduction

The following provides an overview of the approach and results of fate and transport modeling conducted for the Sunoco Station #0363-5430 located at 610 Old York Road in Warminster, Pennsylvania. The purpose of the modeling is to evaluate the migration potential of dissolved phase constituents observed in groundwater at the site. The modeling activities involved a review of site data, conceptual model development, model selection, model construction, and model simulations. Details of the site conceptualization, modeling analyses, and results are described in the following sections.

2. Fate and Transport Analyses

Fate and transport modeling was conducted to evaluate the migration potential of dissolved phase hydrocarbons from the site and was based on site-specific data. The modeling effort concentrated on the dissolved hydrocarbon constituent concentrations over the last twelve quarters of sampling. Any analyzed constituent that has had an exceedance of the Pennsylvania Department of Environmental Protection Act II Statewide Health Standards (PADEP SHS) within the last twelve quarters was simulated in the modeling effort. Benzene, methyl tert-butyl ether (MTBE), and naphthalene are the only constituents to have exceeded the PADEP SHS during that time. Therefore, these constituents were evaluated in the modeling effort.

2.1 Site Conceptualization

The facility is located on the northwest corner of the intersection of Old York Road and Street Road in Warminster, Pennsylvania, approximately 1.7 miles south of Neshaminy Creek. The nearest surface water body, in the direction of flow, is Neshaminy Creek.

Seven monitoring wells (MW-1 through MW-7) have been installed at the facility. Monitoring well locations and facility features are shown on Figure 1. Groundwater sampling and monitoring activities have been conducted at the site since March 1996. Light non-aqueous phase liquid (LNAPL) has never been detected at the site; therefore, a continuing source will not be simulated in the modeling effort. Groundwater elevations at the site indicate groundwater flow to the north with an average gradient of 0.003.

Groundwater samples have been analyzed for benzene, toluene, ethylbenzene, xylenes, MTBE, isopropyl benzene, and naphthalene. Dissolved benzene, MTBE, and naphthalene are the only constituents that have exceeded the PADEP SHS in the last twelve quarters of sampling, therefore, these constituents were simulated in the modeling effort.

2.2 Model Selection

Numerical modeling of dissolved phase hydrocarbon fate and transport was conducted using the model BIOTRANS. BIOTRANS is a two-dimensional, finite element model that considers convective-dispersive transport, adsorption, and decay for multiple hydrocarbon constituents in

either porous or fractured media. Transport of dissolved species is simulated by solving the two-dimensional, vertically averaged convective-dispersive-reactive equation. The model utilizes steady-state velocity fields that represent average flow conditions. Analyses using BIOTRANS have been previously submitted and accepted by the U.S. EPA and state regulatory agencies. A detailed description of BIOTRANS is available in ES&T (1996).

2.3 Model Construction

The model domain covers an area of approximately 176,000 square feet, encompassing the site and surrounding downgradient areas to enable simulation of potential off-site dissolved migration. The finite element mesh contains 7,056 quadrilateral elements with a nodal spacing of 5 feet. The extent of the model domain and the finite element mesh are depicted in Figure 2. The model simulation was performed for 30 years to predict migration potential.

In the modeling effort, input parameter values were defined from site data whenever possible. When site-specific data were not available, literature values were utilized to define model input values. The following describes the input parameters and the values applied in the modeling effort.

Dissolved Species – Benzene, MTBE, and naphthalene were the constituents of concern considered in the model. For each constituent, the model requires molecular weight, pure phase solubility, and an adsorption coefficient. First-order decay was considered. The soil-water distribution coefficient, K_d, was calculated as the product of f_{oc} and K_{oc}, where f_{oc} represents the organic carbon content of the aquifer material, and K_{oc} is the organic carbon partition coefficient. No site-specific f_{oc} measurements were available, thus a conservative value of 0.005 was applied in the model. K_{oc} is chemical specific and describes the ratio of the amount of constituent adsorbed per unit weight of organic carbon in the aquifer material to the concentration in aqueous solution. The K_{oc} values utilized in the model were selected from Appendix A, Table 5, of the Act 2 regulations (PADEP, 2003). A first-order decay constant was also applied in the model (PADEP, 2003). Table 1 provides the chemical properties for benzene, MTBE, and naphthalene used in the modeling analyses.

Table 1. Chemical Properties Applied in the Modeling.

Parameter	Benzene	MTBE	Naphthalene	Units
Molecular weight[1]	78.11	8.15	128.17	g/mole
Solubility[2]	1,780	45,000	30	mg/L
K_{OC}[2]	58	12	950	cm^3/g
K_d	0.29	0.06	4.75	cm^3/g
First-order decay rate[2]	0.00096	0.0019	0.0027	d^{-1}

[1]http://chemfinder.cambridgesoft.com/
[2]Pa. Code § 250 (Appendix A, Table 5)

Initial Concentrations – The maximum benzene, MTBE, and naphthalene concentrations measured at all wells over the last twelve quarters were used as the initial concentration distributions in the model (Figures 3 through 5). Utilization of the maximum measured concentration distributions result in the most conservative estimate of dissolved-phase fate and transport.

Porosity – Total porosity is the ratio of void volume to total volume in the aquifer. A porosity value of 0.10 was utilized in the modeling effort. This value is representative of the competent shale bedrock encountered in borings at the facility (Freeze and Cherry, 1979).

Soil Bulk Density – The soil bulk density (ρ_b) is the mass of dry soil relative to the bulk soil volume. Bulk density can be calculated using porosity (Φ) and assuming a particle density of 2.65 g/cm^3, which is typical for a quartz, as

$$\rho_b = (1-\Phi) * 2.65 \text{ g/cm}^3$$

The bulk density applied in the modeling is 2.39 g/cm^3.

Longitudinal and Transverse Dispersivity – Hydrodynamic dispersion is the term applied to the combined effects of mechanical dispersion and molecular diffusion in causing a plume to spread within a groundwater system. For this modeling effort, the longitudinal and transverse dispersivities were conservatively estimated as 4 feet and 0.4 feet, respectively.

Groundwater Flow – Groundwater flow representative of measured site conditions was simulated in the modeling effort. A steady-state, uniform flow field was generated considering site hydrologic conditions. Measured groundwater elevations at the site indicate flow toward the northern portion of the facility, with a hydraulic gradient of 0.003. This hydraulic gradient was determined to represent average flow conditions across the site and in the offsite area. Hydraulic conductivity within the aquifer was estimated at 0.001 feet/day based on the competent shale bedrock encountered in borings at the facility (Freeze and Cherry, 1979). The aquifer thickness was assumed to be 85 feet based on the maximum well depth and average water table elevations at the site.

2.4 Modeling Results

Results of the modeling effort indicate that the combined effects of degradation, dispersion, and adsorption act to reduce benzene, MTBE, and naphthalene concentrations over time. Benzene concentrations are predicted to remain above the PADEP SHS of 5 µg/L for the entire 30 year simulation. No dissolved benzene migration is predicted. Predicted benzene concentrations at 5, 10, 15, 20 and 30 years are shown on Figure 3. The maximum benzene concentration in the plume at 5, 10, 15, 20 and 30 years is predicted to be 60.6 µg/L; 49.4 µg/L; 40.3 µg/L; 32.9 µg/L and 22.0 µg/L; respectively. MTBE concentrations are predicted to decrease to below the PADEP SHS of 20 µg/L between 22 and 23 years. No offsite migration beyond the initial MTBE plume extent is predicted. The initial and model-predicted MTBE concentration distributions are shown on Figure 4. The maximum MTBE concentration in the plume at 5, 10, 15 and 20 years is predicted to be 1516.9 µg/L, 420.5 µg/L, 126.4 µg/L and 43.1 µg/L; respectively. Dissolved naphthalene concentrations are predicted remain above the PADEP SHS of 100 µg/L for the

entire 30 year simulation. The initial and model-predicted naphthalene concentration distributions are shown on Figure 5. Offsite migration of dissolved naphthalene concentrations are not predicted. The maximum naphthalene concentration in the plume at 5, 10, 15, 20 and 30 years is predicted to be 203.8 µg/L; 195.9 µg/L; 188.3 µg/L; 181.0 µg/L and 167.23 µg/L; respectively.

3. Summary and Conclusions

Fate and transport modeling has been conducted utilizing current and historical data collected at the site. Site-specific input parameter values were defined from site data whenever possible. The initial concentrations utilized in the model represent the maximum concentrations observed during the most recent eight quarters of sampling.

Model results indicate that benzene concentrations above the PADEP SHS of 5 µg/L persist for the entire 30-year simulation with no off-site migration predicted. Dissolved MTBE concentrations above the PADEP SHS of 20 µg/L are predicted to remain at the site for 22 to 23 years with no additional migration beyond the initial concentration distribution. Dissolved naphthalene concentrations above the PADEP SHS of 100 µg/L are predicted to persist for at least 30 years. No off-site migration of naphthalene concentrations is predicted.

4. References

ChemFinder. Chemical Properties Database. http://chemfinder.cambridgesoft.com/

ES&T. 1996. *BIOTRANS, Areal Dissolved Phase Transport Model for Organic Chemical Spills with Natural or Enhanced Bioremediation, User and Technical Guide.* Environmental Systems & Technologies, Blacksburg, VA.

Freeze, R.A. and J.A. Cherry. 1979. *Groundwater*, Prentice-Hall, Inc., Englewood Cliffs, NJ.

PADEP. 2003. Pennsylvania Bulletin Online.
http://www.pacode.com/secure/data/025/chapter250/chap250toc.html



File Name:	Warminster 8.5x11.ppt
Date:	12/19/2005
Drafter:	WMG
Approved:	JWW

Figure 1. Site map showing facility features and monitoring well locations.

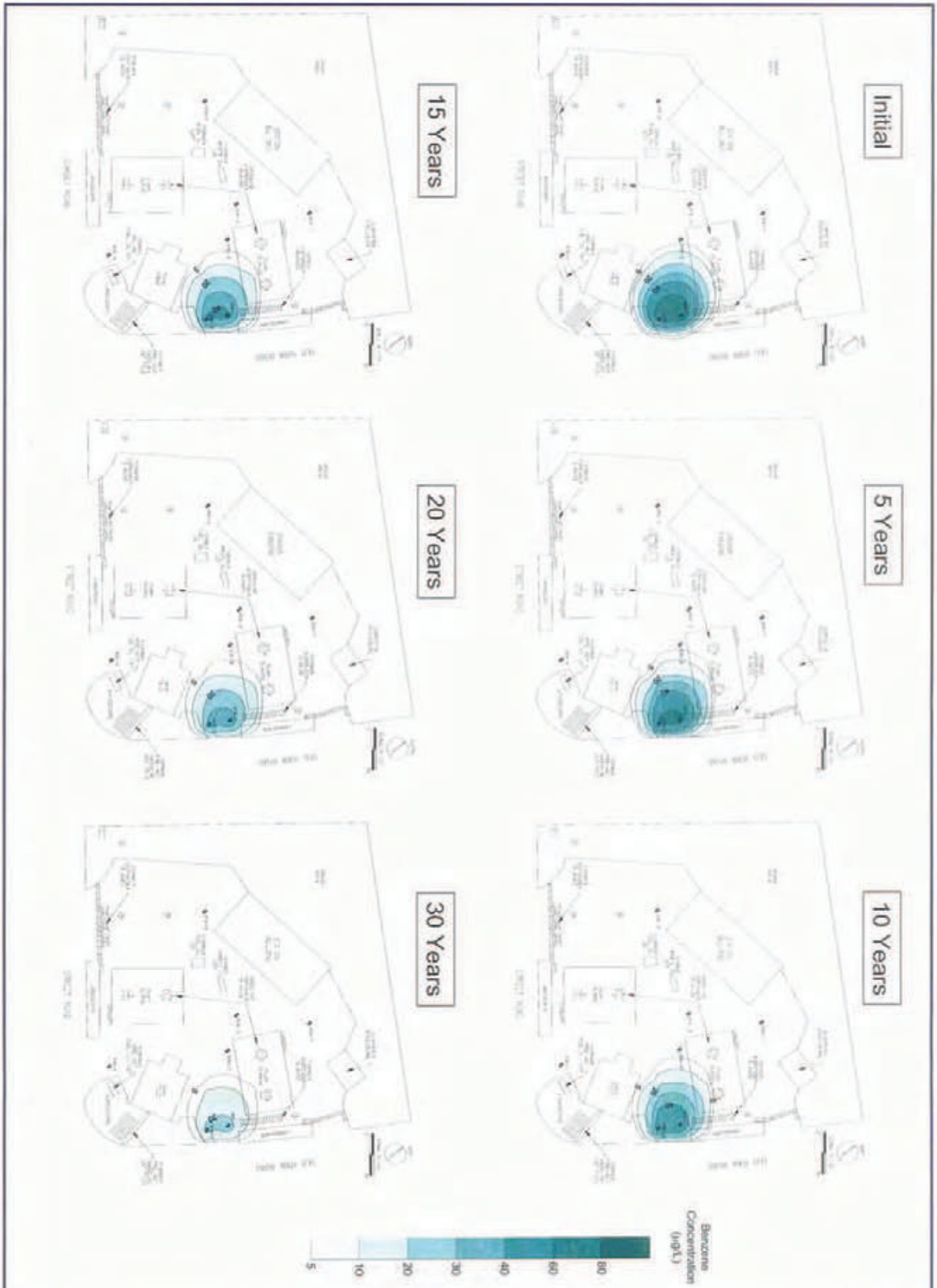
EST&
Environmental Systems & Technologies
A Division of GES



File Name:	Warminster 8.5x11.ppt
Date:	12/19/2005
Drafter:	WMG
Approved:	JWW

Figure 2. Model domain.

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Environmental Systems & Technologies
A Division of GES



File Name:	Warminster11X17
Date:	12/19/2005
Drafter:	WMG
Approved:	JWW

Figure 3. Initial benzene concentration distribution and model-predicted benzene concentration distributions at 5, 10, 15, 20 and 30 years.

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A Division of GES

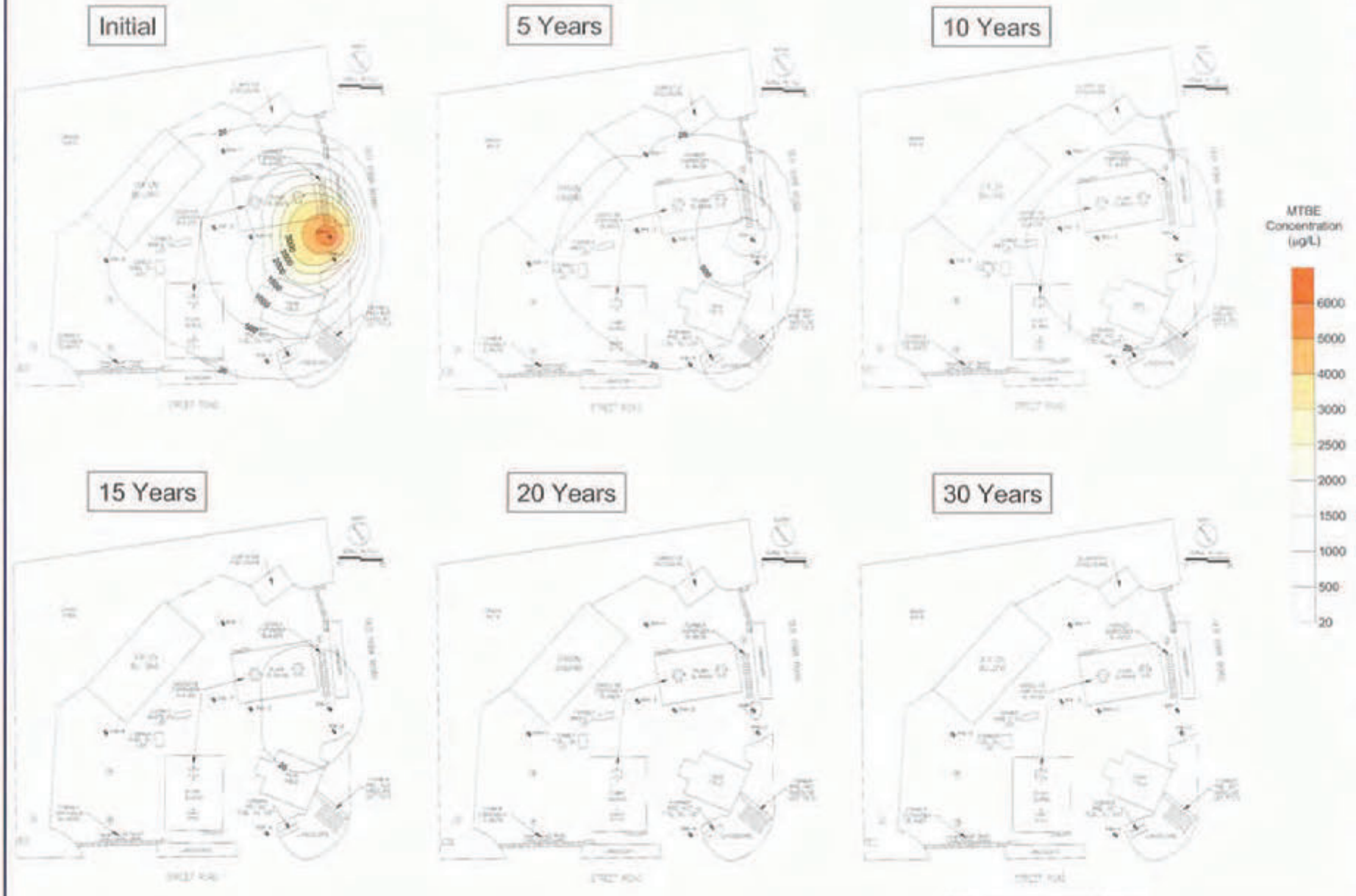


Figure 4. Initial MTBE concentration distribution and model-predicted MTBE concentration distributions at 5, 10, 15, 20 and 30 years.

EST&I Environmental Systems & Technologies
A Division of GES

File Name: Warminster11X17
Date: 12/19/2005
Drafter: WMG
Approved: JWW

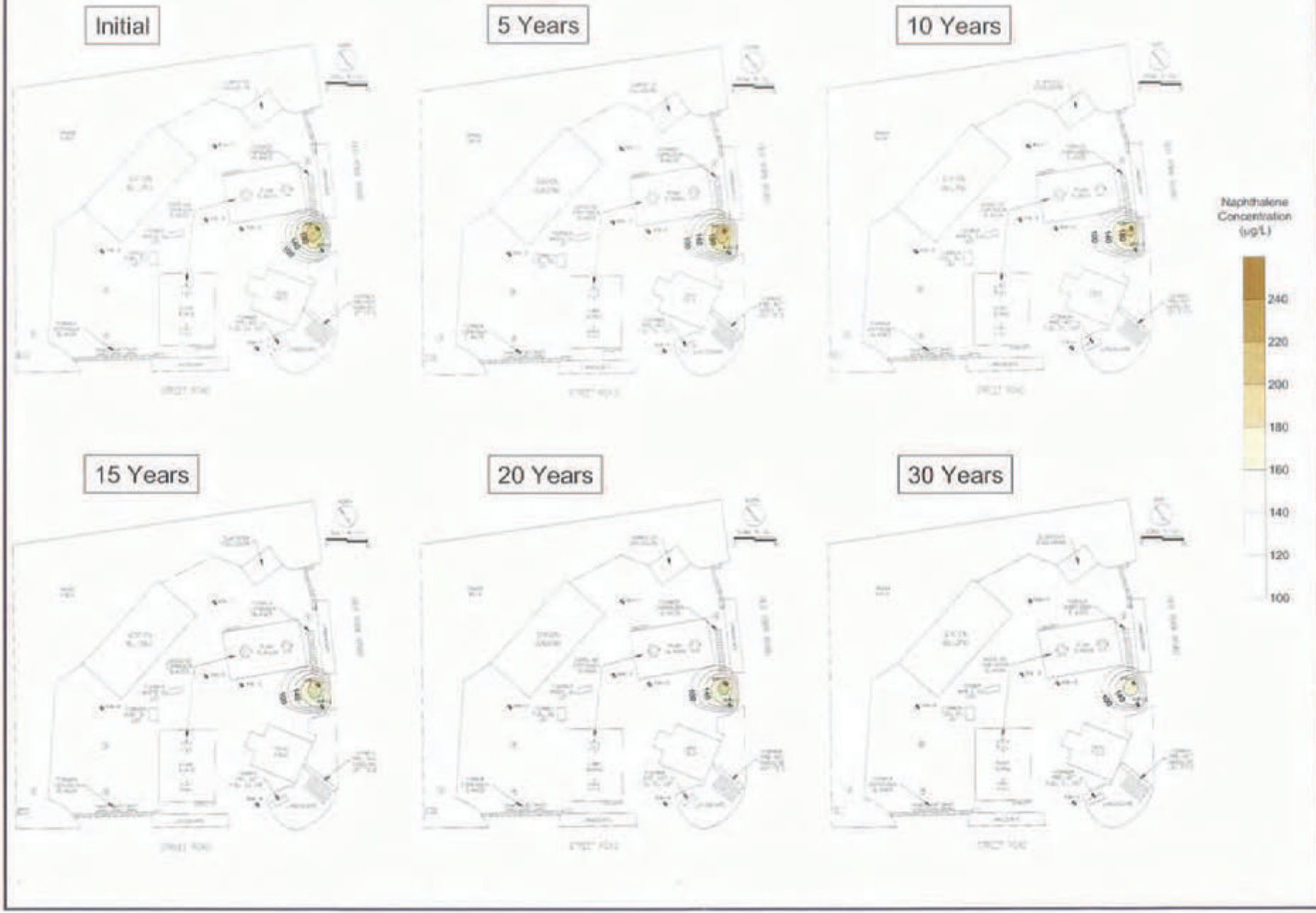


Figure 5. Initial naphthalene concentration distribution and model-predicted naphthalene concentration distributions at 5, 10, 15, 20 and 30 years.

File Name: Warminster11X17
Date: 12/19/2005
Drafter: WMG
Approved: JWW

APPENDIX L

Draft Uniform Environmental Covenant

Prepared by:
Groundwater and Environmental Services, Inc.
440 Creamery Way, Suite 500
Exton, PA 19341
(610) 458-1077

Return to:
Groundwater and Environmental Services, Inc.
440 Creamery Way, Suite 500
Exton, PA 19341
Attn: Krista Snyder
(610) 458-1077 ext. 3068

The County Parcel Identification No. of the Property is: 49009046
GRANTOR: Sunoco, Inc. (R&M)
PROPERTY ADDRESS: 610 York Road, Warminster, Pennsylvania

ENVIRONMENTAL COVENANT

This Environmental Covenant is executed pursuant to the Pennsylvania Uniform Environmental Covenants Act, Act No. 68 of 2007, 27 Pa. C.S. §§ 6501 – 6517 (UECA). This Environmental Covenant subjects the Property identified in Paragraph 1 to the activity and/or use limitations in this document. As indicated later in this document, this Environmental Covenant has been approved by the Pennsylvania Department of Environmental Protection (Department).

1. **Property affected**. The property affected (Property) by this Environmental Covenant is located in the Township of Warminster, Bucks County.

The postal street address of the Property is: 610 York Road, Warminster, PA. The tax assessment street address of the Property is: 610 York Road, Warminster, PA.

The latitude and longitude of the center of the Property affected by this Environmental Covenant is: 40° 12' 36.6" N, 75° 05' 58.2" W.

The Property has been known by the following name(s): Sunoco Station #0363-5430 with PADEP Facility ID #09-30778.

A complete description of the Property is attached to this Environmental Covenant as Exhibit A. A map of the Property is attached to this Environmental Covenant as Exhibit B.

2. **Property Owner / GRANTOR**. Sunoco, Inc. (R&M) is/are the owner(s) of the Property. The mailing address of the Owner is:
1735 Market Street, STE LL, Philadelphia, Pennsylvania, 19103-7583.

3. **Holder(s) / GRANTEE**. The following is/are a "holder," as that term is defined in 27 Pa. C.S. § 6502, of this Environmental Covenant:
Sunoco, Inc. (R&M)
1735 Market Street, STE LL
Philadelphia, PA 19103-7583

4. **Description of Contamination & Remedy**. The following describes the contamination and remedy of the property.

Groundwater sampling was initiated at the site in March 1996, at which time a groundwater monitoring program was initiated. Dissolved-phase hydrocarbons were detected at concentrations above the Department Statewide Health Standards (SHS) in the monitoring wells. This monitoring program continued until July 2009.

During underground storage tank (UST) closure activities in 1995 and 1996, soils samples were collected at depths ranging from one to 12 feet. Soil analytical results demonstrated that benzene was detected at concentrations above the Department SHS in soil samples collected beneath known UST, pre-Act 2 USTs, and dispenser islands. None of the remaining target parameters (toluene, ethylbenzene, and total xylenes) were detected at concentrations greater than the Department SHS during the UST closure activities. During the 2007 monitoring well installation, benzene was detected at concentrations above the Department SHS in two soil samples. The remaining target parameters (toluene, ethylbenzene, total xylenes, methyl tertiary butyl ether (MTBE), isopropylbenzene, and naphthalene) were not detected or were detected at concentrations below the Department SHS.

Remediation was initiated at this site in April 2005, with a chemical oxidation high-intensity targeted (HIT) remediation event in which approximately 450 gallons of 7 to 8% solution of hydrogen peroxide were injected into monitoring wells MW-1, MW-3, and MW-5.

Following active remediation, the dissolved-phase hydrocarbon impact was detected primarily in monitoring wells MW-1 through MW-3, located in the vicinity of the former pre-Act 2 UST field and former dispenser islands along York Road. Dissolved hydrocarbons continued to exhibit decreasing trends. During post-remediation groundwater monitoring and sampling, benzene, MTBE, and naphthalene were detected at concentrations and/or had a laboratory detection limit above the Department SHS. During attainment groundwater monitoring and sampling, benzene was detected at concentrations above the Department SHS and/or had a laboratory detection limit above the Department SHS in monitoring well MW-2, located in the vicinity of the former dispenser islands along York Road.

The environmental activities conducted at this site were in accordance with the Site Characterization Report prepared by Handex of Eastern Pennsylvania dated May 28, 1996, the Additional SCR / Remedial Action Plan (ASCR/RAP) prepared by GES dated January 6, 2006, and the Remedial Action Completion Report (RACR) prepared by GES dated October 1, 2009.

The Site Characterization Report (dated May 28, 1996), the Additional SCR / Remedial Action Plan (ASCR/RAP) (dated January 6, 2006), and the Remedial Action Completion Report (RACR) (dated October 1, 2009) were developed in accordance with applicable sections of Pennsylvania's Storage Tanks, Corrective Action Regulations (Title 25, Chapter 245), as well as the Land Recycling and Environmental Remediation Standards Act (Title 25, Chapter 250). The full administrative record, including the above-mentioned reports, is available at the Department's Southeast Regional Office located at 2 East Main Street in Norristown, Pennsylvania.

5. **Activity & Use Limitations**. The Property is subject to the following activity and use limitations, which the Owner and each subsequent owner of the Property shall abide by:

(a) The groundwater at or under the property shall not be used for drinking or agricultural purposes,

b) The Owner shall prohibit residential use of the Property without first obtaining written approval from the Department.

6. **Notice of Limitations in Future Conveyances**. Each instrument hereafter conveying any interest in the Property subject to this Environmental Covenant shall contain a notice of the activity and use limitations set forth in this Environmental Covenant and shall provide the recorded location of this Environmental Covenant.

7. **Compliance Reporting**. The owner and each subsequent owner of the Property shall submit to the Department written documentation confirming that the activity and use limitations in this Environmental Covenant are being complied with following transfer of the Property. In addition, the Owner or subsequent owner shall, as appropriate, notify the Department concerning proposed changes in use of the Property, filing of applications for building permits for the Property or proposals for any work at the Property which affect the contamination on the Property subject to this Environmental Covenant. The Owner and each subsequent owner shall also submit, to the Department, written documentation concerning the use of the property and compliance with this Environmental Covenant upon request by the Department.

8. **Access by the Department**. In addition to any rights already possessed by the Department, this Environmental Covenant grants to the Department a right of access of the Property in connection with implementation or enforcement of this Environmental Covenant.

9. **Recordation & Proof & Notification**. Within 30 days after the date of the Department's approval, the Owner(s) shall file this Environmental Covenant with the Recorder of Deeds for each County in which the Property is located, and send a file-stamped copy of this Environmental Covenant to the Department within 60 days recordation. Within that time period, the Owner(s) also shall send a file-stamped copy to each of the following: each Municipality and County in which the Property is located; any Holder identified in this Environmental Covenant; each person holding a recorded interest in the Property; and each person in possession of the Property.

10. **Termination or Modification**. This Environmental Covenant may only be terminated or modified in accordance with Section 9 of UECA, 27 Pa. C.S. § 6509, including as follows:

> In accordance with Section 10 of UECA, 27 Pa. C.S. § 6510(a)(3)(i), Grantor hereby waives the right to consent to any amendment or termination of the Environmental Covenant by consent; it being intended that any amendment to or termination of this Environmental Covenant by consent in accordance with this Paragraph requires only the following signatures on the instrument amending or terminating this Environmental Covenant: (i) the Holder at the time of such amendment or termination; (ii) the then current owner of the Property and (iii) the Department.]

11. **Department's address**. Communications with the Department regarding this Environmental Covenant shall be sent to:

ECP Manager
Southeast Regional Office
2 East Main Street
Norristown, PA 19401

ACKNOWLEDGMENTS by Owner(s) and any Holder(s), in the following form:

Sunoco, Inc. (R&M), "Grantor"

Date: By: _____
Name: _____
Title: _____

APPROVED, by Commonwealth of Pennsylvania,
Department of Environmental Protection

Date: By: _____
Name: Stephan Sinding
Title: ECP Manager

COMMONWEALTH OF PENNSYLVANIA)[other state, if executed outside PA]
)
COUNTY OF _____) SS:

On this ___ day of _____, 20__, before me, the undersigned officer, personally appeared _____ [Owner, Grantor] who acknowledged himself/herself to be the person whose name is subscribed to this Environmental Covenant, and acknowledged that s/he executed same for the purposes therein contained.

In witness whereof, I hereunto set my hand and official seal.

_____
Notary Public

COMMONWEALTH OF PENNSYLVANIA)[other state, if executed outside PA]
)
COUNTY OF _____) SS:

On this ___ day of _____, 20__, before me, the undersigned officer, personally appeared _____ [Holder, Grantee] who acknowledged himself/herself to be the person whose name is subscribed to this Environmental Covenant, and acknowledged that s/he executed same for the purposes therein contained.

In witness whereof, I hereunto set my hand and official seal.

_____
Notary Public

EXHIBIT A

DESCRIPTION OF PROPERTY

DRAFT

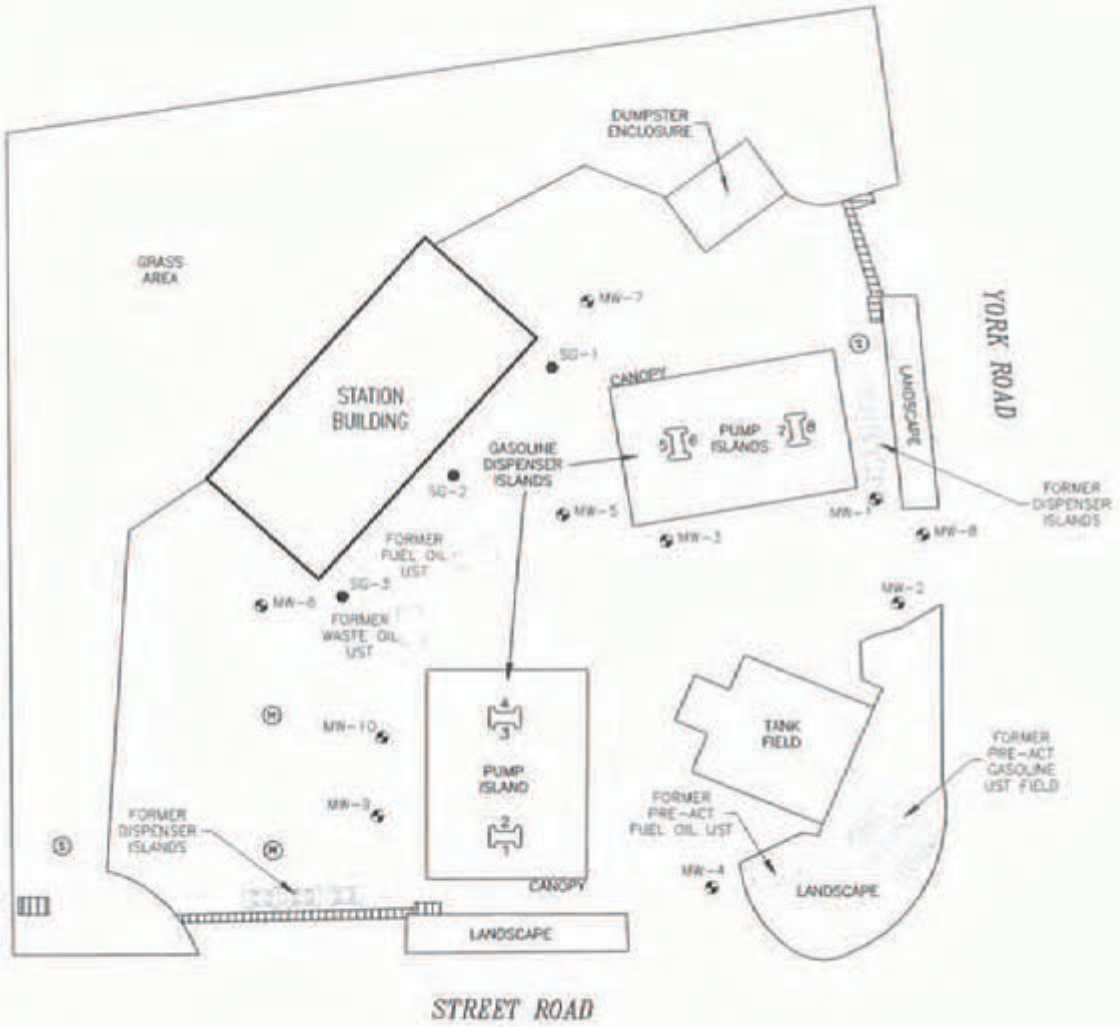
The site, located at the intersection of York Road (Route 263) and Street Road in Warminster, Pennsylvania (40° 12' 36.6" N, 75° 05' 58.2" W), is currently owned by Sunoco, Inc. (R&M), and is currently utilized as a retail gasoline facility and convenience store.

The property is zoned as commercial and is approximately 0.69 acres in size. The currently existing features at the site include a one-story station building and convenience store, four gasoline dispenser islands, three unleaded gasoline underground storage tanks (USTs), and associated subsurface piping. The UST area and dispenser island area are covered with a concrete pad. Removal and closure of fuel oil and waste oil underground storage tanks (USTs), removal of six gasoline dispenser islands, and removal of four pre-Act 2 unleaded gasoline USTs took place between November 1995 and February 1996. The former pre-Act 2 UST tank field and dispenser island areas are comprised of clean fill material and have been resurfaced. Grass and landscaping exists at the intersection of York Road and Street Road as well as behind the station building. The remaining portion of the site is covered in asphalt. There are numerous utility lines located at the site which include sub-grade public water, natural gas, telephone, and sanitary sewer. Ten monitoring wells (MW-1 through MW-10) comprise the monitoring well network and are located on-site. There are also three soil vapor points (SG-1 through SG-3) on-site. These well and soil-gas points will be properly abandoned upon approval of the Remedial Action Completion Report (RACR) (dated October 1, 2009). A site map showing property boundaries and pertinent current and former site features is included as **Exhibit B**.

EXHIBIT B

SITE MAP

DRAFT



LEGEND

- MONITORING WELL
- SEWER MANHOLE
- MANHOLE
- STORM DRAINAGE
- SOIL GAS SURVEY POINT

DRAFTED BY: TP (EXTON)	SITE MAP
CHECKED BY: KLS	SUNOCO STATION #0363-5430 610 YORK ROAD WARMINSTER, PENNSYLVANIA
REVIEWED BY: JJO	Groundwater & Environmental Services, Inc. 440 CREAMERY WAY, SUITE 500, EXTON, PA 19341
NORTH	SCALE IN FEET: 0 30 / DATE: 08-19-09 / FIGURE: 1

Groundwater
& Environmental Services, Inc.

440 Creamery Way • Suite 500 • Exton, Pennsylvania 19341 • (610) 458-1077 • Fax (610) 458-2300

October 1, 2009

Ms. Lauren Mapleton
Pennsylvania Department of Environmental Protection
Environmental Cleanup Program
2 East Main Street
Norristown, Pennsylvania 19401

Re: Site Characterization Report Addendum and
Remedial Action Completion Report (SCRA/RACR)
Sunoco Station #0363-5430
610 York Road
Warminster, Pennsylvania
PADEP Facility ID #09-30778

Dear Ms. Mapleton:

Enclosed please find the Site Characterization Report Addendum (SCRA) and Remedial Action Completion Report (RACR) prepared on behalf of Sunoco, Inc. (R&M) by Groundwater & Environmental Services, Inc. (GES) for the above-referenced facility. The SCRA/RACR includes available historical information, site characterization activities, presents a conceptual model of subsurface hydrocarbon impact at the site as well as associated risk, and the demonstration of attainment for groundwater and soil.

Please feel free to call either of the undersigned if you have any questions or comments.

Respectfully submitted,

Groundwater & Environmental Services, Inc.

Krista L. Snyder
Project Manager

Bonnie E. Cobb
Project Management Assistant

Enclosure

cc: Sunoco - Enfos
GES Project File

Site Characterization Addendum/Remedial Action Completion Report Addendum
GES - April 8, 2008

Groundwater
& Environmental Services, Inc.

440 Creamery Way • Suite 500 • Exton, Pennsylvania 19341 • (610) 458-1077 • Fax (610) 458-2300

April 8, 2010

Ms. Lauren Mapleton
Pennsylvania Department of Environmental Protection
Environmental Cleanup Program
Southeastern Regional Office
2 East Main Street
Norristown, Pennsylvania 19401

Re: Site Characterization Report Addendum/ Remedial Action Completion Report Addendum
Sunoco Station #0363-5430
610 York Road
Warminster, PA
Facility Id #: 09-30778

Dear Ms. Mapleton:

Groundwater & Environmental Services, Inc. (GES), on behalf of Sunoco, Inc, (R&M) has prepared this addendum letter for the Site Characterization Report Addendum / Remedial Action Completion Report (SCRA/ RACR) that was submitted to the Pennsylvania Department of Environmental Protection (PADEP) on October 1, 2009. This report included a draft Environmental Covenant (EC) for the subject property. On January 26, 2010, Lauren Mapleton of PADEP stated in email correspondence (**Appendix A**) that maintenance of an impervious cap or proof that an impervious cap is not needed would have to be included as part of the EC for the subject property to obtain site closure.

Based upon the historical analytical results for on-site soils, Site-Specific Standards (SSS) were chosen for benzene in soil at the site. Previous submittals (October 1, 2009 SCRA/ RACR) indicated there are no open soil exposure pathways; therefore, there is no risk. Numeric values for the SSS for benzene were not previously determined. Historical soil analytical data are provided in **Table 1**.

To demonstrate that an impervious cap will not need to be included as an activity and use limitation for the property in the environmental covenant, GES completed additional modeling efforts to evaluate the potential vertical migration of benzene if the asphalt cap were to be removed and surface waters were able to infiltrate the overburden soils. To model this vertical migration, GES utilized the BUFFER1 spreadsheet available on the PADEP website. Soil sample Disp-2 was the only historic soil sample that was considered for this modeling effort since it is the only historic soil sample that is covered in asphalt. All the other historic soil samples that have exhibited a benzene exceedance above the PADEP Statewide Health Standard (SHS) are located in landscaped areas. Soil sample locations are shown on **Figure 1** and historic groundwater analytical data are shown on **Table 2**.

Input parameter values were defined from site-specific and published data. The following describes the input parameters of the BUFFER1 spreadsheet and the values applied in the model.

Recharge Rate (cm/year)
Hydraulic conductivity within the aquifer was estimated to be 0.001 feet/day for the fate and transport modeling that was submitted as part of the October 1, 2009 SCRA/RACR, which is equivalent to 11.1252 cm/year; therefore, 11.1252 cm/year was utilized in the modeling efforts.

Soil Bulk Density
The soil bulk density used in the model is 2.39 g/cm^3 , which is consistent with the soil bulk density that was utilized in the fate and transport modeling that was submitted as part of the October 1, 2009 SCRA/RACR.

Water-Filled Porosity of Soil
Weathered shale bedrock was encountered at depths of four to seven feet bgs. Competent red shale, sandstone, and siltstone bedrock was encountered at an average of 12 feet bgs and the average depth to water at the site is 16 feet; therefore a water-filled porosity value for shale of 0.10 was used in the model, which is consistent with the porosity value used in the fate and transport modeling that was submitted as part of the October 1, 2009 SCRA/RACR.

Apparent Partition Coefficient Kapp (ml/g)
The apparent partition coefficient is defined in the BUFFER1 spreadsheet guidance document provided by PADEP as the ratio of Csorb (contaminant concentration that is non-aqueous in mg/kg) to Caq (aqueous concentration of contaminant in mg/L). For this ratio, the historic high concentration of benzene in monitoring well MW-1 (adjacent to soil sample Disp-1) was utilized for Caq (0.184 mg/L). The benzene concentration in soil sample Disp-2 (Csorb) is 0.700 mg/kg; therefore the ratio of Csorb to Caq is 3.8, which was utilized in the model.

Depth Increment (feet)
Soil sample Disp-2 was collected from one foot below ground surface, directly under the former dispenser island. The benzene concentration in this soil sample is relatively close to the PADEP SHS; therefore, a depth increment of one foot for benzene is utilized in the modeling effort, assuming that the impacted soils are between one and two feet below grade.

Csoil Initial
An initial soil concentration of 0.7 mg/kg (700 µg/kg) was utilized since this is the observed concentration of benzene in soil sample Disp-2.

Model Results
The BUFFER1 spreadsheet calculated the time increment as 3.29 months; therefore, the 30-year endpoint for the modeling effort as described in Title 25, §250.308(c)(1) is equal to 109 time increments. Depth to water in MW-1, the monitoring well closest to soil sample Disp-2, has ranged from 5.18 to 18.96 feet below top-of-casing (TOC) with an average depth to water of 11.4 feet below TOC. During the most recent eight sampling events, the depth to water in monitoring well MW-1 has ranged from 9.43 to 17.27 feet below TOC with an average of 12.78 feet below TOC. Therefore, in order to be conservative, the total aqueous concentration of benzene at 5 feet below grade after 109 time increments will be utilized as the predicted model output. The BUFFER1.xls spreadsheet predicts that the total aqueous concentration at five feet below grade after 30 years is 0.005 mg/L (5 µg/L), which does not exceed the PADEP SHS for benzene in a non-residential, used aquifer. The BUFFER1 spreadsheet output is attached as **Appendix B.**

Based upon the above assessment, maintenance of an impermeable cap will not be included as an activity and use limitation for the property in the environmental covenant. The draft environmental covenant is included in **Appendix C,** which outlines the activity and use limitations. Upon PADEP approval, Sunoco will sign and notarize this document and submit to PADEP for final execution.

Respectfully submitted,
Groundwater & Environmental Services, Inc.

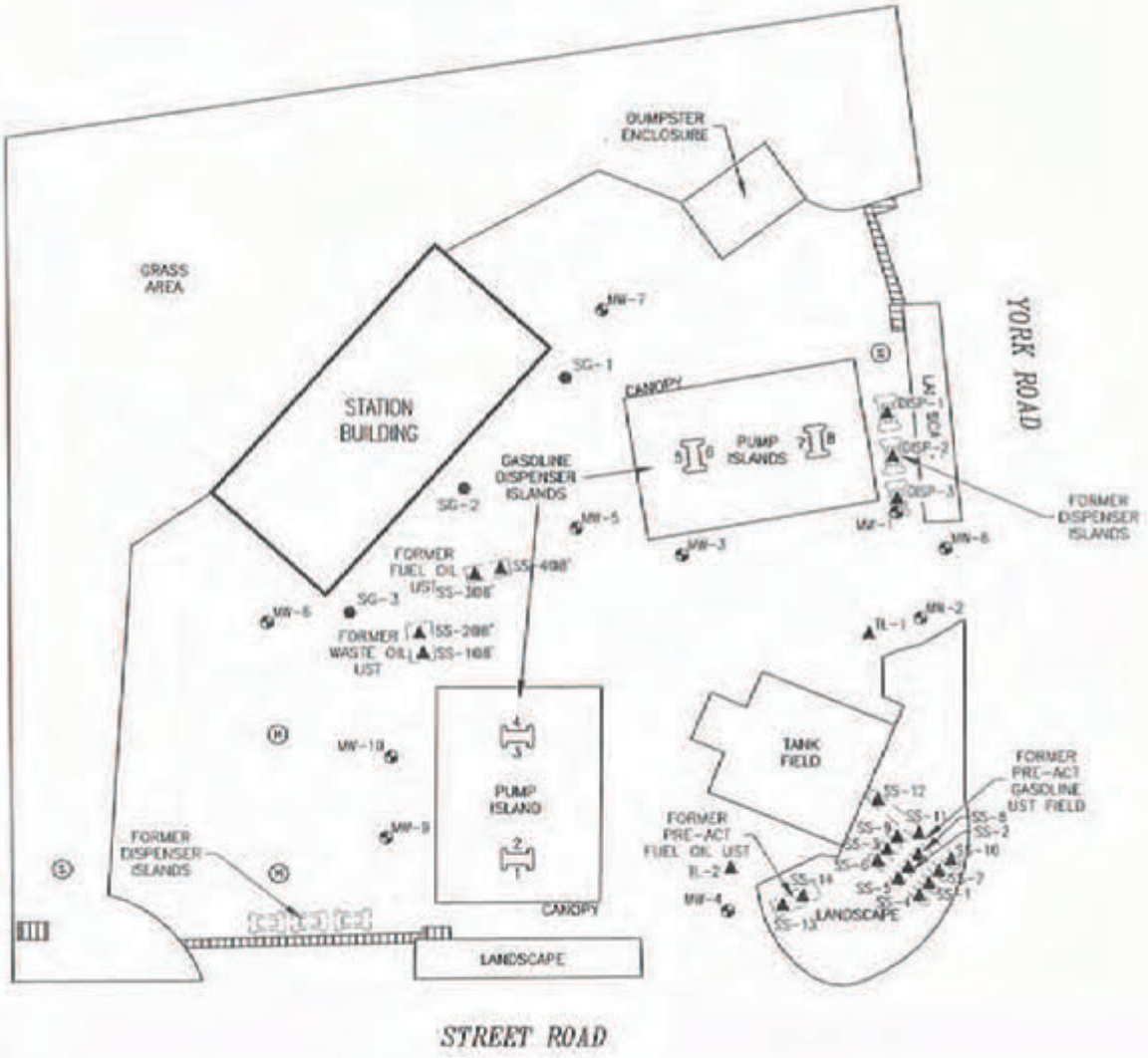
Krista L. Snyder
Project Manager

Jennifer L. O'Reilly, P.G.
Senior Hydrogeologist
Senior Project Manager

By affixing my seal to this document, I am certifying that to the best of my knowledge the information is true and correct. I further certify that I am licensed to practice in the Commonwealth of Pennsylvania and that it is within my professional expertise to verify the correctness of the information.

Enclosure
Cc: William Brochu, Sunoco (ENFOS)
ICF International – T. Aubel (Claim #96-131)
GES Project File

FIGURES



LEGEND

- MONITORING WELL
- SEWER MANHOLE
- MANHOLE
- STORM DRAINAGE
- SOIL GAS SURVEY POINT
- UST CLOSURE SOIL SAMPLE

DRAFTED BY: TP (EXTON)	UST CLOSURE SOIL SAMPLE LOCATION MAP 1995/1996
CHECKED BY: KLS	SUNOCO STATION #0363-5430 610 YORK ROAD WARMINSTER, PENNSYLVANIA
REVIEWED BY: KLS	Groundwater & Environmental Services, Inc. 440 CREAMERY WAY, SUITE 500, EXTON, PA 19341
NORTH	SCALE IN FEET: 0 30 / DATE: 04-07-10 / FIGURE: 1

TABLES

TABLE 1
HISTORICAL SOIL ANALYTICAL DATA SUMMARY

SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PA

Sample ID		Depth (ft)	Sample Date	Benzene (µg/kg)	Toluene (µg/kg)	Ethylbenzene (µg/kg)	Total Xylenes (µg/kg)	MTBE (µg/kg)	Isopropyl benzene (µg/kg)	Naphthalene (µg/kg)	TPH-GRO (mg/kg)	TPH (mg/kg)
UST CLOSURE ACTIVITIES, 1995/1996	SS-1	8	12/28/1995	ND<6	<6	ND<6	<18	NA	NA	NA	NA	40
	SS-2	8	12/28/1995	ND<6	<6	ND<6	ND<18	NA	NA	NA	NA	370
	SS-3	8	12/28/1995	ND<6	<6	ND<6	<17	NA	NA	NA	NA	490
	SS-4	8	12/28/1995	ND<6	<6	ND<6	<17	NA	NA	NA	NA	160
	DISP-1	1	2/8/1996	160	3,000	3,000	23,000	NA	NA	NA	200	NA
	DISP-2	1	2/8/1996	700	51,000	41,000	250,000	NA	NA	NA	1,300	NA
	DISP-3	1	2/8/1996	200	14,000	10,000	63,000	NA	NA	NA	310	NA
	TL-1	1	2/13/1996	ND<5	ND<5	ND<5	ND<16	NA	NA	NA	ND<1	NA
	TL-2	1	2/13/1996	ND<100	800	2,100	19,000	NA	NA	NA	150	NA
	SS-1	12	2/27/1996	1,000	23,000	34,000	190,000	NA	NA	NA	1,100	NA
	SS-2	12	2/27/1996	1,900	33,000	26,000	160,000	NA	NA	NA	1,100	NA
	SS-3	12	2/27/1996	45	270	120	830	NA	NA	NA	6	NA
	SS-4	12	2/27/1996	ND<500	500	3,400	17,000	NA	NA	NA	200	NA
	SS-5	12	2/27/1996	<6	<6	<6	<19	NA	NA	NA	ND<1	NA
	SS-6	12	2/27/1996	31	450	500	2,800	NA	NA	NA	29	NA
	SS-7	12	2/27/1996	1,900	10,000	23,000	110,000	NA	NA	NA	1100	NA
	SS-8	12	2/27/1996	ND<600	800	6,400	21,000	NA	NA	NA	400	NA
	SS-9	12	2/27/1996	<700	<700	11,000	20,000	NA	NA	NA	1,100	NA
	SS-10	12	2/27/1996	1,000	11,000	12,000	85,000	NA	NA	NA	800	NA
	SS-11	12	2/27/1996	ND<600	4,600	15,000	93,000	NA	NA	NA	700	NA
	SS-12	12	2/27/1996	ND<100	900	4,200	9,800	NA	NA	NA	300	NA
	SS-13	8	2/27/1996	NA	NA	NA	NA	NA	NA	NA	NA	30
	SS-14	8	2/27/1996	NA	NA	NA	NA	NA	NA	NA	NA	98
PADEP Statewide Health Standard for Unsaturated and Saturated Soils in a Non-Residential, Used Aquifer				500	100,000	70,000	1,000,000	2,000	1,400,000 / 230,000	25,000 / 10,000	NA	NA

TABLE 1
HISTORICAL SOIL ANALYTICAL DATA SUMMARY

SUNOCO STATION #0363-5420
610 YORK ROAD
WARMINSTER, PA

Sample ID		Depth (ft)	Sample Date	Benzene (µg/kg)	Toluene (µg/kg)	Ethylbenzene (µg/kg)	Total Xylenes (µg/kg)	MTBE (µg/kg)	Isopropyl benzene (µg/kg)	Naphthalene (µg/kg)	TPH-GRO (mg/kg)	TPH (mg/kg)
Monitoring Well Installation, 1996	MW-1	5-7	3/13/1996	ND<6	ND<6	ND<6	ND<18	NA	NA	NA	ND<1	NA
	MW-2	5-7	3/13/1996	ND<6	<6	<6	<18	NA	NA	NA	ND<1	NA
	MW-3	5-7	3/13/1996	<6	<6	<6	<18	NA	NA	NA	ND<1	NA
Monitoring Well Installation, 1997	MW-4	-	10/27/1997	<6	<6	<6	<17	<20	<10	<20	NA	NA
Monitoring Well Installation, 2004	MW-5	25	10/18/2004	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5	NA	NA
	MW-6	15	10/18/2004	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5	NA	NA
Monitoring Well Installation, 2007	MW-8	5	2/22/2007	<530	<530	1,200	8,200	<530	<530	2,700	NA	NA
	MW-8	24	2/22/2007	<520	<520	<520	<520	<520	<520	<520	NA	NA
	MW-9	5	2/23/2007	<440	<440	<440	<440	<440	<440	720	NA	NA
	MW-9	15	2/23/2007	<480	<480	<480	<480	<480	<480	<480	NA	NA
	MW-10	15	2/23/2007	<480	<480	<480	<480	<480	<480	<480	NA	NA
PADEP Statewide Health Standard for Unsaturated and Saturated Soils in a Non-Residential, Used Aquifer				500	100,000	70,000	1,000,000	2,000	1,600,000 / 230,000	25,000 / 10,000	N/A	N/A

All results reported on a dry weight basis except samples SS-1 and SS-2 (collected on 2/27/1996). Those samples were reported on an as received basis, due to laboratory error.

ND: Not Detected

NA: Not Analyzed

N/A: Not Applicable

MTBE: Methyl tert Butyl Ether

TPH: Total Petroleum Hydrocarbons

GRO: Gasoline Range Organics

mg/kg: milligrams per kilogram

µg/kg: micrograms per kilogram

TABLE 2
HISTORICAL GROUNDWATER MONITORING DATA SUMMARY

SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PA

Monitoring Well	Date	Top of Casing (ft)	Depth to Water (ft)	GW Elevation (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Isopropyl Benzene (µg/L)	Naphthalene (µg/L)
MSCs for Used, Non-Res. Aquifer					5	1,000	700	10,000	20	2,300	100
MW-1	03/23/1996	96.79	8	88.79	ND< 1	ND< 1	ND	2	NA	NA	NA
	09/09/1996	96.79	12.5	84.29	**13**	ND< 10	340	1,060	**240**	NA	**150**
	11/07/1996	96.79	10.12	86.67	ND< 1	ND< 1	ND< 1	3	2	NA	ND< 5
	02/14/1997	96.79	8.47	88.32	ND< 1	ND< 1	ND	ND< 3	**88**	NA	ND< 5
	05/07/1997	96.79	9.58	87.21	ND	ND	ND	ND< 3	ND< 1	NA	ND< 5
	09/15/1997	96.79	DRY	-	NS	NS	NS	NS	NS	NS	NS
	11/11/1997	96.79	DRY	-	NS	NS	NS	NS	NS	NS	NS
	03/17/1998	96.79	8.75	88.04	ND	ND	ND	ND	ND<1	NA	ND<5
	06/15/1998	96.79	5.18	91.61	ND	ND	ND	ND	ND< 5	ND	ND
	06/17/1999	96.79	DRY	-	NS	NS	NS	NS	NS	NS	NS
	02/15/2000	96.79	10.19	86.60	**184**	530	87.4	379	**12,800**	ND	ND
	05/12/2000	96.79	10.16	86.63	2.7	ND	ND	2.8	**242**	ND	2.5
	10/16/2000	96.79	13.83	82.96	**79.8**	589	368	1,020	**957**	40.6	**280**
	03/23/2001	96.79	7.63	89.16	ND	ND	ND	ND	1.9	ND	ND
	06/14/2001	96.79	10.84	85.95	**20.3**	35.5	96.2	130	**221**	13.3	41.6
	09/18/2001	96.79	DRY	-	NS	NS	NS	NS	NS	NS	NS
	12/26/2001	96.79	DRY	-	NS	NS	NS	NS	NS	NS	NS
	03/26/2002	96.79	DRY	-	NS	NS	NS	NS	NS	NS	NS
	06/14/2002	96.79	12.51	84.28	**9.7**	25.5	294	513	**103**	35.3	**214**
	09/13/2002	96.79	DRY	-	NS	NS	NS	NS	NS	NS	NS
	10/30/2002	96.79	16.46	80.33	**23.5**	29.2	377	691	**84.0**	72.5	**297**
	03/05/2003	96.79	9.01	87.78	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5
	05/08/2003	96.79	9.58	87.21	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0
	08/06/2003	96.79	11.99	84.80	<1.0	<5.0	9.5	<10	<5.0	<5.0	5.5
	10/24/2003	96.79	DRY	-	NS	NS	NS	NS	NS	NS	NS
	01/16/2004	96.79	9.14	87.65	<1.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0
	04/14/2004	96.79	7.97	88.82	<1.0	<5.0	<5.0	<10	**68**	<5.0	<5.0
	07/15/2004	96.79	14.67	82.12	**6.0**	8.0	170	380	**610**	42	**160**
	10/04/2004	97.77	12.55	85.22	2	ND<3	38	35	**43**	16	52
	01/13/2005	97.77	9.31	88.46	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5
	04/20/2005	97.77	8.52	89.25	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	07/15/2005	97.77	14.31	83.46	2.0	8.0	227	445	**57.4**	49.6	**241**
	09/07/2005	97.77	DRY	-	NS	NS	NS	NS	NS	NS	NS
	09/20/2005	97.77	DRY	-	NS	NS	NS	NS	NS	NS	NS
	10/28/2005	97.77	12.02	85.75	**83.4**	241	140	812	**6,330**	22.2	**136**
	02/10/2006	97.77	9.08	88.69	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	05/15/2006	97.77	18.96	78.81	NS	NS	NS	NS	NS	NS	NS
	08/18/2006	97.77	DRY	-	NS	NS	NS	NS	NS	NS	NS
	11/15/2006	97.77	9.56	88.21	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	03/30/2007	97.77	8.90	88.87	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	05/17/2007	97.77	9.28	88.49	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	08/02/2007	97.77	DRY	-	NS	NS	NS	NS	NS	NS	NS
	10/04/2007	97.77	DRY	-	NS	NS	NS	NS	NS	NS	NS
	01/28/2008	97.77	13.13	84.64	2	ND<1	58	24	12	27	36
	04/07/2008	97.77	9.43	88.34	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/01/2008	97.77	14.20	83.57	2	ND<1	22	4	7	9	13
	10/08/2008	97.77	DRY	-	NS	NS	NS	NS	NS	NS	NS
	02/03/2009	97.77	13.06	84.71	2	ND<1	10	7	5	9	15
	04/06/2009	97.77	17.27	80.50	5	ND<1	14	27	11	43	34
	07/08/2009	97.77	9.57	88.20	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4

TABLE 2
HISTORICAL GROUNDWATER MONITORING DATA SUMMARY

SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PA

Monitoring Well	Date	Top of Casing (ft)	Depth to Water (ft)	GW Elevation (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Isopropyl Benzene (µg/L)	Naphthalene (µg/L)
MSCs for Used, Non-Res. Aquifer					5	1,000	700	10,000	20	2,300	100
MW-2	03/23/1996	97.43	8.6	88.83	**280**	130	160	1,150	NA	NA	NA
	09/09/1996	97.43	13.25	84.18	**180**	5	180	140	**170**	NA	49
	11/07/1996	97.43	11.25	86.18	**74**	3	85	79	**74**	NA	39
	02/14/1997	97.43	9.33	88.10	**36**	6	35	67	15	NA	18
	05/07/1997	97.43	10.15	87.28	**55**	4	75	81	**26**	NA	19
	09/15/1997	97.43	23.2	74.23	**430**	13	410	340	**140**	NA	**200**
	11/11/1997	97.43	24.3	73.13	NS	NS	NS	NS	NS	NS	NS
	03/17/1998	97.43	9.35	88.08	**58**	2	100	160	**35**	NA	43
	06/15/1998	97.43	9.86	87.57	**91**	9	240	930	10	27	**120**
	06/17/1999	97.43	21.41	76.02	**87**	ND	160	7	**280**	18	30
	02/15/2000	97.43	11.04	86.39	**91.3**	1.4	242	94.5	**274**	37.6	84.4
	05/12/2000	97.43	10.73	86.70	**21.2**	ND	59.6	9.8	**161**	8.9	12.6
	10/16/2000	97.43	13.4	84.03	**70.4**	27.3	276	123	**359**	49.7	91.4
	03/23/2001	97.43	8.24	89.19	2.1	ND	10.5	ND	8.8	ND	ND
	06/14/2001	97.43	14.37	83.06	**45.8**	2.1	197	45.8	**113**	29.5	56.8
	09/18/2001	97.43	DRY	-	NS	NS	NS	NS	NS	NS	NS
	12/26/2001	97.43	DRY	-	NS	NS	NS	NS	NS	NS	NS
	03/26/2002	97.43	21.74	75.69	**192**	4.3	410	182	**164**	42.1	**104**
	06/14/2002	97.43	13.35	84.08	**35.7**	ND<2.5	173	57.3	**57.2**	29.2	**111**
	09/13/2002	97.43	23.55	73.88	**82.4**	2.6	268	55.5	**123**	43.1	**153**
	10/30/2002	97.43	18.93	78.50	**171**	4.9	**886**	291	**155**	113	**344**
	03/05/2003	97.43	9.96	87.47	**27**	ND<1	160	24	**24**	25	59
	05/08/2003	97.43	10.53	86.90	4.3	<1.0	29	<5.0	<5.0	<5.0	13
	08/06/2003	97.43	13.08	84.35	**13**	<5.0	43	<10	15	8.7	20
	10/24/2003	97.43	20.57	76.86	**54**	<1.6	320	86	**43**	44	**140**
	01/16/2004	97.43	9.72	87.71	<1.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0
	04/14/2004	97.43	8.88	88.55	**10**	<5.0	72	12	**41**	12	21
	07/15/2004	97.43	17.40	80.03	**53**	31	370	160	**2,300**	56	**180**
	10/04/2004	98.31	13.24	85.07	**34**	ND<7	180	35	**190**	38	60
	01/13/2005	98.31	10.21	88.10	**6**	ND<1	59	5	**39**	14	20
	04/20/2005	98.31	9.08	89.23	ND<1.0	ND<1.0	9.3	ND<3.0	3.9	3.3	4.3
	07/15/2005	98.31	15.36	82.95	**38.1**	1.5	161	68.7	**89.9**	79.7	**142**
	09/07/2005	98.31	23.45	74.86	**10.0**	ND<1.0	18.5	ND<3.0	**59.5**	11.0	23.0
	09/20/2005	98.31	DRY	-	NS	NS	NS	NS	NS	NS	NS
	10/28/2005	98.31	12.81	85.50	**76.7**	51.8	195	67.3	**2,750**	80.8	**136**
	02/10/2006	98.31	10.68	87.63	4.7	1.0	30.3	4.1	**39.7**	10.8	8.4
	05/15/2006	98.31	20.04	78.27	**34.7**	7.6	108	46.5	**421**	31.0	43.3
	08/18/2006	98.31	20.68	77.63	**28.8**	1.8	106	8.6	**179**	48.2	31.8
	11/15/2006	98.31	10.39	87.92	**9.4**	ND<1.0	56.5	5.0	**25.1**	26.2	20.3
	03/30/2007	98.31	9.29	89.02	2	ND<1	12	2	5	7	5
	05/17/2007	98.31	9.99	88.32	2	ND<1	14	2	4	8	5
	08/02/2007	98.31	21.74	76.57	**7**	ND<1	15	3	**28**	12	ND<4
	10/04/2007	98.31	DRY	-	NS	NS	NS	NS	NS	NS	NS
	01/28/2008	98.31	13.42	84.89	**8**	ND<1	12	5	12	15	11
	04/07/2008	98.31	10.03	88.28	2	ND<1	11	2	3	9	5
	07/01/2008	98.31	14.85	83.46	ND<1	ND<1	1	ND<1	2	ND<2	ND<4
	10/31/2008	98.31	21.63	76.68	**15**	ND<1	39	11	8	41	11
	02/03/2009	98.31	13.15	85.16	2	ND<1	7	1	3	8	ND<4
	04/06/2009	98.31	18.75	79.56	5	ND<1	15	2	8	8	ND<4
	07/08/2009	98.31	10.25	88.06	ND<1	ND<1	2	ND<1	ND<1	3	ND<4

TABLE 2
HISTORICAL GROUNDWATER MONITORING DATA SUMMARY

SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PA

Monitoring Well	Date	Top of Casing (ft)	Depth to Water (ft)	GW Elevation (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Isopropyl Benzene (µg/L)	Naphthalene (µg/L)
MSCs for Used, Non-Res. Aquifer					5	1,000	700	10,000	20	2,300	100
MW-3	03/23/1996	98.08	9.35	88.73	**12**	ND< 1	2	3	NA	NA	NA
	09/09/1996	98.08	13.76	84.32	ND	ND	ND	ND	**480**	NA	ND
	11/07/1996	98.08	11.43	86.65	ND< 1	ND< 1	ND< 1	ND< 3	**170**	NA	ND< 5
	02/14/1997	98.08	10.18	87.90	2	ND< 1	ND	ND< 3	**130**	NA	ND< 5
	05/07/1997	98.08	10.9	87.18	ND	ND	ND	ND	**99**	NA	ND
	09/15/1997	98.08	23.68	74.40	NS	NS	NS	NS	NS	NS	NS
	11/11/1997	98.08	23.95	74.13	NS	NS	NS	NS	NS	NS	NS
	03/17/1998	98.08	10.25	87.83	ND<1	ND<1	ND<1	ND<3	**22**	NA	ND<5
	06/15/1998	98.08	10.56	87.52	ND	ND	ND	ND< 5	8	ND	ND<5
	06/17/1999	98.08	21.97	76.11	ND	ND	ND	ND	7	ND	ND
	02/15/2000	98.08	11.96	86.12	**80**	325	21.7	267	**1,680**	ND	ND
	05/12/2000	98.08	11.43	86.65	ND	ND	ND	ND	**256**	ND	ND
	10/16/2000	98.08	14.15	83.93	ND	ND	ND	ND	**42.3**	ND	ND
	03/23/2001	98.08	9.04	89.04	1.3	ND	ND	ND	**55.2**	ND	ND
	06/14/2001	98.08	12.1	85.98	ND<1	ND<1	ND<1	ND<5	**44.9**	ND<2	ND<5
	09/18/2001	98.08	DRY	-	NS	NS	NS	NS	NS	NS	NS
	12/26/2001	98.08	23.21	74.87	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<5
	03/26/2002	98.08	22.7	75.38	ND<1	ND<1	ND<1	ND<1.4	2.6	ND<2	ND<5
	06/14/2002	98.08	13.95	84.13	ND<1.0	ND<1.0	ND<1.0	ND<1.0	10.6	ND<2.0	ND<5.0
	09/13/2002	98.08	DRY	-	NS	NS	NS	NS	NS	NS	NS
	10/30/2002	98.08	18.45	79.63	ND<1.0	ND<1.0	ND<1.0	ND<1.0	1.8	ND<2.0	6.6
	03/05/2003	98.08	10.71	87.37	ND<1	ND<1	ND<1	ND<1	11	ND<5	ND<5
	05/08/2003	98.08	11.43	86.65	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0
	08/06/2003	98.08	13.51	84.57	<1.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0
	10/24/2003	98.08	20.74	77.34	<1.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0
	01/16/2004	98.08	10.53	87.55	<1.0	<5.0	<5.0	<10	**28**	<5.0	<5.0
	04/14/2004	98.08	9.83	88.25	<1.0	<5.0	<5.0	<10	**20**	<5.0	<5.0
	07/15/2004	98.08	17.05	81.03	<1.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0
	10/04/2004	98.78	13.92	84.86	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5
	01/13/2005	98.78	11.13	87.65	ND<1	ND<1	ND<1	ND<1	19	ND<5	ND<5
	04/20/2005	98.78	10.04	88.74	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	07/15/2005	98.78	15.71	83.07	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	09/07/2005	98.78	DRY	-	NS	NS	NS	NS	NS	NS	NS
	09/20/2005	98.78	23.75	75.03	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	10/28/2005	98.78	13.75	85.03	3.1	2.2	ND<1.0	26.0	**749**	ND<1.0	9.0
	02/10/2006	98.78	10.59	88.19	ND<1.0	ND<1.0	ND<1.0	ND<3.0	**33.8**	ND<1.0	ND<2.0
	05/15/2006	98.78	20.37	78.41	ND<1.0	ND<1.0	ND<1.0	ND<3.0	1.5	ND<1.0	ND<2.0
	08/18/2006	98.78	20.91	77.87	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	11/15/2006	98.78	11.32	87.46	ND<1.0	ND<1.0	ND<1.0	ND<3.0	2.6	ND<1.0	ND<2.0
	03/30/2007	98.78	10.28	88.50	ND<1	ND<1	ND<1	ND<1	2	ND<2	ND<4
	05/17/2007	98.78	10.82	87.96	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	08/02/2007	98.78	22.12	76.66	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/04/2007	98.78	DRY	-	NS	NS	NS	NS	NS	NS	NS
	01/28/2008	98.78	14.62	84.16	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/07/2008	98.78	11.81	86.97	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/01/2008	98.78	15.72	83.06	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/08/2008	98.78	23.89	74.89	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	02/03/2009	98.78	14.62	84.16	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/06/2009	98.78	18.53	80.25	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/08/2009	98.78	11.11	87.67	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4

TABLE 2
HISTORICAL GROUNDWATER MONITORING DATA SUMMARY

SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PA

Monitoring Well	Date	Top of Casing (ft)	Depth to Water (ft)	GW Elevation (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Isopropyl Benzene (µg/L)	Naphthalene (µg/L)
MSC's for Used, Non-Res. Aquifer					5	1,000	700	10,000	20	2,300	100
MW-4	11/11/1997	98.08	23.87	74.21	ND<1	ND<1	ND	ND<3	10	NA	ND<5
	03/17/1998	98.08	10.1	87.98	ND	ND	ND<1	ND<3	ND<1	NA	ND<5
	06/15/1998	98.08	10.32	87.76	ND	ND	ND	ND	ND	ND	ND
	06/17/1999	98.08	22.61	75.47	ND	ND	ND	ND	ND<5	ND	ND
	02/15/2000	98.08	11.91	86.17	ND	ND	ND	ND	15.8	ND	ND
	05/12/2000	98.08	11.41	86.67	ND	ND	ND	ND	9.5	ND	ND
	10/16/2000	98.08	14.03	84.05	ND	ND	ND	ND	**972**	ND	ND
	03/23/2001	98.08	8.94	89.14	ND	ND	ND	ND	ND	ND	ND
	06/14/2001	98.08	12.05	86.03	ND<1	ND<1	ND<1	ND<5	**31.6**	ND<2	ND<5
	09/18/2001	98.08	24.57	73.51	ND<1	ND<1	ND<1	ND<1	4.9	ND<2	ND<5
	12/26/2001	98.08	24.43	73.65	ND<1	ND<1	ND<1	ND<1	1.7	ND<2	ND<5
	03/26/2002	98.08	23.82	74.26	ND<1	ND<1	ND<1	ND<1.4	1.1	ND<2	ND<5
	06/14/2002	98.08	14.01	84.07	ND<1.0	ND<1.0	ND<1.0	ND<1.0	7.5	ND<2.0	ND<5.0
	09/13/2002	98.08	24.67	73.41	ND<1.0	ND<1.0	ND<1.0	ND<1.0	1.2	ND<2.0	ND<5.0
	10/30/2002	98.08	20.38	77.70	ND<1.0	ND<1.0	ND<1.0	ND<1.0	1.6	ND<2.0	ND<5.0
	03/05/2003	98.08	10.68	87.40	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5
	05/08/2003	98.08	11.25	86.83	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0
	08/06/2003	98.08	13.75	84.33	<1.0	<5.0	<5.0	<10	9.8	<5.0	<5.0
	10/24/2003	98.08	20.63	77.45	<1.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0
	01/16/2004	98.08	10.46	87.62	<1.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0
	04/14/2004	98.08	9.86	88.22	<1.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0
	07/15/2004	98.08	18.63	79.45	<1.0	<5.0	<5.0	<10	5.0	<5.0	<5.0
	10/04/2004	98.94	13.99	84.95	ND<3	ND<4	ND<4	ND<4	**100**	ND<5	ND<5
	01/13/2005	98.94	10.98	87.96	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5
	04/20/2005	98.94	9.81	89.13	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	07/15/2005	98.94	16.05	82.89	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	09/07/2005	98.94	24.61	74.33	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	09/20/2005	98.94	24.51	74.43	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	10/28/2005	98.94	13.81	85.13	ND<1.0	ND<1.0	ND<1.0	ND<3.0	**89.6**	ND<1.0	ND<2.0
	02/10/2006	98.94	10.46	88.48	ND<1.0	ND<1.0	ND<1.0	ND<3.0	7.4	ND<1.0	ND<2.0
	05/15/2006	98.94	21.19	77.75	ND<1.0	ND<1.0	ND<1.0	ND<3.0	2.2	ND<1.0	ND<2.0
	08/18/2006	98.94	21.72	77.22	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	11/15/2006	98.94	11.25	87.69	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	03/30/2007	98.94	10.11	88.83	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	05/17/2007	98.94	10.75	88.19	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	08/02/2007	98.94	23.45	75.49	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/04/2007	98.94	24.61	74.33	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	01/28/2008	98.94	14.36	84.58	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/07/2008	98.94	10.75	88.19	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/01/2008	98.94	15.57	83.37	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/08/2008	98.94	24.59	74.35	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	02/03/2009	98.94	14.42	84.52	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/06/2009	98.94	19.55	79.39	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/08/2009	98.94	11.00	87.94	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4

TABLE 2
HISTORICAL GROUNDWATER MONITORING DATA SUMMARY

SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PA

Monitoring Well	Date	Top of Casing (ft)	Depth to Water (ft)	GW Elevation (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Isopropyl Benzene (µg/L)	Naphthalene (µg/L)
MSCs for Used, Non-Res. Aquifer					5	1,000	700	10,000	20	2,300	100
MW-5	12/09/2004	99.55	12.52	87.03	ND<1	ND<1	ND<1	ND<1	5	ND<5	ND<5
	01/13/2005	99.55	11.77	87.78	ND<1	ND<1	ND<1	ND<1	14	ND<5	ND<5
	04/20/2005	99.55	10.55	89.00	ND<1.0	ND<1.0	ND<1.0	ND<3.0	5.0	ND<1.0	ND<2.0
	07/15/2005	99.55	16.22	83.33	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	09/07/2005	99.55	26.92	72.63	ND<1.0	ND<1.0	ND<1.0	ND<3.0	1.9	ND<1.0	ND<2.0
	09/20/2005	99.55	30.02	69.53	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	10/28/2005	99.55	14.32	85.23	ND<1.0	ND<1.0	ND<1.0	4.1	**648**	ND<1.0	ND<2.0
	02/10/2006	99.55	11.38	88.17	ND<1.0	ND<1.0	ND<1.0	ND<3.0	**34.0**	ND<1.0	ND<2.0
	05/15/2006	99.55	22.42	77.13	ND<1.0	ND<1.0	ND<1.0	ND<3.0	2.1	ND<1.0	ND<2.0
	08/18/2006	99.55	23.15	76.40	ND<1.0	ND<1.0	ND<1.0	ND<3.0	1.5	ND<1.0	ND<2.0
	11/15/2006	99.55	11.72	87.83	ND<1.0	ND<1.0	ND<1.0	ND<3.0	1.3	ND<1.0	ND<2.0
	03/30/2007	99.55	10.92	88.63	ND<1	ND<1	ND<1	ND<1	2	ND<2	ND<4
	05/17/2007	99.55	11.35	88.20	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	08/02/2007	99.55	24.65	74.90	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/04/2007	99.55	36.25	63.30	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	01/28/2008	99.55	15.32	84.23	ND<1	ND<1	ND<1	ND<1	1	ND<2	ND<4
	04/07/2008	99.55	11.66	87.89	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/01/2008	99.55	16.33	83.22	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/08/2008	99.55	32.92	66.63	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	02/03/2009	99.55	15.25	84.30	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/06/2009	99.55	19.88	79.67	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/08/2009	99.55	11.72	87.83	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
MW-6	12/09/2004	99.72	12.69	87.03	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5
	01/13/2005	99.72	11.85	87.87	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5
	04/20/2005	99.72	10.70	89.02	ND<1.0	ND<1.0	ND<1.0	ND<3.0	2.0	ND<1.0	ND<2.0
	07/15/2005	99.72	16.39	83.33	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	09/07/2005	99.72	27.10	72.62	NA	NA	NA	NA	NA	NA	NA
	09/20/2005	99.72	29.88	69.84	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	10/28/2005	99.72	14.47	85.25	ND<1.0	ND<1.0	ND<1.0	ND<3.0	13.8	ND<1.0	ND<2.0
	02/10/2006	99.72	11.40	88.32	ND<1.0	ND<1.0	ND<1.0	ND<3.0	2.3	ND<1.0	ND<2.0
	05/15/2006	99.72	21.25	78.47	ND<1.0	ND<1.0	ND<1.0	ND<3.0	8.7	ND<1.0	ND<2.0
	08/18/2006	99.72	22.29	77.43	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	11/15/2006	99.72	12.05	87.67	ND<1.0	ND<1.0	ND<1.0	ND<3.0	1.1	ND<1.0	ND<2.0
	03/30/2007	99.72	11.06	88.66	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	05/17/2007	99.72	11.52	88.20	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	08/02/2007	99.72	23.45	76.27	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/04/2007	99.72	36.06	63.66	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	01/28/2008	99.72	15.50	84.22	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/07/2008	99.72	11.68	88.04	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/01/2008	99.72	16.45	83.27	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/08/2008	99.72	32.57	67.15	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	02/03/2009	99.72	15.54	84.18	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/06/2009	99.72	19.85	79.87	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/08/2009	99.72	11.93	87.79	ND<1	ND<1	ND<1	2	ND<1	ND<2	ND<4

TABLE 2
HISTORICAL GROUNDWATER MONITORING DATA SUMMARY

SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PA

Monitoring Well	Date	Top of Casing (ft)	Depth to Water (ft)	GW Elevation (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Isopropyl Benzene (µg/L)	Naphthalene (µg/L)
MSCs for Used, Non-Res. Aquifer					5	1,000	700	10,000	20	2,300	100
MW-7	12/09/2004	99.20	15.39	83.81	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5
	01/13/2005	99.20	14.63	84.57	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5
	04/20/2005	99.20	14.48	84.72	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	07/15/2005	99.20	20.15	79.05	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	09/07/2005	99.20	29.81	69.39	NA	NA	NA	NA	NA	NA	NA
	09/20/2005	99.20	32.85	66.35	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	10/28/2005	99.20	18.81	80.39	ND<1.0	1.7	ND<1.0	ND<3.0	60.8	ND<1.0	ND<2.0
	02/10/2006	99.20	15.83	83.37	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	05/15/2006	99.20	25.99	73.21	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	08/18/2006	99.20	27.13	72.07	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	11/15/2006	99.20	15.85	83.35	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	03/30/2007	99.20	14.20	85.00	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	05/17/2007	99.20	16.23	82.97	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	08/02/2007	99.20	28.54	70.66	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/04/2007	99.20	38.36	60.84	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	01/28/2008	99.20	19.96	79.24	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/07/2008	99.20	16.03	83.17	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/01/2008	99.20	20.64	78.56	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/08/2008	99.20	36.20	63.00	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	02/03/2009	99.20	19.40	79.80	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/06/2009	99.20	23.41	75.79	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/08/2009	99.20	15.99	83.21	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
MW-8	03/30/2007	97.78	11.25	86.53	ND<1	ND<1	ND<1	ND<1	17	ND<2	ND<4
	05/17/2007	97.78	13.18	84.60	ND<1	ND<1	ND<1	ND<1	14	ND<2	ND<4
	08/02/2007	97.78	26.55	71.23	ND<1	ND<1	ND<1	ND<1	11	ND<2	ND<4
	10/04/2007	97.78	36.96	60.82	ND<1	ND<1	ND<1	ND<1	5	ND<2	ND<4
	01/28/2008	97.78	17.20	80.58	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/07/2008	97.78	13.62	84.16	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/01/2008	97.78	18.54	79.24	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/08/2008	97.78	34.12	63.66	ND<1	ND<1	ND<1	ND<1	4	ND<2	ND<4
	02/03/2009	97.78	18.11	79.67	ND<1	ND<1	ND<1	ND<1	5	ND<2	ND<4
	04/06/2009	97.78	21.84	75.94	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/08/2009	97.78	14.55	83.23	ND<1	ND<1	ND<1	ND<1	1	ND<2	ND<4

TABLE 2
HISTORICAL GROUNDWATER MONITORING DATA SUMMARY

SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PA

Monitoring Well	Date	Top of Casing (ft)	Depth to Water (ft)	GW Elevation (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Isopropyl Benzene (µg/L)	Naphthalene (µg/L)
MSCs for Used, Non-Res. Aquifer					5	1,000	700	10,000	20	2,300	100
MW-9	03/30/2007	98.68	11.45	87.23	ND<1	ND<1	ND<1	ND<1	7	ND<2	ND<4
	05/17/2007	98.68	13.80	84.88	ND<1	ND<1	ND<1	ND<1	6	ND<2	ND<4
	08/02/2007	98.68	27.02	71.66	ND<1	ND<1	ND<1	ND<1	2	ND<2	ND<4
	10/04/2007	98.68	37.70	60.98	ND<1	ND<1	ND<1	ND<1	5	ND<2	ND<4
	01/28/2008	98.68	18.56	80.12	ND<1	ND<1	ND<1	ND<1	3	ND<2	ND<4
	04/07/2008	98.68	14.48	84.20	ND<1	ND<1	ND<1	ND<1	4	ND<2	ND<4
	07/01/2008	98.68	19.51	79.17	ND<1	ND<1	ND<1	ND<1	3	ND<2	ND<4
	10/08/2008	98.68	35.29	63.39	ND<1	ND<1	ND<1	ND<1	1	ND<2	ND<4
	02/03/2009	98.68	18.71	79.97	ND<1	ND<1	ND<1	ND<1	2	ND<2	ND<4
	04/06/2009	98.68	22.87	75.81	ND<1	ND<1	ND<1	ND<1	2	ND<2	ND<4
	07/08/2009	98.68	15.27	83.41	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
MW-10	03/30/2007	98.44	10.64	87.80	ND<1	ND<1	ND<1	ND<1	2	ND<2	ND<4
	05/17/2007	98.44	11.09	87.35	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	08/02/2007	98.44	24.60	73.84	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/04/2007	98.44	36.03	62.41	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	01/28/2008	98.44	15.06	83.38	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/07/2008	98.44	11.22	87.22	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/01/2008	98.44	16.10	82.34	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/08/2008	98.44	33.22	65.22	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	02/03/2009	98.44	15.98	82.46	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/06/2009	98.44	19.67	78.77	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/08/2009	98.44	11.49	86.95	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4

=AVERAGE(D3:D304)

<# = Less than the method detection limit of #
µg/L = Micrograms/liter
DRY = No water for sampling
MTBE = Methyl tertiary butyl ether
NA = Not Available or not analyzed for that specific compound
ND = Not detected (# is method detection limit)
NS = Not Sampled

APPENDIX A

Krista Snyder

From: Mapleton, Lauren [lmapleton@state.pa.us]
Sent: Tuesday, January 26, 2010 3:41 PM
To: Krista Snyder
Subject: Sun at York Road

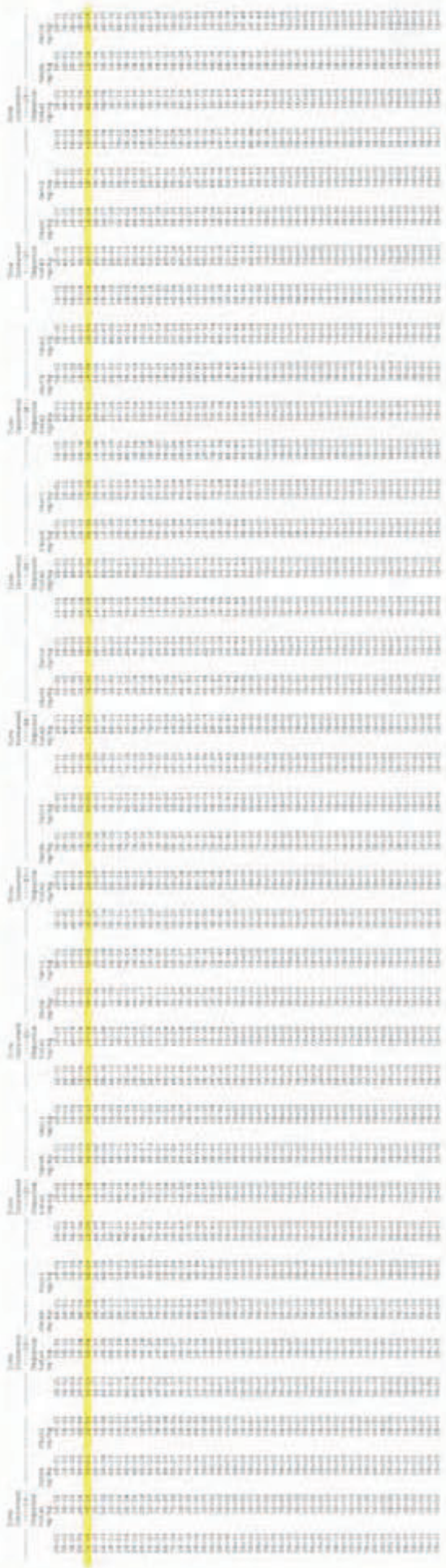
Krista,

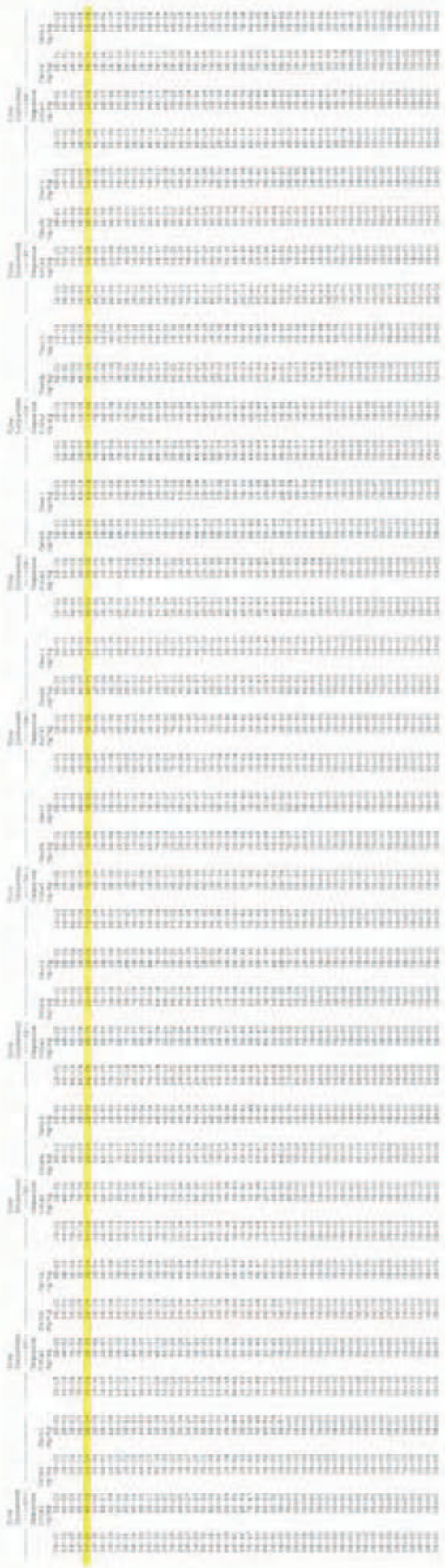
Walter Payne and I tried to call you today. We wanted to talk about the requirement to maintain a cap over the former dispenser area that is parallel to York Road due to the benzene exceedance in soil versus providing proof a cap is not needed. Don't know your schedule, but we need to talk about this so we can bring this case to closure.

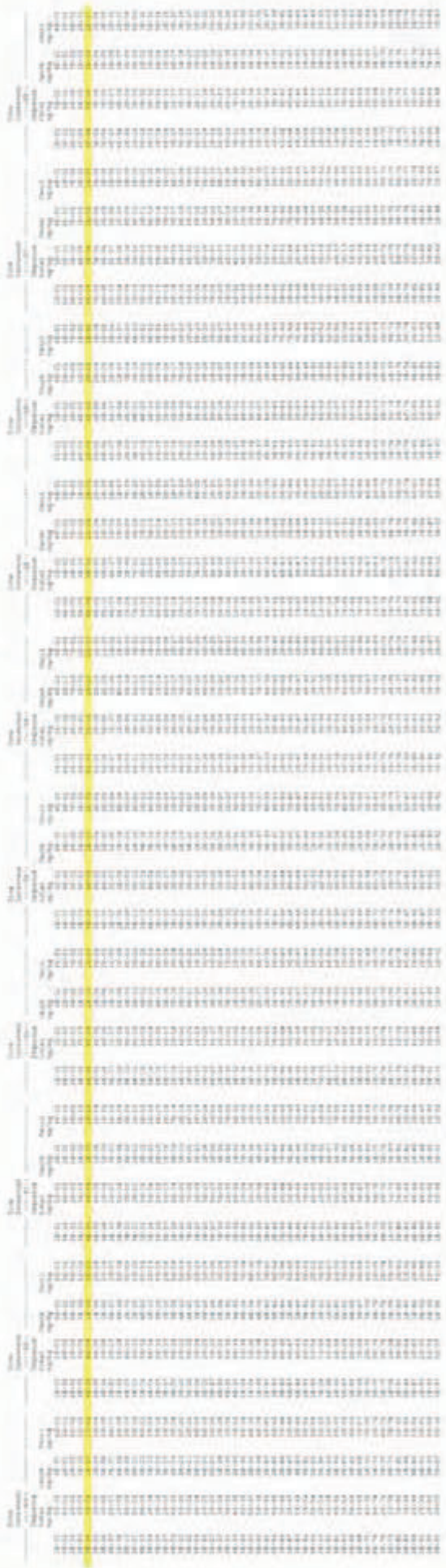
Let me know when is a good time to contact you.

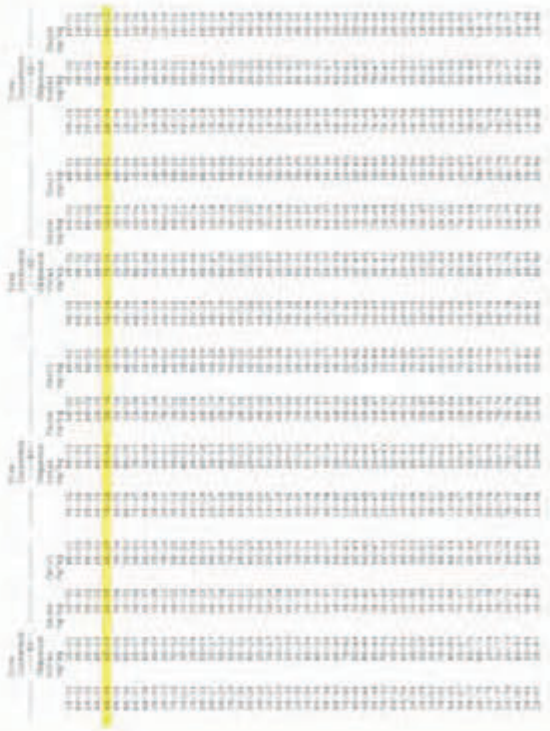
Lauren

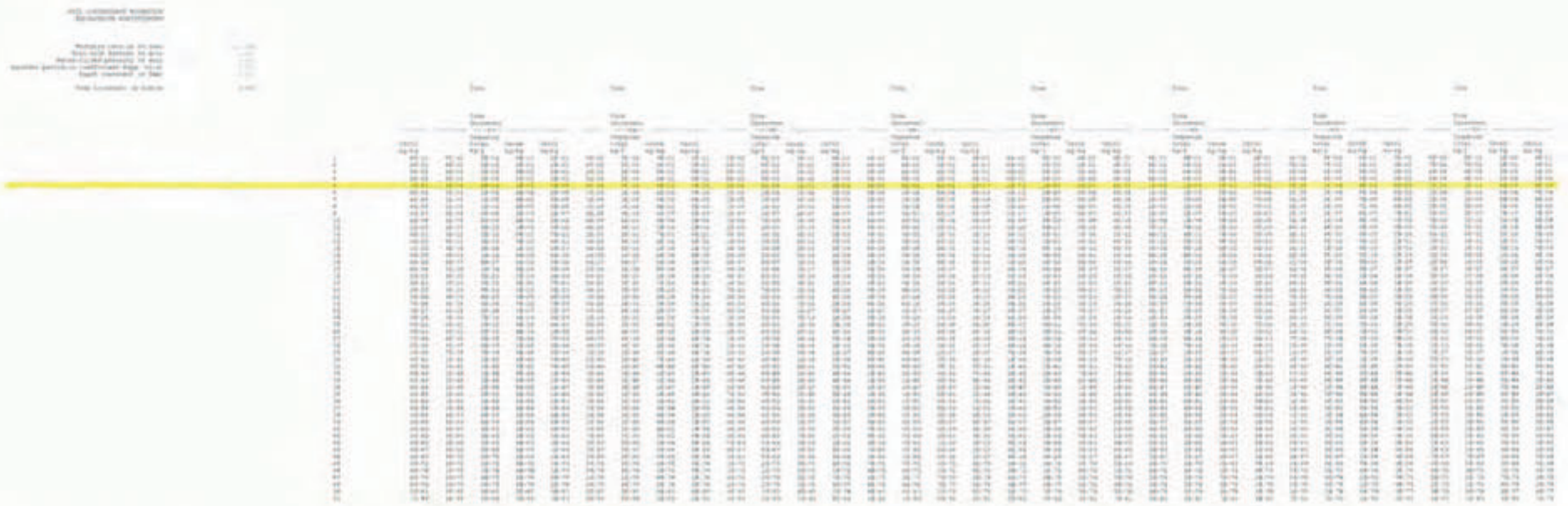
Lauren T. Mapleton | Geologic Specialist Department of Environmental Protection Southeast Regional Office
2 East Main Street | Norristown, PA 19401
Phone: 484.250.5783| Fax: 484.250.5961
www.depweb.state.pa.us

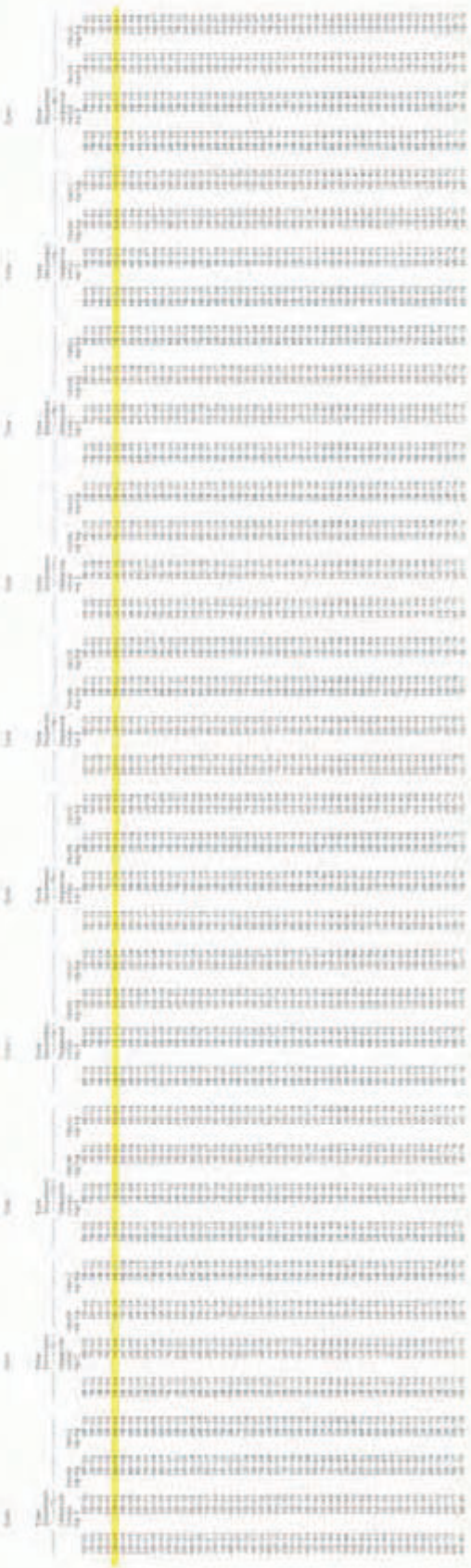


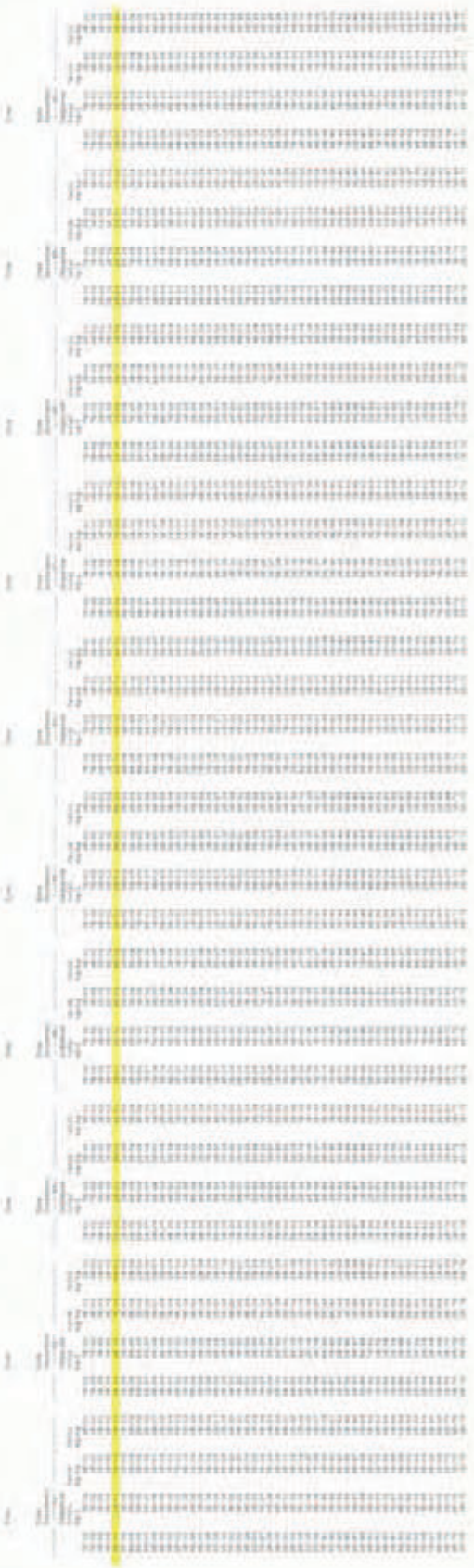


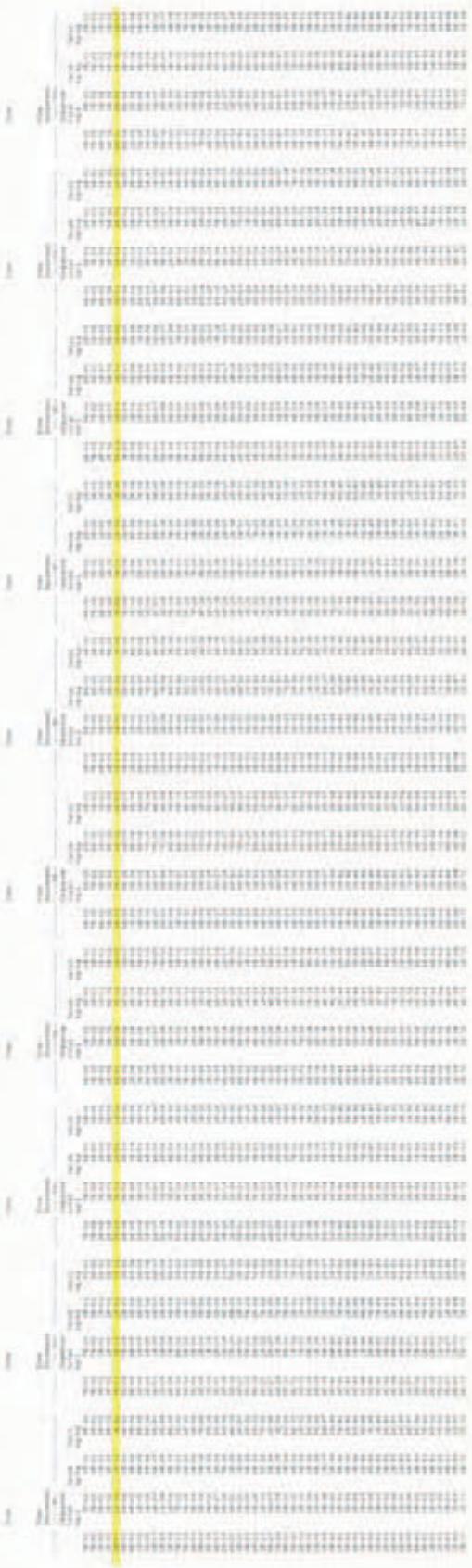


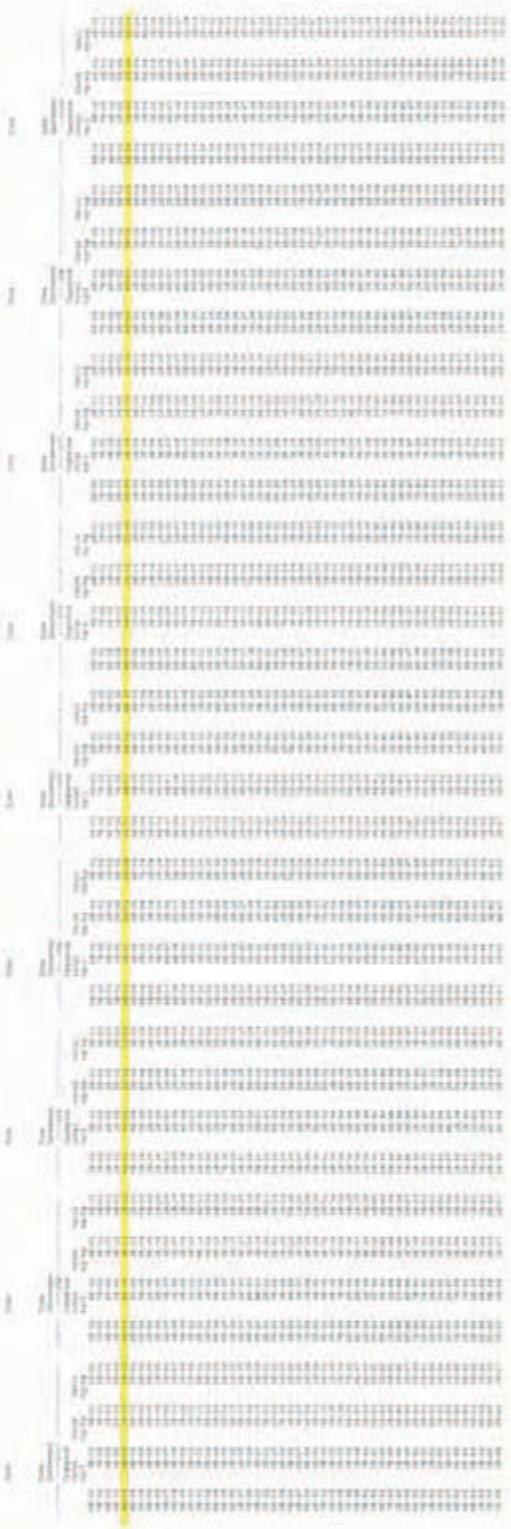












Prepared by:
Groundwater and Environmental Services, Inc.
440 Creamery Way, Suite 500
Exton, PA 19341
(610) 458-1077

Return to:
Groundwater and Environmental Services, Inc.
440 Creamery Way, Suite 500
Exton, PA 19341
Attn: Krista Snyder
(610) 458-1077 ext. 3068

The County Parcel Identification No. of the Property is: 49009046
GRANTOR: Sunoco, Inc.
PROPERTY ADDRESS: 610 York Road, Warminster, Pennsylvania

ENVIRONMENTAL COVENANT

This Environmental Covenant is executed pursuant to the Pennsylvania Uniform Environmental Covenants Act, Act No. 68 of 2007, 27 Pa. C.S. §§ 6501 – 6517 (UECA). This Environmental Covenant subjects the Property identified in Paragraph 1 to the activity and/or use limitations in this document. As indicated later in this document, this Environmental Covenant has been approved by the Pennsylvania Department of Environmental Protection (Department).

1. **Property affected**. The property affected (Property) by this Environmental Covenant is located in the Township of Warminster, Bucks County.

The postal street address of the Property is: 610 York Road, Warminster, PA. The tax assessment street address of the Property is: 610 York Road, Warminster, PA.

The latitude and longitude of the center of the Property affected by this Environmental Covenant is: 40° 12' 36.6" N, 75° 05' 58.2" W.

The Property has been known by the following name(s): Sunoco Station #0363-5430 with PADEP Facility ID #09-30778.

A complete description of the Property is attached to this Environmental Covenant as Exhibit A. A map of the Property is attached to this Environmental Covenant as Exhibit B.

2. **Property Owner / GRANTOR**. Sunoco, Inc. (R&M) is the owner of the Property. The mailing address of the Owner is:
1735 Market Street, STE LL, Philadelphia, Pennsylvania, 19103-7583.

3. **Holder(s) / GRANTEE**. The following is a "holder," as that term is defined in 27 Pa. C.S. § 6502, of this Environmental Covenant:
Sunoco Inc. (R&M)
Philadelphia, PA 19103

4. **Description of Contamination & Remedy**. The following describes the contamination and remedy of the property.

Groundwater sampling was initiated at the site in March 1996, at which time a groundwater monitoring program was initiated. Dissolved-phase hydrocarbons were detected at concentrations above the Department Statewide Health Standards (SHS) in the monitoring wells. This monitoring program continued until July 2009.

During underground storage tank (UST) closure activities in 1995 and 1996, soils samples were collected at depths ranging from one to 12 feet. Soil analytical results demonstrated that benzene was detected at concentrations above the Department SHS in soil samples collected beneath known USTs, pre-Act 2 USTs, and dispenser islands. None of the remaining target parameters (toluene, ethylbenzene, and total xylenes) were detected at concentrations greater than the Department SHS during the UST closure activities. During the 2007 monitoring well installation, benzene was detected at concentrations above the Department SHS in two soil samples. The remaining target parameters (toluene, ethylbenzene, total xylenes, methyl tertiary butyl ether (MTBE), isopropylbenzene, and naphthalene) were not detected or were detected at concentrations below the Department SHS.

Remediation was initiated at this site in April 2005, with a chemical oxidation high-intensity targeted (HIT) remediation event in which approximately 450 gallons of 7 to 8% solution of hydrogen peroxide were injected into monitoring wells MW-1, MW-3, and MW-5.

Following active remediation, the dissolved-phase hydrocarbon impact was detected primarily in monitoring wells MW-1 through MW-3, located in the vicinity of the former pre-Act 2 UST field and former dispenser islands along York Road. Dissolved hydrocarbons continued to exhibit decreasing trends. During post-remediation groundwater monitoring and sampling, benzene, MTBE, and naphthalene were detected at concentrations and/or had a laboratory detection limit above the Department SHS. During attainment groundwater monitoring and sampling, benzene was detected at concentrations above the Department SHS and/or had a laboratory detection limit above the Department SHS in monitoring well MW-2, located in the vicinity of the former dispenser islands along York Road; however, fate and transport modeling did not predict off-site migration of the hydrocarbon plume.

The environmental activities conducted at this site were in accordance with the Site Characterization Report prepared by Handex of Eastern Pennsylvania dated May 28, 1996, the Additional SCR / Remedial Action Plan (ASCR/RAP) prepared by GES dated January 6, 2006, and the Remedial Action Completion Report (RACR) prepared by GES dated October 1, 2009.

The Site Characterization Report (dated May 28, 1996), the Additional SCR / Remedial Action Plan (ASCR/RAP) (dated January 6, 2006), and the Remedial Action Completion Report (RACR) (dated October 1, 2009) were developed in accordance with applicable sections of Pennsylvania's Storage Tanks, Corrective Action Regulations (Title 25, Chapter 245), as well as the Land Recycling and Environmental Remediation Standards Act (Title 25, Chapter 250). The complete file, including the above-mentioned reports, is available at the Department's Southeast Regional Office located at 2 East Main Street in Norristown, Pennsylvania.

5. **Activity & Use Limitations**. The Property is subject to the following activity and use limitations, which the Owner and each subsequent owner of the Property shall abide by:

(a) The groundwater at or under the property shall not be used for drinking or agricultural purposes.

b) The Owner shall prohibit residential use of the Property without first obtaining written approval from the Department.

6. **Notice of Limitations in Future Conveyances**. Each instrument hereafter conveying any interest in the Property subject to this Environmental Covenant shall contain a notice of the activity and use limitations set forth in this Environmental Covenant and shall provide the recorded location of this Environmental Covenant.

7. **Compliance Reporting**. The owner and each subsequent owner of the Property shall submit to the Department written documentation confirming that the activity and use limitations in this Environmental Covenant are being complied with following transfer of the Property. In addition, the Owner or subsequent owner shall, as appropriate, notify the Department concerning proposed changes in use of the Property, filing of applications for building permits for the Property or proposals for any work at the Property which affect the contamination on the Property subject to this Environmental Covenant. The Owner and each subsequent owner shall also submit, to the Department, written documentation concerning the use of the property and compliance with this Environmental Covenant upon request by the Department.

8. **Access by the Department**. In addition to any rights already possessed by the Department, this Environmental Covenant grants to the Department a right of

access of the Property in connection with implementation or enforcement of this Environmental Covenant.

9. **Recordation & Proof & Notification**. Within 30 days after the date of the Department's approval, the Owner shall file this Environmental Covenant with the Recorder of Deeds for each County in which the Property is located, and send a file-stamped copy of this Environmental Covenant to the Department within 60 days recordation. Within that time period, the Owner also shall send a file-stamped copy to each of the following: each Municipality and County in which the Property is located; any Holder identified in this Environmental Covenant; each person holding a recorded interest in the Property; and each person in possession of the Property.

10. **Termination or Modification**. This Environmental Covenant may only be terminated or modified in accordance with Section 9 of UECA, 27 Pa. C.S. § 6509, including as follows:

> In accordance with Section 10 of UECA, 27 Pa. C.S. § 6510(a)(3)(i), Grantor hereby waives the right to consent to any amendment or termination of the Environmental Covenant by consent; it being intended that any amendment to or termination of this Environmental Covenant by consent in accordance with this Paragraph requires only the following signatures on the instrument amending or terminating this Environmental Covenant: (i) the Holder at the time of such amendment or termination; (ii) the then current owner of the Property and (iii) the Department.]

11. **Department's address**. Communications with the Department regarding this Environmental Covenant shall be sent to:

ECP Manager
Southeast Regional Office
2 East Main Street
Norristown, PA 19401

ACKNOWLEDGMENTS by Owner(s) and any Holder(s), in the following form:

Sunoco, Inc. (R&M), "Grantor"

Date: By: _____

Name: _____

Title: _____

COMMONWEALTH OF PENNSYLVANIA)[other state, if executed outside PA]

)

COUNTY OF _____) SS:

On this ___ day of _____, 20__, before me, the undersigned officer, personally appeared _____ [Owner, Grantor] who acknowledged himself/herself to be the person whose name is subscribed to this Environmental Covenant, and acknowledged that s/he executed same for the purposes therein contained.

In witness whereof, I hereunto set my hand and official seal.

_____

Notary Public

EXHIBIT A

DESCRIPTION OF PROPERTY

The site, located at the intersection of York Road (Route 263) and Street Road in Warminster, Pennsylvania (40° 12' 36.6" N, 75° 05' 58.2" W), is currently owned by Sunoco, Inc. (R&M), and is currently utilized as a retail gasoline facility and convenience store.

The property is zoned as commercial. The currently existing features at the site include a one-story station building and convenience store, four gasoline dispenser islands, three unleaded gasoline underground storage tanks (USTs), and associated subsurface piping. The UST area and dispenser island area are covered with a concrete pad. Removal and closure of fuel oil and waste oil underground storage tanks (USTs), removal of six gasoline dispenser islands, and removal of four pre-Act 2 unleaded gasoline USTs took place between November 1995 and February 1996. The former pre-Act 2 UST tank field and dispenser island areas are comprised of clean fill material and have been resurfaced. Grass and landscaping exists at the intersection of York Road and Street Road as well as behind the station building. The remaining portion of the site is covered in asphalt. There are numerous utility lines located at the site which include sub-grade public water, natural gas, telephone, and sanitary sewer. Ten monitoring wells (MW-1 through MW-10) comprise the monitoring well network and are located on-site. There are also three soil vapor points (SG-1 through SG-3) on-site. These well and soil-gas points will be properly abandoned upon approval of the Remedial Action Completion Report (RACR) (dated October 1, 2009). A site map showing property boundaries and pertinent current and former site features is included as **Exhibit B**.

ALL THAT CERTAIN piece or parcel of land with the buildings and improvements erected thereon situate in the Township of Warminster, County of Bucks, Commonwealth of Pennsylvania, more particularly described in accordance with a survey and plan thereof made of William S. Erwin, Registered Professional Engineer of Langhorne, Pennsylvania, dated December 10, 1954, as follows, to wit:

BEGINNING at a point in the middle line of Street Road (also known as Pennsylvania Traffic Route No. 132) (33 feet wide) at the distance of 16.70 feet North 50 degrees 30 minutes West of the intersection of the said center line of Street Road with the middle line of Old York Road (also known as United States Traffic Route No 611) (45 feet wide): extending thence (1) North 08 degrees 52 minutes 30 seconds East along a line in said Old York Road distant 8.13 feet Westwardly from and running parallel with the middle line thereof 264.00 feet to a point; thence (2) across said Old York Road North 54 degrees 17 minutes West 9.12 feet to a monument set in a Northwesterly line thereof and continuing thence still North 54 degrees 17 minutes West along line of land now or late of Agnes Taylor 158 feet to a field stone in line of land now or late of Elise Naylor; thence (3) South 39 degrees 15 minutes West along said line of land now or late of said Elsie Naylor 216.15 feet to a railroad spike in the said middle line of said Street Road; and thence (4) South 50 degrees 30 minutes East along said middle line of said Street Road 300.30 feet to the point and place of beginning.

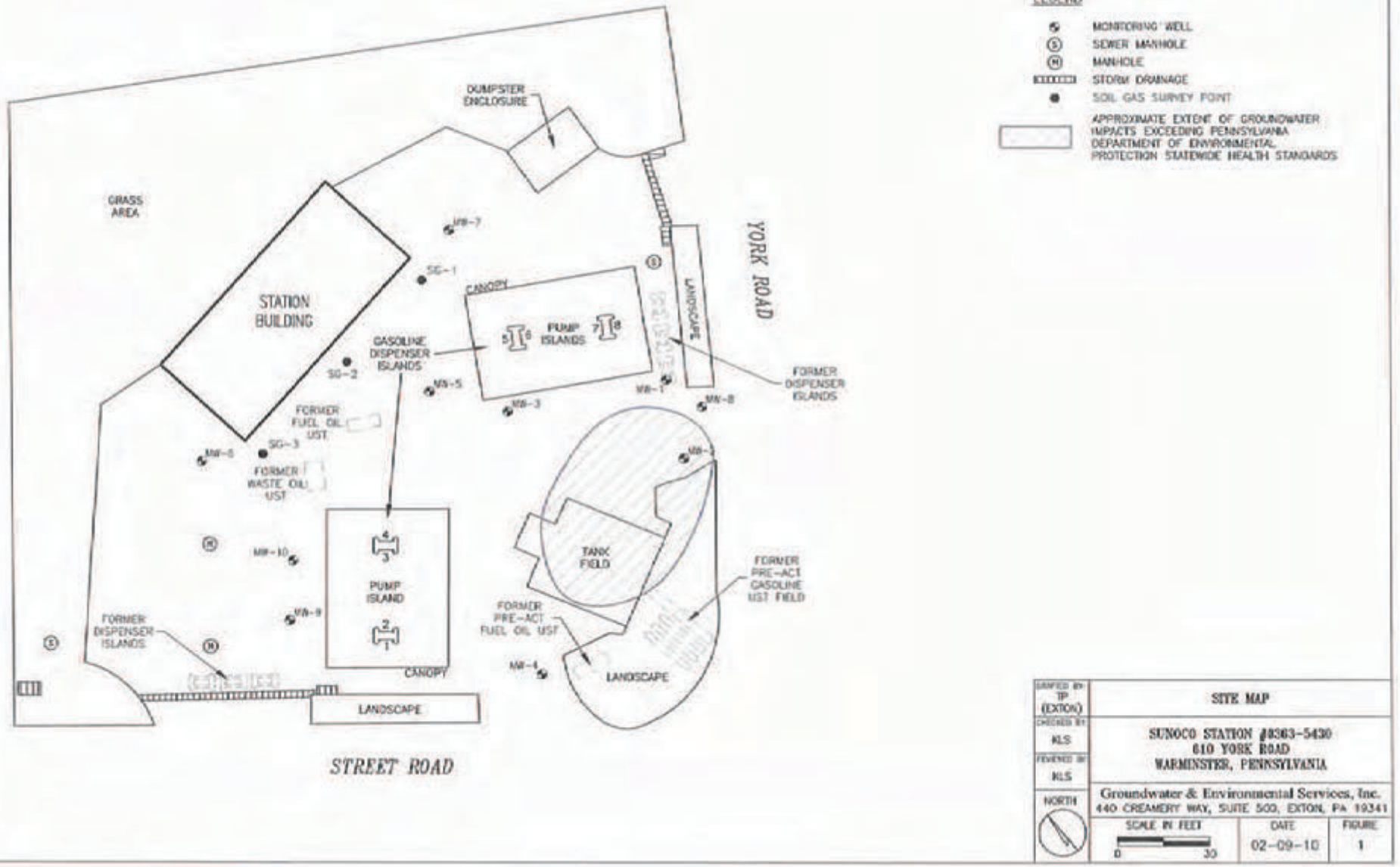
CONTAINING 1.197 acres, more or less.

COUNTY PARCEL NUMBER 49-9-46

BEING the same premises which Charles Schultz and Clara A. Schultz, his wife by Deed dated December 30, 1954 and recorded in Bucks County, in Deed Book 1210 page 238 conveyed unto The Atlantic Refining Company, a Pa. Corp., in fee. And the said Atlantic Refining Company is now known as the Atlantic Richfield Company.

EXHIBIT B

SITE MAP


LEGEND
MONITORING WELL
SEWER MANHOLE
MANHOLE
STORM DRAINAGE
SOIL GAS SURVEY POINT
APPROXIMATE EXTENT OF GROUNDWATER IMPACTS EXCEEDING PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION STATEWIDE HEALTH STANDARDS
DUMPSTER ENCLOSURE
GRASS AREA
STATION BUILDING
CANOPY
PUMP ISLANDS
GASOLINE DISPENSER ISLANDS
LANDSCAPE
YORK ROAD
FORMER DISPENSER ISLANDS
FORMER FUEL OIL UST
FORMER WASTE OIL UST
MW-7
SG-1
SG-2
SG-3
MW-5
MW-3
MW-1
MW-8
MW-6
MW-2
MW-10
MW-9
PUMP ISLAND
TANK FIELD
FORMER PRE-ACT GASOLINE UST FIELD
FORMER PRE-ACT FUEL OIL UST
MW-4
FORMER DISPENSER ISLANDS
CANOPY
LANDSCAPE
STREET ROAD
DRAWN BY: TP (EXTON)
CHECKED BY: KLS
REVIEWED BY: KLS
NORTH
SITE MAP
SUNOCO STATION #8363-5430
610 YORK ROAD
WARMINSTER, PENNSYLVANIA
Groundwater & Environmental Services, Inc.
440 CREAMERY WAY, SUITE 500, EXTON, PA 19341
SCALE IN FEET
0
30
DATE
02-09-10
FIGURE
1

Supplemental Information for Site Characterization Report Addendum/Remedial Action Completion Report Addendum

GES - July 20, 2010

Groundwater
& Environmental Services, Inc.

440 Creamery Way • Suite 500 • Exton, Pennsylvania 19341 • (610) 458-1077 • Fax (610) 458-2300

July 20, 2010

Ms. Lauren Mapleton
Pennsylvania Department of Environmental Protection
Environmental Cleanup Program
Southeastern Regional Office
2 East Main Street
Norristown, Pennsylvania 19401

Re: Supplemental Information for Site Characterization Report Addendum/ Remedial Action Completion Report Addendum
Sunoco Station #0363-5430
610 York Road
Warminster, PA
Facility Id #: 09-30778

Dear Ms. Mapleton:

Groundwater & Environmental Services, Inc. (GES), on behalf of Sunoco, Inc, (R&M) is providing this supplemental information for the Site Characterization Report Addendum / Remedial Action Completion Report (SCRA/ RACR) that was submitted to the Pennsylvania Department of Environmental Protection (PADEP) on October 1, 2009. This report included a draft Environmental Covenant (EC) for the subject property. On January 26, 2010, Lauren Mapleton of PADEP stated in email correspondence that maintenance of an impervious cap or proof that an impervious cap is not needed would have to be included as part of the EC for the subject property to obtain site closure.

To demonstrate that an impervious cap will not need to be included as an activity and use limitation for the property in the EC, GES completed additional modeling efforts to evaluate the potential vertical migration of benzene if the asphalt cap were to be removed and surface waters were able to infiltrate the overburden soils. To model this vertical migration, GES utilized the BUFFER1 spreadsheet available on the PADEP website. Soil sample Disp-2 is the only historic soil sample that was considered for this modeling effort since it is the only historic soil sample that is covered in asphalt (impervious surface). All the other historic soil samples that have exhibited a benzene exceedance above the PADEP Statewide Health Standard (SHS) are located in landscaped areas. Soil sample locations are shown on **Figure 1** and historic soil analytical data are shown on **Table 1**. These additional modeling efforts were submitted to PADEP as part of the SCRA/RACR Addendum dated April 8, 2010.

On June 14, 2010, in response to the April 8, 2010 SCRA/RACR Addendum, Ms. Lauren Mapleton of PADEP requested that the input parameter value used for recharge rate be revised to take infiltration of rainfall in the vicinity of the site into account. Additionally, Ms. Mapleton requested that soil bulk density and porosity input parameters reflective of the overburden soils at the site be utilized (input parameters for shallow bedrock were previously utilized) (**Appendix A**). As a result, GES has completed

additional modeling efforts. The following describes the input parameters of the BUFFER1 spreadsheet and the values applied in the model.

Recharge Rate (cm/year)
The site is located in the Neshaminy River watershed; therefore, a recharge rate was obtained from United States Geological Survey (USGS) data for a stream gauging point located in the Neshaminy Creek near Langhorne, PA. According to data collected by USGS, the mean annual recharge for this stream location ranged from 9.5 to 11.5 inch per year (in/yr). In order to be conservative, the recharge rate within the aquifer was estimated to be 11.5 in/yr, which is equivalent to 29.21 cm/year. A copy of USGS data is attached as **Appendix B.**

Soil Bulk Density
The site is underlain by approximately seven feet of unconsolidated material primarily consisting of silt, sand, and clay. Therefore, a soil bulk density representative of silt (1.38 g/cm^3) was used in the model.[1]

Water-Filled Porosity of Soil
The site is underlain by approximately seven feet of unconsolidated material primarily consisting of silt, sand, and clay. In order to be conservative, a water-filled porosity value representative of both sand and silt (0.40) was used in the model.[2]

Apparent Partition Coefficient Kapp (ml/g)
The apparent partition coefficient is defined in the BUFFER1 spreadsheet guidance document provided by PADEP as the ratio of Csorb (contaminant concentration that is non-aqueous in mg/kg) to Caq (aqueous concentration of contaminant in mg/L). For this ratio, the historic high concentration of benzene in monitoring well MW-1 (adjacent to soil sample Disp-1) was utilized for Caq (0.184 mg/L). The benzene concentration in soil sample Disp-2 (Csorb) is 0.700 mg/kg; therefore the ratio of Csorb to Caq is 3.8, which was utilized in the model.

Depth Increment (feet)
Soil sample Disp-2 was collected from one foot below ground surface, directly under a former dispenser island. The benzene concentration in this soil sample is relatively close to the PADEP SHS; therefore, a depth increment of one foot for benzene is utilized in the modeling effort, assuming that the impacted soils are between one and two feet below grade.

Csoil Initial
An initial soil concentration of 0.7 mg/kg (700 µg/kg) was utilized since this is the observed concentration of benzene in soil sample Disp-2.

Model Results
The BUFFER1 spreadsheet calculated the time increment as 5.01 months; therefore, the 30-year endpoint for the modeling effort as described in Title 25, §250.308(c)(1) is equal to 71.9 time increments. Competent red shale, sandstone, and siltstone bedrock was encountered at an average of 12 feet bgs and the average depth to water at the site is 16 feet. Depth to water in MW-1, the monitoring well closest to soil sample Disp-2, has ranged from 5.18 to 18.96 feet below top-of-casing (TOC) with an average depth to water of 11.4 feet below TOC. During the most recent eight sampling events, the depth to water in monitoring well MW-1 has ranged from 9.43 to 17.27 feet below TOC with an average of 12.78 feet below TOC. Therefore, the total aqueous concentration of benzene at 12 feet below grade after 72 time increments will be utilized as the predicted model output. The BUFFER1.xls spreadsheet predicts that the total aqueous concentration at 12 feet below grade after 30 years is 0.001 mg/L (1 µg/L), which does not

1 Morris, D.A. and A.I. Johnson, 1967. Summary of hydrologic and physical properties of rock and soil materials as analyzed by the Hydrologic Laboratory of the U.S. Geological Survey, U.S. Geological Survey Water-Supply Paper 1839-D.

2 Freeze, R.A. and J.A. Cherry. 1979. Groundwater. Prentice-Hall, Inc., Englewood Cliffs, NJ.

exceed the PADEP SHS for benzene in a non-residential, used aquifer. The BUFFER1 spreadsheet output is attached as **Appendix C**.

Based upon the above assessment, maintenance of an impermeable cap will not be included as an activity and use limitation for the property in the environmental covenant. The draft environmental covenant is included in **Appendix D,** which outlines the activity and use limitations. Upon PADEP approval, Sunoco will sign and notarize this document and submit to PADEP for final execution.

Site-Specific Standard of Benzene

Based upon the historical analytical results for on-site soils, the Site-Specific Standard (SSS) was chosen for benzene in soil at the site. Previous submittals (October 1, 2009 SCRA/ RACR) indicated there are no open soil exposure pathways; therefore, there is no risk. Numeric values for the SSS for benzene were not previously determined. Historical soil analytical data are provided in **Table 1.**

As previously mentioned, the BUFFER1.xls spreadsheet predicts that the total aqueous concentration at 12 feet below grade after 30 years is 0.001 mg/L (1 µg/L), which does not exceed the PADEP SHS for benzene in a non-residential, used aquifer. However, since the model predicts that adsorbed-phase benzene will intersect the water table at a detectable concentration (less than the PADEP SHS) a numerical Site-Specific Standards (SSS) for dissolved-phase benzene will be calculated.

A 95% upper confidence limit (UCL) for a normal distribution data set was calculated to develop the site-specific standard for benzene. The 95% UCL for benzene was calculated using data from monitoring well MW-2, since this is the only well that exhibited concentrations of benzene above the PADEP SHS during the most recent eight groundwater sampling events. Historical groundwater analytical data are provided in **Table 2.** The 95% UCL from monitoring well MW-2 was utilized to calculate a site-specific standard for benzene of 12 µg/L. The site-specific calculations are summarized in **Table 3.**

Respectfully submitted,
Groundwater & Environmental Services, Inc.

Krista L. Snyder
Project Manager

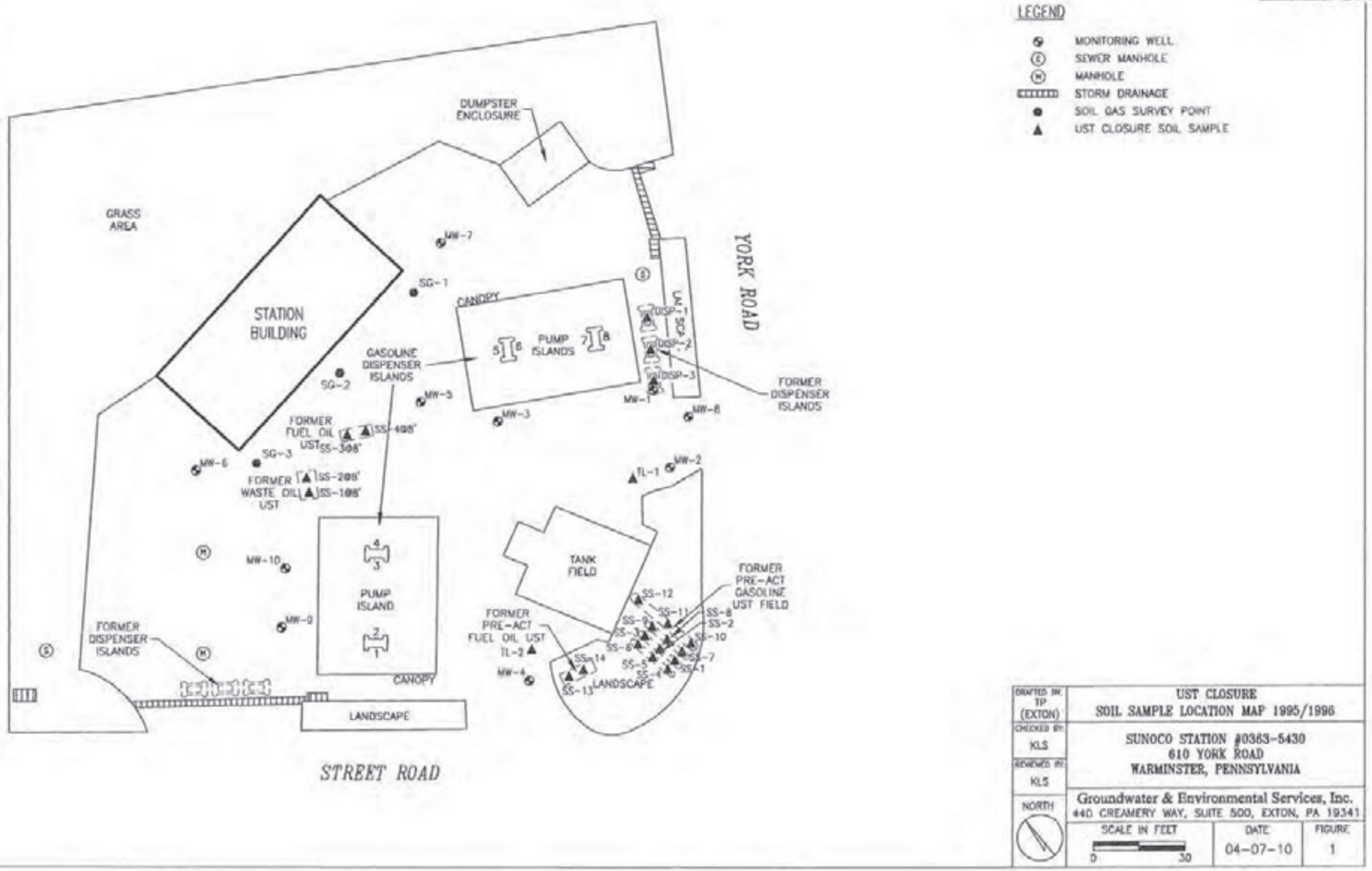
COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JENNIFER L. O'REILLY

Jennifer L. O'Reilly, P.G.
Senior Hydrogeologist
Senior Project Manager

By affixing my seal to this document, I am certifying that to the best of my knowledge the information is true and correct. I further certify that I am licensed to practice in the Commonwealth of Pennsylvania and that it is within my professional expertise to verify the correctness of the information.

Enclosure
Cc: William Brochu, Sunoco (ENFOS)
ICF International – T. Aubel (Claim #96-131)
GES Project File

FIGURES


LEGEND
MONITORING WELL
SEWER MANHOLE
MANHOLE
STORM DRAINAGE
SOIL GAS SURVEY POINT
UST CLOSURE SOIL SAMPLE
DUMPSTER ENCLOSURE
GRASS AREA
STATION BUILDING
YORK ROAD
CANOPY
PUMP ISLANDS
GASOLINE DISPENSER ISLANDS
FORMER DISPENSER ISLANDS
FORMER FUEL OIL UST
FORMER WASTE OIL UST
TANK FIELD
FORMER PRE-ACT GASOLINE UST FIELD
FORMER PRE-ACT FUEL OIL UST
PUMP ISLAND
LANDSCAPE
STREET ROAD
UST CLOSURE
SOIL SAMPLE LOCATION MAP 1995/1996
SUNOCO STATION #0383-5430
610 YORK ROAD
WARMINSTER, PENNSYLVANIA
Groundwater & Environmental Services, Inc.
440 CREAMERY WAY, SUITE 500, EXTON, PA 19341
NORTH
SCALE IN FEET
0 30
DATE
04-07-10
FIGURE
1
DRAFTED BY: TP (EXTON)
CHECKED BY: KLS
REVIEWED BY: KLS

TABLES

TABLE 1
HISTORICAL SOIL ANALYTICAL DATA SUMMARY

SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PA

Sample ID		Depth (ft)	Sample Date	Benzene (µg/kg)	Toluene (µg/kg)	Ethylbenzene (µg/kg)	Total Xylenes (µg/kg)	MTBE (µg/kg)	Isopropyl benzene (µg/kg)	Naphthalene (µg/kg)	TPH-GRO (mg/kg)	TPH (mg/kg)
UST CLOSURE ACTIVITIES, 1995/1996	SS-1	8	12/28/1995	ND<6	<6	ND<6	<18	NA	NA	NA	NA	40
	SS-2	8	12/28/1995	ND<6	<6	ND<6	ND<18	NA	NA	NA	NA	370
	SS-3	8	12/28/1995	ND<6	<6	ND<6	<17	NA	NA	NA	NA	480
	SS-4	8	12/28/1995	ND<6	<6	ND<6	<17	NA	NA	NA	NA	100
	DISP-1	1	2/8/1996	100	3,000	3,000	21,000	NA	NA	NA	200	NA
	DISP-2	1	2/8/1996	700	51,000	41,000	250,000	NA	NA	NA	1,300	NA
	DISP-3	1	2/8/1996	200	14,000	10,000	63,000	NA	NA	NA	310	NA
	TL-1	1	2/13/1996	ND<5	ND<5	ND<5	ND<16	NA	NA	NA	ND<1	NA
	TL-2	1	2/13/1996	ND<100	800	2,100	19,000	NA	NA	NA	150	NA
	SS-1	12	2/27/1996	1,000	23,000	34,000	180,000	NA	NA	NA	1,100	NA
	SS-2	12	2/27/1996	1,900	33,000	26,000	160,000	NA	NA	NA	1,100	NA
	SS-3	12	2/27/1996	45	270	120	830	NA	NA	NA	6	NA
	SS-4	12	2/27/1996	ND<100	300	3,400	17,000	NA	NA	NA	200	NA
	SS-5	12	2/27/1996	<6	<6	<6	<19	NA	NA	NA	ND<1	NA
	SS-6	12	2/27/1996	31	450	500	2,800	NA	NA	NA	28	NA
	SS-7	12	2/27/1996	1,900	10,000	24,000	140,000	NA	NA	NA	1100	NA
	SS-8	12	2/27/1996	ND<600	800	6,400	21,000	NA	NA	NA	400	NA
	SS-9	12	2/27/1996	<700	<700	11,000	20,000	NA	NA	NA	1,100	NA
	SS-10	12	2/27/1996	1,000	11,000	12,000	85,000	NA	NA	NA	800	NA
	SS-11	12	2/27/1996	ND<600	4,600	15,000	93,000	NA	NA	NA	700	NA
	SS-12	12	2/27/1996	ND<100	500	4,200	9,800	NA	NA	NA	300	NA
	SS-13	8	2/27/1996	NA	NA	NA	NA	NA	NA	NA	NA	30
	SS-14	8	2/27/1996	NA	NA	NA	NA	NA	NA	NA	NA	90
PADEP Statewide Health Standard for Unsaturated and Saturated Soils in a Non-Residential, Used Aquifer				500	100,000	70,000	1,000,000	2,000	1,600,000 / 230,000	25,000 / 10,000	N/A	N/A

TABLE 1
HISTORICAL SOIL ANALYTICAL DATA SUMMARY

SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PA

Sample ID		Depth (ft)	Sample Date	Benzene (µg/kg)	Toluene (µg/kg)	Ethylbenzene (µg/kg)	Total Xylenes (µg/kg)	MTBE (µg/kg)	Isopropyl benzene (µg/kg)	Naphthalene (µg/kg)	TPH-GRO (mg/kg)	TPH (mg/kg)
Monitoring Well Installation, 1996	MW-1	5-7	3/13/1996	ND<6	ND<6	ND<6	ND<18	NA	NA	NA	ND<1	NA
	MW-2	5-7	3/13/1996	ND<6	<6	<6	<18	NA	NA	NA	ND<1	NA
	MW-3	5-7	3/13/1996	<6	<6	<6	<18	NA	NA	NA	ND<1	NA
Monitoring Well Installation, 1997	MW-4	-	10/27/1997	<6	<6	<6	<17	<20	<10	<20	NA	NA
Monitoring Well Installation, 2004	MW-5	25	10/18/2004	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5	NA	NA
	MW-6	15	10/18/2004	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5	NA	NA
Monitoring Well Installation, 2007	MW-8	5	2/22/2007	<530	<530	1,200	8,200	<530	<530	3,700	NA	NA
	MW-8	24	2/22/2007	<520	<520	<520	<520	<520	<520	<520	NA	NA
	MW-9	5	2/23/2007	<440	<440	<440	<440	<440	<440	720	NA	NA
	MW-9	15	2/23/2007	<480	<480	<480	<480	<480	<480	<480	NA	NA
	MW-10	15	2/23/2007	<480	<480	<480	<480	<480	<480	<480	NA	NA
PADEP Statewide Health Standard for Unsaturated and Saturated Soils in a Non-Residential, Used Aquifer				**500**	**100,000**	**70,000**	**1,000,000**	**2,000**	**1,600,000 / 230,000**	**25,000 / 10,000**	**N/A**	**N/A**

All results reported on a dry weight basis except samples SS-1 and SS-2 (collected on 2/27/1996). Those samples were reported on an as received basis, due to laboratory error.

ND: Not Detected

NA: Not Analyzed

N/A: Not Applicable

MTBE: Methyl *tert* Butyl Ether

TPH: Total Petroleum Hydrocarbons

GRO: Gasoline Range Organics

mg/kg: milligrams per kilogram

µg/kg: micrograms per kilogram

TABLE 2
HISTORICAL GROUNDWATER MONITORING DATA SUMMARY

SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PA

Monitoring Well	Date	Top of Casing (ft)	Depth to Water (ft)	GW Elevation (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Isopropyl Benzene (µg/L)	Naphthalene (µg/L)
MSCs for Used, Non-Res. Aquifer					5	1,000	700	10,000	20	2,300	100
MW-1	03/23/1996	96.79	8	88.79	ND< 1	ND< 1	ND	2	NA	NA	NA
	09/09/1996	96.79	12.5	84.29	**13**	ND< 10	340	1,060	**240**	NA	**150**
	11/07/1996	96.79	10.12	86.67	ND< 1	ND< 1	ND< 1	3	2	NA	ND< 5
	02/14/1997	96.79	8.47	88.32	ND< 1	ND< 1	ND	ND< 3	**88**	NA	ND< 5
	05/07/1997	96.79	9.58	87.21	ND	ND	ND	ND< 3	ND< 1	NA	ND< 5
	09/15/1997	96.79	DRY	-	NS	NS	NS	NS	NS	NS	NS
	11/11/1997	96.79	DRY	-	NS	NS	NS	NS	NS	NS	NS
	03/17/1998	96.79	8.75	88.04	ND	ND	ND	ND	ND<1	NA	ND<5
	06/15/1998	96.79	5.18	91.61	ND	ND	ND	ND	ND< 5	ND	ND
	06/17/1999	96.79	DRY	-	NS	NS	NS	NS	NS	NS	NS
	02/15/2000	96.79	10.19	86.60	**184**	530	87.4	379	**12,800**	ND	ND
	05/12/2000	96.79	10.16	86.63	2.7	ND	ND	2.8	**242**	ND	2.5
	10/16/2000	96.79	13.83	82.96	**79.8**	589	368	1,020	**957**	40.6	**280**
	03/23/2001	96.79	7.63	89.16	ND	ND	ND	ND	1.9	ND	ND
	06/14/2001	96.79	10.84	85.95	**20.3**	35.5	96.2	130	**221**	13.3	41.6
	09/18/2001	96.79	DRY	-	NS	NS	NS	NS	NS	NS	NS
	12/26/2001	96.79	DRY	-	NS	NS	NS	NS	NS	NS	NS
	03/26/2002	96.79	DRY	-	NS	NS	NS	NS	NS	NS	NS
	06/14/2002	96.79	12.51	84.28	**9.7**	25.5	294	513	**103**	35.3	**214**
	09/13/2002	96.79	DRY	-	NS	NS	NS	NS	NS	NS	NS
	10/30/2002	96.79	16.46	80.33	**23.5**	29.2	377	691	**84.0**	72.5	**297**
	03/05/2003	96.79	9.01	87.78	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5
	05/08/2003	96.79	9.58	87.21	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0
	08/06/2003	96.79	11.99	84.80	<1.0	<5.0	9.5	<10	<5.0	<5.0	5.5
	10/24/2003	96.79	DRY	-	NS	NS	NS	NS	NS	NS	NS
	01/16/2004	96.79	9.14	87.65	<1.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0
	04/14/2004	96.79	7.97	88.82	<1.0	<5.0	<5.0	<10	**68**	<5.0	<5.0
	07/15/2004	96.79	14.67	82.12	**6.0**	8.0	170	380	**610**	42	**160**
	10/04/2004	97.77	12.55	85.22	2	ND<3	38	35	**43**	16	52
	01/13/2005	97.77	9.31	88.46	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5
	04/20/2005	97.77	8.52	89.25	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	07/15/2005	97.77	14.31	83.46	2.0	8.0	227	445	**57.4**	49.6	**241**
	09/07/2005	97.77	DRY	-	NS	NS	NS	NS	NS	NS	NS
	09/20/2005	97.77	DRY	-	NS	NS	NS	NS	NS	NS	NS
	10/28/2005	97.77	12.02	85.75	**83.4**	241	140	812	**6,330**	22.2	**136**
	02/10/2006	97.77	9.08	88.69	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	05/15/2006	97.77	18.96	78.81	NS	NS	NS	NS	NS	NS	NS
	08/18/2006	97.77	DRY	-	NS	NS	NS	NS	NS	NS	NS
	11/15/2006	97.77	9.56	88.21	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	03/30/2007	97.77	8.90	88.87	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	05/17/2007	97.77	9.28	88.49	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	08/02/2007	97.77	DRY	-	NS	NS	NS	NS	NS	NS	NS
	10/04/2007	97.77	DRY	-	NS	NS	NS	NS	NS	NS	NS
	01/28/2008	97.77	13.13	84.64	2	ND<1	58	24	12	27	36
	04/07/2008	97.77	9.43	88.34	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/01/2008	97.77	14.20	83.57	2	ND<1	22	4	7	9	13
	10/08/2008	97.77	DRY	-	NS	NS	NS	NS	NS	NS	NS
	02/03/2009	97.77	13.06	84.71	2	ND<1	10	7	5	9	15
	04/06/2009	97.77	17.27	80.50	5	ND<1	14	27	11	43	34
	07/08/2009	97.77	9.57	88.20	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4

TABLE 2
HISTORICAL GROUNDWATER MONITORING DATA SUMMARY

SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PA

Monitoring Well	Date	Top of Casing (ft)	Depth to Water (ft)	GW Elevation (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Isopropyl Benzene (µg/L)	Naphthalene (µg/L)
MSCs for Used, Non-Res. Aquifer					5	1,000	700	10,000	20	2,300	100
MW-2	03/23/1996	97.43	8.6	88.83	**280**	130	160	1,150	NA	NA	NA
	09/09/1996	97.43	13.25	84.18	**180**	5	180	140	**170**	NA	49
	11/07/1996	97.43	11.25	86.18	**74**	3	85	79	**74**	NA	39
	02/14/1997	97.43	9.33	88.10	**36**	6	35	67	15	NA	18
	05/07/1997	97.43	10.15	87.28	**55**	4	75	81	**26**	NA	19
	09/15/1997	97.43	23.2	74.23	**430**	13	410	340	**140**	NA	**200**
	11/11/1997	97.43	24.3	73.13	NS	NS	NS	NS	NS	NS	NS
	03/17/1998	97.43	9.35	88.08	**58**	2	100	160	**35**	NA	43
	06/15/1998	97.43	9.86	87.57	**91**	9	240	930	10	27	**120**
	06/17/1999	97.43	21.41	76.02	**87**	ND	160	7	**280**	18	30
	02/15/2000	97.43	11.04	86.39	**91.3**	1.4	242	94.5	**274**	37.6	84.4
	05/12/2000	97.43	10.73	86.70	**21.2**	ND	59.6	9.8	**161**	8.9	12.6
	10/16/2000	97.43	13.4	84.03	**70.4**	27.3	276	123	**359**	49.7	91.4
	03/23/2001	97.43	8.24	89.19	2.1	ND	10.5	ND	8.8	ND	ND
	06/14/2001	97.43	14.37	83.06	**45.8**	2.1	197	45.8	**113**	29.5	56.8
	09/18/2001	97.43	DRY	-	NS	NS	NS	NS	NS	NS	NS
	12/26/2001	97.43	DRY	-	NS	NS	NS	NS	NS	NS	NS
	03/26/2002	97.43	21.74	75.69	**192**	4.3	410	182	**164**	42.1	**104**
	06/14/2002	97.43	13.35	84.08	**35.7**	ND<2.5	173	57.3	**57.2**	29.2	**111**
	09/13/2002	97.43	23.55	73.88	**82.4**	2.6	268	55.5	**123**	43.1	**153**
	10/30/2002	97.43	18.93	78.50	**171**	4.9	**886**	291	**155**	113	**344**
	03/05/2003	97.43	9.96	87.47	**27**	ND<1	160	24	**24**	25	59
	05/08/2003	97.43	10.53	86.90	4.3	<1.0	29	<5.0	<5.0	<5.0	13
	08/06/2003	97.43	13.08	84.35	**13**	<5.0	43	<10	15	8.7	20
	10/24/2003	97.43	20.57	76.86	**54**	<1.6	320	86	**43**	44	**140**
	01/16/2004	97.43	9.72	87.71	<1.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0
	04/14/2004	97.43	8.88	88.55	**10**	<5.0	72	12	**41**	12	21
	07/15/2004	97.43	17.40	80.03	**53**	31	370	160	**2,300**	56	**180**
	10/04/2004	98.31	13.24	85.07	**34**	ND<7	180	35	**190**	38	60
	01/13/2005	98.31	10.21	88.10	**6**	ND<1	59	5	**39**	14	20
	04/20/2005	98.31	9.08	89.23	ND<1.0	ND<1.0	9.3	ND<3.0	3.9	3.3	4.3
	07/15/2005	98.31	15.36	82.95	**38.1**	1.5	161	68.7	**89.9**	79.7	**142**
	09/07/2005	98.31	23.45	74.86	**10.0**	ND<1.0	18.5	ND<3.0	**59.5**	11.0	23.0
	09/20/2005	98.31	DRY	-	NS	NS	NS	NS	NS	NS	NS
	10/28/2005	98.31	12.81	85.50	**76.7**	51.8	195	67.3	**2,750**	80.8	**136**
	02/10/2006	98.31	10.68	87.63	4.7	1.0	30.3	4.1	**39.7**	10.8	8.4
	05/15/2006	98.31	20.04	78.27	**34.7**	7.6	108	46.5	**421**	31.0	43.3
	08/18/2006	98.31	20.68	77.63	**28.8**	1.8	106	8.6	**179**	48.2	31.8
	11/15/2006	98.31	10.39	87.92	**9.4**	ND<1.0	56.5	5.0	**25.1**	26.2	20.3
	03/30/2007	98.31	9.29	89.02	2	ND<1	12	2	5	7	5
	05/17/2007	98.31	9.99	88.32	2	ND<1	14	2	4	8	5
	08/02/2007	98.31	21.74	76.57	7	ND<1	15	3	**28**	12	ND<4
	10/04/2007	98.31	DRY	-	NS	NS	NS	NS	NS	NS	NS
	01/28/2008	98.31	13.42	84.89	8	ND<1	12	5	12	15	11
	04/07/2008	98.31	10.03	88.28	2	ND<1	11	2	3	9	5
	07/01/2008	98.31	14.85	83.46	ND<1	ND<1	1	ND<1	2	ND<2	ND<4
	10/31/2008	98.31	21.63	76.68	**15**	ND<1	39	11	8	41	11
	02/03/2009	98.31	13.15	85.16	2	ND<1	7	1	3	8	ND<4
	04/06/2009	98.31	18.75	79.56	5	ND<1	15	2	8	8	ND<4
	07/08/2009	98.31	10.25	88.06	ND<1	ND<1	2	ND<1	ND<1	3	ND<4

TABLE 2
HISTORICAL GROUNDWATER MONITORING DATA SUMMARY

SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PA

Monitoring Well	Date	Top of Casing (ft)	Depth to Water (ft)	GW Elevation (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Isopropyl Benzene (µg/L)	Naphthalene (µg/L)
MSCs for Used, Non-Res. Aquifer					5	1,000	700	10,000	20	2,300	100
MW-3	03/23/1996	98.08	9.35	88.73	12	ND< 1	2	3	NA	NA	NA
	09/09/1996	98.08	13.76	84.32	ND	ND	ND	ND	480	NA	ND
	11/07/1996	98.08	11.43	86.65	ND< 1	ND< 1	ND< 1	ND< 3	170	NA	ND< 5
	02/14/1997	98.08	10.18	87.90	2	ND< 1	ND	ND< 3	130	NA	ND< 5
	05/07/1997	98.08	10.9	87.18	ND	ND	ND	ND	99	NA	ND
	09/15/1997	98.08	23.68	74.40	NS	NS	NS	NS	NS	NS	NS
	11/11/1997	98.08	23.95	74.13	NS	NS	NS	NS	NS	NS	NS
	03/17/1998	98.08	10.25	87.83	ND<1	ND<1	ND<1	ND<3	22	NA	ND<5
	06/15/1998	98.08	10.56	87.52	ND	ND	ND	ND< 5	8	ND	ND<5
	06/17/1999	98.08	21.97	76.11	ND	ND	ND	ND	7	ND	ND
	02/15/2000	98.08	11.96	86.12	80	325	21.7	267	1,680	ND	ND
	05/12/2000	98.08	11.43	86.65	ND	ND	ND	ND	256	ND	ND
	10/16/2000	98.08	14.15	83.93	ND	ND	ND	ND	42.3	ND	ND
	03/23/2001	98.08	9.04	89.04	1.3	ND	ND	ND	55.2	ND	ND
	06/14/2001	98.08	12.1	85.98	ND<1	ND<1	ND<1	ND<5	44.9	ND<2	ND<5
	09/18/2001	98.08	DRY	-	NS	NS	NS	NS	NS	NS	NS
	12/26/2001	98.08	23.21	74.87	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<5
	03/26/2002	98.08	22.7	75.38	ND<1	ND<1	ND<1	ND<1.4	2.6	ND<2	ND<5
	06/14/2002	98.08	13.95	84.13	ND<1.0	ND<1.0	ND<1.0	ND<1.0	10.6	ND<2.0	ND<5.0
	09/13/2002	98.08	DRY	-	NS	NS	NS	NS	NS	NS	NS
	10/30/2002	98.08	18.45	79.63	ND<1.0	ND<1.0	ND<1.0	ND<1.0	1.8	ND<2.0	6.6
	03/05/2003	98.08	10.71	87.37	ND<1	ND<1	ND<1	ND<1	11	ND<5	ND<5
	05/08/2003	98.08	11.43	86.65	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0
	08/06/2003	98.08	13.51	84.57	<1.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0
	10/24/2003	98.08	20.74	77.34	<1.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0
	01/16/2004	98.08	10.53	87.55	<1.0	<5.0	<5.0	<10	28	<5.0	<5.0
	04/14/2004	98.08	9.83	88.25	<1.0	<5.0	<5.0	<10	20	<5.0	<5.0
	07/15/2004	98.08	17.05	81.03	<1.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0
	10/04/2004	98.78	13.92	84.86	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5
	01/13/2005	98.78	11.13	87.65	ND<1	ND<1	ND<1	ND<1	19	ND<5	ND<5
	04/20/2005	98.78	10.04	88.74	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	07/15/2005	98.78	15.71	83.07	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	09/07/2005	98.78	DRY	-	NS	NS	NS	NS	NS	NS	NS
	09/20/2005	98.78	23.75	75.03	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	10/28/2005	98.78	13.75	85.03	3.1	2.2	ND<1.0	26.0	749	ND<1.0	9.0
	02/10/2006	98.78	10.59	88.19	ND<1.0	ND<1.0	ND<1.0	ND<3.0	33.8	ND<1.0	ND<2.0
	05/15/2006	98.78	20.37	78.41	ND<1.0	ND<1.0	ND<1.0	ND<3.0	1.5	ND<1.0	ND<2.0
	08/18/2006	98.78	20.91	77.87	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	11/15/2006	98.78	11.32	87.46	ND<1.0	ND<1.0	ND<1.0	ND<3.0	2.6	ND<1.0	ND<2.0
	03/30/2007	98.78	10.28	88.50	ND<1	ND<1	ND<1	ND<1	2	ND<2	ND<4
	05/17/2007	98.78	10.82	87.96	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	08/02/2007	98.78	22.12	76.66	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/04/2007	98.78	DRY	-	NS	NS	NS	NS	NS	NS	NS
	01/28/2008	98.78	14.62	84.16	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/07/2008	98.78	11.81	86.97	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/01/2008	98.78	15.72	83.06	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/08/2008	98.78	23.89	74.89	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	02/03/2009	98.78	14.62	84.16	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/06/2009	98.78	18.53	80.25	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/08/2009	98.78	11.11	87.67	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4

TABLE 2
HISTORICAL GROUNDWATER MONITORING DATA SUMMARY

SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PA

Monitoring Well	Date	Top of Casing (ft)	Depth to Water (ft)	GW Elevation (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Isopropyl Benzene (µg/L)	Naphthalene (µg/L)
MSCs for Used, Non-Res. Aquifer					5	1,000	700	10,000	20	2,300	100
MW-4	11/11/1997	98.08	23.87	74.21	ND<1	ND<1	ND	ND<3	10	NA	ND<5
	03/17/1998	98.08	10.1	87.98	ND	ND	ND<1	ND<3	ND<1	NA	ND<5
	06/15/1998	98.08	10.32	87.76	ND	ND	ND	ND	ND	ND	ND
	06/17/1999	98.08	22.61	75.47	ND	ND	ND	ND	ND<5	ND	ND
	02/15/2000	98.08	11.91	86.17	ND	ND	ND	ND	15.8	ND	ND
	05/12/2000	98.08	11.41	86.67	ND	ND	ND	ND	9.5	ND	ND
	10/16/2000	98.08	14.03	84.05	ND	ND	ND	ND	972	ND	ND
	03/23/2001	98.08	8.94	89.14	ND	ND	ND	ND	ND	ND	ND
	06/14/2001	98.08	12.05	86.03	ND<1	ND<1	ND<1	ND<5	31.6	ND<2	ND<5
	09/18/2001	98.08	24.57	73.51	ND<1	ND<1	ND<1	ND<1	4.9	ND<2	ND<5
	12/26/2001	98.08	24.43	73.65	ND<1	ND<1	ND<1	ND<1	1.7	ND<2	ND<5
	03/26/2002	98.08	23.82	74.26	ND<1	ND<1	ND<1	ND<1.4	1.1	ND<2	ND<5
	06/14/2002	98.08	14.01	84.07	ND<1.0	ND<1.0	ND<1.0	ND<1.0	7.5	ND<2.0	ND<5.0
	09/13/2002	98.08	24.67	73.41	ND<1.0	ND<1.0	ND<1.0	ND<1.0	1.2	ND<2.0	ND<5.0
	10/30/2002	98.08	20.38	77.70	ND<1.0	ND<1.0	ND<1.0	ND<1.0	1.6	ND<2.0	ND<5.0
	03/05/2003	98.08	10.68	87.40	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5
	05/08/2003	98.08	11.25	86.83	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0
	08/06/2003	98.08	13.75	84.33	<1.0	<5.0	<5.0	<10	9.8	<5.0	<5.0
	10/24/2003	98.08	20.63	77.45	<1.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0
	01/16/2004	98.08	10.46	87.62	<1.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0
	04/14/2004	98.08	9.86	88.22	<1.0	<5.0	<5.0	<10	<5.0	<5.0	<5.0
	07/15/2004	98.08	18.63	79.45	<1.0	<5.0	<5.0	<10	5.0	<5.0	<5.0
	10/04/2004	98.94	13.99	84.95	ND<3	ND<4	ND<4	ND<4	100	ND<5	ND<5
	01/13/2005	98.94	10.98	87.96	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5
	04/20/2005	98.94	9.81	89.13	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	07/15/2005	98.94	16.05	82.89	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	09/07/2005	98.94	24.61	74.33	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	09/20/2005	98.94	24.51	74.43	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	10/28/2005	98.94	13.81	85.13	ND<1.0	ND<1.0	ND<1.0	ND<3.0	89.6	ND<1.0	ND<2.0
	02/10/2006	98.94	10.46	88.48	ND<1.0	ND<1.0	ND<1.0	ND<3.0	7.4	ND<1.0	ND<2.0
	05/15/2006	98.94	21.19	77.75	ND<1.0	ND<1.0	ND<1.0	ND<3.0	2.2	ND<1.0	ND<2.0
	08/18/2006	98.94	21.72	77.22	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	11/15/2006	98.94	11.25	87.69	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	03/30/2007	98.94	10.11	88.83	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	05/17/2007	98.94	10.75	88.19	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	08/02/2007	98.94	23.45	75.49	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/04/2007	98.94	24.61	74.33	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	01/28/2008	98.94	14.36	84.58	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/07/2008	98.94	10.75	88.19	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/01/2008	98.94	15.57	83.37	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/08/2008	98.94	24.59	74.35	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	02/03/2009	98.94	14.42	84.52	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/06/2009	98.94	19.55	79.39	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/08/2009	98.94	11.00	87.94	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4

TABLE 2
HISTORICAL GROUNDWATER MONITORING DATA SUMMARY

SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PA

Monitoring Well	Date	Top of Casing (ft)	Depth to Water (ft)	GW Elevation (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Isopropyl Benzene (µg/L)	Naphthalene (µg/L)
MSCs for Used, Non-Res. Aquifer					5	1,000	700	10,000	20	2,300	100
MW-5	12/09/2004	99.55	12.52	87.03	ND<1	ND<1	ND<1	ND<1	5	ND<5	ND<5
	01/13/2005	99.55	11.77	87.78	ND<1	ND<1	ND<1	ND<1	14	ND<5	ND<5
	04/20/2005	99.55	10.55	89.00	ND<1.0	ND<1.0	ND<1.0	ND<3.0	5.0	ND<1.0	ND<2.0
	07/15/2005	99.55	16.22	83.33	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	09/07/2005	99.55	26.92	72.63	ND<1.0	ND<1.0	ND<1.0	ND<3.0	1.9	ND<1.0	ND<2.0
	09/20/2005	99.55	30.02	69.53	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	10/28/2005	99.55	14.32	85.23	ND<1.0	ND<1.0	ND<1.0	4.1	**648**	ND<1.0	ND<2.0
	02/10/2006	99.55	11.38	88.17	ND<1.0	ND<1.0	ND<1.0	ND<3.0	**34.0**	ND<1.0	ND<2.0
	05/15/2006	99.55	22.42	77.13	ND<1.0	ND<1.0	ND<1.0	ND<3.0	2.1	ND<1.0	ND<2.0
	08/18/2006	99.55	23.15	76.40	ND<1.0	ND<1.0	ND<1.0	ND<3.0	1.5	ND<1.0	ND<2.0
	11/15/2006	99.55	11.72	87.83	ND<1.0	ND<1.0	ND<1.0	ND<3.0	1.3	ND<1.0	ND<2.0
	03/30/2007	99.55	10.92	88.63	ND<1	ND<1	ND<1	ND<1	2	ND<2	ND<4
	05/17/2007	99.55	11.35	88.20	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	08/02/2007	99.55	24.65	74.90	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/04/2007	99.55	36.25	63.30	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	01/28/2008	99.55	15.32	84.23	ND<1	ND<1	ND<1	ND<1	1	ND<2	ND<4
	04/07/2008	99.55	11.66	87.89	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/01/2008	99.55	16.33	83.22	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/08/2008	99.55	32.92	66.63	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	02/03/2009	99.55	15.25	84.30	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/06/2009	99.55	19.88	79.67	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/08/2009	99.55	11.72	87.83	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
MW-6	12/09/2004	99.72	12.69	87.03	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5
	01/13/2005	99.72	11.85	87.87	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5
	04/20/2005	99.72	10.70	89.02	ND<1.0	ND<1.0	ND<1.0	ND<3.0	2.0	ND<1.0	ND<2.0
	07/15/2005	99.72	16.39	83.33	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	09/07/2005	99.72	27.10	72.62	NA	NA	NA	NA	NA	NA	NA
	09/20/2005	99.72	29.88	69.84	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	10/28/2005	99.72	14.47	85.25	ND<1.0	ND<1.0	ND<1.0	ND<3.0	13.8	ND<1.0	ND<2.0
	02/10/2006	99.72	11.40	88.32	ND<1.0	ND<1.0	ND<1.0	ND<3.0	2.3	ND<1.0	ND<2.0
	05/15/2006	99.72	21.25	78.47	ND<1.0	ND<1.0	ND<1.0	ND<3.0	8.7	ND<1.0	ND<2.0
	08/18/2006	99.72	22.29	77.43	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	11/15/2006	99.72	12.05	87.67	ND<1.0	ND<1.0	ND<1.0	ND<3.0	1.1	ND<1.0	ND<2.0
	03/30/2007	99.72	11.06	88.66	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	05/17/2007	99.72	11.52	88.20	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	08/02/2007	99.72	23.45	76.27	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/04/2007	99.72	36.06	63.66	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	01/28/2008	99.72	15.50	84.22	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/07/2008	99.72	11.68	88.04	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/01/2008	99.72	16.45	83.27	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/08/2008	99.72	32.57	67.15	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	02/03/2009	99.72	15.54	84.18	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/06/2009	99.72	19.85	79.87	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/08/2009	99.72	11.93	87.79	ND<1	ND<1	ND<1	2	ND<1	ND<2	ND<4

TABLE 2
HISTORICAL GROUNDWATER MONITORING DATA SUMMARY

SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PA

Monitoring Well	Date	Top of Casing (ft)	Depth to Water (ft)	GW Elevation (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Isopropyl Benzene (µg/L)	Naphthalene (µg/L)
MSCs for Used, Non-Res. Aquifer					5	1,000	700	10,000	20	2,300	100
MW-7	12/09/2004	99.20	15.39	83.81	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5
	01/13/2005	99.20	14.63	84.57	ND<1	ND<1	ND<1	ND<1	ND<5	ND<5	ND<5
	04/20/2005	99.20	14.48	84.72	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	07/15/2005	99.20	20.15	79.05	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	09/07/2005	99.20	29.81	69.39	NA	NA	NA	NA	NA	NA	NA
	09/20/2005	99.20	32.85	66.35	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	10/28/2005	99.20	18.81	80.39	ND<1.0	1.7	ND<1.0	ND<3.0	**60.8**	ND<1.0	ND<2.0
	02/10/2006	99.20	15.83	83.37	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	05/15/2006	99.20	25.99	73.21	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	08/18/2006	99.20	27.13	72.07	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	11/15/2006	99.20	15.85	83.35	ND<1.0	ND<1.0	ND<1.0	ND<3.0	ND<1.0	ND<1.0	ND<2.0
	03/30/2007	99.20	14.20	85.00	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	05/17/2007	99.20	16.23	82.97	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	08/02/2007	99.20	28.54	70.66	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/04/2007	99.20	38.36	60.84	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	01/28/2008	99.20	19.96	79.24	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/07/2008	99.20	16.03	83.17	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/01/2008	99.20	20.64	78.56	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/08/2008	99.20	36.20	63.00	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	02/03/2009	99.20	19.40	79.80	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/06/2009	99.20	23.41	75.79	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/08/2009	99.20	15.99	83.21	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
MW-8	03/30/2007	97.78	11.25	86.53	ND<1	ND<1	ND<1	ND<1	17	ND<2	ND<4
	05/17/2007	97.78	13.18	84.60	ND<1	ND<1	ND<1	ND<1	14	ND<2	ND<4
	08/02/2007	97.78	26.55	71.23	ND<1	ND<1	ND<1	ND<1	11	ND<2	ND<4
	10/04/2007	97.78	36.96	60.82	ND<1	ND<1	ND<1	ND<1	5	ND<2	ND<4
	01/28/2008	97.78	17.20	80.58	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/07/2008	97.78	13.62	84.16	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/01/2008	97.78	18.54	79.24	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/08/2008	97.78	34.12	63.66	ND<1	ND<1	ND<1	ND<1	4	ND<2	ND<4
	02/03/2009	97.78	18.11	79.67	ND<1	ND<1	ND<1	ND<1	5	ND<2	ND<4
	04/06/2009	97.78	21.84	75.94	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/08/2009	97.78	14.55	83.23	ND<1	ND<1	ND<1	ND<1	1	ND<2	ND<4

TABLE 2
HISTORICAL GROUNDWATER MONITORING DATA SUMMARY

SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PA

Monitoring Well	Date	Top of Casing (ft)	Depth to Water (ft)	GW Elevation (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Isopropyl Benzene (µg/L)	Naphthalene (µg/L)
MSCs for Used, Non-Res. Aquifer					5	1,000	700	10,000	20	2,300	100
MW-9	03/30/2007	98.68	11.45	87.23	ND<1	ND<1	ND<1	ND<1	7	ND<2	ND<4
	05/17/2007	98.68	13.80	84.88	ND<1	ND<1	ND<1	ND<1	6	ND<2	ND<4
	08/02/2007	98.68	27.02	71.66	ND<1	ND<1	ND<1	ND<1	2	ND<2	ND<4
	10/04/2007	98.68	37.70	60.98	ND<1	ND<1	ND<1	ND<1	5	ND<2	ND<4
	01/28/2008	98.68	18.56	80.12	ND<1	ND<1	ND<1	ND<1	3	ND<2	ND<4
	04/07/2008	98.68	14.48	84.20	ND<1	ND<1	ND<1	ND<1	4	ND<2	ND<4
	07/01/2008	98.68	19.51	79.17	ND<1	ND<1	ND<1	ND<1	3	ND<2	ND<4
	10/08/2008	98.68	35.29	63.39	ND<1	ND<1	ND<1	ND<1	1	ND<2	ND<4
	02/03/2009	98.68	18.71	79.97	ND<1	ND<1	ND<1	ND<1	2	ND<2	ND<4
	04/06/2009	98.68	22.87	75.81	ND<1	ND<1	ND<1	ND<1	2	ND<2	ND<4
	07/08/2009	98.68	15.27	83.41	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
MW-10	03/30/2007	98.44	10.64	87.80	ND<1	ND<1	ND<1	ND<1	2	ND<2	ND<4
	05/17/2007	98.44	11.09	87.35	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	08/02/2007	98.44	24.60	73.84	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/04/2007	98.44	36.03	62.41	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	01/28/2008	98.44	15.06	83.38	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/07/2008	98.44	11.22	87.22	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/01/2008	98.44	16.10	82.34	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	10/08/2008	98.44	33.22	65.22	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	02/03/2009	98.44	15.98	82.46	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	04/06/2009	98.44	19.67	78.77	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4
	07/08/2009	98.44	11.49	86.95	ND<1	ND<1	ND<1	ND<1	ND<1	ND<2	ND<4

=AVERAGE(D3:D304)

<# = Less than the method detection limit of #
µg/L = Micrograms/liter
DRY = No water for sampling
MTBE = Methyl tertiary butyl ether
NA = Not Available or not analyzed for that specific compound
ND = Not detected (# is method detection limit)
NS = Not Sampled

TABLE 3

CALCULATION OF SITE-SPECIFIC STANDARD FOR BENZENE

SUNOCO STATION #0003-7101
315 South Main Street
Manheim, Pennsylvania

Test Statistic:	Benzene Concentration (µg/L)	Date Detected
MW-2 Data	**7**	08/02/2007
	8	01/28/2008
	2	04/07/2008
	ND<1	07/01/2008
	15	10/31/2008
	2	02/03/2009
	5	04/06/2009
	ND<1	07/08/2009
Number of Samples	6	
Mean	7	
Standard Deviation	5	
Student-t	3	
95% UCL	12	

Footnotes:
µg/L = micrograms per liter
UCL = upper confidence limit

APPENDIX A

PADEP Correspondence

Krista Snyder

From: Mapleton, Lauren [lmapleton@state.pa.us]
Sent: Monday, June 14, 2010 1:42 PM
To: Krista Snyder
Subject: Sun at 610 York Road, RACR addendum

Krista,

I went over your buffer model and I have two concerns. The recharge rate has to do more with what will infiltrate from the surface than hydraulic conductivity. Infiltration from rainfall should be used to come up with a value for recharge rate. Second, is the water filled porosity of soil value. Since we are looking at water infiltration from the surface, you should consider the porosity of unconsolidated layers also and not just competent bedrock.

I want to talk to Walter who's out until Wednesday and then lets discuss and come to some compromise on values.

Lauren

Lauren T. Mapleton | Geologic Specialist Department of Environmental Protection Southeast Regional Office
2 East Main Street | Norristown, PA 19401
Phone: 484.250.5783 | Fax: 484.250.5961
www.depweb.state.pa.us

APPENDIX B

USGS Data Sheet

USGS science for a changing world

Pennsylvania Water Science Center

Estimates of Mean-Monthly & Annual Ground-Water Recharge

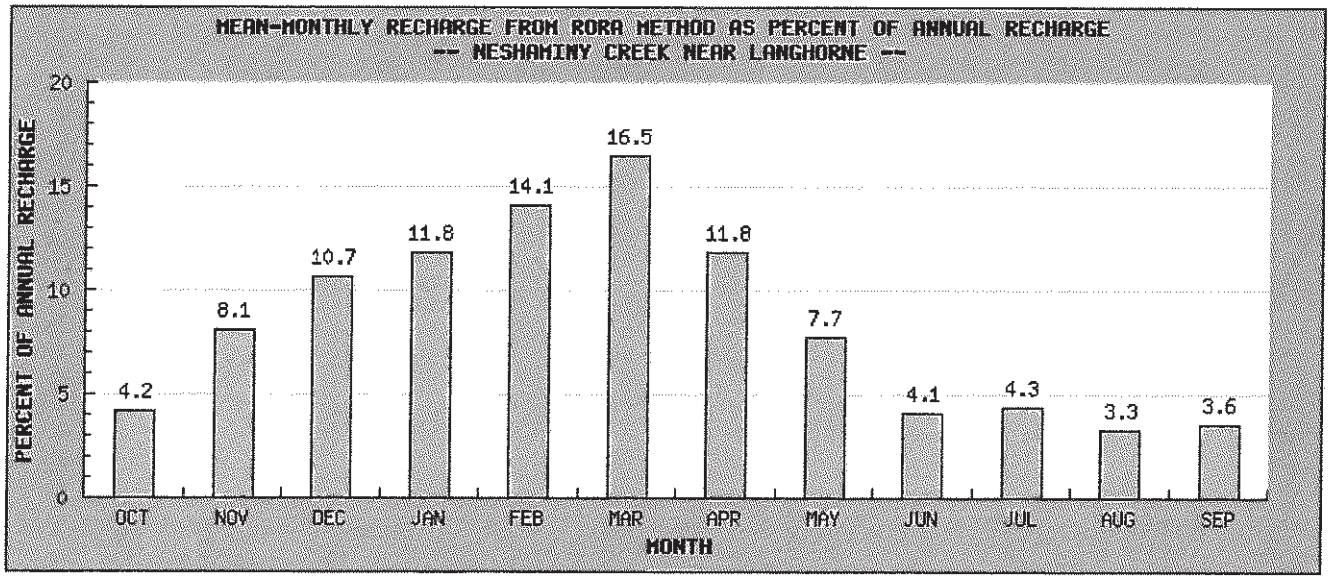
Neshaminy Creek near Langhorne: 01465500

Available Options							
Graphs	Data Tables	Detailed Station Information	Land Use Map	Geology Map	Back to county map	Back to state map	Main Page

Mean-Annual Recharge Estimates for Period of Record, in inches	
From Recession Curve Displacement (RORA) Method	11.5
From Hydrograph Separation of Baseflow (PART) Method	9.5

Basin Characteristics	
Drainage Area (square miles)	210
Period of Record Used for Estimating Recharge (calendar year)	1935-2001
Land Cover (show map) (Forest/Agriculture/Developed/Other) as % of Area	31.9/37.5/28.7/1.8
Rock Types (show map) (Sandstone and Shale/Carbonate/Crystalline/Unconsolidated Sediments) as % of Area	95.6/1.8/2.6/0

Graphs



APPENDIX C

BUFFER1 Spreadsheet Output

SOIL CONTAMINANT MIGRATION
EQUILIBRIUM PARTITIONING

Recharge rate in cm/year	29.2100
Soil bulk density in g/cc	1.58
Water-filled porosity of soil	0.40
Apparent partition coefficient Kapp (ml/g)	3.80
Depth increment in feet	1.00

Time increment in months 5.01

Soil depth increment	Csoil initial mg/kg	Time Increment —1—				Time Increment —2—				Time Increment —3—				Time Increment —4—				Time Increment —5—				Time Increment —6—			
			Caqueous mg/l	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg
1	0.00	2E-01	2E-01	7E-01	5E-01	2E-01	2E-01	6E-01	5E-01	1E-01	1E-01	6E-01	6E-01	1E-01	1E-01	5E-01	5E-01	1E-01	1E-01	5E-01	5E-01	1E-01	1E-01	4E-01	4E-01
2	0.00	0E+00	0E+00	0E+00	6E-02	1E-02	1E-02	5E-02	9E-02	2E-02	2E-02	9E-02	1E-01	3E-02	3E-02	1E-01	2E-01	4E-02	4E-02	1E-01	2E-01	5E-02	5E-02	2E-01	2E-01
3	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	4E-03	9E-04	9E-04	3E-03	1E-02	2E-03	2E-03	9E-03	2E-02	5E-03	5E-03	2E-02	3E-02	7E-03	7E-03	3E-02	4E-02
4	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	3E-04	6E-05	2E-04	1E-03	2E-04	2E-04	9E-04	2E-03	5E-04	5E-04	2E-03	4E-03
5	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	2E-05	5E-06	5E-06	2E-05	8E-05	2E-05	2E-05	8E-05	2E-04
6	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	1E-06	3E-07	3E-07	1E-06	8E-06
7	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	1E-07
8	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
9	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
10	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
11	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
12	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
13	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
14	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
15	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
16	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
17	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
18	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
19	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
20	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
21	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
22	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
23	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
24	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
25	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
26	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
27	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
28	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
29	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
30	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
31	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
32	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
33	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
34	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
35	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
36	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
37	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
38	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
39	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
40	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
41	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
42	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
43	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
44	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
45	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
46	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
47	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
48	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
49	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
50	0.00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00

	Time Increment —7—				Time Increment —8—				Time Increment —9—				Time Increment —10—				Time Increment —11—				Time Increment —12—				Time Increment —13—				Time Increment —14—		
	Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg
1E-01	1E-01	4E-01	4E-01	1E-01	1E-01	4E-01	4E-01	9E-02	9E-02	4E-01	4E-01	9E-02	9E-02	3E-01	3E-01	8E-02	8E-02	3E-01	3E-01	8E-02	8E-02	3E-01	3E-01	7E-02	7E-02	3E-01	3E-01	6E-02	6E-02	2E-01	2E-01
5E-02	5E-02	2E-01	2E-01	6E-02	6E-02	2E-01	2E-01	6E-02	6E-02	2E-01	2E-01	6E-02	6E-02	2E-01	3E-01	6E-02	6E-02	2E-01	3E-01	6E-02	6E-02	2E-01	3E-01	6E-02	6E-02	2E-01	3E-01	7E-02	7E-02	2E-01	3E-01
1E-02	1E-02	4E-02	5E-02	1E-02	1E-02	5E-02	8E-02	2E-02	2E-02	6E-02	8E-02	2E-02	2E-02	7E-02	9E-02	2E-02	2E-02	6E-02	1E-01	2E-02	2E-02	9E-02	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01
1E-03	1E-03	4E-03	7E-03	2E-03	2E-03	6E-03	1E-02	2E-03	2E-03	9E-03	1E-02	3E-03	3E-03	1E-02	2E-02	5E-03	5E-03	2E-02	2E-02	8E-03	8E-03	3E-02	3E-02	7E-03	7E-03	3E-02	4E-02	9E-03	9E-03	3E-02	4E-02
6E-05	6E-05	2E-04	5E-04	1E-04	1E-04	5E-04	1E-03	2E-04	2E-04	9E-04	2E-03	4E-04	4E-04	2E-03	3E-03	8E-04	8E-04	2E-03	4E-03	9E-04	9E-04	3E-03	5E-03	1E-03	1E-03	5E-03	7E-03	2E-03	2E-03	8E-03	9E-03
2E-06	2E-06	7E-06	2E-05	6E-06	6E-06	2E-05	6E-05	1E-05	1E-05	6E-05	1E-04	3E-05	3E-05	1E-04	2E-04	6E-05	6E-05	2E-04	4E-04	1E-04	1E-04	4E-04	6E-04	2E-04	2E-04	6E-04	1E-03	2E-04	2E-04	8E-04	1E-03
2E-08	2E-08	9E-08	6E-07	2E-07	2E-07	6E-07	2E-06	6E-07	6E-07	2E-06	7E-06	2E-06	2E-06	6E-06	2E-05	4E-06	4E-06	1E-05	3E-05	8E-06	8E-06	3E-05	6E-05	1E-05	1E-05	5E-05	1E-04	2E-05	2E-05	9E-05	2E-04
0E+00	0E+00	0E+00	7E-09	2E-09	2E-09	7E-09	5E-08	1E-08	1E-08	5E-08	2E-07	5E-08	5E-08	2E-07	7E-07	2E-07	2E-07	6E-07	2E-06	4E-07	4E-07	2E-06	4E-06	9E-07	9E-07	4E-06	8E-06	2E-06	2E-06	7E-06	1E-05
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	5E-10	1E-10	1E-10	5E-10	4E-09	1E-09	1E-09	4E-09	2E-08	5E-09	5E-09	2E-08	7E-08	2E-08	2E-08	6E-08	2E-07	5E-08	5E-08	2E-07	4E-07	1E-07	1E-07	4E-07	1E-06
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	4E-11	9E-12	9E-12	3E-11	3E-10	8E-11	8E-11	3E-10	2E-09	4E-10	4E-10	2E-09	6E-09	2E-09	2E-09	2E-09	8E-09	2E-08	5E-09	5E-09	2E-08	5E-08
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	3E-12	8E-13	6E-13	2E-12	3E-11	7E-12	7E-12	2E-11	1E-10	4E-11	4E-11	1E-10	6E-10	1E-10	1E-10	6E-10	2E-09
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	2E-13	5E-14	5E-14	2E-13	2E-12	5E-13	5E-13	2E-12	1E-11	3E-12	3E-12	1E-11	5E-11
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	1E-14	3E-15	3E-15	1E-14	2E-13	4E-14	4E-14	2E-13	1E-12
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	1E-15	2E-16	2E-16	9E-16	1E-14
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	7E-17
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00

Time Increment —15—				Time Increment —16—				Time Increment —17—				Time Increment —18—				Time Increment —19—				Time Increment —20—				Time Increment —21—				Time Increment —22—			
	Csqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg
6E-02	6E-02	2E-01	2E-01	6E-02	6E-02	2E-01	2E-01	5E-02	5E-02	2E-01	2E-01	5E-02	5E-02	2E-01	2E-01	4E-02	4E-02	2E-01	2E-01	4E-02	4E-02	2E-01	2E-01	4E-02	4E-02	1E-01	1E-01	4E-02	4E-02	1E-01	1E-01
7E-02	7E-02	2E-01	3E-01	6E-02	6E-02	2E-01	3E-01	6E-02	6E-02	2E-01	3E-01	6E-02	6E-02	2E-01	3E-01	6E-02	6E-02	2E-01	2E-01	6E-02	6E-02	2E-01	2E-01	6E-02	6E-02	2E-01	2E-01	6E-02	6E-02	2E-01	2E-01
3E-02	3E-02	1E-01	1E-01	4E-02	4E-02	1E-01	2E-01	4E-02	4E-02	1E-01	2E-01	4E-02	4E-02	1E-01	2E-01	4E-02	4E-02	2E-01	2E-01	4E-02	4E-02	2E-01	2E-01	4E-02	4E-02	2E-01	2E-01	5E-02	5E-02	2E-01	2E-01
1E-02	1E-02	4E-02	5E-02	1E-02	1E-02	5E-02	6E-02	1E-02	1E-02	5E-02	6E-02	2E-02	2E-02	6E-02	7E-02	2E-02	2E-02	6E-02	8E-02	2E-02	2E-02	7E-02	8E-02	2E-02	2E-02	8E-02	9E-02	2E-02	2E-02	8E-02	1E-01
2E-03	2E-03	8E-03	1E-02	3E-03	3E-03	1E-02	1E-02	3E-03	3E-03	1E-02	2E-02	4E-03	4E-03	2E-02	2E-02	5E-03	5E-03	2E-02	3E-02	6E-03	6E-03	2E-02	3E-02	7E-03	7E-03	3E-02	3E-02	8E-03	8E-03	3E-02	4E-02
3E-04	3E-04	1E-03	2E-03	5E-04	5E-04	2E-03	3E-03	6E-04	6E-04	2E-03	3E-03	8E-04	8E-04	3E-03	4E-03	1E-03	1E-03	4E-03	5E-03	1E-03	1E-03	5E-03	7E-03	2E-03	2E-03	6E-03	8E-03	2E-03	2E-03	8E-03	1E-02
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3E-06	3E-06	1E-05	2E-05	6E-06	6E-06	2E-05	4E-05	1E-05	1E-05	4E-05	6E-05	2E-05	2E-05	6E-05	1E-04	2E-05	2E-05	9E-05	1E-04	4E-05	4E-05	1E-04	2E-04	5E-05	5E-05	2E-04	3E-04	7E-05	7E-05	3E-04	4E-04
2E-07	2E-07	9E-07	2E-06	5E-07	5E-07	2E-06	4E-06	9E-07	9E-07	3E-06	6E-06	2E-06	2E-06	6E-06	1E-05	3E-06	3E-06	1E-05	2E-05	4E-06	4E-06	2E-05	3E-05	6E-06	6E-06	2E-05	4E-05	1E-05	1E-05	4E-05	6E-05
1E-08	1E-08	5E-08	1E-07	3E-08	3E-08	1E-07	2E-07	6E-08	6E-08	2E-07	5E-07	1E-07	1E-07	5E-07	9E-07	2E-07	2E-07	8E-07	2E-06	4E-07	4E-07	1E-06	3E-06	7E-07	7E-07	2E-06	4E-06	1E-06	1E-06	4E-06	7E-06
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3E-15	3E-15	1E-14	9E-14	2E-14	2E-14	8E-14	4E-13	1E-13	1E-13	4E-13	2E-12	4E-13	4E-13	2E-12	6E-12	1E-12	1E-12	5E-12	2E-11	4E-12	4E-12	2E-11	4E-11	1E-11	1E-11	4E-11	1E-10	3E-11	3E-11	1E-10	2E-10
2E-17	2E-17	7E-17	1E-15	2E-16	2E-16	9E-16	7E-15	2E-15	2E-15	7E-15	4E-14	9E-15	9E-15	4E-14	2E-13	4E-14	4E-14	1E-13	6E-13	1E-13	1E-13	5E-13	2E-12	4E-13	4E-13	2E-12	5E-12	1E-12	1E-12	4E-12	1E-11
0E+00	0E+00	0E+00	5E-18	1E-18	1E-18	5E-18	7E-17	2E-17	2E-17	7E-17	6E-16	1E-16	1E-16	5E-16	3E-15	8E-16	8E-16	3E-15	1E-14	4E-15	4E-15	1E-14	5E-14	1E-14	1E-14	5E-14	2E-13	4E-14	4E-14	2E-13	5E-13
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	4E-19	9E-20	9E-20	3E-19	6E-19	1E-18	1E-18	5E-18	5E-17	1E-17	1E-17	4E-17	3E-16	7E-17	7E-17	3E-16	1E-15	3E-16	3E-16	1E-15	5E-15	1E-15	1E-15	5E-15	2E-14
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	3E-20	6E-21	6E-21	6E-21	2E-20	4E-19	1E-19	1E-19	4E-19	4E-18	9E-19	9E-19	4E-18	2E-17	6E-18	6E-18	2E-17	1E-16	3E-17	3E-17	1E-16	5E-16
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	2E-21	5E-22	5E-22	2E-21	3E-20	8E-21	8E-21	3E-20	3E-19	8E-20	8E-20	3E-19	2E-18	5E-19	5E-19	2E-18	1E-17
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	1E-22	3E-23	3E-23	1E-22	3E-21	6E-22	6E-22	2E-21	2E-20	6E-21	6E-21	2E-20	2E-19
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	1E-23	2E-24	2E-24	9E-24	2E-22	5E-23	5E-23	2E-22	2E-21
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	7E-25	2E-25	2E-25	7E-25	1E-23
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	5E-26
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00

	Time Increment —23—				Time Increment —24—				Time Increment —25—				Time Increment —26—				Time Increment —27—				Time Increment —28—				Time Increment —29—				Time Increment —30—		
	Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg
3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	2E-02	2E-02	9E-02	9E-02	2E-02	2E-02	9E-02	9E-02	2E-02	2E-02	8E-02	8E-02	2E-02	2E-02	7E-02	7E-02
8E-02	8E-02	2E-01	2E-01	5E-02	5E-02	2E-01	2E-01	5E-02	5E-02	2E-01	2E-01	5E-02	5E-02	2E-01	2E-01	5E-02	5E-02	2E-01	2E-01	5E-02	5E-02	2E-01	2E-01	5E-02	5E-02	2E-01	2E-01	4E-02	4E-02	2E-01	2E-01
5E-02	5E-02	2E-01	2E-01	5E-02	5E-02	2E-01	2E-01	5E-02	5E-02	2E-01	2E-01	5E-02	5E-02	2E-01	2E-01	5E-02	5E-02	2E-01	2E-01	5E-02	5E-02	2E-01	2E-01	5E-02	5E-02	2E-01	2E-01	5E-02	5E-02	2E-01	2E-01
2E-02	2E-02	9E-02	1E-01	2E-02	2E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01
9E-03	9E-03	3E-02	4E-02	1E-02	1E-02	4E-02	4E-02	1E-02	1E-02	4E-02	5E-02	1E-02	1E-02	5E-02	5E-02	1E-02	1E-02	5E-02	6E-02	1E-02	1E-02	5E-02	6E-02	2E-02	2E-02	6E-02	7E-02	2E-02	2E-02	8E-02	7E-02
2E-03	2E-03	9E-03	1E-02	3E-03	3E-03	1E-02	1E-02	3E-03	3E-03	1E-02	2E-02	4E-03	4E-03	1E-02	2E-02	5E-03	5E-03	2E-02	2E-02	5E-03	5E-03	2E-02	2E-02	6E-03	6E-03	2E-02	3E-02	7E-03	7E-03	2E-02	3E-02
5E-04	5E-04	2E-03	3E-03	7E-04	7E-04	3E-03	3E-03	8E-04	8E-04	3E-03	4E-03	1E-03	1E-03	4E-03	5E-03	1E-03	1E-03	5E-03	8E-03	1E-03	1E-03	6E-03	7E-03	2E-03	2E-03	7E-03	8E-03	2E-03	2E-03	7E-03	1E-02
1E-04	1E-04	4E-04	5E-04	1E-04	1E-04	5E-04	7E-04	2E-04	2E-04	6E-04	9E-04	2E-04	2E-04	6E-04	1E-03	3E-04	3E-04	1E-03	1E-03	3E-04	3E-04	1E-03	2E-03	4E-04	4E-04	2E-03	3E-03	5E-04	5E-04	2E-03	3E-03
1E-05	1E-05	5E-05	8E-05	2E-05	2E-05	7E-05	1E-04	3E-05	3E-05	1E-04	2E-04	4E-05	4E-05	1E-04	2E-04	5E-05	5E-05	2E-04	3E-04	7E-05	7E-05	3E-04	4E-04	9E-05	9E-05	3E-04	5E-04	1E-04	1E-04	4E-04	6E-04
2E-06	2E-06	6E-06	1E-05	3E-06	3E-06	1E-05	2E-05	4E-06	4E-06	1E-05	2E-05	5E-06	5E-06	2E-05	3E-05	6E-06	6E-06	3E-05	4E-05	1E-05	1E-05	4E-05	6E-05	1E-05	1E-05	6E-05	8E-05	2E-05	2E-05	8E-06	1E-04
2E-07	2E-07	6E-07	1E-06	3E-07	3E-07	1E-06	2E-06	4E-07	4E-07	2E-06	3E-06	7E-07	7E-07	3E-06	4E-06	1E-06	1E-06	4E-06	6E-06	2E-06	2E-06	6E-06	9E-06	2E-06	2E-06	8E-06	1E-05	3E-06	3E-06	1E-05	2E-05
1E-08	1E-08	5E-08	1E-07	3E-08	3E-08	1E-07	2E-07	4E-08	4E-08	2E-07	3E-07	7E-08	7E-08	3E-07	5E-07	1E-07	1E-07	4E-07	7E-07	1E-08	1E-08	3E-07	2E-07	7E-07	1E-08	3E-07	3E-07	1E-06	2E-06	4E-07	4E-07	2E-06	2E-06
1E-09	1E-09	4E-09	6E-09	2E-09	2E-09	7E-09	1E-08	4E-09	4E-09	1E-08	3E-08	7E-09	7E-09	2E-08	5E-08	1E-08	1E-08	4E-08	8E-08	2E-08	2E-08	7E-08	1E-07	3E-08	3E-08	1E-07	2E-07	5E-08	5E-08	2E-07	3E-07
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3E-12	3E-12	1E-11	3E-11	7E-12	7E-12	3E-11	7E-11	2E-11	2E-11	8E-11	1E-10	3E-11	3E-11	1E-10	3E-10	7E-11	7E-11	3E-10	5E-10	1E-10	1E-10	5E-10	1E-09	2E-10	2E-10	9E-10	2E-09	4E-10	4E-10	2E-09	3E-09
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2E-18	2E-18	9E-18	4E-17	1E-17	1E-17	4E-17	2E-16	4E-17	4E-17	2E-16	5E-16	1E-16	1E-16	5E-16	2E-15	4E-16	4E-16	2E-15	5E-15	1E-15	1E-15	4E-15	1E-14	3E-15	3E-15	1E-14	3E-14	7E-15	7E-15	3E-14	7E-14
4E-20	4E-20	2E-19	9E-19	2E-19	2E-19	8E-19	4E-18	1E-18	1E-18	4E-18	2E-17	4E-18	4E-18	1E-17	5E-17	1E-17	1E-17	5E-17	2E-16	4E-17	4E-17	2E-16	5E-16	1E-16	1E-16	4E-16	1E-15	3E-16	3E-16	1E-15	3E-15
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0E+00	0E+00	0E+00	4E-27	8E-26	9E-26	3E-27	8E-26	2E-26	2E-26	8E-26	9E-25	2E-25	2E-25	9E-25	8E-24	2E-24	2E-24	7E-24	5E-23	1E-23	1E-23	4E-23	2E-22	6E-23	6E-23	2E-22	1E-21	3E-22	3E-22	1E-21	4E-21
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	3E-28	8E-29	8E-29	2E-28	6E-27	1E-27	1E-27	6E-27	7E-26	2E-26	2E-26	7E-26	6E-25	1E-25	1E-25	6E-25	4E-24	1E-24	1E-24	4E-24	2E-23	5E-24	5E-24	2E-23	1E-22
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	2E-29	5E-30	5E-30	2E-29	5E-28	1E-28	1E-28	4E-28	6E-27	1E-27	1E-27	5E-27	5E-26	1E-26	1E-26	5E-26	3E-25	8E-26	8E-26	3E-25	2E-24
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00

	Time Increment —31—				Time Increment —32—				Time Increment —33—				Time Increment —34—				Time Increment —35—				Time Increment —36—				Time Increment —37—				Time Increment —38—		
	Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg
2E-02	2E-02	7E-02	7E-02	2E-02	2E-02	6E-02	6E-02	2E-02	2E-02	6E-02	6E-02	1E-02	1E-02	6E-02	6E-02	1E-02	1E-02	5E-02	5E-02	1E-02	1E-02	5E-02	5E-02	1E-02	1E-02	4E-02	4E-02	1E-02	1E-02	4E-02	4E-02
4E-02	4E-02	2E-01	2E-01	4E-02	4E-02	2E-01	2E-01	4E-02	4E-02	1E-01	1E-01	4E-02	4E-02	1E-01	1E-01	4E-02	4E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01
5E-02	5E-02	2E-01	2E-01	5E-02	5E-02	2E-01	2E-01	5E-02	5E-02	2E-01	2E-01	5E-02	5E-02	2E-01	2E-01	5E-02	5E-02	2E-01	2E-01	4E-02	4E-02	2E-01	2E-01	4E-02	4E-02	1E-01	2E-01	4E-02	4E-02	2E-01	2E-01
3E-02	3E-02	1E-01	1E-01	4E-02	4E-02	1E-01	1E-01	4E-02	4E-02	1E-01	2E-01	4E-02	4E-02	1E-01	2E-01	4E-02	4E-02	1E-01	2E-01	4E-02	4E-02	1E-01	2E-01	4E-02	4E-02	1E-01	2E-01	4E-02	4E-02	1E-01	2E-01
2E-02	2E-02	7E-02	8E-02	2E-02	2E-02	7E-02	8E-02	2E-02	2E-02	8E-02	9E-02	2E-02	2E-02	8E-02	9E-02	2E-02	2E-02	9E-02	1E-01	2E-02	2E-02	9E-02	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01
7E-03	7E-03	3E-02	3E-02	6E-03	6E-03	3E-02	4E-02	8E-03	8E-03	3E-02	4E-02	1E-02	1E-02	4E-02	4E-02	1E-02	1E-02	4E-02	5E-02	1E-02	1E-02	4E-02	5E-02	1E-02	1E-02	5E-02	5E-02	1E-02	1E-02	5E-02	6E-02
2E-03	2E-03	9E-03	1E-02	3E-03	3E-03	1E-02	1E-02	3E-03	3E-03	1E-02	1E-02	4E-03	4E-03	1E-02	2E-02	4E-03	4E-03	2E-02	2E-02	5E-03	5E-03	2E-02	2E-02	5E-03	5E-03	2E-02	2E-02	5E-03	5E-03	2E-02	2E-02
6E-04	6E-04	2E-03	3E-03	7E-04	7E-04	3E-03	4E-03	9E-04	9E-04	3E-03	4E-03	1E-03	1E-03	4E-03	5E-03	1E-03	1E-03	5E-03	7E-03	2E-03	2E-03	8E-03	8E-03	2E-03	2E-03	8E-03	9E-03	2E-03	2E-03	7E-03	9E-03
1E-04	1E-04	5E-04	7E-04	2E-04	2E-04	7E-04	9E-04	2E-04	2E-04	8E-04	1E-03	3E-04	3E-04	1E-03	1E-03	3E-04	3E-04	1E-03	2E-03	4E-04	4E-04	1E-03	2E-03	5E-04	5E-04	2E-03	2E-03	5E-04	5E-04	2E-03	3E-03
3E-05	3E-05	1E-04	1E-04	3E-05	3E-05	1E-04	2E-04	4E-05	4E-05	2E-04	2E-04	6E-05	6E-05	2E-04	3E-04	7E-05	7E-05	3E-04	4E-04	9E-05	9E-05	3E-04	5E-04	1E-04	1E-04	4E-04	6E-04	1E-04	1E-04	5E-04	7E-04
4E-06	4E-06	2E-05	2E-05	8E-06	6E-06	2E-05	3E-05	8E-06	8E-06	3E-05	4E-05	1E-05	1E-05	4E-05	6E-05	1E-05	1E-05	5E-05	7E-05	2E-05	2E-05	7E-05	1E-04	2E-05	2E-05	8E-06	1E-04	3E-05	3E-05	1E-04	2E-04
6E-07	6E-07	2E-06	4E-06	9E-07	9E-07	3E-06	5E-06	1E-06	1E-06	5E-06	7E-06	2E-06	2E-06	7E-06	1E-05	2E-06	2E-06	9E-06	1E-05	3E-06	3E-06	1E-05	2E-05	4E-06	4E-06	2E-05	2E-05	6E-06	6E-06	2E-05	3E-05
7E-08	7E-08	3E-07	5E-07	1E-07	1E-07	4E-07	7E-07	2E-07	2E-07	6E-07	1E-06	2E-07	2E-07	9E-07	1E-06	4E-07	4E-07	1E-06	2E-06	5E-07	5E-07	2E-06	3E-06	7E-07	7E-07	3E-06	4E-06	9E-07	9E-07	4E-06	5E-06
8E-09	8E-09	3E-08	5E-08	1E-08	1E-08	5E-08	8E-08	2E-08	2E-08	8E-08	1E-07	3E-08	3E-08	1E-07	2E-07	5E-08	5E-08	2E-07	3E-07	7E-08	7E-08	3E-07	4E-07	1E-07	1E-07	4E-07	6E-07	1E-07	1E-07	5E-07	6E-07
8E-10	8E-10	3E-09	5E-09	1E-09	1E-09	5E-09	9E-09	2E-09	2E-09	8E-09	1E-08	3E-09	3E-09	1E-08	2E-08	5E-09	5E-09	2E-08	3E-08	8E-09	8E-09	3E-08	5E-08	1E-08	1E-08	5E-08	8E-08	2E-08	2E-08	7E-08	1E-07
6E-11	6E-11	2E-10	5E-10	1E-10	1E-10	4E-10	8E-10	2E-10	2E-10	7E-10	1E-09	3E-10	3E-10	1E-09	2E-09	6E-10	6E-10	2E-09	4E-09	9E-10	9E-10	3E-09	6E-09	1E-09	1E-09	5E-09	9E-09	2E-09	2E-09	9E-09	1E-08
5E-12	5E-12	2E-11	4E-11	9E-12	9E-12	3E-11	7E-11	2E-11	2E-11	6E-11	1E-10	3E-11	3E-11	1E-10	2E-10	5E-11	5E-11	2E-10	4E-10	9E-11	9E-11	3E-10	6E-10	1E-10	1E-10	6E-10	1E-09	2E-10	2E-10	9E-10	2E-09
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2E-14	2E-14	6E-14	1E-13	4E-14	4E-14	1E-13	3E-13	8E-14	8E-14	3E-13	6E-13	2E-13	2E-13	6E-13	1E-12	3E-13	3E-13	1E-12	2E-12	6E-13	6E-13	2E-12	4E-12	1E-12	1E-12	4E-12	8E-12	2E-12	2E-12	7E-12	1E-11
8E-16	8E-16	3E-15	8E-15	2E-15	2E-15	7E-15	2E-14	4E-15	4E-15	2E-14	4E-14	1E-14	1E-14	4E-14	8E-14	2E-14	2E-14	8E-14	2E-13	4E-14	4E-14	2E-13	3E-13	8E-14	8E-14	3E-13	6E-13	2E-13	2E-13	6E-13	1E-12
3E-17	3E-17	1E-16	4E-16	9E-17	9E-17	3E-16	9E-16	2E-16	2E-16	6E-16	2E-15	5E-16	5E-16	2E-15	5E-15	1E-15	1E-15	4E-15	1E-14	3E-15	3E-15	1E-14	2E-14	5E-15	5E-15	2E-14	4E-14	1E-14	1E-14	4E-14	9E-14
1E-18	1E-18	5E-18	1E-17	4E-18	4E-18	1E-17	4E-17	1E-17	1E-17	4E-17	1E-16	2E-17	2E-17	9E-17	2E-16	6E-17	6E-17	2E-16	6E-16	1E-16	1E-16	5E-16	1E-15	3E-16	3E-16	1E-15	3E-15	7E-15	7E-16	3E-15	6E-15
4E-20	4E-20	2E-19	5E-19	1E-19	1E-19	5E-19	2E-18	4E-19	4E-19	1E-18	4E-18	1E-18	1E-18	4E-18	1E-17	3E-18	3E-18	1E-17	3E-17	7E-18	7E-18	3E-17	7E-17	2E-17	2E-17	6E-17	2E-16	4E-17	4E-17	1E-16	3E-16
1E-21	1E-21	4E-21	2E-20	4E-21	4E-21	1E-20	5E-20	1E-20	1E-20	5E-20	2E-19	4E-20	4E-20	1E-19	5E-19	1E-19	1E-19	4E-19	1E-18	3E-19	3E-19	1E-18	3E-18	6E-19	6E-19	3E-18	8E-18	2E-18	2E-18	7E-18	2E-17
2E-23	2E-23	9E-23	4E-22	1E-22	1E-22	4E-22	2E-21	4E-22	4E-22	1E-21	5E-21	1E-21	1E-21	5E-21	2E-20	4E-21	4E-21	2E-20	5E-20	1E-20	1E-20	4E-20	1E-19	3E-20	3E-20	1E-19	4E-19	9E-20	9E-20	3E-19	9E-19
5E-25	5E-25	2E-24	9E-24	2E-24	2E-24	8E-24	4E-23	9E-24	9E-24	3E-23	1E-22	4E-23	4E-23	1E-22	5E-22	1E-22	1E-22	5E-22	2E-21	4E-22	4E-22	2E-21	5E-21	1E-21	1E-21	5E-21	1E-20	3E-21	3E-21	1E-20	4E-20
7E-27	7E-27	3E-26	2E-25	4E-26	4E-26	1E-25	8E-25	2E-25	2E-25	7E-25	3E-24	8E-25	8E-25	3E-24	1E-23	3E-24	3E-24	1E-23	5E-23	1E-23	1E-23	5E-23	2E-22	4E-23	4E-23	2E-22	5E-22	1E-22	1E-22	5E-22	1E-21
8E-29	8E-29	3E-28	2E-27	6E-28	6E-28	2E-27	1E-26	3E-27	3E-27	1E-26	7E-26	2E-26	2E-26	6E-26	3E-25	8E-26	8E-26	3E-25	1E-24	3E-25	3E-25	1E-24	5E-24	1E-24	1E-24	4E-24	2E-23	4E-24	4E-24	1E-23	5E-23
6E-31	6E-31	2E-30	3E-29	6E-30	6E-30	2E-29	2E-28	5E-29	5E-29	2E-28	1E-27	3E-28	3E-28	1E-27	8E-27	1E-27	1E-27	6E-27	3E-26	7E-27	7E-27	3E-26	1E-25	3E-26	3E-26	1E-25	4E-25	1E-25	1E-25	4E-25	2E-24
3E-33	3E-33	1E-32	2E-31	5E-32	5E-32	2E-31	2E-30	5E-31	5E-31	2E-30	2E-29	4E-30	4E-30	1E-29	1E-28	2E-29	2E-29	9E-29	5E-28	1E-28	1E-28	5E-28	3E-27	6E-28	6E-28	2E-27	1E-26	3E-27	3E-27	1E-26	4E-26
9E-36	8E-36	3E-35	1E-33	3E-34	3E-34	1E-33	2E-32	4E-33	4E-33	1E-32	2E-31	4E-32	4E-32	1E-31	1E-30	3E-31	3E-31	1E-30	6E-30	2E-30	2E-30	6E-30	5E-29	1E-29	1E-29	4E-29	2E-28	5E-29	5E-29	2E-28	1E-27
0E+00	0E+00	0E+00	3E-38	8E-37	6E-37	2E-36	8E-35	2E-35	2E-35	7E-35	1E-33	3E-34	3E-34	1E-33	1E-32	3E-33	3E-33	1E-32	1E-31	2E-32	2E-32	9E-32	7E-31	2E-31	2E-31	6E-31	4E-30	1E-30	1E-30	4E-30	2E-29
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	2E-37	5E-38	5E-38	2E-37	6E-36	1E-36	1E-36	5E-36	9E-35	2E-35	2E-35	8E-35	1E-33	2E-34	2E-34	9E-34	8E-33	2E-33	2E-33	8E-33	6E-32	1E-32	1E-32	5E-32	3E-31
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	1E-38	3E-39	3E-39	1E-38	4E-37	1E-37	1E-37	4E-37	7E-36	2E-36	2E-36	6E-36	8E-35	2E-35	2E-35	7E-35	7E-34	2E-34	2E-34	6E-34	5E-33
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	1E-39	2E-40	2E-40	9E-40	3E-38	8E-39	8E-39	3E-38	5E-37	1E-37	1E-37	5E-37	6E-36	1E-36	1E-36	6E-36	5E-35
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	7E-41	2E-41	2E-41	7E-41	2E-39	6E-40	6E-40	2E-39	4E-38	1E-38	1E-38	4E-38	5E-37
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00

	Time Increment —39—				Time Increment —40—				Time Increment —41—				Time Increment —42—				Time Increment —43—				Time Increment —44—				Time Increment —45—				Time Increment —46—		
	Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg
1E-02	1E-02	4E-02	4E-02	9E-03	9E-03	4E-02	4E-02	9E-03	9E-03	3E-02	3E-02	8E-03	8E-03	3E-02	3E-02	7E-03	7E-03	3E-02	3E-02	7E-03	7E-03	3E-02	3E-02	6E-03	6E-03	2E-02	2E-02	6E-03	6E-03	2E-02	2E-02
3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	2E-02	2E-02	9E-02	8E-02	2E-02	2E-02	9E-02	8E-02	2E-02	2E-02	8E-02	8E-02	2E-02	2E-02	8E-02	8E-02
4E-02	4E-02	2E-01	2E-01	4E-02	4E-02	2E-01	2E-01	4E-02	4E-02	2E-01	2E-01	4E-02	4E-02	2E-01	2E-01	4E-02	4E-02	1E-01	2E-01	4E-02	4E-02	1E-01	1E-01	4E-02	4E-02	1E-01	1E-01	4E-02	4E-02	1E-01	1E-01
4E-02	4E-02	1E-01	2E-01	4E-02	4E-02	2E-01	2E-01	4E-02	4E-02	2E-01	2E-01	4E-02	4E-02	2E-01	2E-01	4E-02	4E-02	2E-01	2E-01	4E-02	4E-02	2E-01	2E-01	4E-02	4E-02	2E-01	2E-01	4E-02	4E-02	1E-01	2E-01
3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01
1E-02	1E-02	5E-02	6E-02	2E-02	2E-02	6E-02	7E-02	2E-02	2E-02	6E-02	7E-02	2E-02	2E-02	6E-02	7E-02	2E-02	2E-02	7E-02	8E-02	2E-02	2E-02	7E-02	8E-02	2E-02	2E-02	7E-02	8E-02	2E-02	2E-02	8E-02	9E-02
6E-03	6E-03	2E-02	3E-02	7E-03	7E-03	3E-02	3E-02	7E-03	7E-03	3E-02	3E-02	6E-03	6E-03	3E-02	3E-02	6E-03	6E-03	3E-02	4E-02	9E-03	9E-03	3E-02	4E-02	1E-02	1E-02	4E-02	4E-02	1E-02	1E-02	4E-02	5E-02
2E-03	2E-03	6E-03	1E-02	2E-03	2E-03	9E-03	1E-02	3E-03	3E-03	1E-02	1E-02	3E-03	3E-03	1E-02	1E-02	3E-03	3E-03	1E-02	2E-02	4E-03	4E-03	1E-02	2E-02	4E-03	4E-03	2E-02	2E-02	5E-03	5E-03	2E-02	2E-02
6E-04	6E-04	2E-03	3E-03	7E-04	7E-04	3E-03	4E-03	9E-04	9E-04	3E-03	4E-03	1E-03	1E-03	4E-03	5E-03	1E-03	1E-03	4E-03	5E-03	1E-03	1E-03	5E-03	6E-03	1E-03	1E-03	6E-03	7E-03	2E-03	2E-03	6E-03	8E-03
2E-04	2E-04	6E-04	8E-04	2E-04	2E-04	8E-04	1E-03	2E-04	2E-04	9E-04	1E-03	3E-04	3E-04	1E-03	1E-03	3E-04	3E-04	1E-03	2E-03	4E-04	4E-04	2E-03	2E-03	5E-04	5E-04	2E-03	2E-03	5E-04	5E-04	2E-03	3E-03
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7E-06	7E-06	3E-05	4E-05	1E-05	1E-05	4E-05	5E-05	1E-05	1E-05	5E-05	6E-05	2E-05	2E-05	6E-05	8E-05	2E-05	2E-05	7E-05	1E-04	2E-05	2E-05	9E-05	1E-04	3E-05	3E-05	1E-04	2E-04	4E-05	4E-05	1E-04	2E-04
1E-06	1E-06	5E-06	7E-06	2E-06	2E-06	7E-06	9E-06	2E-06	2E-06	9E-06	1E-05	3E-06	3E-06	1E-05	2E-05	4E-06	4E-06	1E-05	2E-05	5E-06	5E-06	2E-05	3E-05	8E-06	8E-06	3E-05	4E-05	8E-06	8E-06	3E-05	4E-05
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3E-08	3E-08	1E-07	2E-07	4E-08	4E-08	2E-07	2E-07	8E-08	8E-08	2E-07	3E-07	8E-08	8E-08	3E-07	5E-07	1E-07	1E-07	4E-07	6E-07	2E-07	2E-07	6E-07	9E-07	2E-07	2E-07	8E-07	1E-06	3E-07	3E-07	1E-06	2E-06
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3E-13	3E-13	1E-12	2E-12	5E-13	5E-13	2E-12	4E-12	9E-13	9E-13	3E-12	6E-12	2E-12	2E-12	6E-12	1E-11	3E-12	3E-12	1E-11	2E-11	4E-12	4E-12	2E-11	3E-11	7E-12	7E-12	3E-11	5E-11	1E-11	1E-11	4E-11	7E-11
2E-14	2E-14	8E-14	2E-13	4E-14	4E-14	2E-13	3E-13	7E-14	7E-14	3E-13	5E-13	1E-13	1E-13	5E-13	1E-12	2E-13	2E-13	9E-13	2E-12	4E-13	4E-13	2E-12	3E-12	7E-13	7E-13	3E-12	5E-12	1E-12	1E-12	4E-12	8E-12
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8E-17	8E-17	3E-16	7E-16	2E-16	2E-16	7E-16	1E-15	4E-16	4E-16	1E-15	3E-15	7E-16	7E-16	3E-15	6E-15	1E-15	1E-15	5E-15	1E-14	3E-15	3E-15	1E-14	2E-14	5E-15	5E-15	2E-14	4E-14	9E-15	9E-15	3E-14	7E-14
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2E-19	2E-19	8E-19	2E-18	5E-19	5E-19	2E-18	5E-18	1E-18	1E-18	5E-18	1E-17	3E-18	3E-18	1E-17	2E-17	6E-18	6E-18	2E-17	5E-17	1E-17	1E-17	5E-17	1E-16	3E-17	3E-17	1E-16	2E-16	5E-17	5E-17	2E-16	4E-16
9E-21	9E-21	4E-20	1E-19	2E-20	2E-20	9E-20	2E-19	6E-20	6E-20	2E-19	6E-19	1E-19	1E-19	5E-19	1E-18	3E-19	3E-19	1E-18	3E-18	7E-19	7E-19	3E-18	6E-18	2E-18	2E-18	6E-18	1E-17	3E-18	3E-18	1E-17	3E-17
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1E-23	1E-23	5E-23	2E-22	4E-23	4E-23	1E-22	4E-22	1E-22	1E-22	4E-22	1E-21	3E-22	3E-22	1E-21	3E-21	8E-22	8E-22	3E-21	8E-21	2E-21	2E-21	7E-21	2E-20	5E-21	5E-21	2E-20	4E-20	1E-20	1E-20	4E-20	1E-19
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2E-28	2E-28	9E-28	4E-27	1E-27	1E-27	4E-27	1E-26	4E-27	4E-27	1E-26	5E-26	1E-26	1E-26	5E-26	2E-25	4E-26	4E-26	2E-25	5E-25	1E-25	1E-25	5E-25	1E-24	4E-25	4E-25	1E-24	4E-24	1E-24	1E-24	4E-24	1E-23
5E-30	5E-30	2E-29	9E-29	2E-29	2E-29	8E-29	4E-28	9E-29	9E-29	3E-28	1E-27	3E-28	3E-28	1E-27	5E-27	1E-27	1E-27	5E-27	2E-26	4E-27	4E-27	2E-26	5E-26	1E-26	1E-26	5E-26	2E-25	4E-26	4E-26	1E-25	4E-25
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1E-37	1E-37	4E-37	4E-36	1E-36	1E-36	4E-36	3E-35	6E-36	6E-36	3E-35	2E-34	5E-35	5E-35	2E-34	1E-33	3E-34	3E-34	1E-33	6E-33	1E-33	1E-33	5E-33	3E-32	6E-33	6E-33	2E-32	1E-31	3E-32	3E-32	1E-31	4E-31
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6E-45	6E-45	2E-44	9E-43	2E-43	2E-43	9E-43	2E-41	4E-42	4E-42	2E-41	2E-40	5E-41	5E-41	2E-40	2E-39	5E-40	5E-40	2E-39	2E-38	4E-39	4E-39	2E-38	1E-37	3E-38	3E-38	1E-37	7E-37	2E-37	2E-37	7E-37	4E-36
0E+00	0E+00	0E+00	2E-45	5E-46	5E-46	2E-45	7E-44	2E-44	2E-44	7E-44	1E-42	3E-43	3E-43	1E-42	2E-41	4E-42	4E-42	2E-41	2E-40	4E-41	4E-41	2E-40	1E-39	3E-40	3E-40	1E-39	1E-38	2E-39	2E-39	9E-39	6E-38
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	1E-46	3E-47	3E-47	1E-46	5E-45	1E-45	1E-45	5E-45	1E-43	2E-44	2E-44	9E-44	1E-42	3E-43	3E-43	1E-42	1E-41	3E-42	3E-42	1E-41	1E-40	3E-41	3E-41	1E-40	8E-40
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	1E-47	2E-48	2E-48	9E-48	4E-48	9E-47	9E-47	4E-46	8E-45	2E-45	2E-45	7E-45	1E-43	3E-44	3E-44	1E-43	1E-42	3E-43	3E-43	1E-42	9E-42
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	7E-49	2E-49	2E-49	7E-49	3E-47	7E-48	7E-48	3E-47	6E-46	1E-46	1E-46	5E-46	6E-45	2E-45	2E-45	7E-45	9E-44
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	5E-50	1E-50	1E-50	5E-50	2E-48	5E-49	5E-49	2E-48	4E-47	1E-47	1E-47	4E-47	6E-46
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	4E-51	9E-52	9E-52	3E-51	2E-49	4E-50	4E-50	1E-49	3E-48
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	3E-52	6E-53	6E-53	2E-52	1E-50
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	2E-53
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00

	Time Increment —47—				Time Increment —48—				Time Increment —49—				Time Increment —50—				Time Increment —51—				Time Increment —52—				Time Increment —53—				Time Increment —54—		
	Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg
6E-03	6E-03	2E-02	2E-02	5E-03	5E-03	2E-02	2E-02	5E-03	5E-03	2E-02	2E-02	4E-03	4E-03	2E-02	2E-02	4E-03	4E-03	2E-02	2E-02	4E-03	4E-03	1E-02	1E-02	4E-03	4E-03	1E-02	1E-02	3E-03	3E-03	1E-02	1E-02
2E-02	2E-02	7E-02	8E-02	2E-02	2E-02	7E-02	7E-02	2E-02	2E-02	7E-02	7E-02	2E-02	2E-02	6E-02	6E-02	2E-02	2E-02	6E-02	6E-02	2E-02	2E-02	6E-02	6E-02	1E-02	1E-02	5E-02	5E-02	1E-02	1E-02	5E-02	5E-02
3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01
4E-02	4E-02	1E-01	2E-01	4E-02	4E-02	1E-01	2E-01	4E-02	4E-02	1E-01	2E-01	4E-02	4E-02	1E-01	2E-01	4E-02	4E-02	1E-01	2E-01	4E-02	4E-02	1E-01	1E-01	4E-02	4E-02	1E-01	1E-01	4E-02	4E-02	1E-01	1E-01
3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01
2E-02	2E-02	8E-02	9E-02	2E-02	2E-02	8E-02	9E-02	2E-02	2E-02	9E-02	1E-01	2E-02	2E-02	9E-02	1E-01	2E-02	2E-02	8E-02	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01
1E-02	1E-02	4E-02	5E-02	1E-02	1E-02	5E-02	5E-02	1E-02	1E-02	5E-02	5E-02	1E-02	1E-02	5E-02	6E-02	1E-02	1E-02	5E-02	6E-02	1E-02	1E-02	6E-02	6E-02	2E-02	2E-02	6E-02	7E-02	2E-02	2E-02	6E-02	7E-02
5E-03	5E-03	2E-02	2E-02	5E-03	5E-03	2E-02	2E-02	6E-03	6E-03	2E-02	3E-02	6E-03	6E-03	2E-02	3E-02	7E-03	7E-03	3E-02	3E-02	7E-03	7E-03	3E-02	3E-02	8E-03	8E-03	3E-02	3E-02	8E-03	8E-03	3E-02	4E-02
2E-03	2E-03	7E-03	9E-03	2E-03	2E-03	8E-03	1E-02	2E-03	2E-03	9E-03	1E-02	3E-03	3E-03	1E-02	1E-02	3E-03	3E-03	1E-02	1E-02	3E-03	3E-03	1E-02	1E-02	3E-03	3E-03	1E-02	2E-02	4E-03	4E-03	1E-02	2E-02
6E-04	6E-04	2E-03	3E-03	7E-04	7E-04	3E-03	3E-03	8E-04	8E-04	3E-03	4E-03	9E-04	9E-04	3E-03	4E-03	1E-03	1E-03	4E-03	5E-03	1E-03	1E-03	4E-03	5E-03	1E-03	1E-03	5E-03	6E-03	1E-03	1E-03	6E-03	7E-03
2E-04	2E-04	7E-04	9E-04	2E-04	2E-04	8E-04	1E-03	2E-04	2E-04	9E-04	1E-03	3E-04	3E-04	1E-03	1E-03	3E-04	3E-04	1E-03	2E-03	4E-04	4E-04	1E-03	2E-03	4E-04	4E-04	2E-03	2E-03	5E-04	5E-04	2E-03	2E-03
4E-05	4E-05	2E-04	2E-04	5E-05	5E-05	2E-04	3E-04	7E-05	7E-05	2E-04	3E-04	8E-05	8E-05	3E-04	4E-04	9E-05	9E-05	4E-04	5E-04	1E-04	1E-04	4E-04	5E-04	1E-04	1E-04	5E-04	6E-04	2E-04	2E-04	6E-04	7E-04
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4E-07	4E-07	1E-06	2E-06	5E-07	5E-07	2E-06	3E-06	7E-07	7E-07	2E-06	3E-06	8E-07	8E-07	3E-06	4E-06	1E-06	1E-06	4E-06	6E-06	1E-06	1E-06	5E-06	7E-06	2E-06	2E-06	7E-06	9E-06	2E-06	2E-06	9E-06	1E-05
6E-08	6E-08	2E-07	3E-07	8E-08	8E-08	3E-07	5E-07	1E-07	1E-07	4E-07	6E-07	2E-07	2E-07	8E-07	1E-06	3E-07	3E-07	1E-06	1E-06	3E-07	3E-07	1E-06	2E-06	5E-07	5E-07	2E-06	2E-06	8E-08	8E-08	3E-07	4E-07
9E-09	9E-09	4E-08	5E-08	1E-08	1E-08	5E-08	8E-08	2E-08	2E-08	7E-08	1E-07	3E-08	3E-08	1E-07	1E-07	3E-08	3E-08	1E-07	2E-07	5E-08	5E-08	2E-07	3E-07	8E-08	8E-08	3E-07	4E-07	1E-08	1E-08	5E-08	8E-08
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2E-11	2E-11	7E-11	1E-10	3E-11	3E-11	1E-10	2E-10	4E-11	4E-11	2E-10	3E-10	7E-11	7E-11	3E-10	4E-10	1E-10	1E-10	4E-10	6E-10	1E-10	1E-10	6E-10	9E-10	2E-10	2E-10	8E-10	1E-09	3E-10	3E-10	1E-09	2E-09
2E-12	2E-12	7E-12	1E-11	3E-12	3E-12	1E-11	2E-11	5E-12	5E-12	2E-11	3E-11	8E-12	8E-12	3E-11	5E-11	1E-11	1E-11	5E-11	7E-11	2E-11	2E-11	7E-11	1E-10	3E-11	3E-11	1E-10	2E-10	4E-11	4E-11	2E-10	2E-10
2E-13	2E-13	7E-13	1E-12	3E-13	3E-13	1E-12	2E-12	5E-13	5E-13	2E-12	3E-12	8E-13	8E-13	3E-12	5E-12	1E-12	1E-12	5E-12	9E-12	2E-12	2E-12	8E-12	1E-11	3E-12	3E-12	1E-11	2E-11	5E-12	5E-12	2E-11	3E-11
2E-14	2E-14	6E-14	1E-13	3E-14	3E-14	1E-13	2E-13	5E-14	5E-14	2E-13	3E-13	8E-14	8E-14	3E-13	6E-13	1E-13	1E-13	5E-13	9E-13	2E-13	2E-13	8E-13	1E-12	4E-13	4E-13	1E-12	2E-12	6E-13	6E-13	2E-12	4E-12
1E-15	1E-15	6E-15	1E-14	2E-15	2E-15	8E-15	2E-14	4E-15	4E-15	2E-14	3E-14	7E-15	7E-15	3E-14	5E-14	1E-14	1E-14	5E-14	9E-14	2E-14	2E-14	8E-14	1E-13	4E-14	4E-14	1E-13	2E-13	8E-14	8E-14	2E-13	4E-13
1E-16	1E-16	4E-16	8E-16	2E-16	2E-16	7E-16	1E-15	3E-16	3E-16	1E-15	3E-15	6E-16	6E-16	2E-15	5E-15	1E-15	1E-15	4E-15	8E-15	2E-15	2E-15	7E-15	1E-14	3E-15	3E-15	1E-14	2E-14	6E-15	6E-15	2E-14	4E-14
7E-18	7E-18	3E-17	5E-17	1E-17	1E-17	5E-17	1E-16	3E-17	3E-17	1E-16	2E-16	5E-17	5E-17	2E-16	4E-16	9E-17	9E-17	3E-16	7E-16	2E-16	2E-16	6E-16	1E-15	3E-16	3E-16	1E-15	2E-15	5E-16	5E-16	2E-15	4E-15
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1E-21	1E-21	5E-21	1E-20	3E-21	3E-21	1E-20	3E-20	6E-21	6E-21	2E-20	6E-20	1E-20	1E-20	5E-20	1E-19	3E-20	3E-20	1E-19	2E-19	6E-20	6E-20	2E-19	5E-19	1E-19	1E-19	5E-19	1E-18	2E-18	2E-18	9E-19	2E-18
6E-23	6E-23	2E-22	6E-22	1E-22	1E-22	6E-22	1E-21	3E-22	3E-22	1E-21	3E-21	8E-22	8E-22	3E-21	7E-21	2E-21	2E-21	7E-21	1E-20	4E-21	4E-21	1E-20	3E-20	8E-21	8E-21	3E-20	7E-20	2E-20	2E-20	6E-20	1E-19
3E-24	3E-24	1E-23	3E-23	7E-24	7E-24	3E-23	7E-23	2E-23	2E-23	6E-23	2E-22	4E-23	4E-23	2E-22	4E-22	9E-23	9E-23	4E-22	8E-22	2E-22	2E-22	8E-22	2E-21	5E-22	5E-22	2E-21	4E-21	1E-21	1E-21	4E-21	8E-21
1E-25	1E-25	4E-25	1E-24	3E-25	3E-25	1E-24	3E-24	8E-25	8E-25	3E-24	6E-24	2E-24	2E-24	7E-24	2E-23	5E-24	5E-24	2E-23	4E-23	1E-23	1E-23	4E-23	1E-22	3E-23	3E-23	1E-22	3E-22	8E-23	8E-23	2E-22	5E-22
4E-27	4E-27	1E-26	5E-26	1E-26	1E-26	4E-26	1E-25	3E-26	3E-26	1E-25	3E-25	8E-26	8E-26	3E-25	6E-25	2E-25	2E-25	8E-25	2E-24	5E-25	5E-25	2E-24	5E-24	1E-24	1E-24	5E-24	1E-23	3E-24	3E-24	1E-23	3E-23
1E-28	1E-28	5E-28	2E-27	4E-28	4E-28	2E-27	5E-27	1E-27	1E-27	4E-27	1E-26	3E-27	3E-27	1E-26	4E-26	9E-27	9E-27	3E-26	1E-25	2E-26	2E-26	9E-26	3E-25	6E-26	8E-26	2E-25	6E-25	2E-25	2E-25	8E-25	1E-24
4E-30	4E-30	1E-29	5E-29	1E-29	1E-29	5E-29	2E-28	4E-29	4E-29	2E-28	5E-28	1E-28	1E-28	5E-28	1E-27	4E-28	4E-28	1E-27	4E-27	1E-27	1E-27	4E-27	1E-26	3E-27	3E-27	1E-26	3E-26	7E-27	7E-27	3E-26	7E-26
1E-31	1E-31	4E-31	1E-30	4E-31	4E-31	1E-30	5E-30	1E-30	1E-30	5E-30	2E-29	4E-30	4E-30	2E-29	5E-29	1E-29	1E-29	5E-29	2E-28	4E-29	4E-29	1E-28	4E-28	1E-28	1E-28	4E-28	1E-27	3E-28	3E-28	1E-27	3E-27
2E-33	2E-33	9E-33	4E-32	9E-33	9E-33	4E-32	1E-31	4E-32	4E-32	1E-31	5E-31	1E-31	1E-31	5E-31	2E-30	4E-31	4E-31	2E-30	5E-30	1E-30	1E-30	5E-30	2E-29	4E-30	4E-30	1E-29	5E-29	1E-29	1E-29	1E-28	4E-29
5E-35	5E-35	2E-34	9E-34	2E-34	2E-34	8E-34	4E-33	9E-34	9E-34	3E-33	1E-32	3E-33	3E-33	1E-32	5E-32	1E-32	1E-32	5E-32	2E-31	4E-32	4E-32	2E-31	5E-31	1E-31	1E-31	5E-31	2E-30	4E-31	4E-31	2E-30	5E-30
9E-37	9E-37	3E-36	2E-35	4E-36	4E-36	2E-35	8E-35	2E-35	2E-35	8E-35	3E-34	8E-35	8E-35	3E-34	1E-33	3E-34	3E-34	1E-33	5E-33	1E-33	1E-33	4E-33	2E-32	4E-33	4E-33	2E-32	5E-32	1E-32	1E-32	5E-32	2E-31
1E-38	1E-38	6E-38	3E-37	8E-38	8E-38	3E-37	2E-36	4E-37	4E-37	2E-36	7E-36	2E-36	2E-36	7E-36	3E-35	8E-36	8E-36	3E-35	1E-34	3E-35	3E-35	1E-34	5E-34	1E-34	1E-34	4E-34	2E-33	4E-34	4E-34	1E-33	5E-33
2E-40	2E-40	8E-40	5E-39	1E-39	1E-39	5E-39	3E-38	7E-39	7E-39	3E-38	1E-37	3E-38	3E-38	1E-37	7E-37	2E-37	2E-37	8E-37	3E-36	8E-37	7E-37	3E-36	1E-35	3E-36	3E-36	1E-35	4E-35	1E-35	1E-35	4E-35	2E-34
2E-42	2E-42	8E-42	7E-41	2E-41	2E-41	6E-41	4E-40	1E-40	1E-40	4E-40	2E-39	6E-40	6E-40	2E-39	1E-38	3E-39	3E-39	1E-38	5E-38	1E-38	1E-38	5E-38	2E-37	6E-38	6E-38	2E-37	1E-36	3E-37	3E-37	1E-36	4E-36
2E-44	2E-44	8E-44	7E-43	2E-43	2E-43	7E-43	6E-42	1E-42	1E-42	5E-42	4E-41	9E-42	9E-42	3E-41	2E-40	5E-41	5E-41	2E-40	1E-39	3E-40	3E-40	1E-39	5E-39	1E-39	1E-39	5E-39	2E-38	6E-39	6E-39	2E-38	1E-37
2E-46	2E-46	9E-46	7E-45	2E-45	2E-45	8E-45	6E-44	1E-44	1E-44	6E-44	5E-43	1E-43	1E-43	4E-43	3E-42	7E-43	7E-43	3E-42	2E-41	4E-42	4E-42	2E-41	1E-40	2E-41	2E-41	9E-41	5E-40	1E-40	1E-40	4E-40	2E-39
8E-49	8E-49	3E-48	5E-47	1E-47	1E-47	4E-47	5E-46	1E-46	1E-46	5E-46	5E-45	1E-45	1E-45	4E-45	4E-44	9E-45	9E-45	3E-44	3E-43	6E-44	6E-44	2E-43	2E-42	4E-43	4E-43	1E-42	8E-42	2E-42	2E-42	8E-42	4E-41
3E-51	3E-51	1E-50	2E-49	6E-50	6E-50	2E-49	4E-48	9E-48	9E-48	3E-48	4E-47	1E-47	1E-47	4E-47	4E-46	9E-47	9E-47	4E-46	3E-45	7E-46	7E-46	3E-45	2E-44	5E-45	5E-45	2E-44	1E-43	3E-44	3E-44	1E-43	7E-43
5E-54	5E-54	2E-53	6E-52	2E-52	2E-52	8E-52	2E-50	4E-51	4E-51	2E-50	3E-49	7E-50	7E-50	3E-49	3E-48	8E-49	8E-49	3E-48	3E-47	7E-48	7E-48	3E-47	2E-46	6E-47	6E-47	2E-46	2E-45	4E-46	4E-46	2E-45	1E-44
0E+00	0E+00	0E+00	1E-54	3E-55	3E-55	1E-54	6E-53	1E-53	1E-53	6E-53	1E-51	3E-52	3E-52	1E-51	2E-50	5E-51	5E-51	2E-50	3E-49	6E-50	6E-50	2E-49	2E-48	6E-49	6E-49	2E-48	2E-47	5E-48	5E-48	2E-47	1E-46
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	1E-55	2E-56	2E-56	9E-56	4E-54	1E-54	1E-54	4E-54	1E-52	3E-53	3E-53	1E-52	2E-51	4E-52	4E-52	2E-51	2E-50	5E-51	5E-51	2E-50	2E-49	5E-50	5E-50	2E-49	2E-48
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	7E-57	2E-57	2E-57	7E-57	3E-55	8E-56	8E-56	3E-55	6E-54	2E-54	2E-54	7E-54	1E-52	3E-53	3E-53	1E-52	2E-51	4E-52	4E-52	1E-51	2E-50

	Time Increment —55—				Time Increment —56—				Time Increment —57—				Time Increment —58—				Time Increment —59—				Time Increment —60—				Time Increment —61—				Time Increment —62—	
	Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/kg	Csorb mg/kg
3E-03	3E-03	1E-02	1E-02	3E-03	3E-03	1E-02	1E-02	3E-03	3E-03	1E-02	1E-02	2E-03	2E-03	9E-03	9E-03	2E-03	2E-03	9E-03	9E-03	2E-03	2E-03	8E-03	8E-03	2E-03	2E-03	7E-03	7E-03	2E-03	2E-03	7E-03
1E-02	1E-02	5E-02	5E-02	1E-02	1E-02	5E-02	5E-02	1E-02	1E-02	4E-02	4E-02	1E-02	1E-02	4E-02	4E-02	1E-02	1E-02	4E-02	4E-02	1E-02	1E-02	4E-02	4E-02	9E-03	9E-03	3E-02	3E-02	9E-03	9E-03	3E-02
3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	2E-02	2E-02	9E-02	9E-02	2E-02	2E-02	9E-02	9E-02	2E-02	2E-02	9E-02	9E-02	2E-02	2E-02	8E-02	8E-02	2E-02	2E-02	8E-02	8E-02	2E-02	2E-02	8E-02
4E-02	4E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1F-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01
3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01
3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01
2E-02	2E-02	6E-02	7E-02	2E-02	2E-02	7E-02	8E-02	2E-02	2E-02	7E-02	8E-02	2E-02	2E-02	7E-02	8E-02	2E-02	2E-02	8E-02	8E-02	2E-02	2E-02	8E-02	8E-02	2E-02	2E-02	8E-02	9E-02	2E-02	2E-02	8E-02
5E-03	9E-03	3E-02	4E-02	1E-02	1E-02	4E-02	4E-02	1E-02	1E-02	4E-02	4E-02	1E-02	1E-02	4E-02	5E-02	1E-02	1E-02	4E-02	5E-02	1E-02	1E-02	5E-02	5E-02	1E-02	1E-02	5E-02	5E-02	1E-02	1E-02	5E-02
4E-03	4E-03	2E-02	2E-02	4E-03	4E-03	2E-02	2E-02	5E-03	5E-03	2E-02	2E-02	5E-03	5E-03	2E-02	2E-02	6E-03	6E-03	2E-02	2E-02	6E-03	6E-03	2E-02	3E-02	6E-03	8E-03	2E-02	3E-02	7E-03	7E-03	3E-02
2E-03	2E-03	6E-03	7E-03	2E-03	2E-03	7E-03	8E-03	2E-03	2E-03	8E-03	9E-03	2E-03	2E-03	8E-03	1E-02	2E-03	2E-03	9E-03	1E-02	3E-03	3E-03	1E-02	1E-02	3E-03	3E-03	1E-02	1E-02	3E-03	3E-03	1E-02
6E-04	6E-04	2E-03	3E-03	8E-04	6E-04	2E-03	3E-03	7E-04	7E-04	3E-03	3E-03	8E-04	8E-04	3E-03	4E-03	9E-04	9E-04	4E-03	4E-03	1E-03	1E-03	4E-03	5F-03	1E-03	1E-03	4E-03	5E-03	1E-03	1E-03	5E-03
2E-04	2E-04	7E-04	8E-04	2E-04	2E-04	8E-04	1E-03	2E-04	2E-04	9E-04	1E-03	3E-04	3E-04	1E-03	1E-03	3E-04	3E-04	1E-03	1E-03	4E-04	4E-04	1E-03	2E-03	4E-04	4E-04	2E-03	2E-03	5E-04	5E-04	2E-03
5E-05	5E-05	2E-04	2E-04	6E-05	6E-05	2E-04	3E-04	7E-05	7E-05	3E-04	3E-04	8E-05	8E-05	3E-04	4E-04	9E-05	9E-05	4E-04	5E-04	1E-04	1E-04	4E-04	5E-04	1E-04	1E-04	5E-04	6E-04	1E-04	1E-04	6E-04
1F-05	1E-05	5E-05	6E-05	1F-05	1E-05	6E-05	7E-05	2E-05	2E-05	7E-05	9F-05	2E-05	2F-05	8E-05	1E-04	3E-05	3E-05	1E-04	1E-04	3E-05	3E-05	1E-04	2E-04	4E-05	4E-05	1E-04	2E-04	4E-05	4E-05	2E-04
3E-06	3E-06	1E-05	1E-05	3E-06	3E-06	1E-05	2E-05	4E-06	4E-06	2E-05	2E-05	5E-06	5E-06	2E-05	3E-05	6E-06	6E-06	2E-05	3E-05	6E-06	6E-06	3E-05	4E-05	1E-05	1E-05	4E-05	5E-05	1E-05	1E-05	4E-05
6E-07	6E-07	2E-06	3E-06	7E-07	7E-07	3E-06	4E-06	9E-07	9E-07	4E-06	5E-06	1E-06	1E-06	4E-06	6E-06	1E-06	1E-06	6E-06	8E-06	2E-06	2E-06	7E-06	9E-06	2E-06	2E-06	9E-06	1E-05	3E-06	3E-06	1E-05
1E-07	1E-07	4E-07	6E-07	1E-07	1E-07	5E-07	8E-07	2E-07	2E-07	7E-07	1E-06	2E-07	2E-07	9E-07	1E-06	3E-07	3E-07	1E-06	2E-06	4E-07	4E-07	1E-06	2E-06	5E-07	5E-07	2E-06	3E-06	6E-07	6E-07	2E-06
2E-08	2E-08	7E-08	1E-07	3E-08	3E-08	1E-07	1E-07	3E-08	3E-08	1E-07	2E-07	4E-08	4E-08	2E-07	2E-07	6E-08	6E-08	2E-07	3E-07	6E-08	6E-08	3E-07	4E-07	1E-07	1E-07	4E-07	5E-07	1E-07	1E-07	5E-07
3E-09	3E-09	1E-08	2E-08	4E-09	4E-09	2E-08	2E-08	6E-09	6E-09	2E-08	3E-08	8E-09	8E-09	3E-08	4E-08	1E-08	1E-08	4E-08	6E-08	1E-08	1E-08	5E-08	8E-08	2E-08	2E-08	7E-08	1E-07	2E-08	2E-08	9E-08
4E-10	4E-10	2E-09	3E-09	6E-10	6E-10	2E-09	4E-09	9E-10	9E-10	3E-09	5E-09	1E-09	1E-09	5E-09	7E-09	2E-09	2E-09	8E-09	1E-08	2E-09	2E-09	9E-09	1E-08	3E-09	3E-09	1E-08	2E-08	4E-09	4E-09	2E-08
6E-11	6E-11	2E-10	4E-10	9E-11	9E-11	3E-10	5E-10	1E-10	1E-10	5E-10	7E-10	2E-10	2E-10	7E-10	1E-09	3E-10	3E-10	1E-09	1E-09	4E-10	4E-10	1E-09	2E-09	5E-10	5E-10	2E-09	3E-09	7E-10	7E-10	3E-09
8E-12	8E-12	3E-11	5E-11	1E-11	1E-11	4E-11	7E-11	2E-11	2E-11	8E-11	1E-10	2E-11	2E-11	9E-11	1E-10	4E-11	4E-11	1E-10	2E-10	5E-11	5E-11	2E-10	3E-10	7E-11	7E-11	3E-10	4E-10	1E-10	1E-10	4E-10
9E-13	9E-13	3E-12	6E-12	1E-12	1E-12	5E-12	9E-12	2E-12	2E-12	8E-12	1E-11	3E-12	3E-12	1E-11	2E-11	5E-12	5E-12	2E-11	3E-11	7E-12	7E-12	3E-11	4E-11	1E-11	1E-11	4E-11	6E-11	1E-11	1E-11	6E-11
1E-13	1E-13	4E-13	6E-13	2E-13	2E-13	6E-13	1E-12	2E-13	2E-13	9E-13	2E-12	4E-13	4E-13	1E-12	2E-12	6E-13	6E-13	2E-12	4E-12	9E-13	9E-13	3E-12	5E-12	1E-12	1E-12	5E-12	8E-12	2E-12	2E-12	7E-12
1E-14	1E-14	4E-14	6E-14	2E-14	2E-14	6E-14	1E-13	3E-14	3E-14	1E-13	2E-13	4E-14	4E-14	2E-13	3E-13	8E-14	6E-14	2E-13	4E-13	1E-13	1E-13	4E-13	6E-13	2E-13	2E-13	6E-13	1E-12	2E-13	2E-13	9E-13
9E-16	9E-16	3E-15	6E-15	2E-15	2E-15	6E-15	1E-14	3E-15	3E-15	1E-14	2E-14	4E-15	4E-15	2E-14	3E-14	7E-15	7E-15	3E-14	4E-14	1E-14	1E-14	4E-14	7E-14	2E-14	2E-14	7E-14	1E-13	3E-14	3E-14	1E-13
8E-17	8E-17	3E-16	6E-16	1E-16	1E-16	5E-16	1E-15	2E-16	2E-16	8E-16	2E-15	4E-16	4E-16	2E-15	3E-15	7E-16	7E-16	3E-15	5E-15	1E-15	1E-15	4E-15	7E-15	2E-15	2E-15	7E-15	1E-14	3E-15	3E-15	1E-14
6E-18	6E-18	2E-17	5E-17	1E-17	1E-17	4E-17	8E-17	2E-17	2E-17	6E-17	1E-16	4E-17	4E-17	1E-16	3E-16	6E-17	6E-17	2E-16	4E-16	1E-16	1E-16	4E-16	7E-16	2E-16	2E-16	7E-16	1E-15	3E-16	3E-16	1E-15
5E-19	5E-19	2E-18	4E-18	9E-19	9E-19	3E-18	7E-18	2E-18	2E-18	6E-18	1E-17	3E-18	3E-18	1E-17	2E-17	5E-18	5E-18	2E-17	4E-17	9E-18	9E-18	4E-17	7E-17	2E-17	2E-17	8E-17	1E-16	3E-17	3E-17	1E-16
3E-20	3E-20	1E-19	3E-19	6E-20	6E-20	2E-19	5E-19	1E-19	1E-19	5E-19	9E-19	2E-19	2E-19	9E-19	2E-18	4E-19	4E-19	2E-18	3E-18	8E-19	8E-19	3E-18	6E-18	1E-18	1E-18	5E-18	1E-17	2E-18	2E-18	9E-18
2E-21	2E-21	8E-21	2E-20	4E-21	4E-21	2E-20	3E-20	8E-21	8E-21	3E-20	7E-20	2E-20	2E-20	8E-20	1E-19	3E-20	3E-20	1E-19	2E-19	6E-20	6E-20	2E-19	5E-19	1E-19	1E-19	4E-19	8E-19	2E-19	2E-19	8E-19
1E-22	1E-22	5E-22	1E-21	3E-22	3E-22	1E-21	2E-21	6E-22	6E-22	2E-21	5E-21	1E-21	1E-21	4E-21	9E-21	2E-21	2E-21	8E-21	2E-20	4E-21	4E-21	2E-20	3E-20	8E-21	8E-21	3E-20	6E-20	2E-20	2E-20	6E-20
7E-24	7E-24	3E-23	6E-23	2E-23	2E-23	6E-23	1E-22	3E-23	3E-23	1E-22	3E-22	7E-23	7E-23	3E-22	6E-22	1E-22	1E-22	6E-22	1E-21	3E-22	3E-22	1E-21	2E-21	6E-22	6E-22	2E-21	5E-21	1E-21	1E-21	4E-21
4E-25	4E-25	1E-24	3E-24	8E-25	8E-25	3E-24	6E-24	2E-24	2E-24	7E-24	2E-23	4E-24	4E-24	2E-23	4E-23	9E-24	9E-24	3E-23	6E-23	2E-23	2E-23	7E-23	2E-22	4E-23	4E-23	1E-22	3E-22	8E-23	8E-23	3E-22
2E-26	2E-26	7E-26	2E-25	4E-26	4E-26	2E-25	4E-25	1E-25	1E-25	4E-25	9E-25	2E-25	2E-25	9E-25	2E-24	5E-25	5E-25	2E-24	5E-24	1E-24	1E-24	4E-24	1E-23	2E-24	2E-24	9E-24	2E-23	5E-24	5E-24	2E-23
8E-28	8E-28	3E-27	8E-27	2E-27	2E-27	7E-27	2E-26	5E-27	5E-27	2E-26	5E-26	1E-26	1E-26	4E-26	1E-25	3E-26	3E-26	1E-25	3E-25	6E-26	6E-26	2E-25	6E-25	1E-25	1E-25	5E-25	1E-24	3E-25	3E-25	1E-24
3E-29	3E-29	1E-28	3E-28	8E-29	8E-29	3E-28	9E-28	2E-28	2E-28	8E-28	2E-27	5E-28	5E-28	2E-27	5E-27	1E-27	1E-27	5E-27	1E-26	3E-27	3E-27	1E-26	3E-26	7E-27	7E-27	3E-26	7E-26	2E-26	2E-26	6E-26
1E-30	1E-30	4E-30	1E-29	3E-30	3E-30	1E-29	4E-29	9E-30	9E-30	3E-29	1E-28	2E-29	2E-29	8E-29	3E-28	6E-29	6E-29	2E-28	6E-28	2E-28	2E-28	6E-28	2E-27	4E-28	4E-28	1E-27	4E-27	9E-28	9E-28	3E-27
4E-32	4E-32	2E-31	5E-31	1E-31	1E-31	5E-31	1E-30	4E-31	4E-31	1E-30	4E-30	1E-30	1E-30	4E-30	1E-29	3E-30	3E-30	1E-29	3E-29	7E-30	7E-30	3E-29	7E-29	2E-29	2E-29	7E-29	2E-28	4E-29	4E-29	2E-28
1E-33	1E-33	5E-33	2E-32	4E-33	4E-33	2E-32	5E-32	1E-32	1E-32	5E-32	2E-31	4E-32	4E-32	1E-31	4E-31	1E-31	1E-31	4E-31	1E-30	3E-31	3E-31	1E-30	3E-30	8E-31	8E-31	3E-30	8E-30	2E-30	2E-30	8E-30
4E-35	4E-35	1E-34	5E-34	1E-34	1E-34	5E-34	2E-33	4E-34	4E-34	2E-33	5E-33	1E-33	1E-33	5E-33	2E-32	4E-33	4E-33	1E-32	5E-32	1E-32	1E-32	4E-32	1E-31	3E-32	3E-32	1E-31	3E-31	8E-32	8E-32	3E-31
1E-36	1E-36	4E-36	1E-35	4E-36	4E-36	1E-35	5E-35	1E-35	1E-35	5E-35	2E-34	4E-35	4E-35	2E-34	5E-34	1E-34	1E-34	5E-34	2E-33	4E-34	4E-34	2E-33	5E-33	1E-33	1E-33	4E-33	1E-32	3E-33	3E-33	1E-32
2E-38	2E-38	9E-38	4E-37	9E-38	9E-38	4E-37	1E-36	4E-37	4E-37	1E-36	5E-36	1E-36	1E-36	5E-36	2E-35	4E-36	4E-36	2E-35	5E-35	1E-35	1E-35	5E-35	2E-34	4E-35	4E-35	2E-34	5E-34	1E-34	1E-34	5E-34
5E-40	5E-40	2E-39	9E-39	2E-39	2E-39	8E-39	4E-38	9E-39	9E-39	3E-38	1E-37	3E-38	3E-38	1E-37	5E-37	1E-37	1E-37	5E-37	2E-36	4E-37	4E-37	2E-36	6E-36	1E-36	1E-36	5E-36	2E-35	4E-36	4E-36	2E-35
1E-41	1E-41	4E-41	2E-40	5E-41	5E-41	2E-40	8E-40	2E-40	2E-40	8E-40	3E-39	8E-40	8E-40	3E-39	1E-38	3E-39	2E-39	1E-38	3E-38	1E-38	1E-38	4E-38	2E-37	4E-38	4E-38	2E-37	5E-37	1E-37	1E-37	5E-37
2E-43	2E-43	7E-43	4E-42	9E-43	9E-43	3E-42	2E-41	4E-42	4E-42	2E-41	8E-41	2E-41	2E-41	7E-41	3E-40	8E-41	8E-41	3E-40	1E-39	3E-40	3E-40	1E-39	5E-39	1E-39	1E-39	4E-39	2E-38	4E-39	4E-39	1E-38
3E-45	3E-45	1E-44	6E-44	1E-44	1E-44	6E-44	3E-43	8E-44	8E-44	3E-43	2E-42	4E-43	4E-43	1E-42	7E-42	2E-42	2E-42	6E-42	3E-41	7E-42	7E-42	3E-41	1E-40	3E-41	3E-41	1E-40	4E-40	1E-40	1E-40	4E-40
3E-47	3E-47	1E-46	9E-46	2E-46	2E-46	8E-46	5E-45	1E-45	1E-45	5E-45	3E-44	7E-45	7E-45	3E-44	1E-43	3E-44	3E-44	1E-43	6E-43	2E-43	2E-43	6E-43	3E-42	7E-43	7E-43	2E-42	1E-41	3E-42	3E-42	1E-41
4E-49	4E-49	1E-48	1E-47	3E-48	3E-48	1E-47	8E-47	2E-47	2E-47	7E-47	4E-46	1E-46	1E-46	4E-46	2E-45	6E-46	6E-46	2E-45	1E-44	3E-45	3E-45	1E-44	6E-44	1E-44	1E-44	5E-44	2E-43	6E-44	6E-44	2E-43
4E-51	4E-51	1E-50	1E-49	3E-50	3E-50	1E-49	1E-48	2E-49	2E-49	9E-49	6E-48	2E-48	2E-48	8E-48	4E-47	9E-48	9E-48	4E-47	2E-46	5E-47	5E-47	2E-46	1E-45	3E-46	3E-46	1E-45	5E-45	1E-45	1E-45	5E-45

Time	Time Increment —63—			Time	Time Increment —64—			Time	Time Increment —65—			Time	Time Increment —66—			Time	Time Increment —67—			Time	Time Increment —68—			Time	Time Increment —69—			Time	Time Increment —70—		
	Caqueous total mg/l	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/l	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/l	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/l	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/l	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/l	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/l	Csorb mg/kg	Csoil mg/kg		Caqueous total mg/l	Csorb mg/kg	Csoil mg/kg
2E-03	2E-03	6E-03	6E-03	2E-03	2E-03	6E-03	6E-03	1E-03	1E-03	5E-03	5E-03	1E-03	1E-03	5E-03	5E-03	1E-03	1E-03	5E-03	5E-03	1E-03	1E-03	4E-03	4E-03	1E-03	1E-03	4E-03	4E-03	1E-03	1E-03	4E-03	4E-03
8E-03	8E-03	3E-02	3E-02	8E-03	8E-03	3E-02	3E-02	7E-03	7E-03	3E-02	3E-02	7E-03	7E-03	3E-02	3E-02	6E-03	6E-03	2E-02	2E-02	6E-03	6E-03	2E-02	2E-02	6E-03	6E-03	2E-02	2E-02	5E-03	5E-03	2E-02	2E-02
2E-02	2E-02	7E-02	7E-02	2E-02	2E-02	7E-02	7E-02	2E-02	2E-02	7E-02	7E-02	2E-02	2E-02	6E-02	6E-02	2E-02	2E-02	6E-02	6E-02	2E-02	2E-02	6E-02	6E-02	1E-02	1E-02	6E-02	6E-02	1E-02	1E-02	5E-02	5E-02
3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	2E-02	2E-02	9E-02	1E-01	2E-02	2E-02	9E-02	1E-01
3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01
2E-02	2E-02	8E-02	9E-02	2E-02	2E-02	9E-02	1E-01	2E-02	2E-02	9E-02	1E-01	2E-02	2E-02	9E-02	1E-01	2E-02	2E-02	9E-02	1E-01	2E-02	2E-02	9E-02	1E-01	2E-02	2E-02	9E-02	1E-01	2E-02	2E-02	9E-02	1E-01
1E-02	1E-02	5E-02	6E-02	1E-02	1E-02	5E-02	6E-02	2E-02	2E-02	6E-02	6E-02	2E-02	2E-02	6E-02	7E-02	2E-02	2E-02	6E-02	7E-02	2E-02	2E-02	6E-02	7E-02	2E-02	2E-02	7E-02	7E-02	2E-02	2E-02	7E-02	8E-02
7E-03	7E-03	3E-02	3E-02	6E-03	6E-03	3E-02	3E-02	6E-03	6E-03	3E-02	4E-02	9E-03	9E-03	4E-02	4E-02	1E-02	1E-02	4E-02	4E-02	1E-02	1E-02	4E-02	4E-02	1E-02	1E-02	4E-02	5E-02	6E-03	6E-03	2E-02	2E-02
3E-03	3E-03	1E-02	2E-02	4E-03	4E-03	1E-02	2E-02	4E-03	4E-03	2E-02	2E-02	4E-03	4E-03	2E-02	2E-02	5E-03	5E-03	2E-02	2E-02	5E-03	5E-03	2E-02	2E-02	5E-03	5E-03	2E-02	2E-02	6E-03	6E-03	2E-02	2E-02
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5E-04	5E-04	2E-03	2E-03	6E-04	6E-04	2E-03	3E-03	7E-04	7E-04	2E-02	3E-03	7E-04	7E-04	3E-03	3E-03	8E-04	8E-04	3E-03	4E-03	9E-04	9E-04	3E-03	4E-03	1E-03	1E-03	4E-03	5E-03	1E-03	1E-03	4E-03	5E-03
2E-04	2E-04	6E-04	8E-04	2E-04	2E-04	7E-04	9E-04	2E-04	2E-04	8E-04	1E-03	3E-04	3E-04	1E-03	1E-03	3E-04	3E-04	1E-03	1E-03	3E-04	3E-04	1E-03	2E-03	4E-04	4E-04	1E-03	2E-03	4E-04	4E-04	2E-03	2E-03
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3E-06	3E-06	1E-05	2E-05	4E-06	4E-06	2E-05	2E-05	5E-06	5E-06	2E-05	2E-05	6E-06	6E-06	2E-05	3E-05	7E-06	7E-06	3E-05	4E-05	9E-06	9E-06	3E-05	4E-05	1E-05	1E-05	4E-05	5E-05	1E-05	1E-05	5E-05	6E-05
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6E-09	6E-09	2E-08	3E-08	8E-09	8E-09	3E-08	4E-08	1E-08	1E-08	4E-08	5E-08	1E-08	1E-08	5E-08	7E-08	2E-08	2E-08	7E-08	9E-08	2E-08	2E-08	8E-08	1E-07	3E-08	3E-08	1E-07	1E-07	4E-08	4E-08	1E-07	2E-07
1E-09	1E-09	4E-09	5E-09	1E-09	1E-09	5E-09	7E-09	2E-09	2E-09	7E-09	1E-08	2E-09	2E-09	9E-09	1E-08	3E-09	3E-09	1E-08	2E-08	4E-09	4E-09	2E-08	2E-08	5E-09	5E-09	2E-08	3E-08	7E-09	7E-09	3E-08	4E-08
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2E-11	2E-11	8E-11	1E-10	3E-11	3E-11	1E-10	2E-10	4E-11	4E-11	2E-10	2E-10	6E-11	6E-11	2E-10	3E-10	8E-11	8E-11	3E-10	5E-10	1E-10	1E-10	4E-10	7E-10	2E-10	2E-10	8E-10	9E-10	2E-10	2E-10	8E-10	1E-09
3E-12	3E-12	1E-11	2E-11	4E-12	4E-12	2E-11	2E-11	8E-12	8E-12	2E-11	4E-11	9E-12	9E-12	3E-11	5E-11	1E-11	1E-11	5E-11	7E-11	2E-11	2E-11	7E-11	1E-10	2E-11	2E-11	9E-11	1E-10	3E-11	3E-11	1E-10	2E-10
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3E-20	3E-20	1E-19	2E-19	5E-20	5E-20	2E-19	4E-19	1E-19	1E-19	4E-19	7E-19	2E-19	2E-19	7E-19	1E-18	3E-19	3E-19	1E-18	2E-18	5E-19	5E-19	2E-18	4E-18	9E-19	9E-19	3E-18	6E-18	1E-18	1E-18	6E-18	1E-17
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1E-23	1E-23	4E-23	8E-23	2E-23	2E-23	8E-23	3E-22	4E-23	4E-23	2E-22	3E-22	8E-23	8E-23	3E-22	8E-22	2E-22	2E-22	8E-22	1E-21	3E-22	3E-22	1E-21	2E-21	5E-22	5E-22	2E-21	4E-21	1E-21	1E-21	4E-21	7E-21
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4E-26	4E-26	1E-25	3E-25	6E-26	8E-26	3E-25	7E-25	2E-25	2E-25	6E-25	1E-24	4E-25	4E-25	1E-24	3E-24	7E-25	7E-25	3E-24	6E-24	1E-24	1E-24	6E-24	1E-23	3E-24	3E-24	1E-23	2E-23	6E-24	6E-24	2E-23	4E-23
2E-27	2E-27	8E-27	2E-26	5E-27	5E-27	2E-26	4E-26	1E-26	1E-26	4E-26	9E-26	2E-26	2E-26	9E-26	2E-25	5E-26	5E-26	2E-25	4E-25	9E-26	9E-26	4E-25	8E-25	2E-25	2E-25	7E-25	2E-24	4E-25	4E-25	1E-24	3E-24
1E-28	1E-28	4E-28	1E-27	2E-28	2E-28	9E-28	2E-27	6E-28	6E-28	2E-27	5E-27	1E-27	1E-27	5E-27	1E-26	3E-27	3E-27	1E-26	2E-26	6E-27	6E-27	2E-26	5E-26	1E-26	1E-26	5E-26	1E-25	3E-26	3E-26	1E-25	2E-25
5E-30	5E-30	2E-29	5E-29	1E-29	1E-29	5E-29	1E-28	3E-29	3E-29	1E-28	3E-28	7E-29	7E-29	3E-28	6E-28	2E-28	2E-28	6E-28	1E-27	3E-28	3E-28	1E-27	3E-27	7E-28	7E-28	3E-27	6E-27	2E-27	2E-27	6E-27	1E-26
2E-31	2E-31	8E-31	2E-30	6E-31	6E-31	2E-30	6E-30	1E-30	1E-30	5E-30	1E-29	3E-30	3E-30	1E-29	3E-29	8E-30	8E-30	3E-29	7E-29	2E-29	2E-29	7E-29	2E-28	4E-29	4E-29	2E-28	4E-28	9E-29	9E-29	3E-28	6E-28
9E-33	9E-33	3E-32	1E-31	2E-32	2E-32	9E-32	3E-31	6E-32	6E-32	2E-31	6E-31	2E-31	2E-31	6E-31	2E-30	4E-31	4E-31	1E-30	4E-30	9E-31	9E-31	4E-30	9E-30	2E-30	2E-30	8E-30	2E-29	5E-30	5E-30	2E-29	5E-29
4E-34	4E-34	1E-33	4E-33	1E-33	1E-33	4E-33	1E-32	3E-33	3E-33	1E-32	3E-32	7E-33	7E-33	3E-32	7E-32	2E-32	2E-32	7E-32	2E-31	4E-32	4E-32	2E-31	4E-31	1E-31	1E-31	4E-31	1E-30	3E-31	3E-31	1E-30	2E-30
1E-35	1E-35	5E-35	2E-34	4E-35	4E-35	1E-34	4E-34	1E-34	1E-34	4E-34	1E-33	3E-34	3E-34	1E-33	3E-33	8E-34	8E-34	3E-33	8E-33	2E-33	2E-33	8E-33	2E-32	5E-33	5E-33	2E-32	5E-32	1E-32	1E-32	5E-32	1E-31
4E-37	4E-37	2E-36	5E-36	1E-36	1E-36	5E-36	2E-35	4E-36	4E-36	1E-35	5E-35	1E-35	1E-35	5E-35	1E-34	3E-35	3E-35	1E-34	3E-34	8E-35	8E-35	3E-34	9E-34	2E-34	2E-34	8E-34	2E-33	6E-34	6E-34	2E-33	6E-33
1E-38	1E-38	5E-38	2E-37	4E-38	4E-38	2E-37	6E-37	1E-37	1E-37	5E-37	2E-36	4E-37	4E-37	2E-36	5E-36	1E-36	1E-36	5E-36	1E-35	3E-36	3E-36	1E-35	4E-35	9E-36	9E-36	4E-35	1E-34	2E-35	2E-35	9E-35	3E-34
4E-40	4E-40	1E-39	5E-39	1E-38	1E-39	5E-39	2E-38	4E-39	4E-39	2E-38	6E-38	1E-38	1E-38	5E-38	2E-37	4E-38	4E-38	2E-37	5E-37	1E-37	1E-37	5E-37	1E-36	4E-37	4E-37	1E-36	4E-36	1E-36	1E-36	4E-36	1E-35
1E-41	1E-41	4E-41	2E-40	4E-41	4E-41	1E-40	5E-40	1E-40	1E-40	5E-40	2E-39	4E-40	4E-40	2E-39	6E-39	1E-39	1E-39	5E-39	2E-38	4E-39	4E-39	2E-38	5E-38	1E-38	1E-38	5E-38	2E-37	4E-38	4E-38	1E-37	4E-37
2E-43	2E-43	9E-43	4E-42	1E-42	1E-42	4E-42	1E-41	4E-42	4E-42	1E-41	5E-41	1E-41	1E-41	5E-41	2E-40	4E-41	4E-41	2E-40	6E-40	1E-40	1E-40	5E-40	2E-39	4E-40	4E-40	2E-39	5E-39	1E-39	1E-39	5E-39	2E-38
5E-45	5E-45	2E-44	9E-44	2E-44	2E-44	9E-44	4E-43	9E-44	9E-44	3E-43	1E-42	3E-43	3E-43	1E-42	5E-42	1E-42	1E-42	5E-42	2E-41	4E-42	4E-42	2E-41	8E-41	1E-41	1E-41	5E-41	2E-40	4E-41	4E-41	2E-40	6E-40

Time	Time Increment —71— Caqueous total mg/l	Csorb mg/kg	Csoil mg/kg	Time	Time Increment —72— Caqueous total mg/l	Csorb mg/kg	Csoil mg/kg
9E-04	9E-04	3E-03	3E-03	9E-04	9E-04	3E-03	3E-03
5E-03	5E-03	2E-02	2E-02	5E-03	5E-03	2E-02	2E-02
1E-02	1E-02	5E-02	5E-02	1E-02	1E-02	5E-02	5E-02
2E-02	2E-02	9E-02	9E-02	2E-02	2E-02	9E-02	9E-02
3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01
3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01
3E-02	3E-02	1E-01	1E-01	3E-02	3E-02	1E-01	1E-01
2E-02	2E-02	7E-02	8E-02	2E-02	2E-02	7E-02	8E-02
1E-02	1E-02	4E-02	5E-02	1E-02	1E-02	5E-02	5E-02
8E-03	8E-03	2E-02	3E-02	8E-03	8E-03	2E-02	3E-02
3E-03	3E-03	1E-02	1E-02	3E-03	3E-03	1E-02	1E-02
1E-03	1E-03	5E-03	5E-03	1E-03	1E-03	5E-03	6E-03
5E-04	5E-04	2E-03	2E-03	5E-04	5E-04	2E-03	2E-03
2E-04	2E-04	6E-04	7E-04	2E-04	2E-04	7E-04	8E-04
5E-05	5E-05	2E-04	2E-04	6E-05	6E-05	2E-04	3E-04
1E-05	1E-05	6E-05	7E-05	2E-05	2E-05	7E-05	8E-05
4E-06	4E-06	1E-05	2E-05	5E-06	5E-06	2E-05	2E-05
1E-06	1E-06	4E-06	5E-06	1E-06	1E-06	4E-06	6E-06
2E-07	2E-07	8E-07	1E-06	3E-07	3E-07	1E-06	1E-06
5E-08	5E-08	2E-07	2E-07	6E-08	6E-08	2E-07	3E-07
9E-09	9E-09	4E-08	5E-08	1E-08	1E-08	5E-08	6E-08
2E-09	2E-09	6E-09	9E-09	2E-09	2E-09	9E-09	1E-08
3E-10	3E-10	1E-09	2E-09	4E-10	4E-10	2E-09	2E-09
5E-11	5E-11	2E-10	3E-10	7E-11	7E-11	2E-10	4E-10
7E-12	7E-12	3E-11	4E-11	1E-11	1E-11	4E-11	6E-11
1E-12	1E-12	4E-12	6E-12	1E-12	1E-12	6E-12	9E-12
1E-13	1E-13	5E-13	6E-13	2E-13	2E-13	8E-13	1E-12
2E-14	2E-14	7E-14	1E-13	3E-14	3E-14	1E-13	2E-13
2E-15	2E-15	8E-15	1E-14	3E-15	3E-15	1E-14	2E-14
2E-16	2E-16	9E-16	2E-15	4E-16	4E-16	1E-15	2E-15
2E-17	2E-17	9E-17	2E-16	4E-17	4E-17	2E-16	3E-16
2E-18	2E-18	9E-18	2E-17	4E-18	4E-18	2E-17	3E-17
2E-19	2E-19	9E-19	2E-18	4E-19	4E-19	2E-18	3E-18
2E-20	2E-20	8E-20	1E-19	4E-20	4E-20	1E-19	3E-19
2E-21	2E-21	7E-21	1E-20	3E-21	3E-21	1E-20	2E-20
1E-22	1E-22	5E-22	1E-21	3E-22	3E-22	1E-21	2E-21
1E-23	1E-23	4E-23	8E-23	2E-23	2E-23	8E-23	2E-22
8E-25	8E-25	3E-24	6E-24	1E-24	1E-24	5E-24	1E-23
5E-26	5E-26	2E-25	4E-25	1E-25	1E-25	4E-25	8E-25
3E-27	3E-27	1E-26	3E-26	7E-27	7E-27	3E-26	6E-26
2E-28	2E-28	7E-28	2E-27	4E-28	4E-28	2E-27	4E-27
1E-29	1E-29	4E-29	1E-28	2E-29	2E-29	9E-29	2E-28
6E-31	6E-31	2E-30	6E-30	1E-30	1E-30	5E-30	1E-29
3E-32	3E-32	1E-31	3E-31	7E-32	7E-32	3E-31	7E-31
1E-33	1E-33	5E-33	1E-32	3E-33	3E-33	1E-32	3E-32
6E-35	6E-35	2E-34	7E-34	2E-34	2E-34	8E-34	2E-33
3E-36	3E-36	1E-35	3E-35	7E-36	7E-36	3E-35	7E-35
1E-37	1E-37	4E-37	1E-36	3E-37	3E-37	1E-36	3E-36
4E-39	4E-39	2E-38	5E-38	1E-38	1E-38	4E-38	1E-37
1E-40	1E-40	5E-40	2E-39	4E-40	4E-40	2E-39	5E-39

Soil depth increment	TI 1	TI 2	TI 3	TI 4	TI 5	TI 6	TI 7	TI 8	TI 9	TI 10	TI 11	TI 12	TI 13	TI 14	TI 15	TI 16	TI 17	TI 18	TI 19	TI 20	TI 21	TI 22	TI 23	TI 24	TI 25
1	2E-01	2E-01	1E-01	1E-01	1E-01	1E-01	1E-01	1E-01	9E-02	9E-02	8E-02	8E-02	7E-02	6E-02	6E-02	6E-02	5E-02	5E-02	4E-02	4E-02	4E-02	4E-02	3E-02	3E-02	3E-02
2	0E+00	1E-02	2E-02	3E-02	4E-02	5E-02	5E-02	6E-02	6E-02	6E-02	6E-02	6E-02	6E-02	7E-02	7E-02	6E-02	6E-02	6E-02	6E-02	6E-02	6E-02	6E-02	6E-02	5E-02	5E-02
3	0E+00	0E+00	9E-04	2E-03	5E-03	7E-03	1E-02	1E-02	2E-02	2E-02	2E-02	2E-02	3E-02	3E-02	3E-02	4E-02	4E-02	4E-02	4E-02	4E-02	4E-02	5E-02	5E-02	5E-02	5E-02
4	0E+00	0E+00	0E+00	6E-05	2E-04	5E-04	1E-03	2E-03	2E-03	3E-03	5E-03	6E-03	7E-03	8E-03	1E-02	1E-02	1E-02	2E-02	2E-02	2E-02	2E-02	2E-02	2E-02	3E-02	3E-02
5	0E+00	0E+00	0E+00	0E+00	5E-06	2E-05	6E-05	1E-04	2E-04	4E-04	6E-04	9E-04	1E-03	2E-03	3E-03	3E-03	3E-03	4E-03	5E-03	6E-03	7E-03	8E-03	9E-03	1E-02	1E-02
6	0E+00	0E+00	0E+00	0E+00	0E+00	3E-07	2E-06	6E-06	1E-05	3E-05	6E-05	1E-04	2E-04	2E-04	3E-04	5E-04	6E-04	8E-04	1E-03	1E-03	2E-03	2E-03	2E-03	3E-03	3E-03
7	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	2E-08	2E-07	8E-07	2E-06	4E-06	8E-06	1E-05	2E-05	4E-05	6E-05	9E-05	1E-04	2E-04	2E-04	3E-04	4E-04	5E-04	7E-04	8E-04
8	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	2E-08	1E-08	5E-08	2E-07	4E-07	9E-07	2E-06	3E-06	6E-06	1E-05	2E-05	3E-05	4E-05	5E-05	7E-05	1E-04	1E-04	2E-04
9	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	1E-10	1E-09	5E-09	2E-08	5E-08	1E-07	2E-07	5E-07	8E-07	2E-06	3E-06	4E-06	6E-06	1E-05	1E-05	2E-05	3E-05
10	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	9E-12	8E-11	4E-10	2E-09	5E-09	1E-08	3E-08	6E-08	1E-07	2E-07	4E-07	7E-07	1E-06	2E-06	3E-06	4E-06
11	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	6E-13	7E-12	4E-11	1E-10	5E-10	1E-09	3E-09	7E-09	2E-08	3E-08	6E-08	1E-07	2E-07	3E-07	4E-07
12	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	5E-14	5E-13	3E-12	1E-11	5E-11	1E-10	4E-10	9E-10	2E-09	4E-09	8E-09	1E-08	3E-08	4E-08
13	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	3E-15	4E-14	3E-13	1E-12	4E-12	1E-11	4E-11	1E-10	2E-10	5E-10	1E-09	2E-09	4E-09
14	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	2E-16	3E-15	2E-14	1E-13	4E-13	1E-12	4E-12	1E-11	3E-11	6E-11	1E-10	3E-10
15	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	2E-17	2E-16	2E-15	9E-15	4E-14	1E-13	4E-13	1E-12	3E-12	7E-12	2E-11
16	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	1E-18	2E-17	1E-16	8E-16	4E-15	1E-14	4E-14	1E-13	3E-13	8E-13
17	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	9E-20	1E-18	1E-17	7E-17	3E-16	1E-15	4E-15	1E-14	4E-14
18	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	6E-21	1E-19	8E-19	3E-17	1E-16	4E-16	1E-15		
19	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	5E-22	8E-21	8E-20	5E-18	2E-16	1E-17	4E-17		
20	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	3E-23	6E-22	6E-21	4E-20	2E-19	1E-18		
21	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	2E-24	5E-23	5E-22	3E-21	2E-20	
22	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	2E-25	4E-24	4E-23	3E-22
23	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	1E-26	3E-25	3E-24
24	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	9E-28	2E-26
25	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	6E-25
26	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
27	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
28	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
29	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
30	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00
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TI 26	TI 27	TI 28	TI 29	TI 30	TI 31	TI 32	TI 33	TI 34	TI 35	TI 36	TI 37	TI 38	TI 39	TI 40	TI 41	TI 42	TI 43	TI 44	TI 45	TI 46	TI 47	TI 48	TI 49	TI 50	TI 51	TI 52	TI 53	TI 54	TI 55	TI 56	TI 57
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0E+00	0E+00	0E+00	0E+00	9E-36	3E-34	4E-33	4E-32	3E-31	2E-30	1E-29	5E-29	2E-28	1E-27	4E-27	1E-26	4E-26	1E-25	4E-25	1E-24	3E-24	7E-24	2E-23	4E-23	9E-23	2E-22	5E-22	1E-21	2E-21	4E-21	8E-21	
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	6E-37	2E-35	3E-34	3E-33	2E-32	2E-31	1E-30	5E-30	2E-29	9E-29	3E-28	1E-27	4E-27	1E-26	4E-26	1E-25	3E-25	8E-25	2E-24	5E-24	1E-23	3E-23	8E-23	1E-22	3E-22	6E-22
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	5E-38	1E-36	2E-35	2E-34	2E-33	1E-32	8E-32	4E-31	2E-30	8E-30	3E-29	1E-28	4E-28	1E-27	4E-27	1E-26	3E-26	8E-26	2E-25	5E-25	1E-24	3E-24	7E-24	2E-23	3E-23
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	3E-39	1E-37	2E-36	2E-35	2E-34	1E-33	7E-33	4E-32	2E-31	8E-31	3E-30	1E-29	4E-29	1E-28	4E-28	1E-27	3E-27	9E-27	2E-26	6E-26	2E-25	4E-25	9E-25	2E-24
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	2E-40	8E-39	1E-37	1E-36	1E-35	5E-35	8E-34	3E-33	2E-32	7E-32	3E-31	1E-30	4E-30	1E-29	4E-29	1E-28	4E-28	1E-27	3E-27	7E-27	2E-26	4E-26	1E-25
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	2E-41	6E-40	1E-38	1E-37	1E-36	6E-36	5E-35	3E-34	1E-33	6E-33	3E-32	1E-31	4E-31	1E-30	4E-30	1E-29	4E-29	1E-28	3E-28	8E-28	2E-27	5E-27
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	1E-42	4E-41	7E-40	9E-39	8E-38	6E-37	4E-36	2E-35	1E-34	6E-34	2E-33	9E-33	4E-32	1E-31	4E-31	1E-30	4E-30	1E-29	3E-29	8E-29	2E-28
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	9E-44	3E-42	2E-41	7E-40	7E-39	5E-38	3E-37	2E-36	1E-35	5E-35	2E-34	9E-34	3E-33	1E-32	4E-32	1E-31	4E-31	1E-30	3E-30	9E-30
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	6E-45	2E-43	4E-42	5E-41	5E-40	4E-39	3E-38	2E-37	9E-37	4E-36	2E-35	8E-35	3E-34	1E-33	4E-33	1E-32	4E-32	1E-31	4E-31
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	5E-46	2E-44	3E-43	4E-42	4E-41	3E-40	2E-39	1E-38	8E-38	4E-37	2E-36	8E-36	3E-35	1E-34	4E-34	1E-33	4E-33	1E-32
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	3E-47	1E-45	2E-44	3E-43	3E-42	3E-41	2E-40	1E-39	7E-39	3E-38	2E-37	7E-37	3E-36	1E-35	4E-35	1E-34	4E-34
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	2E-48	9E-47	2E-45	3E-44	3E-43	2E-42	2E-41	1E-40	6E-40	3E-39	1E-38	6E-38	3E-37	1E-36	4E-36	1E-35
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	2E-49	7E-48	1E-46	2E-45	2E-44	2E-43	1E-42	9E-42	5E-41	3E-40	1E-39	6E-39	2E-38	8E-38	4E-37
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	1E-50	5E-49	1E-47	2E-46	2E-45	1E-44	1E-43	7E-43	4E-42	2E-41	1E-40	5E-40	2E-39	9E-39
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	9E-52	4E-50	8E-49	1E-47	1E-46	1E-45	9E-45	6E-44	4E-43	2E-42	1E-41	5E-41	2E-40
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	8E-53	3E-51	6E-50	9E-49	1E-47	9E-47	7E-46	5E-45	3E-44	2E-43	9E-43	4E-42
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	5E-54	2E-52	4E-51	7E-50	8E-49	7E-48	6E-47	4E-46	3E-45	1E-44	6E-44
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	3E-55	1E-53	3E-52	5E-51	6E-50	6E-49	5E-48	3E-47	2E-46	1E-45
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	2E-56	1E-54	3E-53	4E-52	5E-51	5E-50	4E-49	3E-48	2E-47
0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	0E+00	2E-57	8E-56	2E-54	3E-53	4E-52	4E-51	3E-50	2E-49

TI 58	TI 59	TI 60	TI 61	TI 62	TI 63	TI 64	TI 65	TI 66	TI 67	TI 68	TI 69	TI 70	TI 71	TI 72
2E-03	2E-03	2E-03	2E-03	2E-03	2E-03	2E-03	1E-03	1E-03	1E-03	1E-03	1E-03	1E-03	9E-04	9E-04
1E-02	1E-02	1E-02	9E-03	9E-03	8E-03	8E-03	7E-03	7E-03	6E-03	6E-03	6E-03	5E-03	5E-03	5E-03
2E-02	2E-02	2E-02	2E-02	2E-02	2E-02	2E-02	2E-02	2E-02	2E-02	2E-02	1E-02	1E-02	1E-02	1E-02
3E-02	3E-02	3E-02	3E-02	3E-02	3E-02	3E-02	3E-02	3E-02	3E-02	3E-02	2E-02	2E-02	2E-02	2E-02
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3E-02	3E-02	3E-02	3E-02	3E-02	3E-02	3E-02	3E-02	3E-02	3E-02	3E-02	3E-02	3E-02	3E-02	3E-02
2E-02	2E-02	2E-02	2E-02	2E-02	2E-02	2E-02	2E-02	2E-02	2E-02	2E-02	3E-02	3E-02	3E-02	3E-02
1E-02	1E-02	1E-02	1E-02	1E-02	1E-02	1E-02	2E-02	2E-02	2E-02	2E-02	2E-02	2E-02	2E-02	2E-02
5E-03	6E-03	6E-03	6E-03	7E-03	7E-03	6E-03	8E-03	9E-03	9E-03	1E-02	1E-02	1E-02	1E-02	1E-02
2E-03	2E-03	3E-03	3E-03	3E-03	3E-03	4E-03	4E-03	4E-03	5E-03	5E-03	5E-03	6E-03	6E-03	6E-03
8E-04	9E-04	1E-03	1E-03	1E-03	1E-03	2E-03	2E-03	2E-03	2E-03	2E-03	2E-03	3E-03	3E-03	3E-03
3E-04	3E-04	4E-04	4E-04	5E-04	5E-04	6E-04	7E-04	7E-04	8E-04	9E-04	1E-03	1E-03	1E-03	1E-03
8E-05	9E-05	1E-04	1E-04	1E-04	2E-04	2E-04	2E-04	3E-04	3E-04	3E-04	4E-04	4E-04	5E-04	5E-04
2E-05	3E-05	3E-05	4E-05	4E-05	5E-05	6E-05	7E-05	8E-05	9E-05	1E-04	1E-04	1E-04	2E-04	2E-04
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2E-07	3E-07	4E-07	5E-07	6E-07	8E-07	1E-06	1E-06	1E-06	2E-06	2E-06	3E-06	3E-06	4E-06	5E-06
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2E-10	3E-10	4E-10	5E-10	7E-10	1E-09	1E-09	2E-09	2E-09	3E-09	4E-09	5E-09	7E-09	9E-09	1E-08
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4E-17	6E-17	1E-16	2E-16	3E-16	5E-16	8E-16	1E-15	2E-15	3E-15	5E-15	8E-15	1E-14	2E-14	3E-14
3E-18	5E-18	9E-18	2E-17	3E-17	5E-17	9E-17	1E-16	2E-16	3E-16	5E-16	9E-16	1E-15	2E-15	3E-15
2E-19	4E-19	8E-19	1E-18	2E-18	4E-18	7E-18	1E-17	2E-17	3E-17	6E-17	9E-17	1E-16	2E-16	4E-16
2E-20	3E-20	6E-20	1E-19	2E-19	4E-19	7E-19	1E-18	2E-18	3E-18	6E-18	9E-18	2E-17	2E-17	4E-17
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8E-40	3E-39	1E-38	4E-38	1E-37	4E-37	1E-36	4E-36	1E-35	3E-35	8E-35	2E-34	6E-34	1E-33	3E-33
2E-41	8E-41	3E-40	1E-39	4E-39	1E-38	4E-38	1E-37	4E-37	1E-36	3E-36	9E-36	2E-35	6E-35	2E-34
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7E-45	3E-44	2E-43	7E-43	3E-42	1E-41	4E-41	1E-40	4E-40	1E-39	4E-39	1E-38	4E-38	1E-37	3E-37
1E-46	6E-46	3E-45	1E-44	6E-44	2E-43	1E-42	4E-42	1E-41	4E-41	1E-40	4E-40	1E-39	4E-39	1E-38
2E-48	9E-48	5E-47	3E-46	1E-45	5E-45	2E-44	9E-44	3E-43	1E-42	4E-42	1E-41	4E-41	1E-40	4E-40

APPENDIX D

Draft Environmental Covenant

Prepared by:
Groundwater and Environmental Services, Inc.
440 Creamery Way, Suite 500
Exton, PA 19341
(610) 458-1077
County Parcel Identification Number: 49009046

Return to:
Groundwater and Environmental Services, Inc.
440 Creamery Way, Suite 500
Exton, PA 19341
Attn: Krista Snyder
(610) 458-1077 ext. 3068

The County Parcel Identification No. of the Property is: 49009046
GRANTOR: Sunoco, Inc.
PROPERTY ADDRESS: 610 York Road, Warminster, Pennsylvania

ENVIRONMENTAL COVENANT

This Environmental Covenant is executed pursuant to the Pennsylvania Uniform Environmental Covenants Act, Act No. 68 of 2007, 27 Pa. C.S. §§ 6501 – 6517 (UECA). This Environmental Covenant subjects the Property identified in Paragraph 1 to the activity and/or use limitations in this document. As indicated later in this document, this Environmental Covenant has been approved by the Pennsylvania Department of Environmental Protection (Department).

1. **Property affected**. The property affected (Property) by this Environmental Covenant is located in the Township of Warminster, Bucks County.

The postal street address of the Property is: 610 York Road, Warminster, PA. The tax assessment street address of the Property is: 610 York Road, Warminster, PA.

The latitude and longitude of the center of the Property affected by this Environmental Covenant is: 40° 12' 36.6" N, 75° 05' 58.2" W.

The Property has been known by the following name(s): Sunoco Station #0363-5430 with PADEP Storage Tank Facility ID #09-30778.

A complete description of the Property is attached to this Environmental Covenant as Exhibit A. A map of the Property is attached to this Environmental Covenant as Exhibit B.

2. **Property Owner / GRANTOR**. Sunoco, Inc. (R&M) is the owner of the Property. The mailing address of the Owner is:
1735 Market Street, STE LL, Philadelphia, Pennsylvania, 19103-7583.

3. **Holder(s) / GRANTEE**. The following is a "holder," as that term is defined in 27 Pa. C.S. § 6502, of this Environmental Covenant:
Sunoco Inc. (R&M)
Philadelphia, PA 19103

4. **Description of Contamination & Remedy**. The following describes the contamination and remedy of the property.

Groundwater sampling was initiated at the site in March 1996, at which time a groundwater monitoring program was initiated. Dissolved-phase hydrocarbons were detected at concentrations above the Department Statewide Health Standards (SHS) in the monitoring wells. This monitoring program continued until July 2009.

During underground storage tank (UST) closure activities in 1995 and 1996, soils samples were collected at depths ranging from one to 12 feet. Soil analytical results demonstrated that benzene was detected at concentrations above the Department SHS in soil samples collected beneath known USTs, pre-Act 2 USTs, and dispenser islands. None of the remaining target parameters (toluene, ethylbenzene, and total xylenes) were detected at concentrations greater than the Department SHS during the UST closure activities. During the 2007 monitoring well installation, benzene was detected at concentrations above the Department SHS in two soil samples. The remaining target parameters (toluene, ethylbenzene, total xylenes, methyl tertiary butyl ether (MTBE), isopropylbenzene, and naphthalene) were not detected or were detected at concentrations below the Department SHS.

Remediation was initiated at this site in April 2005, with a chemical oxidation high-intensity targeted (HIT) remediation event in which approximately 450 gallons of 7 to 8% solution of hydrogen peroxide were injected into monitoring wells MW-1, MW-3, and MW-5.

Following active remediation, the dissolved-phase hydrocarbon impact was detected primarily in monitoring wells MW-1 through MW-3, located in the vicinity of the former pre-Act 2 UST field and former dispenser islands along York Road. Dissolved hydrocarbons continued to exhibit decreasing trends. During post-remediation groundwater monitoring and sampling, benzene, MTBE, and naphthalene were detected at concentrations and/or had a laboratory detection limit above the Department SHS.

During attainment groundwater monitoring and sampling, benzene was detected at concentrations above the Department SHS and/or had a laboratory detection limit above the Department SHS in monitoring well MW-2, located in the vicinity of the former dispenser islands along York Road; however, fate and transport modeling did not predict off-site migration of the hydrocarbon plume exceeding the Department SHS and the Practical Quantitation Limit (PQL).

The environmental activities conducted at this site were in accordance with the Site Characterization Report (SCR) prepared by Handex of Eastern Pennsylvania dated May 28, 1996, the Additional SCR / Remedial Action Plan (ASCR/RAP) prepared by GES dated January 6, 2006, the SCR Addendum / Remedial Action Completion Report (SCRA/RACR) prepared by GES dated October 1, 2009, and the ASCR/RACR Addendums dated April 8 and July 15, 2010.

The SCR (dated May 28, 1996), the ASCR/RAP (dated January 6, 2006), the SCRA/RACR (dated October 1, 2009), and the ASRC/RACR Addendums (dated April 8 and July 15, 2010) were developed in accordance with applicable sections of Pennsylvania's Storage Tanks, Corrective Action Regulations (Title 25, Chapter 245), as well as the Land Recycling and Environmental Remediation Standards Act (Title 25, Chapter 250). The complete file, including the above-mentioned reports, is available at the Department's Southeast Regional Office located at 2 East Main Street in Norristown, Pennsylvania.

5. **Activity & Use Limitations**. The Property is subject to the following activity and use limitations, which the Owner and each subsequent owner of the Property shall abide by:

(a) The groundwater at or under the property shall not be used.

b) The Owner shall prohibit residential use of the Property.

6. **Notice of Limitations in Future Conveyances**. Each instrument hereafter conveying any interest in the Property subject to this Environmental Covenant shall contain a notice of the activity and use limitations set forth in this Environmental Covenant and shall provide the recorded location of this Environmental Covenant.

7. **Compliance Reporting**. The owner and each subsequent owner of the Property shall submit to the Department written documentation confirming that the activity and use limitations in this Environmental Covenant are being complied with following transfer of the Property. In addition, the Owner or subsequent owner shall, as appropriate, notify the Department concerning proposed changes in use of the Property, filing of applications for building permits for the Property or proposals for any work at the Property which affect the contamination on the Property subject to this Environmental Covenant. The Owner and each subsequent owner shall also submit, to the Department,

written documentation concerning the use of the property and compliance with this Environmental Covenant upon request by the Department.

8. **Access by the Department**. In addition to any rights already possessed by the Department, this Environmental Covenant grants to the Department a right of access of the Property in connection with implementation or enforcement of this Environmental Covenant.

9. **Recordation & Proof & Notification**. Within 30 days after the date of the Department's approval, the Owner shall file this Environmental Covenant with the Recorder of Deeds for each County in which the Property is located, and send a file-stamped copy of this Environmental Covenant to the Department within 60 days recordation. Within that time period, the Owner also shall send a file-stamped copy to each of the following: each Municipality and County in which the Property is located; any Holder identified in this Environmental Covenant; each person holding a recorded interest in the Property; and each person in possession of the Property.

10. **Termination or Modification**. This Environmental Covenant may only be terminated or modified in accordance with Section 9 of UECA, 27 Pa. C.S. § 6509, including as follows:

> In accordance with Section 10 of UECA, 27 Pa. C.S. § 6510(a)(3)(i), Grantor hereby waives the right to consent to any amendment or termination of the Environmental Covenant by consent; it being intended that any amendment to or termination of this Environmental Covenant by consent in accordance with this Paragraph requires only the following signatures on the instrument amending or terminating this Environmental Covenant: (i) the Holder at the time of such amendment or termination; (ii) the then current owner of the Property and (iii) the Department.

11. **Department's address**. Communications with the Department regarding this Environmental Covenant shall be sent to:

ECP Manager
Southeast Regional Office
2 East Main Street
Norristown, PA 19401

ACKNOWLEDGMENTS by Owner(s) and any Holder(s), in the following form:

Sunoco, Inc. (R&M), "Grantor"

Date: By: _____

Name: _____

Title: _____

COMMONWEALTH OF PENNSYLVANIA)[other state, if executed outside PA]

)

COUNTY OF _____) SS:

On this ___ day of _____, 20__, before me, the undersigned officer, personally appeared _____ [Owner, Grantor] who acknowledged himself/herself to be the person whose name is subscribed to this Environmental Covenant, and acknowledged that s/he executed same for the purposes therein contained.

In witness whereof, I hereunto set my hand and official seal.

_____

Notary Public

EXHIBIT A

DESCRIPTION OF PROPERTY

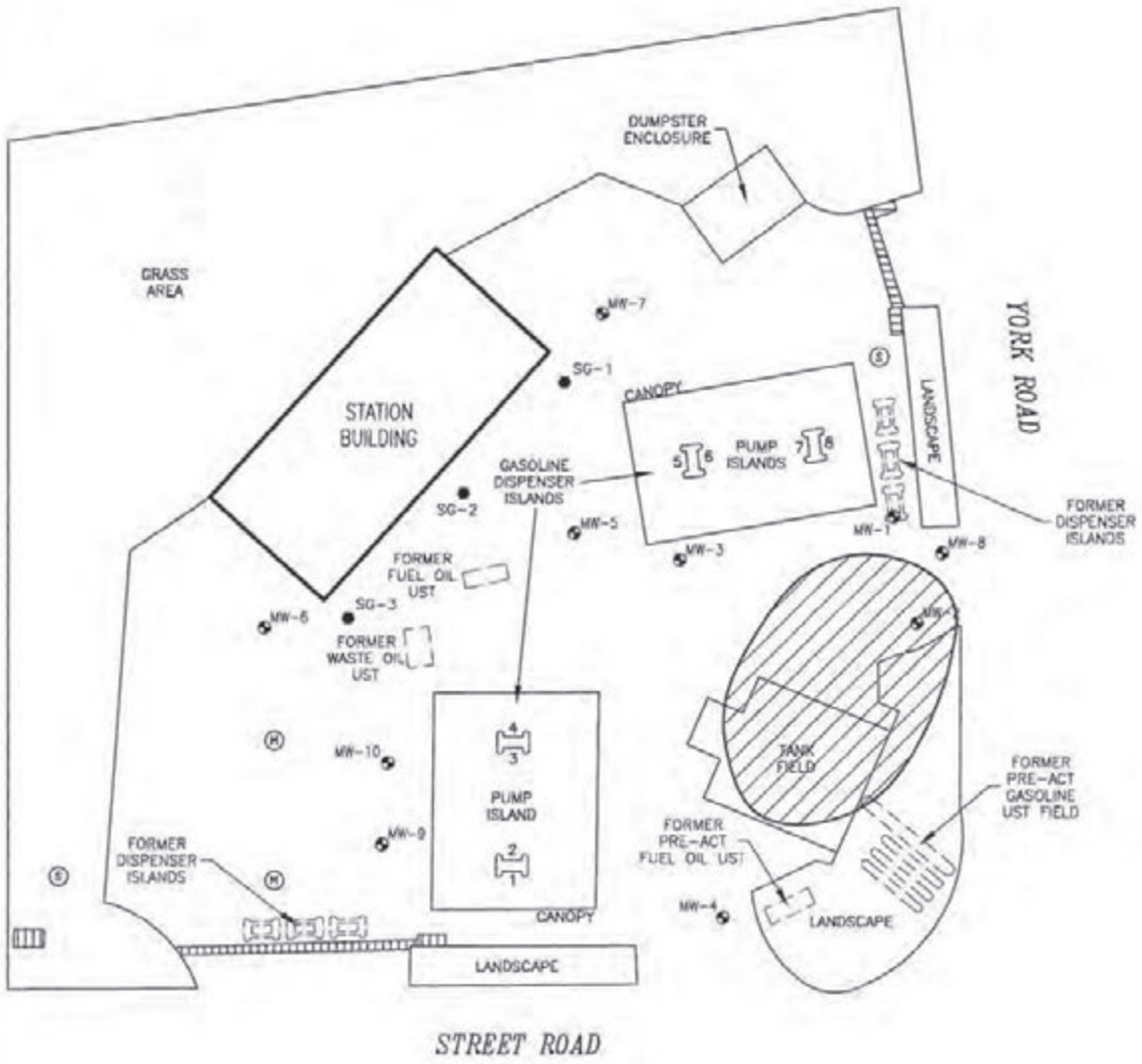
The site, located at the intersection of York Road (Route 263) and Street Road in Warminster, Pennsylvania (40° 12' 36.6" N, 75° 05' 58.2" W), is currently owned by Sunoco, Inc. (R&M), and is currently utilized as a retail gasoline facility and convenience store.

The property is zoned as commercial. The currently existing features at the site include a one-story station building and convenience store, four gasoline dispenser islands, three unleaded gasoline underground storage tanks (USTs), and associated subsurface piping. The UST area and dispenser island area are covered with a concrete pad. Removal and closure of fuel oil and waste oil underground storage tanks (USTs), removal of six gasoline dispenser islands, and removal of four pre-Act 2 unleaded gasoline USTs took place between November 1995 and February 1996. The former pre-Act 2 UST tank field and dispenser island areas are comprised of clean fill material and have been resurfaced. Grass and landscaping exists at the intersection of York Road and Street Road as well as behind the station building. The remaining portion of the site is covered in asphalt. There are numerous utility lines located at the site which include sub-grade public water, natural gas, telephone, and sanitary sewer. Ten monitoring wells (MW-1 through MW-10) comprise the monitoring well network and are located on-site. There are also three soil vapor points (SG-1 through SG-3) on-site. These well and soil-gas points will be properly abandoned upon approval of the Remedial Action Completion Report (RACR) (dated October 1, 2009). A site map showing property boundaries and pertinent current and former site features is included as **Exhibit B**.

ALL THAT CERTAIN piece or parcel of land with the buildings and improvements erected thereon situate in the Township of Warminster, County of Bucks, Commonwealth of Pennsylvania, more particularly described in accordance with a survey and plan thereof made of William S. Erwin, Registered Professional Engineer of Langhorne, Pennsylvania, dated December 10, 1954, as follows, to wit:

BEGINNING at a point in the middle line of Street Road (also known as Pennsylvania Traffic Route No. 132) (33 feet wide) at the distance of 16.70 feet North 50 degrees 30 minutes West of the intersection of the said center line of Street Road with the middle line of Old York Road (also known as United States Traffic Route No 611) (45 feet wide): extending thence (1) North 08 degrees 52 minutes 30 seconds East along a line in said Old York Road distant 8.13 feet Westwardly from and running parallel with the middle line thereof 264.00 feet to a point; thence (2) across said Old York Road North 54 degrees 17 minutes West 9.12 feet to a monument set in a Northwesterly line thereof and continuing thence still North 54 degrees 17 minutes West along line of land now or late of Agnes Taylor 158 feet to a field stone in line of land now or late of Elise Naylor; thence (3) South 39 degrees 15 minutes West along said line of land now or late of said Elsie Naylor 216.15 feet to a railroad spike in the said middle line of said Street Road; and thence (4) South 50 degrees 30 minutes East along said middle line of said Street Road 300.30 feet to the point and place of beginning.

CONTAINING 1.197 acres, more or less.



LEGEND

- MONITORING WELL
- SEWER MANHOLE
- MANHOLE
- STORM DRAINAGE
- SOIL GAS SURVEY POINT
- APPROXIMATE EXTENT OF GROUNDWATER IMPACTS EXCEEDING PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION STATEWIDE HEALTH STANDARDS

DRAFTED BY: TP (EXTON)	SITE MAP
CHECKED BY: KLS	SUNOCO STATION #0363-5430 610 YORK ROAD WARMINSTER, PENNSYLVANIA
REVIEWED BY: KLS	Groundwater & Environmental Services, Inc. 440 CREAMERY WAY, SUITE 500, EXTON, PA 19341
NORTH	SCALE IN FEET: 0 30 / DATE: 02-09-10 / FIGURE: 1

Remedial Action Completion Report Approval Letter

PA DEP - October 13, 2010

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION
SOUTHEAST REGIONAL OFFICE

RECEIVED
OCT 25 2010
By

October 13, 2010

Mr. Bill Brochu, P.G.
Sunoco, Inc.
P.O. Box 4209
Concord, NH 03302-4209

Re: Storage Tank Program
Remedial Action Completion Report Approval
Sunoco S/S No. 0363-5430
Facility ID No. 09-30778
Incident No. 7112
610 York Road
Warminster Township
Bucks County

Dear Mr. Brochu:

The Department of Environmental Protection ("Department") has received and reviewed documentation detailing the outcome of remedial actions taken subsequent to a release of regulated substances from the above-named facility. Your release was confirmed on March 1, 1996. Your Remedial Action Completion Report ("RACR") and succeeding addendums, dated October 1, 2009, April 8 and July 20, 2010, identifies each of the specific regulated substances involved in your release and cleanup.

Groundwater

Our review of the RACR confirms that based on results from eight consecutive sampling rounds you have attained the residential Statewide Health Standards in groundwater for the following compounds of concern: toluene, ethyl benzene, total xylenes, isopropylbenzene, methyl tertiary butyl ether ("MTBE"), and naphthalene.

Additionally, our review of the RACR confirms you have attained a residential site-specific cleanup in groundwater for benzene. Your site-specific cleanup attainment demonstration consisted of identifying exposure pathways, providing evidence that pathways are incomplete and providing model results predicting benzene plume would not migrate offsite above medium specific concentration of 5 ug/l over a 30-year period.

Soil

Based on soil quality beneath former distribution lines, dispensers, and underground storage tanks ("UST") removed in 1993 and 1995 through 1996, the Department has identified four areas of concern ("AOC") where you have provided adequate data for attainment demonstration.

AOC-1 is dispensers parallel to York Road removed and replaced in 1996. It is defined by soil samples labeled DISP-1 through DISP-3 and MW-8. Our review of the RACR confirms that based on sample results, you have attained residential Statewide Health Standards in soil for toluene, ethyl benzene, and xylenes. Additionally, our review confirms you have attained a residential site-specific cleanup for benzene in soil. Site-specific attainment demonstration consisted of identifying and evaluating exposure pathways, including the soil-to-groundwater pathway and providing evidence that they are incomplete. Based on Buffer Model results documented in the July 2010 addendum, an engineering control in the way of a cap is not needed to maintain groundwater quality below the AOC-1.

AOC-2 is the former pre-Act gasoline UST field where four previously closed-in-place tanks were removed in 1996. It is defined by samples labeled SS-1 through SS-11, TL-1, and TL-2. Our review confirms that based on sample results, you have attained residential Statewide Health Standards in soil for toluene, ethyl benzene, and xylenes. Additionally, our review confirms you have attained a residential site-specific cleanup for benzene in soil. Site-specific attainment demonstration consisted of identifying exposure pathways and providing evidence that they are incomplete. AOC-2 has historically been uncapped as it lies below a landscaped area. Therefore, engineering control to maintain groundwater quality is unnecessary.

AOC-3 is where two former 1,000-gallon gasoline USTs were removed in October 1993. It is defined by samples labeled 1 through 6. Our review confirms that based on sample results, you have attained residential Statewide Health Standards in soil for benzene, toluene, ethyl benzene, and xylenes.

AOC-4 is where two former 550-gallon USTs were removed in November 1995. It is defined by samples labeled SS-1 through SS-4. Our review confirms that based on sample results, you have attained residential Statewide Health Standards in soil for benzene, toluene, ethylbenzene, and xylenes.

Soil quality beneath the dispensers formerly located parallel to Street Road and removed in 1996 was not evaluated due to restricted access caused by the canopy footer. Soil from beneath the former 550-gallon UST that held fuel oil previously located adjacent to the pre-Act tankfield was evaluated for total petroleum hydrocarbons ("TPH") only. Releases of liability will not be issued for these two areas due to insufficient information.

You have complied with the procedural requirements of the Department's Corrective Action Regulations as promulgated under the Pennsylvania Storage Tank and Spill Prevention Act. The relief of liability for attaining this cleanup standard is set forth in Chapter 5 of the Land Recycling and Environmental Remediation Standards Act of 1995.

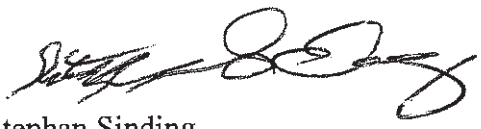
The Department approves the Remedial Action Completion report, subject to the following conditions. The conditions are filing the enclosed Environmental Covenant with the Recorder of Deeds in the proper County and providing the Department with proof of recordation, within the time frame set forth in the Environmental Covenant.

If you chose to abandon the monitoring wells at your facility, please be advised that all abandoned wells shall be reported to Bureau of Topographic and Geologic Survey ("BTGS"), on forms required by BTGS (and any other forms). If available, the original driller's log should be included along with the details of the well abandonment procedure. A photograph should be taken of the site, and a reference map should be made to locate the abandoned well. It also may be appropriate to survey the exact location of the well. This is especially important for wells associated with contaminated sites. Please provide a copy of your BTGS submission to this office.

This letter does not waive any rights of the Commonwealth of Pennsylvania to take enforcement action under applicable law for the conditions discussed in this letter.

Thank you for your cooperation in working with the Department toward the remediation of this site. If you need additional information or have any questions, please call Ms. Lauren Mapleton at 484.250.5783.

Sincerely,



Stephan Sinding
Regional Manager
Environmental Cleanup

Enclosure

cc: Mr. Miceli - USTIF
Mr. Payne, P.G. - DEP
Ms. Mapleton - DEP
Mr. Sepsy - DEP
Ms. Warren - DEP
Ms. Snyder - GES
Warminster Township
Bucks County Health Department
Re 30 (CM10ECP)258-1

Environmental Covenant

GES - November 15, 2010

Groundwater
& Environmental Services, Inc.

440 Creamery Way • Suite 500 • Exton, Pennsylvania 19341 • (610) 458-1077 • Fax (610) 458-2300

November 15, 2010

Ms. Lauren Mapleton
Pennsylvania Department of Environmental Protection
Environmental Cleanup Program
Southeastern Regional Office
2 East Main Street
Norristown, Pennsylvania 19401

Re: Sunoco Station #0363-5430
610 York Road
Warminster, PA
Facility Id #: 09-30778

To Whom It May Concern:

Enclosed is a fully executed environmental covenant for the above-referenced facility that has been approved by the Pennsylvania Department of Environmental Protection. A copy is being provided to you in accordance with Section 9: Recordation & Proof & Notification of the environment covenant, which states that a copy shall be sent to the Municipality and County in which the property is located. Should you have any questions, do not hesitate to call either of the undersigned.

Respectfully submitted,

Krista Snyder
Project Manager

for: Stephanie R. Grillo
Senior Project Manager

Enclosure

cc: GES project File
Sunoco, Inc. (ENFOS)

BUCKS COUNTY RECORDER OF DEEDS

55 East Court Street
Doylestown, Pennsylvania 18901
(215) 348-6209

Instrument Number - 2010076988
Recorded On 10/29/2010 At 10:39:29 AM * Total Pages - 12
* Instrument Type - DEED AGREEMENT - NO PROPERTY TRANSFER
Invoice Number - 399935 User - NMS
* Grantor - SUNOCO INC
* Grantee - PENNA COMWTH DEPT ENVIRONMENTAL PROTECTION
* Customer - SUNOCO
* FEES

RECORDING FEES	$61.00
TOTAL PAID	$61.00

This is a certification page

DO NOT DETACH

This page is now part of this legal document.

RETURN DOCUMENT TO:
SUNOCO

I hereby CERTIFY that this document is recorded in the Recorder of Deeds Office of Bucks County, Pennsylvania.

THE RECORDERS OFFICE OF BUCKS COUNTY, PA.

Robert W. Dickson
Acting Recorder of Deeds

* - Information denoted by an asterisk may change during the verification process and may not be reflected on this page.

0ADCD2

Book: 6543 Page: 1767

Environmental Covenant

RECEIVED
2010 OCT 29 A 10: 21
BUCKS COUNTY
RECORDER OF DEEDS

Prepared by:
Groundwater and Environmental Services, Inc.
440 Creamery Way, Suite 500
Exton, PA 19341
(610) 458-1077

BCRDA
Registry

Return to:
Groundwater and Environmental Services, Inc.
440 Creamery Way, Suite 500
Exton, PA 19341
Attn: Krista Snyder
(610) 458-1077 ext. 3068

The County Parcel Identification No. of the Property is: 49009046
GRANTOR: Sunoco, Inc.
PROPERTY ADDRESS: 610 York Road, Warminster, Pennsylvania

ENVIRONMENTAL COVENANT

This Environmental Covenant is executed pursuant to the Pennsylvania Uniform Environmental Covenants Act, Act No. 68 of 2007, 27 Pa. C.S. §§ 6501 – 6517 (UECA). This Environmental Covenant subjects the Property identified in Paragraph 1 to the activity and/or use limitations in this document. As indicated later in this document, this Environmental Covenant has been approved by the Pennsylvania Department of Environmental Protection (Department).

1. **Property affected**. The property affected (Property) by this Environmental Covenant is located in the Township of Warminster, Bucks County.

The postal street address of the Property is: 610 York Road, Warminster, PA. The tax assessment street address of the Property is: 610 York Road, Warminster, PA.

The latitude and longitude of the center of the Property affected by this Environmental Covenant is: 40° 12' 36.6" N, 75° 05' 58.2" W.

The Property has been known by the following name(s): Sunoco Station #0363-5430 with PADEP Storage Tank Facility ID #09-30778.

A complete description of the Property is attached to this Environmental Covenant as Exhibit A. A map of the Property is attached to this Environmental Covenant as Exhibit B.

2. **Property Owner / GRANTOR**. Sunoco, Inc. (R&M) is the owner of the Property. The mailing address of the Owner is:
1735 Market Street, STE LL, Philadelphia, Pennsylvania, 19103-7583.

3. **Holder(s) / GRANTEE**. The following is a "holder," as that term is defined in 27 Pa. C.S. § 6502, of this Environmental Covenant:
Sunoco Inc. (R&M)
Philadelphia, PA 19103

4. **Description of Contamination & Remedy**. The following describes the contamination and remedy of the property.

Groundwater sampling was initiated at the site in March 1996, at which time a groundwater monitoring program was initiated. Dissolved-phase hydrocarbons were detected at concentrations above the Department Statewide Health Standards (SHS) in the monitoring wells. This monitoring program continued until July 2009.

During underground storage tank (UST) closure activities in 1995 and 1996, soils samples were collected at depths ranging from one to 12 feet. Soil analytical results demonstrated that benzene was detected at concentrations above the Department SHS in soil samples collected beneath known USTs, pre-Act 2 USTs, and dispenser islands. None of the remaining target parameters (toluene, ethylbenzene, and total xylenes) were detected at concentrations greater than the Department SHS during the UST closure activities. During the 2007 monitoring well installation, benzene was detected at concentrations above the Department SHS in two soil samples. The remaining target parameters (toluene, ethylbenzene, total xylenes, methyl tertiary butyl ether (MTBE), isopropylbenzene, and naphthalene) were not detected or were detected at concentrations below the Department SHS.

Remediation was initiated at this site in April 2005, with a chemical oxidation high-intensity targeted (HIT) remediation event in which approximately 450 gallons of 7 to 8% solution of hydrogen peroxide were injected into monitoring wells MW-1, MW-3, and MW-5.

Following active remediation, the dissolved-phase hydrocarbon impact was detected primarily in monitoring wells MW-1 through MW-3, located in the vicinity of the former pre-Act 2 UST field and former dispenser islands along York Road. Dissolved hydrocarbons continued to exhibit decreasing trends. During post-remediation groundwater monitoring and sampling, benzene, MTBE, and naphthalene were detected at concentrations and/or had a laboratory detection limit above the Department SHS.

During attainment groundwater monitoring and sampling, benzene was detected at concentrations above the Department SHS and/or had a laboratory detection limit above the Department SHS in monitoring well MW-2, located in the vicinity of the former dispenser islands along York Road; however, fate and transport modeling did not predict off-site migration of the hydrocarbon plume exceeding the Department SHS and the Practical Quantitation Limit (PQL).

The environmental activities conducted at this site were in accordance with the Site Characterization Report (SCR) prepared by Handex of Eastern Pennsylvania dated May 28, 1996, the Additional SCR / Remedial Action Plan (ASCR/RAP) prepared by GES dated January 6, 2006, the SCR Addendum / Remedial Action Completion Report (SCRA/RACR) prepared by GES dated October 1, 2009, and the ASCR/RACR Addendums dated April 8 and July 15, 2010.

The SCR (dated May 28, 1996), the ASCR/RAP (dated January 6, 2006), the SCRA/RACR (dated October 1, 2009), and the ASRC/RACR Addendums (dated April 8 and July 15, 2010) were developed in accordance with applicable sections of Pennsylvania's Storage Tanks, Corrective Action Regulations (Title 25, Chapter 245), as well as the Land Recycling and Environmental Remediation Standards Act (Title 25, Chapter 250). The complete file, including the above-mentioned reports, is available at the Department's Southeast Regional Office located at 2 East Main Street in Norristown, Pennsylvania.

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b) The Owner shall prohibit residential use of the Property.

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written documentation concerning the use of the property and compliance with this Environmental Covenant upon request by the Department.

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> In accordance with Section 10 of UECA, 27 Pa. C.S. § 6510(a)(3)(i), Grantor hereby waives the right to consent to any amendment or termination of the Environmental Covenant by consent; it being intended that any amendment to or termination of this Environmental Covenant by consent in accordance with this Paragraph requires only the following signatures on the instrument amending or terminating this Environmental Covenant: (i) the Holder at the time of such amendment or termination; (ii) the then current owner of the Property and (iii) the Department.

11. **Department's address**. Communications with the Department regarding this Environmental Covenant shall be sent to:

ECP Manager
Southeast Regional Office
2 East Main Street
Norristown, PA 19401

ACKNOWLEDGMENTS by Owner(s) and any Holder(s), in the following form:

Date: 9/23/10

Sunoco, Inc. (R&M), "Grantor"
By: _____
Name: Roy Lance
Title: Manager Real Estate

COMMONWEALTH OF PENNSYLVANIA)[other state, if executed outside PA]
)
COUNTY OF Philadelphia) SS:

On this 23rd day of September, 2010, before me, the undersigned officer, personally appeared Roy G. Lance [Owner, Grantor] who acknowledged himself/herself to be the person whose name is subscribed to this Environmental Covenant, and acknowledged that s/he executed same for the purposes therein contained.

In witness whereof, I hereunto set my hand and official seal.

Toni Ng
Notary Public

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Toni Ng, Notary Public
City of Philadelphia, Philadelphia County
My Commission Expires Aug. 13, 2013
Member, Pennsylvania Association of Notaries

Property Owner: Sunoco, Inc. (R&M)
Property Address: 610 York Road
Warminster Township
Bucks County

APPROVED, by Commonwealth of Pennsylvania,
Department of Environmental Protection
By: _____ Date: 10-20-10
Name: Stephan Sinding
Title: Environmental Cleanup Program Manager
PADEP - SERO

COMMONWEALTH OF PENNSYLVANIA

COUNTY OF BUCKS

On this 20th day of October, 2010, before me, the undersigned officer, personally appeared Stephan Sinding who acknowledged himself to be the Manager of the Environmental Cleanup Program of the Commonwealth of Pennsylvania, Department of Environmental Protection, Southeast Regional Office, whose name is subscribed to this Environmental Covenant, and acknowledged that he executed same for the purposes therein contained.

In witness whereof, I hereunto set my hand and official seal.

_____
Notary Public

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Judy Lashley, Notary Public
Norristown Boro, Montgomery County
My Commission Expires July 28, 2012
Member, Pennsylvania Association of Notaries

EXHIBIT A

DESCRIPTION OF PROPERTY

The site, located at the intersection of York Road (Route 263) and Street Road in Warminster, Pennsylvania (40° 12' 36.6" N, 75° 05' 58.2" W), is currently owned by Sunoco, Inc. (R&M), and is currently utilized as a retail gasoline facility and convenience store.

The property is zoned as commercial. The currently existing features at the site include a one-story station building and convenience store, four gasoline dispenser islands, three unleaded gasoline underground storage tanks (USTs), and associated subsurface piping. The UST area and dispenser island area are covered with a concrete pad. Removal and closure of fuel oil and waste oil underground storage tanks (USTs), removal of six gasoline dispenser islands, and removal of four pre-Act 2 unleaded gasoline USTs took place between November 1995 and February 1996. The former pre-Act 2 UST tank field and dispenser island areas are comprised of clean fill material and have been resurfaced. Grass and landscaping exists at the intersection of York Road and Street Road as well as behind the station building. The remaining portion of the site is covered in asphalt. There are numerous utility lines located at the site which include sub-grade public water, natural gas, telephone, and sanitary sewer. Ten monitoring wells (MW-1 through MW-10) comprise the monitoring well network and are located on-site. There are also three soil vapor points (SG-1 through SG-3) on-site. These well and soil-gas points will be properly abandoned upon approval of the Remedial Action Completion Report (RACR) (dated October 1, 2009). A site map showing property boundaries and pertinent current and former site features is included as **Exhibit B**.

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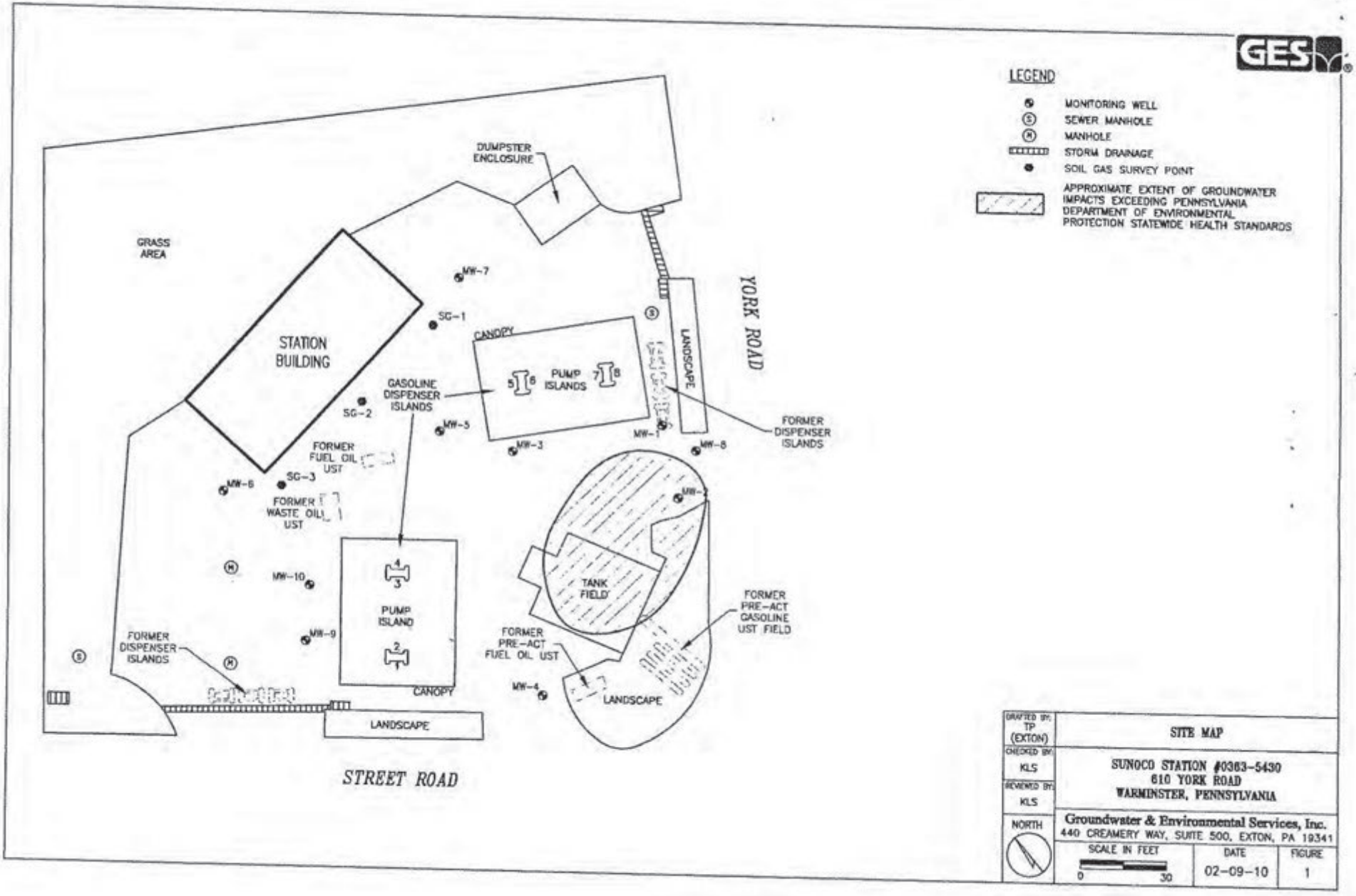
CONTAINING 1.197 acres, more or less.

COUNTY PARCEL NUMBER 49-9-46

BEING the same premises which Charles Schultz and Clara A. Schultz, his wife by Deed dated December 30, 1954 and recorded in Bucks County, in Deed Book 1210 page 238 conveyed unto The Atlantic Refining Company, a Pa. Corp., in fee. And the said Atlantic Refining Company is now known as the Atlantic Richfield Company.

EXHIBIT B

SITE MAP


LEGEND
MONITORING WELL
SEWER MANHOLE
MANHOLE
STORM DRAINAGE
SOIL GAS SURVEY POINT
APPROXIMATE EXTENT OF GROUNDWATER IMPACTS EXCEEDING PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION STATEWIDE HEALTH STANDARDS
DUMPSTER ENCLOSURE
GRASS AREA
STATION BUILDING
MW-7
SG-1
CANOPY
PUMP ISLANDS
5
6
7
8
GASOLINE DISPENSER ISLANDS
SG-2
MW-5
MW-3
MW-1
MW-8
LANDSCAPE
YORK ROAD
FORMER DISPENSER ISLANDS
FORMER FUEL OIL UST
MW-6
SG-3
FORMER WASTE OIL UST
MW-2
TANK FIELD
MW-10
PUMP ISLAND
4
3
2
1
FORMER PRE-ACT GASOLINE UST FIELD
MW-9
FORMER DISPENSER ISLANDS
FORMER PRE-ACT FUEL OIL UST
MW-4
CANOPY
LANDSCAPE
STREET ROAD
DRAFTED BY: TP (EXTON)
CHECKED BY: KLS
REVIEWED BY: KLS
NORTH
SITE MAP
SUNOCO STATION #0363-5430
610 YORK ROAD
WARMINSTER, PENNSYLVANIA
Groundwater & Environmental Services, Inc.
440 CREAMERY WAY, SUITE 500, EXTON, PA 19341
SCALE IN FEET
0
30
DATE
02-09-10
FIGURE
1

Groundwater
& Environmental Services, Inc.

440 Creamery Way • Suite 500 • Exton, Pennsylvania 19341 • (610) 458-1077 • Fax (610) 458-2300

November 15, 2010

Bucks County
55 East Court Street
Doylestown, PA 18901

Re: Sunoco Station #0363-5430
610 York Road
Warminster, PA
Facility Id #: 09-30778

To Whom It May Concern:

Enclosed is a fully executed environmental covenant for the above-referenced facility that has been approved by the Pennsylvania Department of Environmental Protection. A copy is being provided to you in accordance with Section 9: Recordation & Proof & Notification of the environment covenant, which states that a copy shall be sent to the Municipality and County in which the property is located. Should you have any questions, do not hesitate to call either of the undersigned.

Respectfully submitted,

Krista Snyder
Project Manager

for Stephanie R. Grillo
Senior Project Manager

Enclosure

cc: GES project File
Warminster Township
PADEP – L. Mapleton
Sunoco, Inc. (ENFOS)

Groundwater
& Environmental Services, Inc.

440 Creamery Way • Suite 500 • Exton, Pennsylvania 19341 • (610) 458-1077 • Fax (610) 458-2300

November 15, 2010

Warminster Township
401 Gibson Road
Warminster, PA 18974

Re: Sunoco Station #0363-5430
610 York Road
Warminster, PA
Facility Id #: 09-30778

To Whom It May Concern:

Enclosed is a fully executed environmental covenant for the above-referenced facility that has been approved by the Pennsylvania Department of Environmental Protection. A copy is being provided to you in accordance with Section 9: Recordation & Proof & Notification of the environment covenant, which states that a copy shall be sent to the Municipality and County in which the property is located. Should you have any questions, do not hesitate to call either of the undersigned.

Respectfully submitted,

Krista Snyder
Project Manager

for Stephanie R. Grillo
Senior Project Manager

Enclosure

cc: GES project File
Bucks County
PADEP – L. Mapleton
Sunoco, Inc. (ENFOS)

Phase II ESA Report

GES - February 2, 2017

February 2, 2017

Ms. Rhonda Giovannitti
Sunoco, Inc.
3801 West Chester Pike
Newtown Square, Pennsylvania 19073

RE: Phase II Environmental Site Assessment Report
Sunoco Station #0363-5430
610 York Road
Warminster, Bucks County, Pennsylvania

Dear Ms. Giovannitti:

Attached for your review is the Phase II Environmental Site Assessment Report for the Sunoco Station #0363-5430 located at 610 York Road in Warminster, Pennsylvania. At the site, there are no open spill numbers identified.

If you have any questions regarding the information provided in this report, please contact Stephanie Grillo at (800) 426-9871, extension 3064.

Sincerely,
GROUNDWATER & ENVIRONMENTAL SERVICES, INC.



Stephanie R. Grillo
Senior Project Manager

Attachments

Phase II Limited Site Assessment

Date: February 2, 2017

I. SITE NAME

Sunoco Station #0363-5430
610 York Road
Warminster, Bucks County, Pennsylvania

II. SITE DESCRIPTION

FEATURES

Lot Size:	Approximately 0.75 acre(s).
Structures:	One story building housing a convenience store, an active Sunoco retail gasoline station, and two dispenser island canopies located southeast and southwest of the station building.
Surrounding Properties:	(North and northwest) A shopping plaza (Warminster Shopping Plaza) with multiple retails stores including a dry cleaning facility and The Eagle Diner restaurant; (Northeast) Precious Friends of St. Gianna Child Care Center and Archbishop Wood High School; (East) Hatboro Federal Savings Bank with sports fields beyond; (West) Center Point Plaza; (South) Retail shopping areas followed by residences.
Site/Area Topography:	The surface elevation of the site is approximately 310 feet above mean sea level according to the U. S. Geological Survey (USGS) Hatboro, PA topographic quadrangle map (USGS 2013). ***See attached Figure 1 (Site Location Map)***
Water Supply:	Municipal Water Supply
Sewerage:	Public System

POTENTIALLY SENSITIVE RECEPTORS

Environmental Receptors:	There are no wells within ¼ mile of the site. The closest well is located approximately 0.36 miles north of the site; the purpose of this well is listed as a community water system, it should be noted that the well was listed as inactive on 4/30/1998. Warminster Municipal Water Authority supplies public water and sanitary sewer services to the facility and adjacent properties. There is a child care facility and High School located to the northeast of the site and there are residences located northeast and south of the site. The nearest surface water body is an unnamed tributary of Little Neshaminy Creek located approximately 3,200 feet northwest of the site.

SITE HISTORY

Current:	Convenience store with retail gasoline fuel sales (branded Sunoco).
Regulatory Status:	At the start of this investigation there were no open spill numbers identified. There was a historic spill from March 1, 1996 – October 13, 2010, incident No. 7112 due to a Leaking Underground Storage Tank (LUST). On October 1, 2009 a Remedial Action Completion Report (RACR) was submitted to the Pennsylvania

Department of Environmental Protection (PADEP). A RACR Addendum was submitted on July 20, 2010. In a letter from the PADEP dated October 13, 2010 the RACR was approved, subject to an Environmental Covenant being filed with the Recorder of Deeds in Bucks County. A Release of Liability was granted on October 13, 2010 for an attainment demonstration of a combination of Statewide Health and Site Specific Standards. The site specific standard (SSS) for benzene in groundwater was established at a concentration of 12 micrograms per liter (µg/L).

III. SUBSURFACE INVESTIGATION

RECENT SUBSURFACE WORK

Date Drilled:	1/11/2017-1/12/2017
Drilling Method:	Direct Push (Geoprobe)
Number of Borings:	Four soil borings were advanced at the site.
Boring Locations:	***See attached Figure 2 for the Site Map showing boring locations and pertinent site features.***
Maximum Depth Explored:	14 feet below ground surface (bgs) via Geoprobe ***Boring logs are presented as Attachment A.***

GEOLOGY/HYDROGEOLOGY

General Soil Characteristics:	Primarily silt, sand, and clay followed by sandstone. The sandstone fragments were primarily observed from approximately 11 feet to greater than 14 feet bgs. Previous investigations indicated weathered shale bedrock was encountered at depths of four to seven feet bgs. Interbedded shale, sandstone, and siltstone bedrock was encountered at an average of 12 feet bgs
Depth of Refusal:	Refusal encountered in all four soil borings ranging from 11-14 feet bgs.
Depth to Groundwater:	Ranged from approximately 14–15 feet bgs, it should be noted that the liquid levels were measured from four existing monitoring wells that were on-site from the previous site investigation.
Flow/Gradient:	Based on the liquid level data, groundwater generally flows to the southwest under unconfined conditions at a hydraulic gradient of approximately 0.01 feet per foot (ft/ft).

SOIL QUALITY

Number of Soil Samples:	Four soil samples were collected during site assessment activities from SB-1 through SB-4.
Sample Analyses:	Volatile Organic Compounds (VOCs) including benzene, toluene, ethylbenzene, total xylenes (BTEX), methyl tert-butyl ether (MTBE), isopropylbenzene (cumene), naphthalene, 1,2,4-trimethylbenzene (1,2,4-TMB), and 1,3,5-trimethylbenzene (1,3,5-TMB) via US EPA Method 8260B. ***See attached Table 1 and Figure 3 (Soil Analytical Map)***

GROUNDWATER QUALITY

Monitoring Wells:	Four existing monitoring wells were sampled (MW-3, MW-4, MW-5, and MW-10); these wells were installed during the previous site investigation. The wells ranged from a depth of 25-50 feet.
Sample Date:	1/12/2017
Depth to Groundwater:	Groundwater depth ranged from 14.60 feet in monitoring well MW-3 to 15.27 feet in monitoring well MW-5.
Flow:	Generally towards the north and west
Number of Groundwater Samples:	Four groundwater samples were collected from the existing monitoring wells during site assessment activities.
Sample Analysis:	Volatile Organic Compounds (VOCs) including BTEX, MTBE, cumene, naphthalene, 1,2,4-TMB, and 1,3,5-TMB via US EPA Method 8260B.
Monitoring Wells:	MW-1 through MW-10 (previously existing from prior investigation)
Onsite Supply Well:	None Identified on-site

See attached Table 2 and Figure 4 (Groundwater Analytical Map)

ENVIRONMENTAL SITE ASSESSMENT RESULTS

Summary:	The soil analytical results indicate that samples collected during this assessment do not exceed the PADEP Statewide Health Standards (SHS) for unsaturated/saturated soil in a Non-Residential, Used Aquifer. The groundwater analytical results for the samples collected during this assessment indicate that the samples do not exceed the previously approved SSS for a Non-Residential, Used Aquifer for the site.

Table 1 is a summary of soil analytical results. Table 2 is a summary of groundwater analytical results. Boring logs are provided in Attachment A. Attachment B presents the soil laboratory analytical results and Attachment C presents the groundwater laboratory analytical results.

TABLES

Table 1

SOIL QUALITY DATA

Sunoco Station #0363-5430
610 York Road
Warminster, Pennsylvania

Soil Sample ID	Depth (feet)	Date	Benzene (µg/kg)	Toluene (µg/kg)	Ethylbenzene (µg/kg)	Total Xylenes (µg/kg)	MTBE (µg/kg)	Naphthalene (µg/kg)	Isopropyl-benzene (µg/kg)	1,2,4-TMB (µg/kg)	1,3,5-TMB (µg/kg)
PADEP Act 2 U/NR MSCs			**500**	**100,000**	**70,000**	**1,000,000**	**2,000**	**25,000**	**2,500,000**	**35,000**	**210,000**
SB-1	12-13	01/12/17	ND<1.11	ND<5.53	ND<1.11	ND<3.32 J4	ND<1.11	ND<5.53	ND<1.11	ND<1.11	ND<1.11
SB-2	10-11	01/12/17	ND<1.07	ND<5.37	ND<1.07	ND<3.22 J4	ND<1.07	ND<5.37	ND<1.07	ND<1.07	ND<1.07
SB-3	13-14	01/12/17	ND<1.26	ND<6.30	ND<1.26	ND<3.78 J4	ND<1.26	ND<6.30	ND<1.26	ND<1.26	ND<1.26
SB-4	10-11	01/12/17	ND<1.20	ND<5.98	11.2	58.4 J4	ND<1.20	10.6	5.91	54.8	15.9

PADEP =Pennsylvania Department of Environmental Protection
U/NR MSCs = Used Aquifer/non-residential, medium specific concentrations
µg/kg = Microgram per kilogram
MTBE = Methyl tertiary butyl ether
Total Xylenes = Sum of o-xylene, m-xylene and p-xlyene isomers
TMB = Trimethlybenzene
J4 = The associated batch QC was outside the established quality control range for accuracy.

Table 2

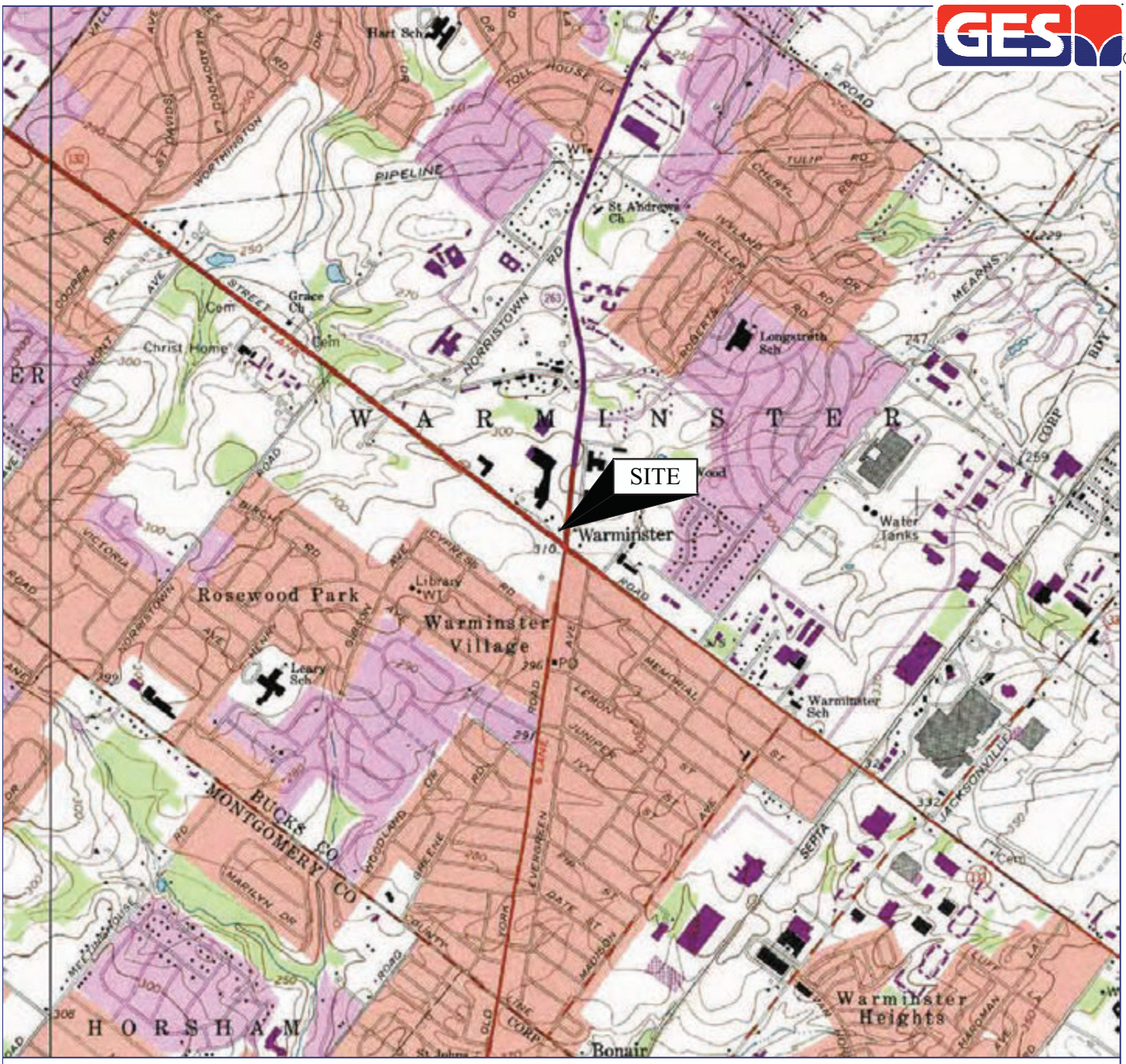
GROUNDWATER QUALITY DATA

Sunoco Station #0363-5430
610 York Road
Warminster, Pennsylvania

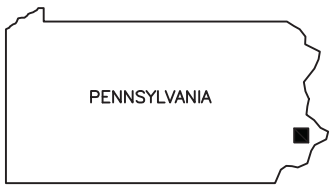
Temporary Well ID	Depth to Water (feet)	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Naphthalene (µg/L)	Cumene (µg/L)	1,2,4-TMB (µg/L)	1,3,5-TMB (µg/L)
PADEP Act 2 U/NR MSCs			**5**	**1,000**	**700**	**10,000**	**20**	**100**	**3,500**	**62**	**1,200**
MW-3	14.60	01/12/17	**5.25**	ND(1.0)	ND(0.5)	ND(1.5)	ND(0.5)	ND(0.5) J4	ND(0.5)	ND(0.5)	ND(0.5)
MW-4	14.90	01/12/17	ND(0.5)	ND(1.0)	ND(0.5)	ND(1.5)	ND(0.5)	ND(0.5) J4	ND(0.5)	ND(0.5)	ND(0.5)
MW-5	15.27	01/12/17	ND(0.5)	ND(1.0)	ND(0.5)	ND(1.5)	ND(0.5)	ND(0.5) J4	ND(0.5)	ND(0.5)	ND(0.5)
MW-10	14.94	01/12/17	ND(0.5)	ND(1.0)	ND(0.5)	ND(1.5)	ND(0.5)	ND(0.5) J4	ND(0.5)	ND(0.5)	ND(0.5)

PADEP =Pennsylvania Department of Environmental Protection
U/NR MSCs = Used Aquifer/non-residential, medium specific concentrations
µg/L = Microgram per Liter
MTBE = Methyl tertiary butyl ether
Total Xylenes = Sum of o-xylene, m-xylene and p-xlyene isomers
TMB = Trimethlybenzene
NA = Not Available or not analyzed for that specific compound
NS = Not sampled
BOLD =Bolded/shaded value indicates the result or detection limit is greater than the Act 2 U/NR MSCs
J4 = The associated batch QC was outside the established quality control range for accuracy.

FIGURES



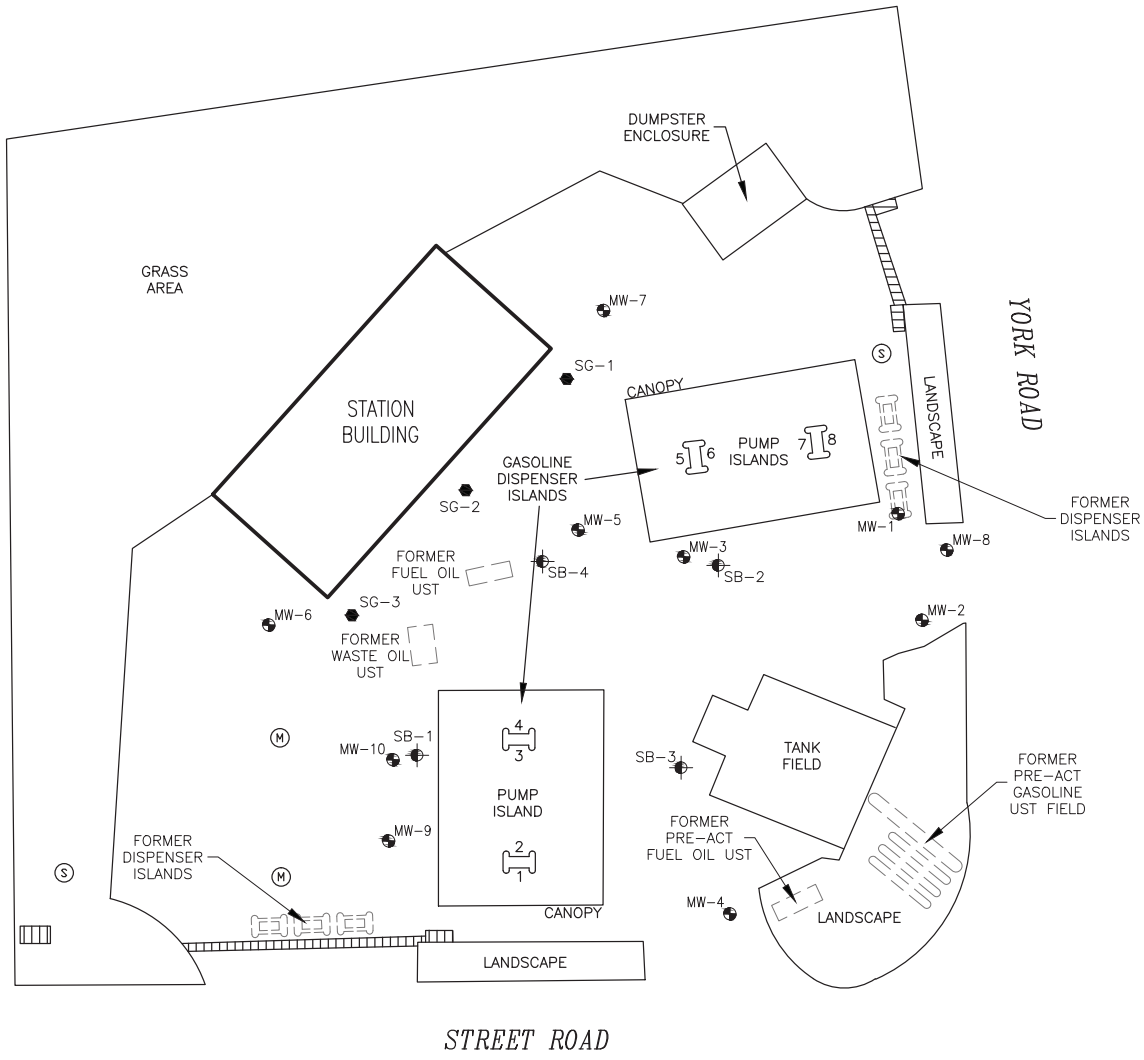
SOURCE: USGS 7.5 MINUTE SERIES
TOPOGRAPHIC QUADRANGLE
HATBORO, PA
CONTOUR INTERVAL = 10' 1966 (1983)



QUADRANGLE LOCATION

DRAFTED BY: TP	SITE LOCATION MAP
CHECKED BY: BCH	SUNOCO STATION #0363-5430 610 YORK ROAD WARMINSTER, PENNSYLVANIA
REVIEWED BY: SRG	Groundwater & Environmental Services, Inc. 440 CREAMERY WAY, SUITE 500, EXTON, PA 19341
NORTH	SCALE IN FEET: 0 2000 / DATE: 01-30-17 / FIGURE: 1

N:_Corporate\Graphics-Exton\Exton\Sunoco\Sun-Optimization Divestment\Pennsylvania\Warminster, Pa\Warminster 610 York Rd SLM.dwg, Layout1, tpeters



LEGEND

- MONITORING WELL
- SEWER MANHOLE
- MANHOLE
- STORM DRAINAGE
- SOIL GAS SURVEY POINT
- SOIL BORING LOCATION

DRAFTED BY: TP	SITE MAP
CHECKED BY: BCH	SUNOCO STATION #0363-5430 610 YORK ROAD WARMINSTER, PENNSYLVANIA
REVIEWED BY: SRG	Groundwater & Environmental Services, Inc. 440 CREAMERY WAY, SUITE 500, EXTON, PA 19341
NORTH	SCALE IN FEET: 0 30 / DATE: 01-27-17 / FIGURE: 2

N:_Corporate\Graphics-Exton\Exton\Sunoco\Sun-Optimization Divestment\Pennsylvania\Warminster, Pa\Warminster 610 York Rd SM (new).dwg, Model, tpeters



LEGEND

- MONITORING WELL
- SEWER MANHOLE
- MANHOLE
- STORM DRAINAGE
- SOIL GAS SURVEY POINT
- SOIL BORING LOCATION

SB-1	SOIL SAMPLE ID
12-13'	SAMPLE DEPTH (feet)
ND<1.11	BENZENE CONCENTRATION (µg/kg)
ND<5.53	TOLUENE CONCENTRATION (µg/kg)
ND<1.11	ETHYLBENZENE CONCENTRATION (µg/kg)
ND<3.32(J4)	TOTAL XYLENES CONCENTRATION (µg/kg)
ND<1.11	MTBE CONCENTRATION (µg/kg)
ND<5.53	NAPHTHALENE CONCENTRATION (µg/kg)
ND<1.11	CUMENE CONCENTRATION (µg/kg)
ND<1.11	1,2,4-TMB CONCENTRATION (µg/kg)
ND<1.11	1,3,5-TMB CONCENTRATION (µg/kg)

<#	LESS THAN THE LABORATORY DETECTION LIMIT
(J4)	THE ASSOCIATED BATCH QC WAS OUTSIDE THE ESTABLISHED QUALITY CONTROL RANGE FOR ACCURACY
(µg/kg)	MICROGRAM PER KILOGRAM
MTBE	METHYL *tert*-BUTYL ETHER
TMB	TRIMETHYLBENZENE

DRAFTED BY: TP	**SOIL ANALYTICAL MAP JANUARY 12, 2017**
CHECKED BY: BCH	**SUNOCO STATION #0363-5430 610 YORK ROAD WARMINSTER, PENNSYLVANIA**
REVIEWED BY: SRG	Groundwater & Environmental Services, Inc. 440 CREAMERY WAY, SUITE 500, EXTON, PA 19341
NORTH	SCALE IN FEET 0 30 / DATE 01-27-17 / FIGURE 3

N:_Corporate\Graphics-Exton\Exton\Sunoco\Sun-Optimization Divestment\Pennsylvania\Warminster, Pa\Warminster 610 York Rd SM (new).dwg, Model, tpeters



LEGEND

- MONITORING WELL
- SEWER MANHOLE
- MANHOLE
- STORM DRAINAGE
- SOIL GAS SURVEY POINT

14.60	DEPTH TO WATER (feet)
5.25	BENZENE CONCENTRATION (µg/L)
ND(1.0)	TOLUENE CONCENTRATION (µg/L)
ND(0.5)	ETHYLBENZENE CONCENTRATION (µg/L)
ND(1.5)	TOTAL XYLENES CONCENTRATION (µg/L)
ND(0.5)	MTBE CONCENTRATION (µg/L)
ND(0.5)J4	NAPHTHALENE CONCENTRATION (µg/L)
ND(0.5)	CUMENE CONCENTRATION (µg/L)
ND(0.5)	1,2,4–TMB CONCENTRATION (µg/L)
ND(0.5)	1,3,5–TMB CONCENTRATION (µg/L)

ND	NOT DETECTED
J4	THE ASSOCIATED BATCH QC WAS OUTSIDE THE ESTABLISHED QUALITY CONTROL RANGE FOR ACCURACY
(µg/L)	MICROGRAM PER LITER
MTBE	METHYL *tert*–BUTYL ETHER
TMB	TRIMETHYLBENZENE

NOTE: SHADED VALUES EXCEED PADEP ACT 2 MSCs.

DRAFTED BY: TP	GROUNDWATER ANALYTICAL MAP JANUARY 12, 2017
CHECKED BY: BCH	SUNOCO STATION #0363-5430 610 YORK ROAD WARMINSTER, PENNSYLVANIA
REVIEWED BY: SRG	Groundwater & Environmental Services, Inc. 440 CREAMERY WAY, SUITE 500, EXTON, PA 19341
NORTH	SCALE IN FEET: 0 30 / DATE: 01–27–17 / FIGURE: 4

N:_Corporate\Graphics-Exton\Exton\Sunoco\Sun-Optimization Divestment\Pennsylvania\Warminster, Pa\Warminster 610 York Rd SM (new).dwg, Model, tpeters

ATTACHMENT A

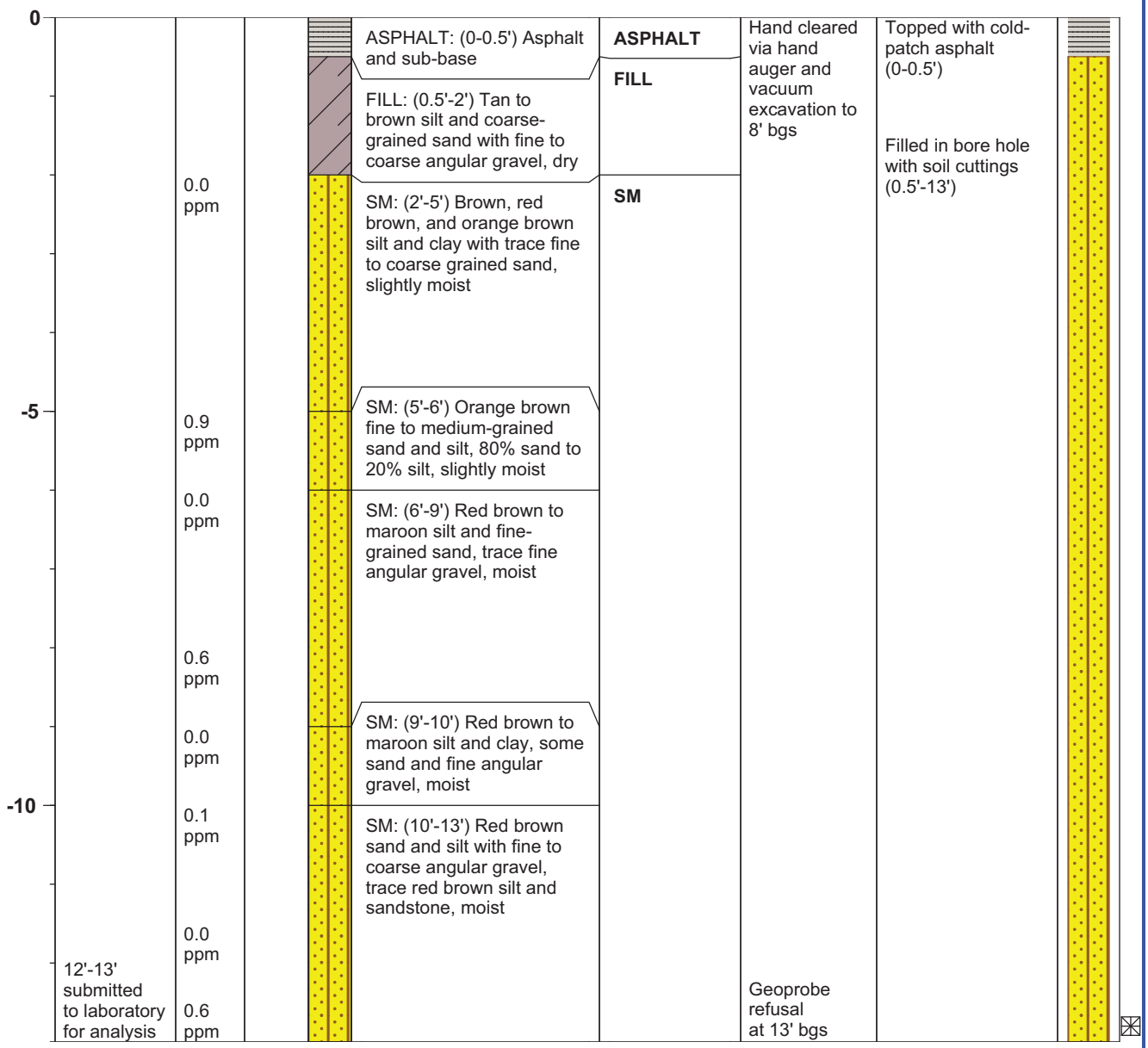
Soil Boring Log

ID NO. **SB-1**

Groundwater and Environmental Services, Inc.

PROJECT:	**Sunoco - Optimization Divestment**	SURFACE ELEV.:	**NA**	TOTAL DEPTH:	**13 ft.**
ADDRESS:	**610 York Rd, Warminster, PA**	WATER DEPTH:	**NA**	CASING EL.:	**NA**
JOB NO.	**0204690-635430-201**	BOREHOLE DIA.:	**3-inch**	WELL DIA.:	**NA**

Logged By:	**Brian Hale**	Drilling Method:	**Air Knife\Vacuum Excavation\Direct Push**
Dates Drilled:	**1/11/17 - 1/12/17**	Sampling Method:	**Grab sample**
Drilling Company:	**Odyssey Environmental Services**	Soil Class. System:	**USCS**
Drill Rig Type:	**Geoprobe 7822 DT**	Field Screening:	**Photoionization Detector**



Elevation (feet)	Sample Interval	Field Screen	Rec-overy	SAMPLE LITHOLOGY	Stratigraphy	Comments	COMPLETION DETAILS

Location:

Northing/Latitude: **NA**
Easting/Longitude: **NA**
Horizontal Datum: **NA**
Vertical Datum: **NA**

General Comments:

SAA = same as above
bgs = below ground surface
ppm = parts per million

Symbol Key:

Static Water Level
Lab Sample Location
Apparent Water Level

SB-1

Soil Boring Log

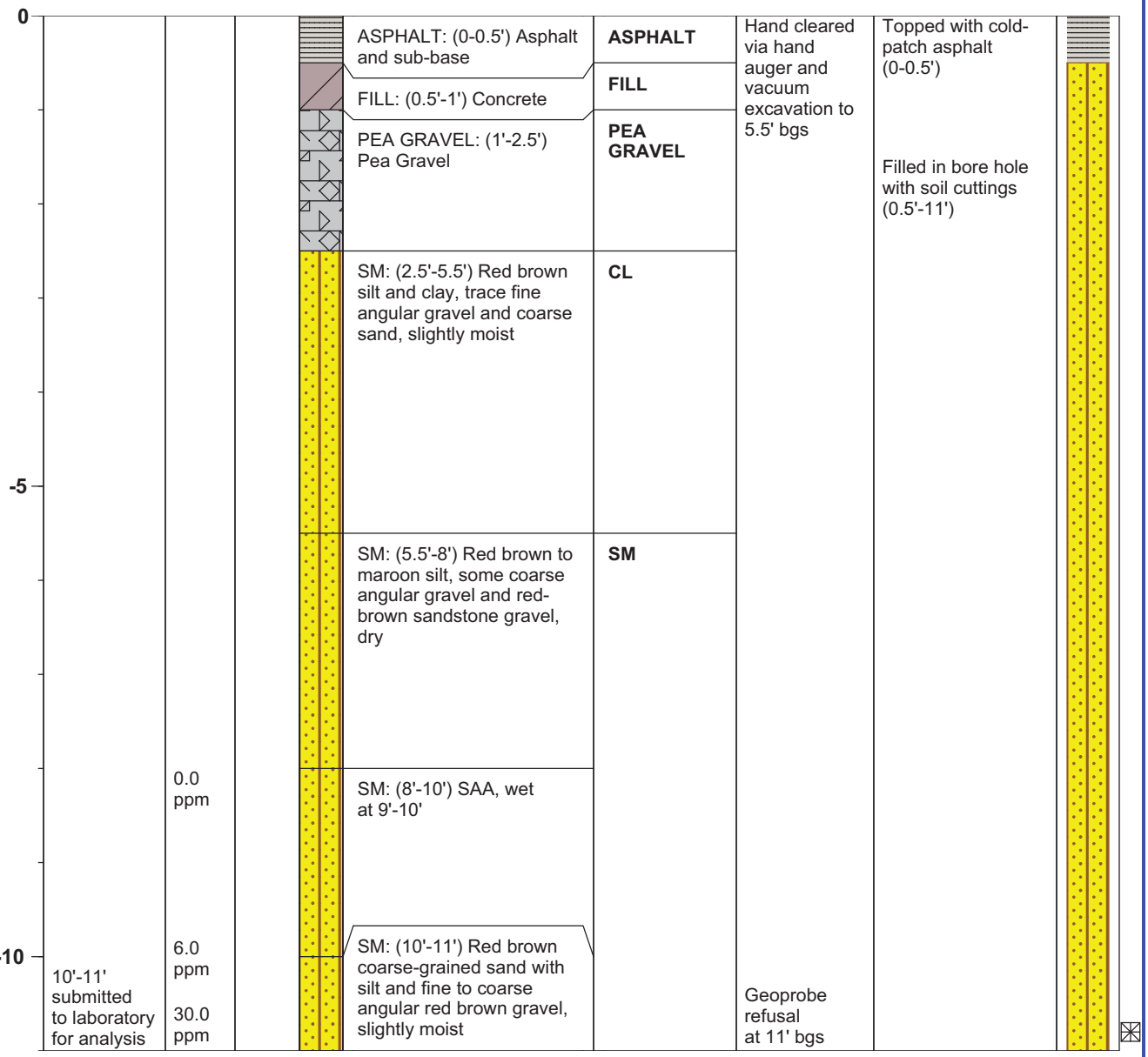
ID NO. **SB-2**

Groundwater and Environmental Services, Inc.

PROJECT:	**Sunoco - Optimization Divestment**	SURFACE ELEV.: **NA**	TOTAL DEPTH: **11 ft.**
ADDRESS:	**610 York Rd, Warminster, PA**	WATER DEPTH: **NA**	CASING EL.: **NA**
JOB NO.	**0204690-635430-201**	BOREHOLE DIA.: **3-inch**	WELL DIA.: **NA**

Logged By:	**Brian Hale**	Drilling Method:	**Air Knife\Vacuum Excavation\Direct Push**
Dates Drilled:	**1/11/17 - 1/12/17**	Sampling Method:	**Grab sample**
Drilling Company:	**Odyssey Environmental Services**	Soil Class. System:	**USCS**
Drill Rig Type:	**Geoprobe 7822 DT**	Field Screening:	**Photoionization Detector**

Elevation (feet)	Sample Interval	Field Screen	Rec-overy	SAMPLE LITHOLOGY	Stratigraphy	Comments	COMPLETION DETAILS
0				ASPHALT: (0-0.5') Asphalt and sub-base	ASPHALT	Hand cleared via hand auger and vacuum excavation to 5.5' bgs	Topped with cold-patch asphalt (0-0.5')
				FILL: (0.5'-1') Concrete	FILL		
				PEA GRAVEL: (1'-2.5') Pea Gravel	PEA GRAVEL		Filled in bore hole with soil cuttings (0.5'-11')
-5				SM: (2.5'-5.5') Red brown silt and clay, trace fine angular gravel and coarse sand, slightly moist	CL		
				SM: (5.5'-8') Red brown to maroon silt, some coarse angular gravel and red-brown sandstone gravel, dry	SM		
		0.0 ppm		SM: (8'-10') SAA, wet at 9'-10'			
-10	10'-11' submitted to laboratory for analysis	6.0 ppm 30.0 ppm		SM: (10'-11') Red brown coarse-grained sand with silt and fine to coarse angular red brown gravel, slightly moist		Geoprobe refusal at 11' bgs	



Location:
- Northing/Latitude: **NA**
- Easting/Longitude: **NA**
- Horizontal Datum: **NA**
- Vertical Datum: **NA**

General Comments:
- SAA = same as above
- bgs = below ground surface
- ppm = parts per million

Symbol Key:
- Static Water Level
- Lab Sample Location
- Apparent Water Level

SB-2

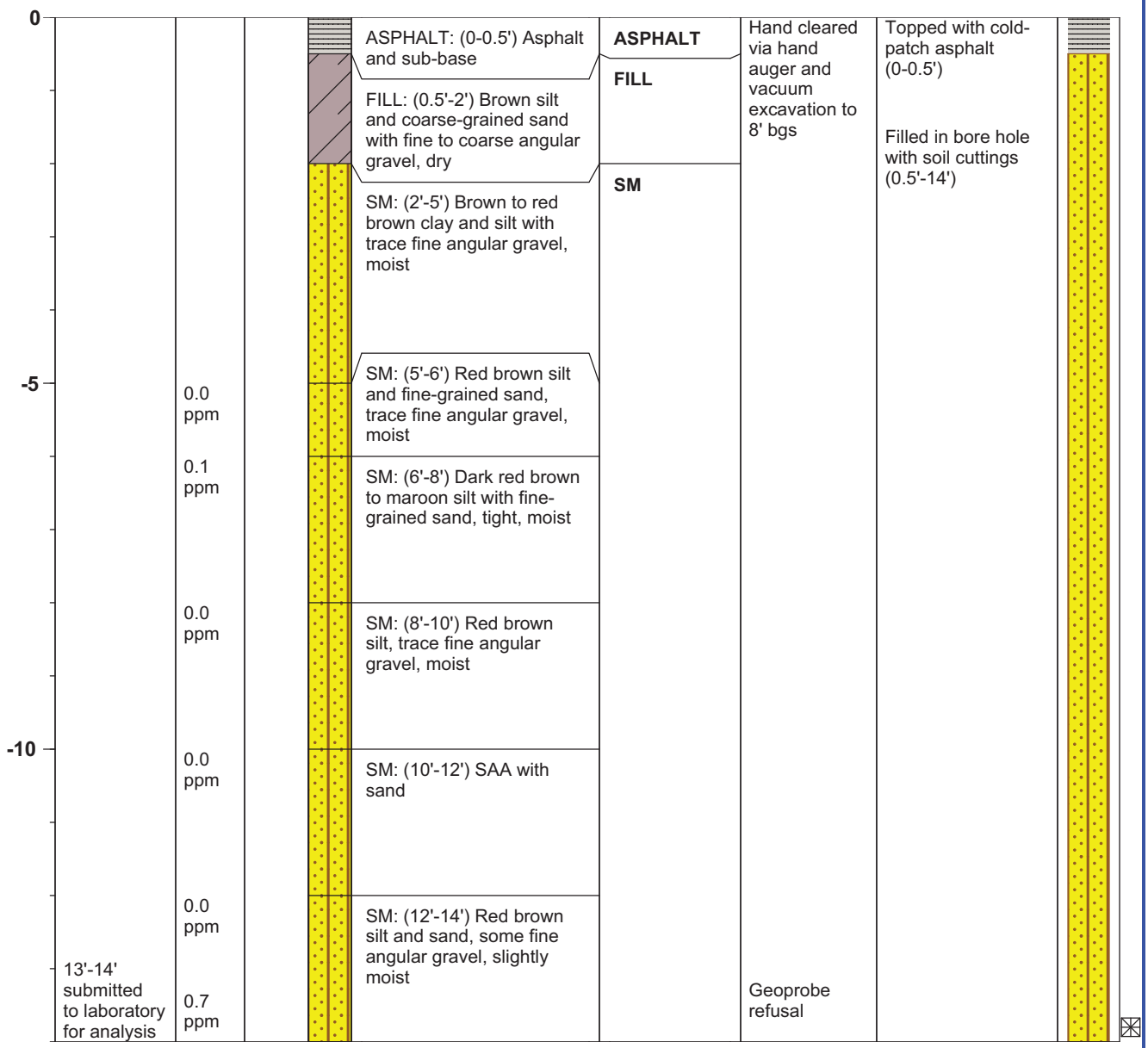
Soil Boring Log

ID NO. **SB-3**

Groundwater and Environmental Services, Inc.

PROJECT:	**Sunoco - Optimization Divestment**	SURFACE ELEV.: **NA**	TOTAL DEPTH: **14 ft.**
ADDRESS:	**610 York Rd, Warminster, PA**	WATER DEPTH: **NA**	CASING EL.: **NA**
JOB NO.	**0204690-635430-201**	BOREHOLE DIA.: **3-inch**	WELL DIA.: **NA**

Logged By:	**Brian Hale**	Drilling Method:	**Air Knife\Vacuum Excavation\Direct Push**
Dates Drilled:	**1/11/17 - 1/12/17**	Sampling Method:	**Grab sample**
Drilling Company:	**Odyssey Environmental Services**	Soil Class. System:	**USCS**
Drill Rig Type:	**Geoprobe 7822 DT**	Field Screening:	**Photoionization Detector**



Elevation (feet)	Sample Interval	Field Screen	Rec-overy	SAMPLE LITHOLOGY	Stratigraphy	Comments	COMPLETION DETAILS

Location:

Northing/Latitude: **NA**

Easting/Longitude: **NA**

Horizontal Datum: **NA**

Vertical Datum: **NA**

General Comments:

SAA = same as above

bgs = below ground surface

ppm = parts per million

Symbol Key:

Static Water Level

Lab Sample Location

Apparent Water Level

SB-3

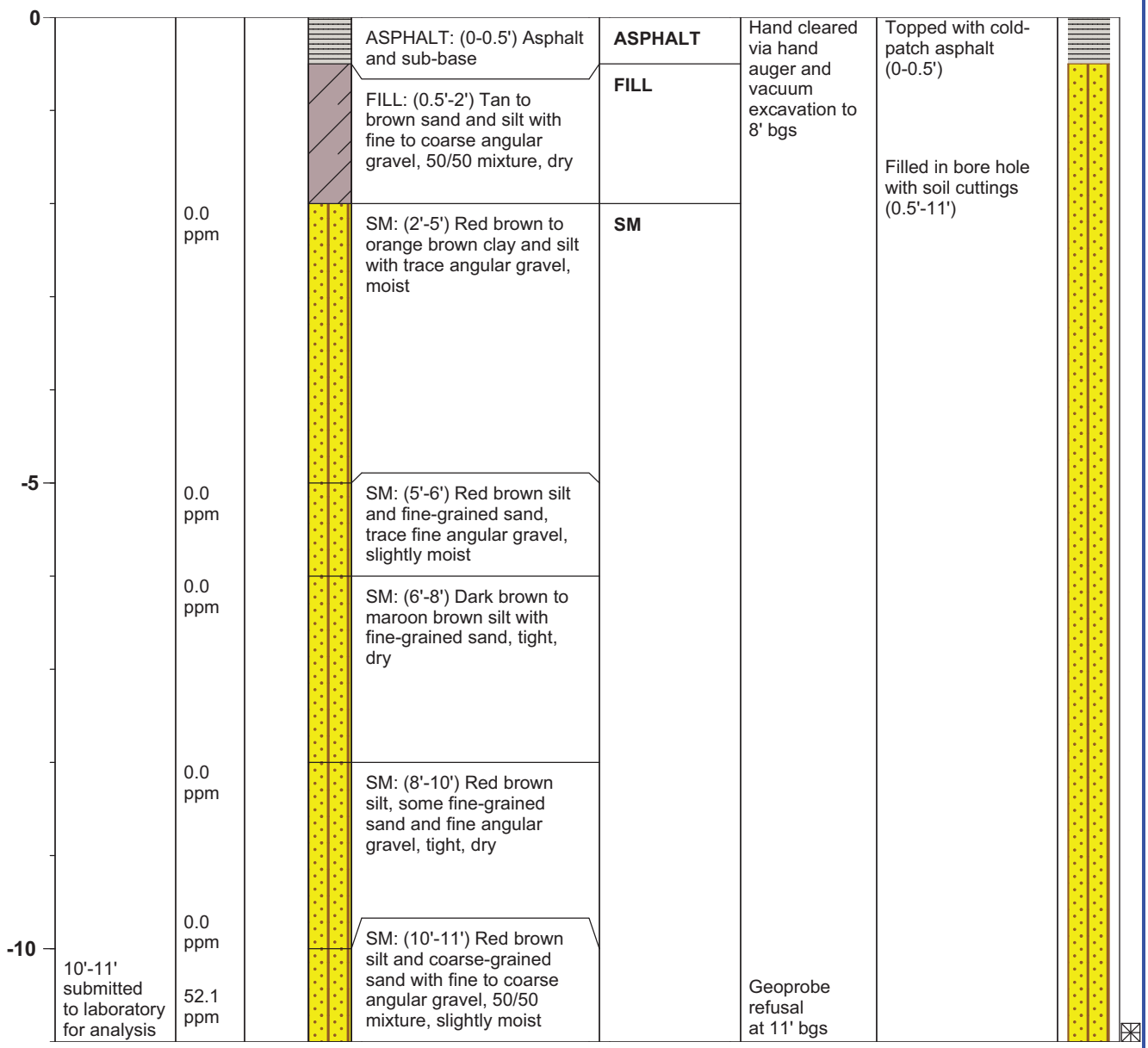
Soil Boring Log

ID NO. **SB-4**

Groundwater and Environmental Services, Inc.

PROJECT:	**Sunoco - Optimization Divestment**	SURFACE ELEV.: **NA**	TOTAL DEPTH: **11 ft.**
ADDRESS:	**610 York Rd, Warminster, PA**	WATER DEPTH: **NA**	CASING EL.: **NA**
JOB NO.	**0204690-635430-201**	BOREHOLE DIA.: **3-inch**	WELL DIA.: **NA**

Logged By:	**Brian Hale**	Drilling Method:	**Air Knife\Vacuum Excavation\Direct Push**
Dates Drilled:	**1/11/17 - 1/12/17**	Sampling Method:	**Grab sample**
Drilling Company:	**Odyssey Environmental Services**	Soil Class. System:	**USCS**
Drill Rig Type:	**Geoprobe 7822 DT**	Field Screening:	**Photoionization Detector**



Elevation (feet)	Sample Interval	Field Screen	Rec-overy	SAMPLE LITHOLOGY	Stratigraphy	Comments	COMPLETION DETAILS

Location:

Northing/Latitude: **NA**

Easting/Longitude: **NA**

Horizontal Datum: **NA**

Vertical Datum: **NA**

General Comments:

SAA = same as above

bgs = below ground surface

ppm = parts per million

Symbol Key:

Static Water Level

Lab Sample Location

Apparent Water Level

SB-4

ATTACHMENT B

ANALYTICAL REPORT

January 17, 2017

GES, Inc - Sunoco

Sample Delivery Group:	L883629
Samples Received:	01/13/2017
Project Number:	0204690-635430-201
Description:	Sunoco Warminster PA

Report To: Stephanie Grillo
440 Creamery Way, Ste 500
Exton, PA 19341

Entire Report Reviewed By:

Chris McCord
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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SB-1 12-13 L883629-01 Solid

Collected by: Brian Hale
Collected date/time: 01/12/17 09:15
Received date/time: 01/13/17 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG943633	1	01/16/17 11:44	01/16/17 11:52	MEL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG943478	1	01/12/17 09:15	01/15/17 14:47	DWR

SB-3 13-14 L883629-02 Solid

Collected by: Brian Hale
Collected date/time: 01/12/17 09:50
Received date/time: 01/13/17 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG943633	1	01/16/17 11:44	01/16/17 11:52	MEL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG943478	1	01/12/17 09:50	01/15/17 17:24	DWR

SB-2 10-11 L883629-03 Solid

Collected by: Brian Hale
Collected date/time: 01/12/17 10:15
Received date/time: 01/13/17 09:00

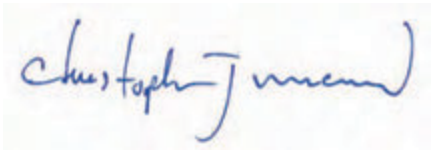
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG943633	1	01/16/17 11:44	01/16/17 11:52	MEL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG943478	1	01/12/17 10:15	01/15/17 17:41	DWR

SB-4 10-11 L883629-04 Solid

Collected by: Brian Hale
Collected date/time: 01/12/17 11:30
Received date/time: 01/13/17 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG943633	1	01/16/17 11:44	01/16/17 11:52	MEL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG943478	1	01/12/17 11:30	01/17/17 07:16	JHH

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Chris McCord
Technical Service Representative

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	90.4		1	01/16/2017 11:52	WG943633

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.00111	1	01/15/2017 14:47	WG943478
Ethylbenzene	ND		0.00111	1	01/15/2017 14:47	WG943478
Isopropylbenzene	ND		0.00111	1	01/15/2017 14:47	WG943478
Methyl tert-butyl ether	ND		0.00111	1	01/15/2017 14:47	WG943478
Naphthalene	ND		0.00553	1	01/15/2017 14:47	WG943478
Toluene	ND		0.00553	1	01/15/2017 14:47	WG943478
1,2,4-Trimethylbenzene	ND		0.00111	1	01/15/2017 14:47	WG943478
1,3,5-Trimethylbenzene	ND		0.00111	1	01/15/2017 14:47	WG943478
Xylenes, Total	ND	J4	0.00332	1	01/15/2017 14:47	WG943478
(S) Toluene-d8	*104*		*80.0-120*		*01/15/2017 14:47*	WG943478
(S) Dibromofluoromethane	*101*		*74.0-131*		*01/15/2017 14:47*	WG943478
(S) 4-Bromofluorobenzene	*97.0*		*64.0-132*		*01/15/2017 14:47*	WG943478

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	79.4		1	01/16/2017 11:52	WG943633

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.00126	1	01/15/2017 17:24	WG943478
Ethylbenzene	ND		0.00126	1	01/15/2017 17:24	WG943478
Isopropylbenzene	ND		0.00126	1	01/15/2017 17:24	WG943478
Methyl tert-butyl ether	ND		0.00126	1	01/15/2017 17:24	WG943478
Naphthalene	ND		0.00630	1	01/15/2017 17:24	WG943478
Toluene	ND		0.00630	1	01/15/2017 17:24	WG943478
1,2,4-Trimethylbenzene	ND		0.00126	1	01/15/2017 17:24	WG943478
1,3,5-Trimethylbenzene	ND		0.00126	1	01/15/2017 17:24	WG943478
Xylenes, Total	ND	J4	0.00378	1	01/15/2017 17:24	WG943478
(S) Toluene-d8	*106*		*80.0-120*		*01/15/2017 17:24*	WG943478
(S) Dibromofluoromethane	*101*		*74.0-131*		*01/15/2017 17:24*	WG943478
(S) 4-Bromofluorobenzene	*94.8*		*64.0-132*		*01/15/2017 17:24*	WG943478

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	93.0		1	01/16/2017 11:52	WG943633

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.00107	1	01/15/2017 17:41	WG943478
Ethylbenzene	ND		0.00107	1	01/15/2017 17:41	WG943478
Isopropylbenzene	ND		0.00107	1	01/15/2017 17:41	WG943478
Methyl tert-butyl ether	ND		0.00107	1	01/15/2017 17:41	WG943478
Naphthalene	ND		0.00537	1	01/15/2017 17:41	WG943478
Toluene	ND		0.00537	1	01/15/2017 17:41	WG943478
1,2,4-Trimethylbenzene	ND		0.00107	1	01/15/2017 17:41	WG943478
1,3,5-Trimethylbenzene	ND		0.00107	1	01/15/2017 17:41	WG943478
Xylenes, Total	ND	J4	0.00322	1	01/15/2017 17:41	WG943478
(S) Toluene-d8	*106*		*80.0-120*		*01/15/2017 17:41*	WG943478
(S) Dibromofluoromethane	*102*		*74.0-131*		*01/15/2017 17:41*	WG943478
(S) 4-Bromofluorobenzene	*86.9*		*64.0-132*		*01/15/2017 17:41*	WG943478

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	83.6		1	01/16/2017 11:52	WG943633

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	ND		0.00120	1	01/17/2017 07:16	WG943478
Ethylbenzene	0.0112		0.00120	1	01/17/2017 07:16	WG943478
Isopropylbenzene	0.00591		0.00120	1	01/17/2017 07:16	WG943478
Methyl tert-butyl ether	ND		0.00120	1	01/17/2017 07:16	WG943478
Naphthalene	0.0106		0.00598	1	01/17/2017 07:16	WG943478
Toluene	ND		0.00598	1	01/17/2017 07:16	WG943478
1,2,4-Trimethylbenzene	0.0548		0.00120	1	01/17/2017 07:16	WG943478
1,3,5-Trimethylbenzene	0.0159		0.00120	1	01/17/2017 07:16	WG943478
Xylenes, Total	0.0584	J4	0.00359	1	01/17/2017 07:16	WG943478
(S) Toluene-d8	*100*		*80.0-120*		*01/17/2017 07:16*	WG943478
(S) Dibromofluoromethane	*103*		*74.0-131*		*01/17/2017 07:16*	WG943478
(S) 4-Bromofluorobenzene	*103*		*64.0-132*		*01/17/2017 07:16*	WG943478

Method Blank (MB)

(MB) R3190859-1 01/16/17 11:52

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.000600			

L882897-01 Original Sample (OS) • Duplicate (DUP)

(OS) L882897-01 01/16/17 11:52 • (DUP) R3190859-3 01/16/17 11:52

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	94.8	95.1	1	0.229		5

Laboratory Control Sample (LCS)

(LCS) R3190859-2 01/16/17 11:52

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	100	85.0-115	

Method Blank (MB)

(MB) R3190824-2 01/15/17 12:12

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000270	0.00100
Ethylbenzene	U		0.000297	0.00100
Isopropylbenzene	U		0.000243	0.00100
Methyl tert-butyl ether	U		0.000212	0.00100
Naphthalene	U		0.00100	0.00500
Toluene	0.00101	J	0.000434	0.00500
1,2,4-Trimethylbenzene	0.000467	J	0.000211	0.00100
1,3,5-Trimethylbenzene	U		0.000266	0.00100
Xylenes, Total	U		0.000698	0.00300
(S) Toluene-d8	*103*			*80.0-120*
(S) Dibromofluoromethane	*91.7*			*74.0-131*
(S) 4-Bromofluorobenzene	*97.8*			*64.0-132*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3190824-1 01/15/17 11:03 • (LCSD) R3190824-3 01/15/17 12:47

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0250	0.0273	0.0279	109	112	71.0-124			2.07	20
Ethylbenzene	0.0250	0.0293	0.0291	117	116	77.0-120			0.710	20
Isopropylbenzene	0.0250	0.0290	0.0279	116	112	75.0-120			3.82	20
Methyl tert-butyl ether	0.0250	0.0256	0.0267	102	107	66.0-125			4.26	20
Naphthalene	0.0250	0.0285	0.0283	114	113	64.0-125			0.610	20
Toluene	0.0250	0.0289	0.0293	115	117	77.0-120			1.56	20
1,2,4-Trimethylbenzene	0.0250	0.0291	0.0287	116	115	75.0-120			1.37	20
1,3,5-Trimethylbenzene	0.0250	0.0297	0.0291	119	117	75.0-120			1.80	20
Xylenes, Total	0.0750	0.0904	0.0886	121	118	77.0-120	J4		2.02	20
(S) Toluene-d8				*104*	*104*	*80.0-120*				
(S) Dibromofluoromethane				*98.5*	*97.8*	*74.0-131*				
(S) 4-Bromofluorobenzene				*94.3*	*93.5*	*64.0-132*				

L883629-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L883629-01 01/15/17 14:47 • (MS) R3190824-4 01/15/17 13:55 • (MSD) R3190824-5 01/15/17 14:13

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.0277	ND	0.0253	0.0279	91.3	101	1	13.0-146			10.1	27
Ethylbenzene	0.0277	ND	0.0248	0.0274	89.6	99.2	1	10.0-147			10.1	31

L883629-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L883629-01 01/15/17 14:47 • (MS) R3190824-4 01/15/17 13:55 • (MSD) R3190824-5 01/15/17 14:13

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Isopropylbenzene	0.0277	ND	0.0236	0.0265	85.4	95.9	1	10.0-147			11.6	33
Methyl tert-butyl ether	0.0277	ND	0.0267	0.0297	96.4	107	1	21.0-145			10.8	29
Naphthalene	0.0277	ND	0.0297	0.0334	107	121	1	10.0-153			11.7	36
Toluene	0.0277	ND	0.0264	0.0279	93.1	98.4	1	10.0-144			5.41	28
1,2,4-Trimethylbenzene	0.0277	ND	0.0235	0.0261	83.9	93.3	1	10.0-151			10.5	34
1,3,5-Trimethylbenzene	0.0277	ND	0.0245	0.0272	88.4	98.4	1	10.0-150			10.7	33
Xylenes, Total	0.0830	ND	0.0758	0.0814	90.3	97.1	1	10.0-150			7.17	31
(S) Toluene-d8					*104*	*103*		*80.0-120*				
(S) Dibromofluoromethane					*104*	*106*		*74.0-131*				
(S) 4-Bromofluorobenzene					*90.8*	*90.9*		*64.0-132*				

Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J4	The associated batch QC was outside the established quality control range for accuracy.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE.**

***** Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Conneticut	PH-0197	North Carolina [1]	DW21704
Florida	E87487	North Carolina [2]	41
Georgia	NELAP	North Dakota	R-140
Georgia [1]	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky [1]	90010	South Dakota	n/a
Kentucky [2]	16	Tennessee [1 4]	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

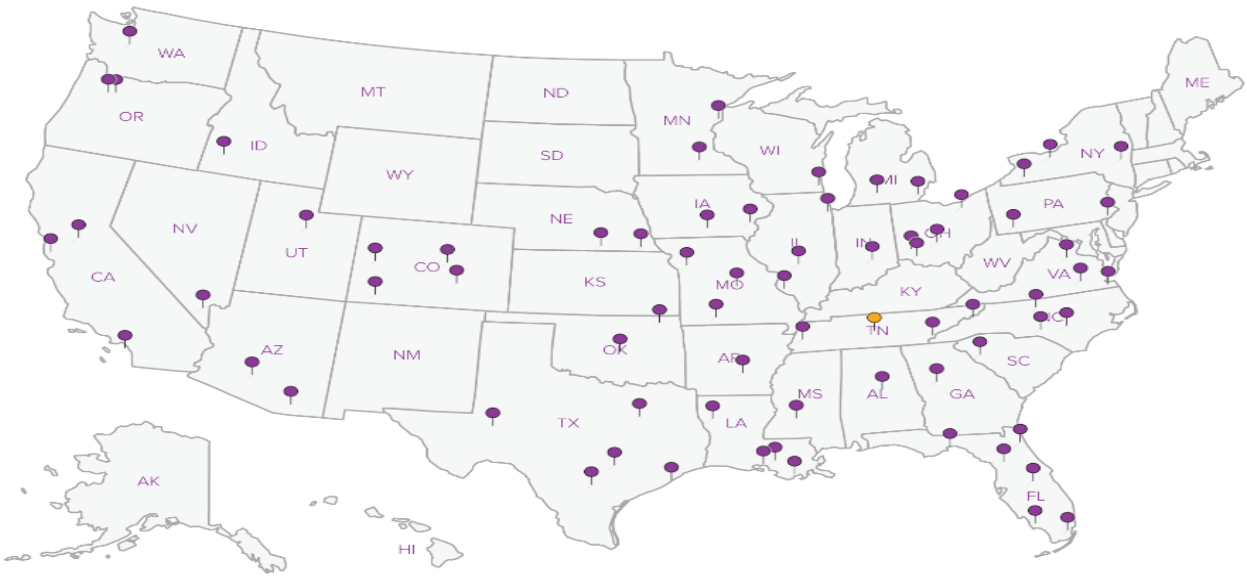
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

[1.] Drinking Water [2.] Underground Storage Tanks [3.] Aquatic Toxicity [4.] Chemical/Microbiological [5.] Mold [n/a] Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



GES, Inc - Sunoco

440 Creamery Way, Ste 500
Exton, PA 19341

Billing Information & Quote Number:

Accounts Payable
440 Creamery Way, Ste 500
Exton, PA 19341

Report to: **Stephanie Grillo**

Email To: **sgrillo@gesonline.com**

Project Description: Sunoco Warminster PA

City/State Collected: Warminster Pennsylvania

Phone: **610-458-1077**
Fax:

Client Project # 0204690-635430-201

Lab Project # **SUNGES-122316L PA**

Collected by (print): Brian Hale

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
X Three Day 25%

Date Results Needed

Email? ___No X__Yes
FAX? ___No ___Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TS 4ozClr-NoPres	V8260LL - UGPA List 40mlAmb-HCl	V8260UGPA 40ml/NaHSO4/Syr/MeOH	Rem./Contaminant	Sample # (lab only)
SB-1 at 12-13'	Grab	SS	12'-13'	1/12/17	0915	4	X		X		-01
SB-3 at 13-14'	Grab	SS	13-14'	1/12/17	0950	4	X		X		02
SB-2 at 10-11'	Grab	SS	10-11'	1/12/17	1015	4	X		X		03
SB-4 at 10-11'	Grab	SS	10-11'	1/12/17	1130	4	X		X		04
		SS				4	X		X		
		SS				4	X		X		
		SS				4	X		X		
		SS				4	X		X		
		SS				4	X		X		
		GW				2		X			

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks:**Log as R4 - 3 day TAT******

pH _____ Temp _____

Flow _____ Other _____

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Brian Hale	1/12/17	1415	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
			526 5108 4574
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☑ SWA

Temp: 2.4° °C Bottles Received: 16

Date: 1/13/17 Time: 0900

Hold #

Condition: (lab use only) tol (OK)

COC Seal Intact: ✓ Y ___N ___NA

pH Checked: NCF:

Chain of Custody Page ___ of ___

ESC LABORATORY SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L883629

B186

Acctnum: **SUNGES**
Template: **T119161**
Prelogin: **P584120**
TSR: **134 - Mark W. Beasley**
PB:
Shipped Via: **FedEx Ground**

ESC
L·A·B S·C·I·E·N·C·E·S
YOUR LAB OF CHOICE

Cooler Receipt Form

Client: SUNGES	SDG#	L883629
Cooler Received/Opened On: 1/13/17	Temperature Upon Receipt:	2.4 °c
Received By: Don Wright		
Signature:		

Receipt Check List	Yes	No	N/A
Were custody seals on outside of cooler and intact?			
Were custody papers properly filled out?			
Did all bottles arrive in good condition?			
Were correct bottles used for the analyses requested?			
Was sufficient amount of sample sent in each bottle?			
Were all applicable sample containers correctly preserved and checked for preservation? (Any not in accepted range noted on COC)			
If applicable, was an observable VOA headspace present?			
Non Conformance Generated. (If yes see attached NCF)			

ATTACHMENT C

ANALYTICAL REPORT

January 16, 2017

GES, Inc - Sunoco

Sample Delivery Group:	L883636
Samples Received:	01/13/2017
Project Number:	0204690-635430-201
Description:	Sunoco Warminster

Report To:

Stephanie Grillo
440 Creamery Way, Ste 500
Exton, PA 19341

Entire Report Reviewed By:

Mark W. Beasley
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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MW-10 L883636-01 GW

Collected by: Brian Hale
Collected date/time: 01/12/17 07:50
Received date/time: 01/13/17 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG943214	1	01/14/17 19:07	01/14/17 19:07	JHH

MW-3 L883636-02 GW

Collected by: Brian Hale
Collected date/time: 01/12/17 08:02
Received date/time: 01/13/17 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG943214	1	01/14/17 19:30	01/14/17 19:30	JHH

MW-4 L883636-03 GW

Collected by: Brian Hale
Collected date/time: 01/12/17 08:16
Received date/time: 01/13/17 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG943214	1	01/14/17 19:53	01/14/17 19:53	JHH

MW-5 L883636-04 GW

Collected by: Brian Hale
Collected date/time: 01/12/17 08:26
Received date/time: 01/13/17 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG943214	1	01/14/17 20:17	01/14/17 20:17	JHH

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Mark W. Beasley
Technical Service Representative

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.000500	1	01/14/2017 19:07	WG943214
Ethylbenzene	ND		0.000500	1	01/14/2017 19:07	WG943214
Toluene	ND		0.00100	1	01/14/2017 19:07	WG943214
Xylenes, Total	ND		0.00150	1	01/14/2017 19:07	WG943214
Methyl tert-butyl ether	ND		0.000500	1	01/14/2017 19:07	WG943214
Isopropylbenzene	ND		0.000500	1	01/14/2017 19:07	WG943214
Naphthalene	ND	J4	0.000500	1	01/14/2017 19:07	WG943214
1,2,4-Trimethylbenzene	ND		0.000500	1	01/14/2017 19:07	WG943214
1,3,5-Trimethylbenzene	ND		0.000500	1	01/14/2017 19:07	WG943214
(S) Toluene-d8	*96.1*		*80.0-120*		*01/14/2017 19:07*	WG943214
(S) Dibromofluoromethane	*93.9*		*76.0-123*		*01/14/2017 19:07*	WG943214
(S) 4-Bromofluorobenzene	*97.7*		*80.0-120*		*01/14/2017 19:07*	WG943214

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	0.00525		0.000500	1	01/14/2017 19:30	WG943214
Ethylbenzene	ND		0.000500	1	01/14/2017 19:30	WG943214
Toluene	ND		0.00100	1	01/14/2017 19:30	WG943214
Xylenes, Total	ND		0.00150	1	01/14/2017 19:30	WG943214
Methyl tert-butyl ether	ND		0.000500	1	01/14/2017 19:30	WG943214
Isopropylbenzene	ND		0.000500	1	01/14/2017 19:30	WG943214
Naphthalene	ND	J4	0.000500	1	01/14/2017 19:30	WG943214
1,2,4-Trimethylbenzene	ND		0.000500	1	01/14/2017 19:30	WG943214
1,3,5-Trimethylbenzene	ND		0.000500	1	01/14/2017 19:30	WG943214
(S) Toluene-d8	*97.2*		*80.0-120*		*01/14/2017 19:30*	WG943214
(S) Dibromofluoromethane	*94.2*		*76.0-123*		*01/14/2017 19:30*	WG943214
(S) 4-Bromofluorobenzene	*97.5*		*80.0-120*		*01/14/2017 19:30*	WG943214

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	ND		0.000500	1	01/14/2017 19:53	WG943214
Ethylbenzene	ND		0.000500	1	01/14/2017 19:53	WG943214
Toluene	ND		0.00100	1	01/14/2017 19:53	WG943214
Xylenes, Total	ND		0.00150	1	01/14/2017 19:53	WG943214
Methyl tert-butyl ether	ND		0.000500	1	01/14/2017 19:53	WG943214
Isopropylbenzene	ND		0.000500	1	01/14/2017 19:53	WG943214
Naphthalene	ND	J4	0.000500	1	01/14/2017 19:53	WG943214
1,2,4-Trimethylbenzene	ND		0.000500	1	01/14/2017 19:53	WG943214
1,3,5-Trimethylbenzene	ND		0.000500	1	01/14/2017 19:53	WG943214
(S) Toluene-d8	*96.5*		*80.0-120*		*01/14/2017 19:53*	WG943214
(S) Dibromofluoromethane	*94.8*		*76.0-123*		*01/14/2017 19:53*	WG943214
(S) 4-Bromofluorobenzene	*98.7*		*80.0-120*		*01/14/2017 19:53*	WG943214

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.000500	1	01/14/2017 20:17	WG943214
Ethylbenzene	ND		0.000500	1	01/14/2017 20:17	WG943214
Toluene	ND		0.00100	1	01/14/2017 20:17	WG943214
Xylenes, Total	ND		0.00150	1	01/14/2017 20:17	WG943214
Methyl tert-butyl ether	ND		0.000500	1	01/14/2017 20:17	WG943214
Isopropylbenzene	ND		0.000500	1	01/14/2017 20:17	WG943214
Naphthalene	ND	J4	0.000500	1	01/14/2017 20:17	WG943214
1,2,4-Trimethylbenzene	ND		0.000500	1	01/14/2017 20:17	WG943214
1,3,5-Trimethylbenzene	ND		0.000500	1	01/14/2017 20:17	WG943214
(S) Toluene-d8	*97.5*		*80.0-120*		*01/14/2017 20:17*	WG943214
(S) Dibromofluoromethane	*93.6*		*76.0-123*		*01/14/2017 20:17*	WG943214
(S) 4-Bromofluorobenzene	*102*		*80.0-120*		*01/14/2017 20:17*	WG943214

Method Blank (MB)

(MB) R3190781-3 01/14/17 13:15

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Benzene	U		0.0000896	0.000500
Ethylbenzene	U		0.000158	0.000500
Isopropylbenzene	U		0.000126	0.000500
Methyl tert-butyl ether	U		0.000102	0.000500
Naphthalene	U		0.000174	0.000500
Toluene	U		0.000412	0.00100
1,2,4-Trimethylbenzene	U		0.000123	0.000500
1,3,5-Trimethylbenzene	U		0.000124	0.000500
Xylenes, Total	U		0.000316	0.00150
(S) Toluene-d8	*96.9*			*80.0-120*
(S) Dibromofluoromethane	*95.7*			*76.0-123*
(S) 4-Bromofluorobenzene	*96.5*			*80.0-120*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3190781-1 01/14/17 11:41 • (LCSD) R3190781-2 01/14/17 12:05

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Benzene	0.0250	0.0224	0.0234	89.6	93.6	69.0-123			4.36	20
Ethylbenzene	0.0250	0.0248	0.0258	99.1	103	77.0-120			3.90	20
Isopropylbenzene	0.0250	0.0235	0.0243	94.1	97.0	75.0-120			3.02	20
Methyl tert-butyl ether	0.0250	0.0212	0.0220	84.8	87.9	64.0-123			3.63	20
Naphthalene	0.0250	0.0136	0.0160	54.5	64.1	62.0-128	J4		16.1	20
Toluene	0.0250	0.0226	0.0237	90.3	94.7	77.0-120			4.72	20
1,2,4-Trimethylbenzene	0.0250	0.0223	0.0232	89.3	93.0	75.0-120			4.02	20
1,3,5-Trimethylbenzene	0.0250	0.0222	0.0233	89.0	93.1	75.0-120			4.50	20
Xylenes, Total	0.0750	0.0730	0.0758	97.3	101	77.0-120			3.74	20
(S) Toluene-d8				*96.5*	*96.7*	*80.0-120*				
(S) Dibromofluoromethane				*94.3*	*95.3*	*76.0-123*				
(S) 4-Bromofluorobenzene				*98.1*	*97.3*	*80.0-120*				

Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.

Qualifier	Description
J4	The associated batch QC was outside the established quality control range for accuracy.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE.**

***** Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Conneticut	PH-0197	North Carolina [1]	DW21704
Florida	E87487	North Carolina [2]	41
Georgia	NELAP	North Dakota	R-140
Georgia [1]	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky [1]	90010	South Dakota	n/a
Kentucky [2]	16	Tennessee [1 4]	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

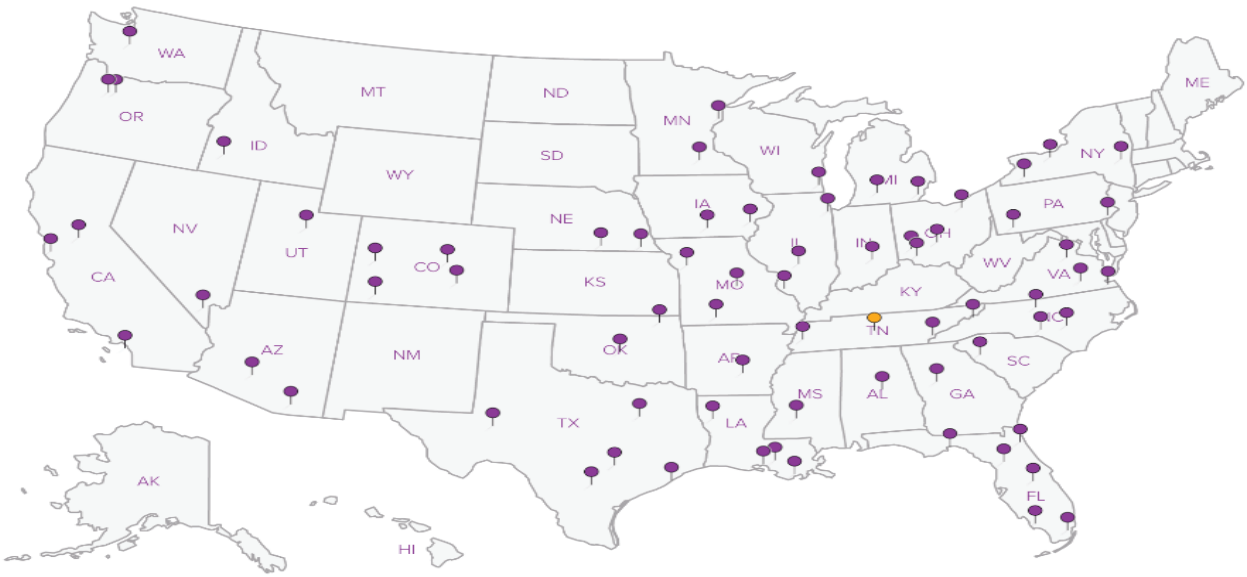
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [n/a] Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



GES, Inc - Sunoco
440 Creamery Way, Ste 500
Exton, PA 19341

Billing Information & Quote Number:
Accounts Payable
440 Creamery Way, Ste 500
Exton, PA 19341

Report to: **Stephanie Grillo**

Email To: **sgrillo@gesonline.com**

Project Description: Sunoco Warminster

City/State Collected: Warminster PA

Phone: **610-458-1077**
Fax:

Client Project # 0204690 - 635430-201

Lab Project # **SUNGES-122316L PA**

Collected by (print): Brian Hale (GES)

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
X Three Day 25%

Date Results Needed

Email? ___No X Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TS 4ozClr-NoPres	V8260LL - UGPA List 40mlAmb-HCl	V8260UGPA 40ml/NaHSO4/Syr/MeOH	Rem./Contaminant	Sample # (lab only)
MW-10	—	GW	—	1/12/17	0750	2		X			-01
MW-3	—	GW	—	1/12/17	0802	2		X			02
MW-4	—	GW	—	1/12/17	0816	2		X			03
MW-5	—	GW	—	1/12/17	0826	2		X			04
		GW				2		X			
		GW				2		X			

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks:**Log as R4 - 3 day TAT******

pH _____ Temp _____
Flow _____ Other _____

Hold #

Condition: (lab use only) Tall OK

COC Seal Intact: ✓ Y ___N ___NA

pH Checked: NCF:

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Brian Hale (GES)	1/12/17	1415	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature) 526 5108 4574
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☒ FedEx ☐ Courier ☐ USPS

Temp: 2.4° °C Bottles Received: 8

Date: 1/13/17 Time: 0900

Chain of Custody Page ___ of ___

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12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L883636
B185

Acctnum: **SUNGES**
Template: **T119161**
Prelogin: **P584120**
TSR: **134 - Mark W. Beasley**
PB:
Shipped Via: **FedEX Ground**

ESC
L·A·B S·C·I·E·N·C·E·S
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Cooler Receipt Form

Client: SUNGES		SDG#	L883636
Cooler Received/Opened On: 1/13/17		Temperature Upon Receipt:	2.4 °c
Received By: Don Wright			
Signature:			

Receipt Check List	Yes	No	N/A
Were custody seals on outside of cooler and intact?	✓		
Were custody papers properly filled out?	✓		
Did all bottles arrive in good condition?	✓		
Were correct bottles used for the analyses requested?	✓		
Was sufficient amount of sample sent in each bottle?	✓		
Were all applicable sample containers correctly preserved and checked for preservation? (Any not in accepted range noted on COC)			✓
If applicable, was an observable VOA headspace present?		✓	
Non Conformance Generated. (If yes see attached NCF)			

Phase I ESA

ePhase, Inc. - July 11, 2017

Phase I Environmental Site Assessment

Sunoco **Gasoline Station**
610 York Road
Warminster
Bucks County, Pennsylvania

Project Number: 17-179.103
Date Issued: July 11, 2017
Date of Site Inspection: June 23, 2017

Prepared For:

WSFS Bank
500 Delaware Avenue
Wilmington, DE 19801

By:

e Phase, Inc.
P.O. Box 44
West Chester, PA 19381-0044
(610) 692-7007
www.ephase.com

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APPENDICES

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Executive Summary

At the request of Mr. Earl Timmons of *WSFS Bank* (the Client), *e Phase, Inc.* has performed a Phase I Environmental Site Assessment (ESA) of a *Sunoco* gasoline station, tax parcel 49-009-046, located at 610 York Road, Warminster Township, Bucks County, Pennsylvania, the Site.

The Site consists of a 0.527-acre, irregularly-shaped parcel of land situated in the northwest corner of Route 132 (West Street Road) and Route 263 (York Road) in Warminster Township. The Site currently serves as a *Sunoco* gasoline station and convenience store. The subject property includes an approximate 1,800-square foot convenience store building, an approximate 1,750-square foot canopy covering two pump islands, an approximate 2,000-square foot canopy covering two pump islands, surface-level asphalt and concrete paving used for parking and access purposes, a tank field area, and grassed/landscaped areas. The interior of the Site building includes public accessible retail space, private office space, a walk-in cooler, a public bathroom, and a storage closet.

The current gasoline station building was built sometime between 1950 and 1958. Pump dispenser locations have been located along the south and eastern edges of the property since development as a gasoline station. The current pump, tank field, building structure, and parking lot/grassy area was in place around 1992. Historic records indicate prior to this time, the Site consisted of two buildings as far back as at least 1876. Use of these buildings is unclear but may have been residential or agricultural related.

The Site is located in a mixed-use residential, commercial, industrial, and institutional area of Warminster Township. The subject property is bounded to the north by *Eagle Diner* and associated parking lot, to the south by West Street Road, York Road, and commercial properties, to the east by York Road and *Hatboro Federal Savings Bank*, and to the west by West Street Road and *Wells Fargo Bank*. Based upon previous groundwater investigations at the Site, groundwater flow in the shallow aquifer varies but mainly flows to the north and west and the deep aquifer groundwater flow is generally to the north.

This ESA has been prepared in general accordance with the ASTM E 1527-13 *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*. Any exceptions to, or deletions from, this practice and any site-specific limiting conditions and/or data gaps are described in Sections 1.4 and 11.0 of this report. Any

additional services requested by the Client which were conducted beyond the scope of this practice are described in Section 12.0 of this report.

The purpose of this ESA was to evaluate the surficial conditions at the Site to identify any *recognized environmental conditions* (*RECs*), *historical recognized environmental conditions* (*HRECs*) and *controlled recognized environmental conditions (CRECs)* in connection with the subject property. In addition, *e Phase, Inc.* conducted an evaluation of the surficial conditions of the Site for other environmental findings, namely significant environmental concerns, moderate environmental concerns, and *de minimis* conditions, as a supplement to the standard ASTM requirements.

e Phase, Inc. has identified the following evidence of *RECs, HRECs and CRECs* in connection with the subject property and/or vicinity:

Summary of RECs, HRECs and CRECs

	Identified	Conclusions	Recommendations
Recognized Environmental Conditions	Yes (4)	1) A cement pad with two metal covers and one small metal cover was located to the north of the building. According to William Brochu of *Sunoco* this structure is associated with a grease trap. Due to the historic use of this property as an auto repair shop (prior to *Sunoco*'s ownership) this grease trap is assumed to be an oil/water separator. Mr. Brochu and Mr. Bernard could not provide any details regarding the structure, contents, tightness testing, discharge location, and/or age of the "grease trap". Oil/water separators can become a conduit for subsurface contamination if hazardous substances or petroleum products are improperly disposed of in them. Moreover, given the historic use of the Site for auto repair purposes, the presence of an on-Site oil/water separator is currently believed to be a *recognized environmental condition*.	Information regarding the structure, purpose, discharge location, and potential contents should be further determined. A subsurface investigation should be conducted to confirm that the soil and/or groundwater has not been impacted by the historic use of the Site and the oil/water separator.
		2) *e Phase, Inc.* observed three metal covers within the parking lot of the Site. Their use is unknown at this time but could be of *de minimis* concern if related to utility access. However, should the use of these metal covers be identified as non-utility related underground structures such as access covers to USTs, there would need to be further investigation into their contents, age, and tightness.	As of the date of this report, *Sunoco* was still attempting to determine the purpose of these metal covers. *Sunoco* should provide the actual purpose of these underground structures.
		3) Based on the *Warminster Municipal Authority* website and the *Bucks County Courier Times*,	Potentially high levels of perfluorinated compounds (PFCs)

	Identified	Conclusions	Recommendations
		the groundwater in *Warminster Township* is known to contain potentially high levels of perfluorinated compounds (PFCs) due to the operations at the *Former Naval Air Station Joint Reserve Base* in Horsham, along with the active *Horsham Air Guard Station*. A known area of impact is provided by the *Bucks County Courier Times* and is included as an Appendix. Based on the general vicinity around the Site, it is possible the groundwater is impacted with PFCs; however, there are areas below and areas above the health advisory level. Therefore, it will be considered a regional groundwater issue within the entire township likely impacting the Site. Since this compound is not a compound of interest for gasoline stations it may be present but unknown despite the significant amount of groundwater sampling previously conducted.	should be investigated by collecting groundwater samples from the existing groundwater wells. These samples would be used to evaluate if the Site falls within the PFC areawide impacted groundwater. They would also be used to determine if an indoor vapor intrusion issue exists from any potential levels of PFCs.
		4) The Site was identified in the UNREG TANK database which includes unregistered tanks that have been removed, permanently closed in place, closed without a permit, or under other circumstances. The Site had the following tanks noted at the Site, none of which are noted with a date of removal: a. Tank 004: 550-gallon used oil UST installed in 1962. b. Tank 005: 1,000-gallon heating oil tank installed in 1962. c. Tank 006: 1,000-gallon tank with unknown content and unknown installation date. d. Tank 007: 550-gallon heating oil tank installed in 1962. Two of these tanks (the 550 gallon USTs) may have been closed during the 1995/1996 tank removal activities, however, this could not be confirmed as part of the scope of this ESA. However, the other sizes/types of tanks were not noted to have been closed during the 1995/1996 tank removal activities. Additional information should be provided by *Sunoco* to confirm they were removed from the Site and not closed in place.	Additional information should be provided by *Sunoco* to confirm they were removed from the Site and not closed in place.
Historical Recognized Environmental Conditions	Yes (1)	1) In 2012, a release of less than 12 gallons occurred at the Site due to an overflow of gas from a vehicle. The appropriate measures were taken for cleanup and an investigation of all storm drains was completed. PADEP considers the cleanup of the incident to be completed.	No further action.
Controlled Recognized Environmental	Yes (1)	1) Groundwater and soil impact was reported in 1995/1996 during tank and dispenser island removal activities. The tank removal investigation revealed that benzene exceeded	Closure of un-used groundwater monitoring wells should be conducted within local, state, and federal requirements.

	Identified	Conclusions	Recommendations
Conditions		the PADEP SHS within the excavation. According to the reports provided, benzene, ethylbenzene, methyl tert butyl ether (MTBE), and/or naphthalene have been detected in each of the groundwater monitoring wells, except MW-6, above the PADEP SHS Attainment of a non-residential statewide health standard was achieved and approved by the PADEP in October 2010 for toluene, ethylbenzene, xylenes, MTBE, cumene, and naphthalene in soils and for toluene, ethylbenzene, xylenes, cumene, and naphthalene in groundwater. Pathway elimination was utilized for attainment of benzene in soils and groundwater and MTBE in groundwater. A covenant was recorded in October 2010 for the property which include activity and use limitations restricting groundwater use and residential use.	
The information presented in this summary table is a synopsis of the conclusions and recommendations for the RECs, HRECs and/or CRECs identified in connection with the Site and vicinity. Additional details on the RECs, HRECs and/or CRECs are provided in the report text; therefore, this summary table should not be used as a stand-alone document			

e Phase, Inc. has identified the following evidence of significant environmental concerns, moderate environmental concerns, and *de minimis* conditions in connection with the subject property and/or vicinity:

Summary of Other Environmental Findings

	Identified	Conclusions	Recommendations
Significant Environmental Concerns	No	NA	NA
Moderate Environmental Concerns	Yes (3)	1) The possible historic presence of a UST to the east across York Road is of environmental interest. According to groundwater investigations conducted at the Site, this property would potentially be located up- or crossgradient. The Site has already conducted numerous soil and groundwater investigations as the Site; therefore, any concerns regarding this potential UST would likely have been identified.	No further action
		2) It is possible that portions of the Site building contain ACBM and/or LBP based on its pre-1978 construction date.	A comprehensive asbestos and LBP survey should be conducted of the Site building should renovation/demolition activities occur in the future.
		3) According to the database	No further action (based upon non-

	Identified	Conclusions	Recommendations
		report, radon concentrations in the vicinity of the Site average 5.7 picocuries per liter (pCi/L), which is above the EPA's recommended action level of 4.0 pCi/L. Radon poses a potential health risk to Site occupants and workers who breathe ambient air.	residential use of building).
de minimis Conditions	Yes (2)	1) The database search identified numerous off-Site facilities within the prescribed search radii. Based upon groundwater flow direction, their regulatory statuses and/or distances, the properties identified by the database search are unlikely to be impacting Site subsurface conditions.	No further action.
		2) Due to the pre-1984 construction date of portions of the Site building, it is possible that Site fluorescent light ballasts contain PCBs. However, since no evidence of releases was observed in the vicinity of inspected fluorescent lights, they are currently believed to be of minimal environmental concern.	Fluorescent light ballasts known or suspected of containing PCBs should be properly disposed by a qualified recycler.

The information presented in this summary table is a synopsis of the conclusions and recommendations for the significant environmental concerns, moderate environmental concerns, and/or de minimis conditions identified in connection with the Site and vicinity. Additional details on these environmental findings are provided in the report text; therefore, this summary table should not be used as a stand-alone document.

1.0 Introduction

This report describes the Phase I ESA performed by *e Phase, Inc.* at *Sunoco* gasoline station, tax parcel 49-009-046, located at 610 York Road, Warminster Township, Bucks County, Pennsylvania (the Site). *e Phase, Inc.* conducted this ESA at the request of Mr. Earl Timmons of *WSFS Bank* (the Client) who authorized this project on June 12, 2017.

1.1 Purpose

This ESA has been prepared in general accordance with the ASTM E 1527-13 *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*. The ASTM standard practice is designed to "define good commercial and customary practice in the United States of America for conducting an environmental site assessment of a parcel of commercial real estate with respect to the range of contaminants within the scope of CERCLA and petroleum products." As such, this practice is intended to constitute "all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice," which is one of the requirements necessary to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations on CERCLA liability (landowner liability protection). The purpose of this ESA was to evaluate the surficial conditions at the Site to identify any *recognized environmental conditions, historical recognized environmental conditions* or *controlled recognized environmental conditions* in connection with the subject property.

A *recognized environmental condition (REC)* is defined as "the presence or likely presence of any *hazardous substances* or *petroleum products* in, on, or at a Site: (1) due to any *release* to the *environment;* (2) under conditions indicative of a *release* to the *environment;* or (3) under conditions that pose a *material threat* of a *release* to the *environment*."

A *historical recognized environmental condition (HREC)* is defined as "a past *release* of any *hazardous substances* or *petroleum products* that has occurred in connection with the Site and had been addressed to the satisfaction of the applicable regulatory authority, without subjecting the Site to any required controls."

A *controlled recognized environmental condition (CREC)* is defined as "a *recognized environmental condition* resulting from a past *release* of *hazardous substances* or *petroleum products* that has been addressed to the satisfaction of the applicable regulatory authority, with *hazardous substances* or *petroleum products* allowed to remain in place subject to the implementation of required controls." Note that a condition identified as a *CREC* does not imply that the *environmental professional* has evaluated or confirmed the adequacy, implementation, or continued effectiveness of the require control that has been, or is intended to be, implemented.

In addition, *e Phase, Inc.* conducted an evaluation of the surficial conditions of the Site for other environmental findings, namely significant environmental concerns, moderate environmental concerns, and *de minimis* conditions, as a supplement to the standard ASTM requirements. Determinations of these other environmental findings were based on the inspector's interpretation and the judgment and opinion of the environmental professional. In general, for the purposes of this report a significant environmental concern is defined as representing a significant threat to the environmental condition of the Site, a moderate environmental concern is defined as representing a moderate threat to the environmental condition of the Site, and a *de minimis* condition is defined as representing a minimal threat or no threat to the environmental condition of the Site. These other environmental findings do not rise to the level of a *recognized environmental condition* but may warrant further environmental investigation, as determined on a case-by-case basis.

1.2 Scope of Services

In general accordance with the guidelines set forth in the ASTM E 1527-13 *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*, *e Phase, Inc.* performed the following activities as part of our assessment:

- Conducted a visual review of surface conditions at interior and exterior portions of the Site on June 23, 2017 to evaluate the current environmental condition of the Site;
- Conducted a visual review of surface conditions at adjoining properties from within the boundaries of the Site or other vantage point to assess the potential environmental threat to the Site from these properties;

- Interviewed the Site contact on June 23, 2017 to identify specialized knowledge or experience in regards to Site characteristics;
- Reviewed online resources retained by Bucks County municipal offices to ascertain the history, physical setting, and environmental issues at and in the immediate vicinity of the Site;
- Reviewed a report of Federal and state environmental records conducted by a database search contractor to identify any Federal- or state-listed sites within the search radii specified in the ASTM E 1527-13 standard which have the potential to impact the environmental condition of the Site;
- Visually evaluated the Site building for the presence of friable suspect ACBM and flaking, peeling, and/or chipping suspect LBP;
- Requested records retained for the Site by the Pennsylvania Department of Environmental Protection (PADEP); and,
- Reviewed various environmental documents provided by the client, owner, and the PADEP.

e Phase, Inc. did not conduct laboratory analyses for the presence of ACBM, LBP, drinking water quality, radon, urea foam formaldehyde insulation, or electromagnetic radiation. Our preliminary inspections for friable suspect ACBM and flaking suspect LBP consisted of only a visual inspection of readily-accessible areas of the Site building. They were not intended to substitute for a comprehensive survey for the purposes of the renovation/demolition of the Site building or to evaluate potential health risks. Although the accepted method of evaluating subsurface conditions at the Site in more detail would be to conduct a *subsurface evaluation* (including the collection and analysis of soil and groundwater samples), such evaluation was beyond the scope of this ESA. Lastly, this ESA was not intended to substitute for a regulatory compliance audit of the Site.

1.3 Significant Assumptions

The recommendations and conclusions discussed herein are based solely and in reliance upon information collected as a result of the activities and services described above in the "Scope of Services." *e Phase, Inc.* neither certifies as to the accuracy nor renders an opinion as to the accuracy or completeness of the statements of the individuals interviewed, governmental records obtained, environmental reports prepared by other consultants, analytical results, or the database search results provided by the

database contractor. There is a possibility that even with the proper application of these methodologies property conditions may exist that could not be identified within the scope of the assessment or which were not reasonably identifiable from the available information. The methodologies of this assessment are not intended to produce all-inclusive or comprehensive results, but rather to provide the Client with information relating to the property.

1.4 Limitations and Exceptions

The observations in this ESA are valid on the date of the site reconnaissance and made under the limitations and conditions noted herein. *e Phase, Inc.* renders no opinion as to the presence of hazardous substances or petroleum products at portions of the Site that were unavailable for direct observation.

e Phase, Inc. has drawn conclusions and developed recommendations with information obtained from "publicly available," "reasonably obtainable," and "practically reviewable" information available at the time of this ESA and an evaluation of Site surficial conditions. The results and conclusions of the Phase I ESA process were limited to Site surficial conditions observed at the time of the site reconnaissance and by the completeness and accuracy of information obtained from records of various sources and interviews with persons that might be knowledgeable of the Site and the conditions thereof.

No reasonable level of Site inspection or records evaluation can completely guarantee that a property is totally free of environmental contamination or potential exposure to some degree of environmental liability. Rather, this site assessment effort was structured to provide "appropriate inquiry" and adequate "environmental due diligence" to qualify our Client for protection under the "innocent landowner defense," the "bona fide prospective purchaser defense," and the "contiguous property owner defense" as described by both CERCLA and the Superfund Amendments and Reauthorization Act.

Subsurface investigations may result in the discovery of conditions in addition to or different from the conditions discovered by surficial observation only. *e Phase, Inc.* does not give any warranty, either expressed or implied, as to the presence of hazardous substances or petroleum products other than set forth elsewhere in this ESA.

Specific limiting conditions and/or data gaps encountered during this ESA are set forth below:

- No response to request for information from the Hartsville Fire Department and the Warminster Township at the time of issuance of this report.
- Inability to obtain standard historical sources documenting the previous uses and ownership of the property since the time of initial Site development or first significant use.

e Phase, Inc. is not of the opinion that the above limitations have impacted our ability to render conclusions with regard to the environmental condition of the subject property. In addition, our inspection did not include the building rooftop; areas behind existing walls, above existing ceilings, or beneath existing flooring; areas underneath parked motor vehicles; and areas obstructed by furniture, stored materials, equipment, etc.

1.5 Special Terms & Conditions

Authorization to perform this work was given by a directive from the Client listed on the cover page of this document.

e Phase, Inc. was directed not to interview the employees of the *Sunoco* station; however, the *Sunoco* regional manager was available for questioning.

1.6 User Reliance

This report has been prepared exclusively for the party to whom it has been delivered to by *e Phase, Inc.* It is confidential and proprietary. It may not be copied, disseminated, distributed or disclosed to any other parties without the expressed written permission of *e Phase, Inc.* No third party may rely on the information contained herein.

2.0 Site Description

2.1 Site Location and Legal Description

Provided below is a description of the Site:

Table 1: Site Description

Property Name:	*Sunoco* Gasoline Station
Site Address:	610 York Road
Site Location:	Northwest corner of Route 132 (West Street Road) and Route 263 (York Road)
Closest Cross Street:	West Street Road
Site Access:	From West Street Road, which is south/west of the Site and York Road, which is east of the Site
Site Acreage:	0.527 acre
Type of Property:	Commercial (gas station and convenience store)
County Assessor Map Number, Block, and Lot:	49-009-046
Instrument Number:	2017021641
Current Owner:	*Sunoco Retail LLC*
Date Purchased:	April 11, 2017
Previous/Historic Use:	Possibly residential

e Phase, Inc. did not uncover any information in Bucks County Assessment records to indicate any environmental liens or deed restrictions (i.e., activity and use limitations, institutional and engineering controls, etc.) on the property. However, it should be noted that only limited information regarding property sales were available, and a known environmental covenant was recorded for the Site in October 2010. Online deed records only cover up to April 7, 2017 and the recorded last deed for the Site was on April 11, 2017.

2.2 Site and Vicinity General Characteristics

The Site consists of a 0.527-acre, irregularly-shaped parcel of land situated in the northwest corner of Route 132 (West Street Road) and Route 263 (York Road). The Site is located in a mixed-use residential, commercial, industrial, and institutional area of Warminster Township. The Site is designed and used for gasoline distribution and

convenience store purposes and is currently operated and occupied by *Sunoco*. Businesses near the Site include *Eagle Diner, Hatboro Federal Savings Bank, Wells Fargo Bank, Archbishop Wood High School, ZIPS Dry Cleaners,* various institutional (religious and educational) properties, and the *Center Point Shopping Center.* The area also has significant residential development.

e Phase, Inc. observed a dry cleaner property to the northwest and a gasoline station located to the west which are property uses that pose a material threat of release of hazardous substances or petroleum products.

2.3 Current Site Ownership and Use

Bucks County Assessor's Office records identify the current owner of the Site as *Sunoco Retail LLC*. The Site currently serves as a *Sunoco* gasoline station and convenience store. The subject property includes an approximate 1,800-square foot convenience store building, an approximate 1,750-square foot canopy covering two pump islands, an approximate 2,000-square foot canopy covering two pump islands, surface-level asphalt and concrete paving used for parking and access purposes, a tank field area, and grassed/landscaped areas. The interior of the Site building includes public accessible retail space, private office space, a walk-in cooler, a public bathroom, and a storage closet.

Based on the Site use as a gasoline station and the presence of groundwater monitoring wells, it is possible that tenant activities are adversely impacting environmental conditions at the Site.

2.4 On-Site Structures, Utilities, and Improvements

Table 2 provides a description of the Site structures and other improvements:

Table 2: Site Structures and Improvements

Number of Structures:	One
Number of Stories and Usage:	One-story retail
Construction Date:	1961 (according to county records) 1950-1958 (based on aerial photographs)
Building Materials:	Brick and block
Roofing Materials:	Flat rubber roofing
Basement Type:	None
Square Footage:	1,800-square feet (building only)
Percent Structures Cover Site:	6%
Paving Materials:	Asphalt (including canopy area)
Percent Paved Surfaces Cover Site:	79%
Pervious surfaces description:	Grassed lawn
Percent Pervious Surfaces Cover Site:	15%

Table 3 provides a listing of the Site infrastructure:

Table 3: Site Utilities

Utility	Source	Supplier
Heating:	Natural gas	*PECO*
Air Conditioning:	Electric roof-mounted AC units	*PECO*
Electric:	Aboveground lines	*PECO*
Water:	Public system	*Warminster Municipal Authority*
Sewer:	Public system	*Warminster Municipal Authority*

2.5 Current Uses of Adjoining Properties

Visual observations of adjoining/surrounding properties (from Site boundaries and readily accessible public areas) are summarized in Table 4.

Table 4: Adjoining/Surrounding Properties

Direction	Description
North	*Eagle Diner* and associated parking lot
South	West Street Road and York Road, beyond which are commercial properties
East	York Road, beyond which is *Hatboro Federal Savings Bank*
West	West Street Road, beyond which is *Wells Fargo Bank*

3.0 Physical Setting

3.1 Topography

The Site is at an elevation of approximately an average of 300 feet above the National Geodetic Vertical Datum of 1929 according to the USGS *Hatboro, PA Quadrangle*. The Site is essentially level. Land near the Site is essentially level.

3.2 Geology/Soils

e Phase, Inc. did not observe any bedrock outcrops at or in the immediate vicinity of the Site. According to the Pennsylvania Department of Conservation and Natural Resources website, the Site is underlain by Stockton Formation, within the Triassic lithotechtonic subdivision. The bedrock type locality is identified as arkosic sandstone. The Stockton Formation crops out in the Newark basin. It is composed of light-gray to buff, coarse-grained, arkosic sandstone and red to purplish-red sandstone, shale, siltstone, and mudstone. Its thin to flaggy beds are well developed and its maximum thickness is approximately 3,300 feet.

According to the Natural Resources Conservation Service websoil survey, the Site is underlain by soils classified as "Urban land" with zero to eight percent slopes. This mapping unit consists of areas where 75 percent or more of the land is covered with impervious surfaces, such as buildings, pavement, and other artificially covered areas.

3.3 Surface Water

The Site is in the Pennypack Creek Regional Basin of the Delaware Drainage Basin, with the Pennypack Creek located 12,000 feet to the south. Surface runoff drains to the Westminster Township stormsewer system and would be to the south, towards the Pennypack Creek, if unimpeded.

3.4 Flood Zone

The Federal Emergency Management Agency *Flood Insurance Rate Map* for the vicinity indicates the Site is in Zone X. A community flood insurance study has identified such zones to be areas of moderate or minimal hazard from the area's principal source of

flooding. However, severe, concentrated rainfall, coupled with inadequate local drainage systems, could flood buildings in this zone.

3.5 Wetlands

e Phase, Inc. did not observe any obvious wetland-type vegetation at the Site. Moreover, according to the *National Wetlands Inventory* map of the *Hatboro, PA Quadrangle*, wetlands are not mapped for the subject property.

3.6 Hydrogeology

Depth to groundwater at the Site is likely deep. At least 14 groundwater monitoring well caps were observed at the Site. It was not clear if all the monitoring wells were still operational. Based upon previous groundwater monitoring activities conducted at the Site, the groundwater flow direction is known to vary seasonally; however, it is most often flowing toward the north or west in the shallow aquifer and northerly in the deeper aquifer. However, in the most recent groundwater sampling conducted in January 2017, *GES* determined the flow to be toward the southwest.

4.0 User-Provided Information

Pursuant to ASTM E 1527-13, *e Phase, Inc.* requested Site information from Mr. Ijmal Ali, owner of Finch Petroleum, operator and buyer of the Site. The User Questionnaire completed by Mr. Ali is provided in Appendix F. Table 5 provides a summary of this information.

Table 5: User Provided Information

User Provided Information	Information Provided to e Phase, Inc. (Y/N)	Details
Title Records	N	Title records were not provided to *e Phase, Inc.* by the Client. However, *e Phase, Inc.* reviewed the Bucks County Assessment online records which did not indicate any environmental liens or deed restrictions (i.e., activity and use limitations, institutional and engineering controls, etc.) on the property. However, it should be noted that only limited information regarding property sales were available and a known environmental covenant was recorded for the Site in October 2010. Online deed records only cover up to April 7, 2017 and the recorded last deed for the Site was on April 11, 2017.
Environmental Liens and Activity Use Limitations	Y	The operator did not have any knowledge of any environmental cleanup liens or of any engineering controls, land use restrictions, or institutional controls on the Site which would affect the activity and use of the property.
Specialized Knowledge	Y	The operator had specialized knowledge or experience relating to the environmental condition of the Site or nearby properties.
Value Reduction for Environmental Issues	Y	The operator was not aware of any environmental issues with regards to the Site that would result in a valuation reduction.
Commonly Known or Reasonable Ascertainable Information	Y	The operator did not report any commonly known or reasonably ascertainable information about the property that is material to recognized environmental conditions in connection with the property.
Indicators that point to the presence or likely presence of contamination at the property.	Y	The operator did not report any indicators that point to the presence of likely presence of contamination at the property.
Prior environmental work	Y	The operator was unaware of any previous environmental work
Reason for performing the Phase I ESA	Y	The operator informed *e Phase, Inc.* that the reason for this ESA Site evaluation was to qualify for the innocent landowner defense.
Other	N	NA

5.0 Records Review

5.1 Federal & State Environmental Database Records

e Phase, Inc. contracted database searches of Federal and state environmental records on June 13, 2017. Federal- and state-listed sites identified within the radii specified by ASTM E 1527-13 are discussed in detail in this section below. Refer to Appendix E for a complete copy of the database search report. Table 6 summarizes these results.

Table 6: Database Search Results

Database	Search Radius	Site	0-⅛ miles	⅛-¼ miles	¼-½ miles	½-1 miles	ZIP
NPL	1 mile	No	0	0	0	1	0
Delisted NPL	½ mile	No	0	0	0		0
CERCLIS	½ mile	No	0	0	0		0
CERCLIS NFRAP	½ mile	No	0	0	0		1
RCRA Generator	¼ mile	Yes	3	3			0
RCRA NLR	¼ mile	No	1	1			0
RCRA CORRACTS	1 mile	No	0	0	0	1	0
RCRA TSD	½ mile	No	0	0	0		0
ERNS	Site	No					0
Tribal Land	1 mile	No	0	0	0	0	0
State/Tribal Sites	1 mile	No	0	0	0	0	0
State/Tribal SWL	½ mile	No	0	0	0		0
State/Tribal UST/AST	¼ mile	Yes	0	2			0
State/Tribal LUSTs	½ mile	Yes	0	2	3		1
Federal/State/Tribal Brownfield	½ mile	No	0	0	0		0
State/Tribal IC/EC	Site	No					0
State/Tribal VCP	½ mile	No	0	0	2		0
FINDS	Site	Yes					
Exclusive Recovered Govt. Archives	Site	Yes (3)					0

Shading represents areas outside ASTM E1527-13 search radius

5.1.1 National Priority List (NPL) Sites

NPL is the EPA's list of Superfund sites and represents the worst of all unidentified, uncontrolled, and/or abandoned hazardous waste sites.

The search did not identify the Site but did identify one site within a one-mile radius of the Site as a NPL site. *Naval Air Devel Ctr* at St. Jacksonville Rd. (EPA ID: PA6170024545; 0.96 mile/east-southeast) was identified as a NPL site. This site is currently on the Final NPL for contamination of the surface and groundwater pathways involving chromium, zinc, cadmium and compounds. Based on distance and contaminants of concern, it is not anticipated that this specific groundwater issue is impacting the subsurface of the Site.

It should be noted that the groundwater in *Warminster Township* is known to contain potentially high levels of perfluorinated compounds (PFCs) due to the operations at the *Former Naval Air Station Joint Reserve Base* in Horsham, along with the active *Horsham Air Guard Station*. Based on the general vicinity around the Site, it is possible the groundwater is impacted with PFCs.

5.1.2 Delisted NPL Sites

Delisted NPL sites are sites that have been deleted from the NPL where no further response is appropriate.

The search did not identify the Site or any sites within a ½-mile radius of the Site as delisted NPL sites.

5.1.3 CERCLIS Listings

A CERCLIS listing is a potential Superfund site currently or previously investigated for a release or threatened release of hazardous waste materials.

The search did not identify the Site or any sites within a ½-mile radius of the Site as CERCLIS listings.

5.1.4 CERCLIS NFRAP Listings

A CERCLIS "No Further Remedial Action Planned" (NFRAP) facility is a property where, to the best of the EPA's knowledge, assessment at the facility has been completed and the EPA has determined that no further steps will be taken to list this property on the NPL. This decision does not necessarily imply that there is no hazard associated with a given site; it only implies that, based upon the available information, the location is not judged to be a potential NPL site.

Possible reasons include no contamination was found, contamination was removed quickly, contamination was not serious enough to require Federal Superfund action or NPL consideration, etc.

The search did not identify the Site or any sites within a ½-mile radius of the Site as CERCLIS NFRAP listings.

5.1.5 RCRA Generator Facilities

A RCRA generator facility is a facility that generates or transports hazardous waste or meets other RCRA requirements.

The search identified the Site and six nearby sites within a ¼-mile radius of the Site as RCRA hazardous waste generator facilities. Table 7 summarizes these facilities.

Table 7: Summary of RCRA Generator Facilities

Name/Address	EPA ID#	Distance/Direction	Facility Type
Sunoco SVC Sta 610 Old York Rd.	PAD987348182	Target Site	VGN Violation Status: No violations found
Button Men LLC DBA Zips Dry Cleaners 618 York Rd.	PAR000528836	0.03 mile/north-northeast	VGN Violation Status: No violations found
Rite Aid No 293 599 York Rd.	PAR000536250	0.10 mile/south-southeast	VGN Violation Status: No violations found
Archbishop Wood High School 655 York Rd.	PAR000525683	0.12 mile/north-northeast	SQG Violation Status: No violations found
Frankford Cleaners 756 Street Rd.	PAD987384179	0.14 mile/west-northwest	VGN Violation Status: No violations found
Collisionmax Warminster an Abra Co. 565 W. Street Rd.	PAR000552307	0.20 mile/southeast	VGN Violation Status: No violations found
Lafferty Chevrolet/Warminster 829 W. Street Rd.	PAD015070055	0.23 mile/northwest	SQG Violation Status: No violations found

SQG = Small quantity generator (of 100-1,000 Kg hazardous waste per month)
VGN = Conditionally exempt generator (of <100 Kg hazardous waste per month)

No violations or enforcement notices were noted within the database search information, as such, the concern associated with these properties is minimized accordingly.

5.1.6 RCRA NLR Facilities

A RCRA NLR facility is a facility not currently classified by the EPA but is still included in the RCRAInfo database.

The search did not identify the Site but did identify two sites within a ¼-mile radius of the Site as RCRA NLR facilities. Table 8 summarizes these facilities.

Table 8: Summary of RCRA NLR Facilities

Name/Address	EPA ID#	Distance/Direction	Facility Type
Heritage Cleaners 614 York Rd.	PAD047324009	0.01 mile/northeast	SQG Violation Status: No violations found
Jiffy Lube 262 600 W. Street Rd.	PAD982363467	0.16 mile/southeast	VGN Violation Status: No violations found

SQG = Small quantity generator (of 100-1,000 Kg hazardous waste per month)
VGN = Conditionally exempt generator (of <100 Kg hazardous waste per month)

No violations or enforcement notices were noted within the database search information. Since these properties are no longer generating hazardous wastes, the concern associated with these listings is minimized accordingly.

5.1.7 RCRA CORRACTS Facilities

A RCRA CORRACTS facility is a hazardous waste handler with reported violations and corrective action activity.

The search did not identify the Site but did identify one site within a one-mile radius of the Site as a RCRA CORRACTS facility. *Naval Air Devel Ctr* at St. Jacksonville Rd. (EPA ID: PA6170024545; 0.96 mile/east-southeast) was identified as a RCRA CORRACTS site. On 9/30/1990, the entire facility was assigned CA210SF – CA Responsibility referred to a non-RCRA Federal Authority, corrective action at the facility referred to CERCLA. On 12/1/1991, the entire facility was assigned CA075HI – CA Prioritization, a high corrective action priority. On 8/24/1998 the entire facility was assigned RFI Imposition. Due to limited information provided it is unclear if this Site is impacting the Site subsurface and will be considered part of the area-wide groundwater impact noted in Section 5.3.1.

5.1.8 RCRA TSD Facilities

A RCRA TSD facility is a facility licensed to store, treat, and dispose of hazardous waste materials.

The search did not identify the Site or any sites within a ½-mile radius of the Site as RCRA non-CORRACTS TSD facilities.

5.1.9 ERNS Sites

ERNS is a database of emergency response actions.

The search did not identify the Site as an ERNS site.

5.1.10 Tribal Land

Tribal land sites are sites with boundaries established by treaty, statute, and/or executive or court order recognized by the Federal Government as territory in which American Indian tribes have primary governmental authority.

The search did not identify the Site or any sites within a one-mile radius of the Site as tribal land sites.

5.1.11 State/Tribal Sites

The State/Tribal Sites database is a database of sites within the PADEP's Hazardous Sites Cleanup Program.

The search did not identify the Site or any sites within a one-mile radius of the Site as State/Tribal sites.

5.1.12 State/Tribal SWL Sites

State/Tribal SWL sites are permitted solid waste landfills.

The search did not identify the Site or any sites within a ½-mile radius of the Site as State/Tribal SWL sites.

5.1.13 State/Tribal USTs and ASTs

The State/Tribal UST/AST database is the state list of registered underground and aboveground storage tanks.

The search identified the Site and two sites within a ¼-mile radius of the Site as containing registered USTs or ASTs. Table 9 summarizes these UST/AST sites.

Table 9: Summary of State Registered USTs/ASTs

Name/Address	# of Tanks	Distance/Direction	Description
Sunoco 0363 5430 610 York Rd.	3 USTs	Target Site	3- 12,000-gal USTs containing gasoline, currently in use
Jiffy Lube 262 600 W. Street Rd.	1 AST	0.16 mile/southeast	1- 275-gal AST containing "other" substance, currently in use
Giant Food Store 6257 800 W. Street Rd.	2	0.17 mile/west-northwest	1- 20,000-gal UST containing gasoline, currently in use 1- 10,000-gal UST containing gasoline, currently in use

USTs and ASTs may pose a threat to the Site if tanks subsequently rupture or leak. The database search identified the Target Site and *Jiffy Lube 262* site within the leaking UST database. Additional information regarding impact to Site subsurface can be found in Section 5.1.14. The *Giant Food Store 6257* site was not identified within the leaking UST database; therefore, it is not likely impacting Site subsurface conditions.

5.1.14 State/Tribal LUSTs

The State/Tribal LUST database is the state list of USTs which have been reported as leaking.

The search identified the Site and five additional sites within a ½-mile radius of the Site as State/Tribal LUST sites. Table 10 summarizes these LUST sites.

Table 10: Summary of LUST Sites

Name/Address	DEP ID#	Distance/Direction	Description
Sunoco 0363 5430 610 York Rd.	582593	Target Site	Facility Type: Underground Storage Tank Containing Petroleum Substance: Leaded Gasoline & Fuel Oil No 4 Impact Desc: Ground Water & Soil Facility Status: Cleanup Completed
Jiffy Lube 262 600 W. Street Rd.	442695	0.16 mile/southeast	Facility Type: Underground Storage Tank Containing Petroleum Substance: New Motor Oil Impact Desc: Soil Facility Status: Cleanup Completed
Lafferty Chevrolet/Warminster 829 W. Street Rd.	582507	0.23 mile/northwest	Facility Type: Underground Storage Tank Containing Petroleum Substance: Used Motor Oil Impact Desc: Soil Facility Status: Cleanup Completed
Cumberland Gulf 143833 455 W. Street Rd.	582126	0.42 mile/southeast	Facility Type: Underground Storage Tank Containing Petroleum Substance: Gasoline, Fuel Oil No 2 & Used Motor Oil Impact Desc: Ground Water & Soil Facility Status: Cleanup Completed

Amoco 4343 Tanks 440 W. Street Rd. Tanks	582123	0.48 mile/southeast	Facility Type: Underground Storage Tank Containing Petroleum Substance: Unleaded Gasoline Impact Desc: Soil & Ground Water Facility Status: Cleanup Completed as of 10/13/2010 status
BAFCO 717 Mearns Rd.	582514	0.49 mile/east-southeast	Facility Type: Underground Storage Tank Containing Petroleum Substance: Gasoline Impact Desc: Soil Facility Status: Cleanup Completed

Based upon their regulatory statuses, distances, and/or cross or downgradient locations, the above-mentioned LUST Sites are unlikely to be impacting Site subsurface conditions.

5.1.15 Federal/State/Tribal Brownfield Sites

The Federal Brownfield is a list of EPA Brownfield sites and Superfund sites that have either an institutional or engineering control. State/Tribal Brownfield sites are the PADEP's Land Recycling Program Act II sites, and sites listed on the PA Sitefinder website.

The search did not identify the Site or any sites within a ½-mile radius of the subject property as Federal/State/Tribal Brownfield sites.

5.1.16 State/Tribal IC/EC

State/Tribal IC/EC sites are sites with institutional or engineering controls in place as part of a response action. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Engineering controls

include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or affect human health.

The search did not identify the Site as a State/Tribal IC/EC site.

5.1.17 State/Tribal VCP

The State/Tribal Voluntary Cleanup Program (VCP) provides an incentive to remediate oil- and gas- related pollution by participants as long as they did not cause or contribute to the contamination. Applicants to the program receive a release of liability to the state in exchange for a successful cleanup.

The search did not identify the Site but did identify two sites within a ½-mile radius of the Site as VCP sites. Table 11 summarizes these sites.

Table 11: Summary of VCP Sites

Name/Address	DEP ID#	Distance/Direction	Description
Delgado Res 545 Lemon St	*778928*	0.37 mile/south-southeast	Category Desc: Fuel Oil No 2 Media: Soil Remediation: Statewide Health Standard
Tomlinson Res 725 Phillips Rd	*620245*	0.43 mile/east	Category Desc: Unleaded Gasoline & PAH Media: Soil Remediation: Statewide Health Standard

Based upon their regulatory statuses, chosen remediation standards, and distances, the above-mentioned VCP properties are unlikely to be impacting Site subsurface conditions.

5.1.18 Database Search Unmappable Properties

Unmappable properties are located in the general vicinity of the Site. However, due to inaccurate or missing information provided by the appropriate governmental agency, the database search contractor was unable to definitively plot these sites.

e Phase, Inc. reviewed the unmappable sites list in an attempt to definitively locate these properties. If we were able to locate such a property within a respective ASTM search radius, it was included above in the appropriate database sections of this ESA. *e Phase, Inc.* also determined that neither the Site nor any adjacent properties were identified on the list of unmappable sites. Refer to Appendix E for information on the two unmappable properties located on streets within the applicable ASTM search radii from the Site.

5.1.19 Vapor Encroachment Screen

e Phase, Inc. has conducted a *Tier 1 VES* in general conformance with *ASTM Standard E 2600-15*. The findings of the *Tier 1 VES* could not rule out a VEC in connection with the Site. *e Phase, Inc.* identified soil sample boring locations, groundwater wells, and gasoline USTs at the Site. However, based on the analytical results from a January 2017 soil and groundwater sampling event performed by *GES*, it is not likely that known soil or groundwater impact is causing a VEC to the subject property. Based upon the findings of this *Tier 1 VES*, the VES process is considered complete in accordance with *ASTM E 2600-15* Guide and vapor intrusion is possible in connection with the Site.

5.1.20 FINDS

FINDS sites are listed in the PA-EFACTS (Pennsylvania – Environmental Facility Application Compliance Tracking System) which is a Department-wide database that provides a holistic view of clients and sites that the DEP regulates.

The search identified the Site as a FINDS site. *Sunoco Svc Sta* at 610 Old York Rd. (Registry ID: 110001047126 & 110059996580; Target Site) was identified as a FINDS site for the RCRA program and in the PA-EFACTS (Pennsylvania – Environmental Facility Application Compliance Tracking System). This FINDS

records is likely associated with the previously discussed RCRA-CESQG and UST/LUST records.

5.2 State Records

5.2.1 Pennsylvania Department of Environmental Protection (PADEP)

e Phase, Inc. conducted a file review for the Site at PADEP on June 26, 2017. This review contained all of the files provided by the Client (as summarized in 6.1) in addition to the following (as summarized below):

1. UST Operation Inspection reports from 2011 and 2014 – all tank systems were in compliance.
2. September 19, 2012 – Notification of Suspect Release and Close Out incident. This incident stems from a release of less than 12 gallons from an overflow of gas from a vehicle. The appropriate measures were taken for cleanup and an investigation of all storm drains was completed. PADEP considers the cleanup of the incident to be completed.
3. December 7, 2009 – Closure report for four product dispensers with no obvious contamination. PADEP approved of the closure report on February 26, 2010.
4. November 18, 2009 – UST Modification Report.
5. Remedial Action Progress Reports from 2006 to 2009.
6. 1996 – UST Closure Report for seven removed tanks.
7. 1996 – Site Characterization Report.
8. 1993 – Two abandoned tanks removed from Site.

Facility details presented on the PADEP eFacts database indicate that three tanks were registered at the Site in August 1989, October 2011, and June 2016. The *Sunoco* gasoline station is identified with Site ID 515769 and exists in the Environmental Cleanup & Brownfields program and the Waste Management Program. There have been 19 inspections at the Site since December 1996 with three air violations (State II Gasoline Vapor Recovery Equipment) and one violation in 2008 regarding "failure to meet performance standards for

new/upgraded tanks." Within the inspection list there is a July 2012 inspection type noted as "Incident – Response to Accident or Event" with a pending result. There is no additional information provided for this line entry; however, based on the file review information, the PADEP considers the cleanup of the incident to be completed.

When engineering or institutional controls are necessary to demonstrate attainment or assure maintenance of an Act 2 remediation standard the PADEP requires the use of environmental covenants. The PADEP is obligated under the Uniform Environmental Covenant Act (UECA) to maintain a registry for the public display of covenants received. *e Phase, Inc.* conducted a search of the PADEP's online Activity and Use Limitations (PA AUL) Registry. According to the search results, the Site has a covenant on file that matches the covenant detailed in Section 6.1 of this report. The mapping function of the AUL search identified this covenant as existing for a property located approximately 0.2 miles to the north of the Site. There are three sites within a one mile radius of the Site that have environmental covenants.

1. *Exide* site (Facility ID 620962) located approximately 0.45 mile southeast of the Site contains files for a Site in Allentown, Pennsylvania; therefore, the information provided was not useful for determining if the *Exide* site would impact the subsurface of the Site. This Site was not identified in the eFacts database; therefore, it is assumed to be a misplaced Site on within the PA AUL registry.

2. *Warminster Express* (Facility ID 09-08612) located approximately 0.45 mile southeast of the Site was a former *BP Station*. Based on the information provided and its distance from the Site, the *Warminster Express* site is not likely to impact the subsurface of the Site. This site is known as *Amoco 4343 Tanks* within Section 5.1 above.

3. *400 West Street* Road site was a former *Shell Service Station* located at 400 West Street Road, Warminster, PA approximately 0.5 mile to the southwest of the Site. Based on the area of the groundwater plume provided and its distance from the Site, the *400 West Street Road* site is not impacting the subsurface of the Site.

5.3 Local Records

5.3.1 Warminster Township Records

e Phase, Inc. contacted Warminster Township on June 13, 2017 and requested access to any records (i.e., building permits, tank permits, use and occupancy permits, notices of violation, etc.) they may have on file for the Site. However, as of the issuance of this report, a response to our request has not been received. If information of environmental significance is subsequently uncovered in records retained for the Site by Warminster Township, a summary of this information will be submitted as an addendum to this report.

Based on the *Warminster Municipal Authority* website and the *Bucks County Courier Times,* the groundwater in Warminster Township is known to contain potentially high levels of perfluorinated compounds (PFCs) due to the operations at the Former Naval Air Station Joint Reserve Base in Horsham, along with the active Horsham Air Guard Station. A known area of impact is provided by the *Bucks County Courier Times* and is included as an Appendix. Based on the general vicinity around the Site, it is possible the groundwater is impacted with PFCs; however, there are areas below and areas above the health advisory level. Therefore, it will be considered a regional groundwater issue within the entire township likely impacting the Site.

5.3.2 Assessor's Office Records

Bucks County Assessor's Office records indicate the Site building was constructed in 1961 with asphalt paving and canopy additions in 1996. The land use description provided by Bucks County is "gas station/mini mart" with a classification of commercial.

e Phase, Inc. did not find any information in Assessor's Office records to indicate any environmental liens or activity and use limitations (institutional and engineering controls) on the property. However, a known environmental covenant was recorded for the Site in October 2010.

5.3.4 Fire Department Records

e Phase, Inc. contacted the Hartsville Fire Department on June 12, 2017 and requested access to any records (i.e., tank permits, hazardous materials

incidents, etc.) they may have on file for the Site. However, as of the issuance of this report, a response to our request has not been received. If information of environmental significance is subsequently uncovered in records retained for the Site by the Hartsville Fire Department, the Client will be notified.

5.4 Environmental Permits and/or Violations

e Phase, Inc. identified UST permits and RCRA-CESQG (no violations) for the Site during the preparation of this ESA.

6.0 Historical Use Information

6.1 Previous Environmental Reports

e Phase, Inc. reviewed a January 6, 2006 "Additional Site Characterization Report/Remedial Action Plan" by *Groundwater & Environmental Services, Inc. (GES), a* October 1, 2009 "Site Characterization Report Addendum/Remedial Action Completion Report" by *GES,* a April 8, 2010 "Site Characterization Report Addendum/Remedial Action Completion Report Addendum" by *GES,* a July 20, 2010 "Supplemental Information for Site Characterization Report Addendum/Remedial Action Completion Report Addendum" by *GES,* a October 13, 2010 "Remedial Action Completion Report Approval" by PADEP, a November 15, 2010 "Executed Covenant" by *GES*, a November 15, a February 2, 2017 "Phase II Environmental Site Assessment Report" by *GES,* and a June 14, 2017 "Phase I Environmental Site Assessment" by *GES.* The following summarizes the information contained in these reports. Refer to Appendix F for copies of the recent Phase I ESA and Phase II from 2017.

January 6, 2006 "Additional Site Characterization Report/Remedial Action Plan" by *Groundwater & Environmental Services, Inc. (GES);*

- *Sunoco* Station #0363-5430, PADEP Facility ID 09-30778.
- Currently at the Site: three 12,000-gallon unleaded gasoline USTs, four unleaded gasoline dispenser islands and associated piping.
- In 1996, localized adsorbed-phase hydrocarbons were observed during the removal of the former dispenser islands and the four formerly closed-in-place USTs. The investigation revealed that benzene exceeded the PADEP SHS within the excavation.
    - In 1995/1996, *GES* oversaw the removal of six unleaded gasoline dispenser islands and two 550-gallon gasoline steel USTs containing fuel oil and waste oil. They also oversaw the removal of the former *Atlantic* two-bay automobile service station, which was replaced with the current *Sunoco* convenience store.
    - During the 1995/1996 activities, three steel 3,000-gallon and one steel 4,000-gallon unleaded gasoline closed-in-place USTs were discovered. These tanks were pre-Act 2 USTs.
    - Obvious localized soil contamination was observed in the UST excavations beneath the eastern dispenser islands. Samples were collected from the eastern dispenser island but not the western dispenser island due to inability to access the excavation.

- The PADEP was notified on February 28, 1996.

- Monitoring wells MW-1 though MW-3 were installed in March 1996. Wells were installed to 25 feet below ground surface consisting of 20 feet of screen and 5 feet of solid PVC. MW-4 was installed in October 1997 with the same construction details as the previously installed wells.
- MW-5 and MW-6 were installed by GES in October 2004 to 50 and 47 feet below ground surface, respectively. MW-7 was installed by GES in November 2004 to a depth of 100 feet below ground surface.
- Groundwater flow is generally to the west/southwest.
- Groundwater quality data indicates that the most significant concentrations exist in the vicinity of the former dispenser islands located at the eastern property boundary. Benzene, ethylbenzene, methyl tert butyl ether (MTBE), and/or naphthalene have been detected in each of the monitoring wells, except MW-6, above the PADEP SHS. No off-Site impact was modeled.
- A chemical oxidation event using peroxide was conducted on April 25, 2005.
- Remedial Actions proposed in this report were:
  - Continue groundwater monitoring and use active remediation if trends continue to increase; and,
  - A fuel inventory check and UST system tightness test shall be conducted by *Sunoco* to make sure the increase in groundwater concentrations are not from a recent release.
- Additional Site Characterization recommendations in this report were:
  - Conduct a soil boring investigation in the vicinity of both set of dispenser islands to further delineate the horizontal and vertical extents of hydrocarbons at the Site;
  - Add an additional monitoring well north of the former dispenser islands along the eastern property boundary; and,
  - Conduct at least two soil gas surveys.

October 1, 2009 "Site Characterization Report Addendum/Remedial Action Completion Report" by *GES;*

- The PADEP required the installation of a second deep monitoring well after the submittal of the 2006 SCR/RAP. Two deep monitoring wells (MW-8 and MW-9) and one shallow monitoring well (MW-10) were installed at the Site in February 2007. A total of ten groundwater monitoring wells are at the Site by this time.
- Soil gas investigations occurred between February and December 2007. Three soil gas points were sampled for MTBE, BTEX, and cumene (the PADEP's unleaded gasoline parameters in 2007). None of the target parameters were detected in the samples at concentrations above the PADEP residential indoor air criteria.
- Groundwater flow direction varies seasonally and has been to the southwest, west/southwest, west/northwest, and east/northeast. The last eight quarters the

groundwater flow was predominantly in the north/west direction in the shallow aquifer and north in the deep aquifer.

- *GES* concluded that based on soil analytical results, soil contamination was localized in the immediate vicinity of the former pre-Act 2 USTs and the former dispensers. Benzene was the only unleaded gasoline parameter analyzed that exceeded the PADEP SHS.
- Groundwater monitoring occurred at the Site since March 1996. Historic groundwater indicates that benzene, ethylbenzene, MTBE, and naphthalene were detected at concentrations above the PADEP SHS. Attainment groundwater monitoring was initiated on October 4, 2007. Since that time benzene was detected above the PADEP SHS in two out of the eight sampling events in MW-2. The other unleaded gasoline parameters were either not detected or detected below the PADEP SHS. Groundwater trends provided in this report indicate decreasing or stable trends.
- Attainment demonstration:
    - Soil standard used was "non-residential used aquifer" for toluene, ethylbenzene, xylenes, MTBE, cumene and naphthalene. Pathway elimination, instead of a calculated numeric site-specific standard, was used for the benzene that was detected above standard in Site soils.
    - Groundwater standard used was "non-residential used aquifer" with total dissolved solids less than or equal to 2,500 for toluene, ethylbenzene, xylenes, cumene and naphthalene. MTBE and benzene were not predicted to migrate beyond the property boundary. Pathway elimination was also used for benzene and MTBE instead of a calculated numeric site-specific standard.

<u>April 8, 2010 "Site Characterization Report Addendum/Remedial Action Completion Report Addendum" by *GES*:</u>

- This letter addendum includes the draft Environmental Covenant text. The text included a modeling activity which supported their conclusion that maintenance of an impervious cap will not need to be necessary as an activity and use limitation.
- The covenant included the following activity and use limitations:
    - The groundwater at or under the property shall not be used for drinking or agricultural purposes.
    - The owner shall prohibit residential use of the Site without first obtaining written approval from the Department.
- The covenant requires the following compliance reporting with the Department:
    - "The owner and each subsequent owner of the Property shall submit to the Department written documentation confirming that the activity and use limitations in the Environmental Covenant are being complied with following transfer of the Property."

- The "Property" as defined by the Site Map attached to the Environmental Covenant includes only a portion of the property in the southeast corner of the property.

July 20, 2010 "Supplemental Information for Site Characterization Report Addendum/Remedial Action Completion Report Addendum" by *GES*:

- Additional modeling activities were conducted and submitted to address the PADEP's concerns regarding the April 2010 modeling efforts. The recharge rate, soil bulk density, and porosity were revised as requested.
- *GES* still concluded that the maintenance of the impervious cap would not be necessary to protect the groundwater in the area of the soil benzene exceedance.

October 13, 2010 "Remedial Action Completion Report Approval" by PADEP:

- The approval covers the release that was confirmed on March 1, 1996 with RACR and RACR Addendums dated October 1, 2009, April 8, and July 20, 2010. The RACR was approved with the condition that the Environmental Covenant be recorded in the property county with proof provided to the PADEP within the required timeframes.
- PADEP Confirmed:
    - Groundwater attainment was confirmed under the residential statewide health standard for toluene, ethylbenzene, xylenes, MTBE, cumene, and naphthalene. Attainment of a site-specific standard for benzene was demonstrated through pathway elimination.
    - Five AOCs were identified by PADEP:
        - AOC-1: Dispensers parallel to York Road removed and replaced in 1996.
            - Residential SHS for soil for toluene, ethylbenzene, and xylenes.
            - Residential SSS for benzene through pathway elimination.
            - No impervious cap needed to maintain groundwater quality below AOC-1.
        - AOC-2: Former pre-Act 2 UST field where closed in place tanks were removed in 1996.
            - Residential SHS for soil for toluene, ethylbenzene, and xylenes.
            - Residential SSS for benzene through pathway elimination.
            - No impervious cap needed to maintain groundwater quality below AOC-1.
        - AOC-3: Two former 1,000-gallon gasoline USTs were removed in October 1993.
            - Residential SHS for soil for benzene, toluene, ethylbenzene, and xylenes.

- AOC-4: Two former 550-gallon USTs were removed in November 1995.
    - Residential SHS for soil for benzene, toluene, ethylbenzene, and xylenes.
- Two Not Numbered AOCs:
    - Soil quality from beneath the Street Road dispensers was not evaluated due to restricted access caused by the canopy footer.
    - Soil from beneath the former 550-gallon fuel oil UST was evaluated for TPH only.
    - Releases of liability will not be issued for these two AOCs.

November 15, 2010 "Executed Covenant" by *GES*;

- Environmental Covenant was recorded on October 29, 2010.
- The covenant included the following activity and use limitations:
    - The groundwater at or under the property shall not be used.
    - The owner shall prohibit residential use of the Site.
- The covenant requires the following compliance reporting with the Department:
- "The owner and each subsequent owner of the Property shall submit to the Department written documentation confirming that the activity and use limitations in the Environmental Covenant are being complied with following transfer of the Property."
- The "Property" as defined by the Site Map attached to the Environmental Covenant includes only a portion of the property in the southeast corner of the property.

March 31, 2017 "Certificate of Storage Tank System Testing" by *Crompco*;

- Underground Storage Tank Facility Operations Inspection completed on PADEP form and conducted by *Crompco*.
    - No suspected or confirmed contamination observed.
    - No known improperly closed or unregistered tanks present.
    - The three USTs were compliant with all aspects inspected.
    - The three USTs were noted to be 12,000-gallon gasoline tanks installed in December 1983.
    - Veeder Root system is noted to be connected to all three tanks. No indications of a release over the last 12 months of data.
    - The last piping and leak detector test was conducted by *Crompco* on August 1, 2016. All passed.
    - No water was measured in tanks.

February 2, 2017 "Phase II Environmental Site Assessment Report" by *GES*

- A limited Phase II Site Assessment with four soil borings/samples and four groundwater samples was conducted on January 11 and 12, 2017.
- The *GES* report has a contradictory note regarding groundwater flow during the January 2017 sampling event. It notes that it was to the southwest in one section and "generally toward the north and west" in another section. Four existing monitoring wells (MW-3, MW-4, MW-5, and MW-10) ranging in depths from 25-50 feet were sampled for BTEX, MTBE, cumene, naphthalene, 1,2,4-Trimethylbenzene (TMB), and 1,3,5-TMB, which is the current PADEP short list for unleaded gasoline constituents. Groundwater results indicate that the groundwater does not exceed the 2010 PADEP approved site-specific standard for non-residential, used aquifer for benzene. The groundwater sample collected from MW-3 showed that benzene does exist above the PADEP statewide health standard for non-residential used aquifer but was below the 2010 approved benzene standard for the Site.
- Soil borings, SB-1 through SB-4, were collected between 10 and 14 feet below ground surface near the center of the Site. The soil samples were analyzed for the current PADEP short list for unleaded gasoline constituents. The soil analytical results indicate that soils do not exceed the PADEP statewide health standards for non-residential, used aquifer.

June 14, 2017 "Phase I Environmental Site Assessment" by *GES*

- The Phase I Site visit was conducted on April 26, 2017.
- *GES* concluded there was one REC and one CREC.
    - REC: Underground storage tanks and associated piping are considered potential environmental concerns due to the hazardous nature of their contents, their underground location, the inability to visually observe their condition, and the historical likelihood of a release. USTs have a typical estimated useful life of 30-40 years, depending on various factors such as the type of tank, the quality of installation, the level of maintenance, and the sub-surface conditions.
    - CREC: The review of the regulatory database identified that a release (Facility No. 582593) was reported for the Site in 1996 during the removal of the former USTs. The release was reportedly closed in 2010 with a Cleanup Completed status. The status indicates that the groundwater and soil contamination, if any, has been investigated and/or remediated in accordance with the regulatory standards accepted at the time closure. The review of the records for the Site indicates that residual contamination may remain in the soil and/or groundwater at the Site and an activity and use limitation was implemented for the Site. It is recommended that PADEP be contacted in order to obtain the AUL and to evaluate its contents. Based on this information, the release from the Site represents a *controlled recognized environmental condition*.

- The regulatory database results included an UNREG TANK result which included "tank facilities not currently registered". The tanks provided in this database are tanks that have been removed, permanently closed in place, closed without a permit, or under other circumstances. The Site had the following tanks noted at the Site, none of which are noted with a date of removal:
    - Tank 004: 550-gallon used oil UST installed in 1962
    - Tank 005: 1,000-gallon heating oil tank installed in 1962
    - Tank 006: 1,000-gallon tank with unknown content and unknown installation date
    - Tank 007: 550-gallon heating oil tank installed in 1962
    - These sizes/types of tanks were not noted to have been closed during the 1995/1996 tank removal activities in any of the documentation provided by the client, owner, or the PADEP. Additional information should be provided by *Sunoco* to confirm they were removed from the Site and not closed in place.

6.2 Interviews

Information provided by persons knowledgeable of the Site regarding the historical uses of the Site (and vicinity/adjoining properties) is summarized below in Table 12.

Table 12: Historical Use Interviews

Person Interviewed	Historical Uses
Doug Barnard, Area Manager for *Sunoco, Inc.*	Mr. Bernard was not able to provide a detailed history of the Site. He was aware that the property was a gasoline station prior to *Sunoco*'s purchase of the property. Mr. Bernard also stated that recent environmental work had been conducted but could not provide details regarding purpose, media sampled, or results

6.3 Historical Research

Table 13 provides a listing of the historical sources consulted for the Site and adjoining properties on June 26, 2017.

Table 13: Historical Sources Consulted

Record	Source/Location	Date(s)
Historic Atlases	Historicmapworks.com	1876
City Directories	None readily available	NA
Aerial Photographs	Googleearth.com	1992, 1999, 2002, 2003, 2004, 2005, 2008, 2010, 2011, and 2016
	Pennpilot.psu.edu	1938, 1958, and 1971
	Philageohistory.org	1965, 1970, 1975, 1980, 1985, 1990, and 1995
	Historicaerials.com	1948, 1950, 1958, 1965, 1967, 1971, 1992, 1999, 2002, 2004, 2008, 2010, and 2013
Sanborn Fire Insurance Rate Maps	None readily available	NA
Historic Topographic Maps	Historicaerials.com	1893, 1896, 1899, 1902, 1906, 1908, 1912, 1924, 1930, 1941, 1946, 1953, 1961, 1968, 1974, 1983, and 2001
Property Tax Records	Bucks County Assessment Records	Undated

6.4 Historical Uses of Site and Adjoining Properties

Table 14 represents a collective summary of the historical use information for the Site and adjoining properties.

Table 14: Historical Uses of Site and Adjoining Properties

Property	Description of Historic Uses	Items of Environmental Interest
Site	The current gasoline station building was built sometime between 1950 and 1958 with renovations occurring at least when *Sunoco* took over around 1996. Pump dispenser locations have been located along the south and eastern edges of the property since development as a gasoline station. The current pump, tank field, building structure, and parking lot/grassy area was in place around 1992. Prior to obvious use as a gasoline station the Site consisted of two buildings as far back as at least 1938. One rectangular building was located within the southeastern corner of the property and extended toward the north end of the property. The second building was located in the northwest corner of the Site. Use of these buildings is unclear but may have been residential or agricultural related.	Historic and current use as a gasoline station is of environmental interest.
Adjoining to North	The parking lot for the diner to the west is located to the north of the Site. The parking lot was constructed at the same time as the diner; between 1985 and 1990. Prior to use as parking lot it was undeveloped land possibly associated with agricultural use.	None.
Adjoining to South	The current shopping plaza property with accessory commercial building and parking lot was constructed sometime between 1985 and 1990. The land to the south was used for agricultural purposes as far back as at least 1938 and contained a small square structure which was likely a farm house or barn. Sometime between 1958 and 1965 the structure was demolished and the land was vacant and potentially farmed until the large shopping plaza was constructed.	None.
Adjoining to East	Sometime between 1950 and 1958, a commercial building was constructed within the corner of West Street Road and York Road (across York Road from the Site). A second commercial building located to the east was constructed between 1958 and 1965. Based on aerial photographs it appears that the first commercial structure may have had a UST located along York Road before the removal of the building between 1971 and 1975. Prior to development with commercial buildings the land to the east was used for agricultural purposes as far back as at least 1938.	The possible presence of a UST to the east across York Road is of environmental interest. According to groundwater investigations conducted at the Site, this property would potentially be located up- or crossgradient.

Property	Description of Historic Uses	Items of Environmental Interest
Adjoining to West	The current diner with building and parking lot footprint was constructed sometime between 1985 and 1990. Prior to development with diner building, the land to the west was used as agricultural use with a barn or house on the property between 1985 and 1971. A small orchard to the north of the structure was observed in the 1958 aerial. Prior to 1958, the land to the west was used as farm fields with no structures. Sometime between 1958 and 1965 the large shopping plaza to the west was constructed.	None.

6.5 Data Gaps and Data Failures

ASTM E 1527-13 defines a data failure as a failure to achieve the historical research objectives of AAI even after reviewing the standard historical sources that are reasonably ascertainable and likely to be useful. Specifically, the historical research objectives include identifying previous uses and ownership of the property since the property was first developed with structures or was placed into use of some form (i.e., residential, agricultural, commercial, industrial, or governmental uses), or back to 1940, whichever is earlier.

Usage of the Site was identified back to 1938, at which time the subject property appears developed with at least two buildings and the surrounding properties appear sparsely developed with residential/agricultural buildings or farm fields. Historical sources prior to 1938 were uncovered; however, no clear land use was able to be identified, as such, a data failure is indicated, which is a type of data gap. However, since the subject property was likely residential or agricultural related in 1938, it is likely the Site was undeveloped prior to this time and was first used for agricultural purposes. As such, this data gap does not appear to be significant and is unlikely to affect the conclusions of this report.

7.0 Site Reconnaissance

7.1 Methodology

The objective of the site reconnaissance was to identify *recognized environmental conditions, historical recognized environmental conditions* and *controlled recognized environmental conditions* at or in the immediate vicinity of the Site by means of a visual, surficial review. In addition, during the regular course of the site reconnaissance, *e Phase, Inc.* also conducted an evaluation of surficial conditions at and in the immediate vicinity of the Site for evidence of significant environmental concerns, moderate environmental concerns, and *de minimis* conditions. Angela Price of *e Phase, Inc.* conducted this visual reconnaissance of interior and exterior portions of the Site on June 23, 2017 in the presence of Mr. Doug Bernard. *e Phase, Inc.*'s reconnaissance consisted of a systematic traverse of the Site to provide a view of Site improvements, facilities, and grounds under the limiting conditions noted in Section 1.4. *e Phase, Inc.* also attempted to visually review exterior portions of adjacent properties observable from within the boundaries of the Site or other vantage point.

A Site plan is included in Appendix C. Photographs taken during the Site inspection are included in Appendix D.

The passage of time may result in a change in the environmental characteristics at the Site and the surrounding properties. *e Phase, Inc.* does not render any opinion as to the environmental conditions at the Site after the date of the site reconnaissance. *e Phase, Inc.* does not undertake to update the conclusions or recommendations of this ESA. *e Phase, Inc.* renders no opinion as to the environmental conditions at locations not reviewed or visually obstructed portions of the Site.

7.2 Site Setting & Interior/Exterior Observations

At the time of the Site reconnaissance, the Site was being utilized by *Sunoco* as a gasoline station and convenience store. The only limiting condition was that Mr. Bernard has only been with *Sunoco* since 2014 and was not entirely familiar with the Site history. Table 15 provides descriptions of environmental items observed on the interior and exterior of the Site during the Site reconnaissance.

Table 15: Summary of Interior/Exterior Observations

Item	Description	Discussion
Underground storage tanks	Three 12,000-gallon gasoline UST located in a tank field within the southern corner of the property. There were two canopies at the site; each with two dispenser islands underneath. One located along the eastern edge of the property and one located along the southern edge of the property. According to Mr. Bernard there are no diesel or kerosene USTs located at the Site. Mr. Bernard provided a certificate of storage tank system testing from March 2017 stating there were no indications of a release over the last 12 months. Mr. Bernard stated that recent subsurface work was conducted by an environmental firm; however, he was not able to provide any additional information at the time of the Site visit. The Phase II report was provided at a later date.	The recent Phase II completed at the Site did not indicate any levels in the soil above the Statewide Health Standard or groundwater above the Site-Specific Standard established for the Site.
Aboveground storage tanks	Not observed.	NA
Containers of hazardous substances and petroleum products	Standard automotive fuels, cleaners, and maintenance materials were stored neatly on shelves in the retail portion of the convenience store. Cleaning chemicals were neatly stored in the storage/office area of the building.	
Containers of hazardous and petroleum wastes	Not observed.	NA
Evidence of electrical, hydraulic, or heat-transfer equipment that might contain PCBs.	Not observed.	NA
Solid Waste Disposal	Two dumpsters were located along the northern edge of the property. No illegal dumping was observed.	No current issues of concern.
Distressed Surfaces or Vegetation	*e Phase, Inc.* did not observe any stressed vegetation at the Site that might suggest the presence of hazardous substances, petroleum, or petroleum products. We observed minor oil discharges on the parking area; however, the discharges are incidental in nature and corrective action is neither practical nor warranted.	NA

Septic Systems and Cesspools	There is a cement pad with two metal covers and one small metal cover. Mr. Bernard assumed this this was formerly used as a septic pit and is no longer in use. *e Phase, Inc.* requested additional information regarding this subsurface structure. According to William Brochu, of *Sunoco*, this structure is associated with a grease trap. Due to the historic use of this property as an auto repair shop (prior to *Sunoco*'s ownership), this grease trap is assumed to be an oil/water separator. Mr. Brochu and Mr. Bernard could not provide any details regarding the structure, contents, tightness testing, discharge location, and/or age of the "grease trap".	Based on the historic use of the Site as an auto repair shop, the presence of this grease trap is a REC.
Wells and Cisterns	At least 14 groundwater monitoring wells were observed across the Site. According to the 2017 Phase II there were 17 groundwater wells at the Site. According to the 2017 groundwater results there is residual benzene contamination in groundwater above the PADEP statewide health standards for non-residential use but below the 2010 PADEP approved benzene Site Specific Standard.	Closure of un-used groundwater monitoring wells should be conducted within local, state, and federal requirements.
Waste Pits, Landfills, Lagoons, ponds, Basins, and Impoundments	Not observed.	NA
Aboveground and Underground Piping	Not observed.	NA
Floor Drains, Storm Drains, and Sumps	Storm drains were observed within the parking lot and access areas of the Site.	No current issues of concern.
Elevators and Hydraulic Lifts	Not observed.	NA
Additional Underground Structures	Three large manholes were observed within the western portion of the Site; two within the West Street Road entrance and one near the air/vacuum equipment. The purpose of these manholes is unclear at this time. As of the date of this report, *Sunoco* was still attempting to determine the purpose of these metal covers.	Based on the historic use of the Site as an auto repair shop, the presence of these unknown underground structures is a REC.
Wastewater Discharges	Not observed.	NA

Asbestos-Containing Building Materials (ACBM)	*e Phase, Inc.* did not observe any suspect damaged or friable ACBM during the site reconnaissance. The 1973 National Emission Standards for Hazardous Air Pollutants partially banned the use of spray-applied ACBM in new buildings. The government expanded these regulations in 1975 and 1978 to ban the use of all types of ACBM in new buildings. The original structure of the Site building was constructed before 1978; however, the internal portion was renovated when *Sunoco* took over around 1996. Based upon the renovation date, sit is unlikely that building materials such as vinyl floor tiling and mastics, acoustical ceiling tiles, roofing materials, plaster, wallboard assemblies, flexible fabric ductwork connectors, fire doors, and electrical cable coverings may contain ACBM unless collected for laboratory analysis and proven otherwise. As long as these materials are intact and in good condition, they do not pose an unacceptable health risk to Site occupants.	*e Phase, Inc.* did not observe any of these materials to be in damaged or friable condition.
Lead-Based Paint (LBP)	*e Phase, Inc.* did not observe any flaking, chipping, and/or peeling paint within the Site buildings. The original structure of the Site building was constructed before 1978; however, the internal portion was renovated when *Sunoco* took over around 1996. Based on the renovation date, it is unlikely that there is lead-based paint present in the Site buildings. However, only laboratory analysis of samples can confirm the presence or absence of LBP.	NA
Lead in Drinking Water	*e Phase, Inc.* did not conduct laboratory analysis for lead or other potential contaminants in drinking water since such testing is beyond the scope of this ESA.	NA
Radon	According to the database report, radon concentrations in the vicinity of the Site average 5.7 picocuries per liter (pCi/L), which is above the EPA's recommended action level of 4.0 pCi/L. According to the EPA's radon zone map, the Site is in Zone One, an area of high radon propensity. Thus, it appears possible that the Site has elevated radon levels. However, only laboratory analysis of samples can confirm the presence or absence of elevated radon levels.	It is possible the Site contains elevated radon levels.
Mold	*e Phase, Inc.* did not conduct an evaluation for visual indications of mold because such evaluation us beyond the scope of this ESA.	NA

8.0 Interviews

Table 16: Key Interviews

Name of Peron interviewed	Affiliation	Date interviewed	Comments
Mr. Doug Bernard	*Sunoco, Inc.* Area Manager	June 23, 2017	Information provided by Mr. Bernard regarding the Site was provided in previous sections.
Mr. William Brochu	*Sunoco, Inc.*	June 30- July 1, 2017	Information provided by Mr. Brochu regarding the Site was provided in previous sections.

According to ASTM 1527-13, if the subject property is abandoned and there is evidence of potential unauthorized uses of the *abandoned property* or evidence of uncontrolled access to the *abandoned property*, an interview with one or more owners or occupants of neighboring or nearby properties must be conducted.

Because the subject property is not categorized as an *abandoned property*, interviews with owners or occupants of neighboring or nearby properties were not conducted.

9.0 Findings and Opinions

e Phase, Inc. has identified the following evidence of *RECs*, *HRECs*, *CRECs* and other environmental findings in connection with the subject property and/or vicinity:

Recognized Environmental Conditions

1. A cement pad with two metal covers and one small metal cover was located to the north of the building. According to William Brochu of *Sunoco* this structure is associated with a grease trap. Due to the historic use of this property as an auto repair shop (prior to *Sunoco*'s ownership) this grease trap is assumed to be an oil/water separator. Mr. Brochu and Mr. Bernard could not provide any details regarding the structure, contents, tightness testing, discharge location, and/or age of the "grease trap". Oil/water separators can become a conduit for subsurface contamination if hazardous substances or petroleum products are improperly disposed of in them. Moreover, given the historic use of the Site for auto repair purposes, the presence of an on-Site oil/water separator is currently believed to be a *recognized environmental condition*.

2. *e Phase, Inc.* observed three metal covers within the parking lot of the Site. Their use is unknown at this time but could be of *de minimis* concern if related to utility access. However, should the use of these metal covers be identified as non-utility related underground structures such as access covers to USTs, there would need to be further investigation into their contents, age, and tightness.

3. Based on the *Warminster Municipal Authority* website and the *Bucks County Courier Times,* the groundwater in *Warminster Township* is known to contain potentially high levels of perfluorinated compounds (PFCs) due to the operations at the *Former Naval Air Station Joint Reserve Base* in Horsham, along with the active *Horsham Air Guard Station*. A known area of impact is provided by the *Bucks County Courier Times* and is included as an Appendix. Based on the general vicinity around the Site, it is possible the groundwater is impacted with PFCs; however, there are areas below and areas above the health advisory level. Therefore, it will be considered a regional groundwater issue within the entire township likely impacting the Site. Since this compound is not a compound of interest for gasoline stations it may be present but unknown despite the significant amount of groundwater sampling previously conducted.

4. The Site was identified in the UNREG TANK database which includes unregistered tanks that have been removed, permanently closed in place, closed without a permit, or under other circumstances. The Site had the following tanks noted at the Site, none of which are noted with a date of removal:

a. Tank 004: 550-gallon used oil UST installed in 1962
b. Tank 005: 1,000-gallon heating oil tank installed in 1962
c. Tank 006: 1,000-gallon tank with unknown content and unknown installation date
d. Tank 007: 550-gallon heating oil tank installed in 1962

Two of these tanks (the 550 gallon USTs) may have been closed during the 1995/1996 tank removal activities, however, this could not be confirmed as part of the scope of this ESA. However, the other sizes/types of tanks were not noted to have been closed during the 1995/1996 tank removal activities. Additional information should be provided by *Sunoco* to confirm they were removed from the Site and not closed in place.

Historical Recognized Environmental Conditions

1. In 2012, a release of less than 12 gallons occurred at the Site due to an overflow of gas from a vehicle. The appropriate measures were taken for cleanup and an investigation of all storm drains was completed. PADEP considers the cleanup of the incident to be completed.

Controlled Recognized Environmental Conditions

1. Groundwater and soil impact was reported in 1995/1996 during tank and dispenser island removal activities. The tank removal investigation revealed that benzene exceeded the PADEP SHS within the excavation. According to the reports provided benzene, ethylbenzene, methyl tert butyl ether (MTBE), and/or naphthalene have been detected in each of the groundwater monitoring wells, except MW-6, above the PADEP SHS. Attainment of a non-residential statewide health standard was achieved and approved by the PADEP in October 2010 for toluene, ethylbenzene, xylenes, MTBE, cumene, and naphthalene in soils and for toluene, ethylbenzene, xylenes, cumene, and naphthalene in groundwater. Pathway elimination was utilized for attainment of benzene in soils and groundwater and MTBE in groundwater. A covenant was recorded in October 2010 for the property which included activity and use limitations restricting groundwater use and residential use.

Significant Environmental Concerns

None

Moderate Environmental Concerns

1. The possible historic presence of a UST to the east across York Road is of environmental interest. According to groundwater investigations conducted at the Site, this property would potentially be located up- or crossgradient. The Site has already conducted numerous soil and groundwater investigations at the Site;

therefore, any concerns regarding this potential UST would likely have been identified.

2. It is possible that portions of the Site building contain ACBM and/or LBP based on its pre-1978 construction date.

3. According to the database report, radon concentrations in the vicinity of the Site average 5.7 picocuries per liter (pCi/L), which is above the EPA's recommended action level of 4.0 pCi/L. Radon poses a potential health risk to Site occupants and workers who breathe ambient air.

de minimis **Conditions**

1. The database search identified numerous off-Site facilities within the prescribed search radii. Based upon groundwater flow direction, their regulatory statuses and/or distances, the properties identified by the database search are unlikely to be impacting Site subsurface conditions.

2. Due to the pre-1984 construction date of portions of the Site building, it is possible that Site fluorescent light ballasts contain PCBs. However, since no evidence of releases was observed in the vicinity of inspected fluorescent lights, they are currently believed to be of minimal environmental concern.

10.0 Conclusions and Recommendations

e Phase, Inc. has performed this ESA in general conformance with the scope and limitations of ASTM Standard E 1527-13 of *Sunoco* Gasoline Station, tax parcel 49-009-046, located at 610 York Road, Warminster Township, Bucks County, Pennsylvania, the Site. Any exceptions to, or deletions from, this practice and any site-specific limiting conditions and/or data gaps are described in Sections 1.4 and 11.0 of this report. Any additional services requested by the Client which were conducted beyond the scope of this practice are described in Section 12.0 of this report. This assessment has revealed four *recognized environmental conditions*, one *historical recognized environmental condition*, one *controlled recognized environmental conditions* and five other environmental findings in connection with the subject property and/or vicinity.

Recognized Environmental Conditions

1. *e Phase, Inc.* observed two metal covers related to a grease trap or oil/water separator. Given the historic use of the Site for auto repair purposes, the presence of an on-Site grease trap or oil water separator is currently believed to be a *recognized environmental condition.*

2. *e Phase, Inc.* observed at least four metal covers within the parking lot of the Site all with unknown purposes. These unknown underground structures are currently believed to be a *recognized environmental condition.*

3. Potentially high levels of perfluorinated compounds (PFCs) may be present in groundwater at the Site due a regional groundwater issue within the entire township. The regional groundwater impact is considered a *recognized environmental condition.*

4. Four unregulated tanks were noted to have been closed at the Site; however, several of them may not have been not included in the summary of the 1995/1996 tank removal activities. Additional information should be provided by *Sunoco* to confirm they were removed from the Site and not closed in place.

Historical Recognized Environmental Conditions

1. The PADEP considers the cleanup of the 2012 gasoline release incident to be completed.

Controlled Recognized Environmental Conditions

1. Groundwater and soil contamination was identified during tank and dispenser removal activities in 1995/1996. PADEP issued a closure approval letter for this release in 2010 approving the requested non-residential statewide health standards and pathway elimination. A covenant has been recorded for the property prohibiting groundwater use and use of the site as residential.

Significant Environmental Concerns

None.

Moderate Environmental Concerns

1. The possible historic presence of a UST to the east across York Road is of environmental interest.

2. It is possible the Site building contains ACBM and/or LBP based on its pre-1978 construction date.

3. It is possible the Site contains elevated radon levels.

de minimis **Conditions**

1. Based on their regulatory statuses, topographically downgradient locations, and/or distances, the properties identified by the database search do not appear to pose a material threat of release of hazardous substances or petroleum products to the Site.

2. It is possible that Site fluorescent light ballasts contain PCBs.

Recommendations

e Phase, Inc. has identified the following evidence of *recognized environmental conditions* in connection with the subject property and/or vicinity which suggest the need for additional investigation:

1. Given the historic use of the Site for auto repair purposes, the presence of an on-Site grease trap or oil water separator is currently believed to be a *recognized environmental condition.* Information regarding the structure, purpose, discharge location, and potential contents should be further determined. A subsurface investigation should be conducted to confirm that the soil and/or groundwater has not been impacted by the historic use of the Site and the oil/water separator.

2. *e Phase, Inc.* observed at least three metal covers within the parking lot of the Site all with unknown purposes. These unknown underground structures are currently believed to be a *recognized environmental condition.* As of the date of

this report, *Sunoco* was still attempting to determine the purpose of these metal covers. *Sunoco* should provide the actual purpose of these underground structures.

3. Potentially high levels of perfluorinated compounds (PFCs) should be investigated by collecting groundwater samples from the existing groundwater wells. These samples would be used to evaluate if the Site falls within the PFC areawide impacted groundwater. They would also be used to determine if an indoor vapor intrusion issue exists from any potential levels of PFCs.

4. Four unregulated tanks were noted to have been closed at the Site; however, several of them were not included in the summary of the 1995/1996 tank removal activities. Additional information should be provided by *Sunoco* to confirm they were removed from the Site and not closed in place.

e Phase, Inc. also recommends the following:

1. Closure of un-used groundwater monitoring wells should be conducted within local, state, and federal requirements.

2. A comprehensive asbestos and LBP survey should be conducted of the Site building prior to renovation/demolition activities.

3. Fluorescent light ballasts known or suspected of containing PCBs should be properly disposed by a qualified recycler.

11.0 Deviations

e Phase, Inc. performed a Phase I Environmental Site Assessment in general conformance with the scope and limitations of ASTM Standard E 1527-13, except for any additional limitations, data gaps, and exceptions detailed in Section 1.4. *e Phase, Inc.* also conducted an evaluation of the surficial conditions of the Site for other environmental findings, namely significant environmental concerns, moderate environmental concerns, and *de minimis* conditions, as a supplement to the standard ASTM requirements.

Notice of Contamination

Trammel Testing - September 12, 2018

NOTIFICATION OF REPORTABLE RELEASE *(Owners and Operators)*

☒ Initial
☐ Follow-Up

NOTIFICATION OF CONTAMINATION *(Certified Installers and Inspectors)*

NOTIFICATION OF REPORTABLE RELEASE *(Owners and Operators)*

The Storage Tank Program's Corrective Action Process (CAP) regulations establish release reporting requirements for owners and operators of storage tanks and storage tank facilities.

Subsection 245.305(a) of the regulations requires owners or operators to notify the appropriate regional office of the Department as soon as practicable, but no later than 24 hours after the confirmation of a reportable release.

Subsection 245.305(d) requires owners or operators to provide an initial written notification to the Department, each municipality in which the reportable release occurred, and each municipality where that release has impacted environmental media or water supplies, buildings, or sewer or other utility lines, within 15 days of the notice required by subsection 245.305(a).

Subsection 245.305(e) requires owners or operators to provide follow-up written notification to the Department and to each impacted municipality of new impacts to environmental media or water supplies, buildings, or sewer or other utility lines discovered after the initial written notification required by subsection 245.305(d). Written notification is to be made within 15 days of the discovery of the new impact.

This form may be used to comply with subsections 245.305(d) and (e).

OWNERS AND OPERATORS (O/O)
INDICATE IF THIS IS AN INITIAL OR FOLLOW-UP NOTIFICATION BY MARKING THE APPROPRIATE BOX FOUND IN THE TOP RIGHT-HAND CORNER OF THIS FORM. PLEASE COMPLETE ALL INFORMATION IN SECTIONS I, II, IIIA, IIIB, IV, V, VII and VIII.

NOTIFICATION OF CONTAMINATION *(Certified Installers and Inspectors)*

The Storage Tank Program's Certification regulations establish standards of performance for certified installers and inspectors of storage tanks and storage tank facilities.

Subsection 245.132(a)(4) of the regulations requires certified installers and inspectors to report to the Department a release of a regulated substance or confirmed or suspected contamination of soil, surface or groundwater from regulated substances observed while performing services as a certified installer or inspector.

This form may be used to comply with subsection 245.132(a)(4). Subsection 245.132(a)(4) requires submission of the form within 48 hours of observing suspected or confirmed contamination. Where there is a reportable release, the form may be submitted jointly by the owner, operator, certified installer and certified inspector. In this instance, the form must be received by the appropriate regional office within 15 days of the notice required by subsection 245.305(a).

CERTIFIED INSTALLERS AND INSPECTORS (I/I)
PLEASE COMPLETE ALL INFORMATION IN SECTIONS I, II, IIIA, IIIC, VI, VII and VIII.

INSTRUCTIONS

I. FACILITY INFORMATION - Record the name, I.D. number and physical location (not P.O. Box) of the facility at which a reportable release has been confirmed or at which suspected or confirmed contamination has been observed. Include the name and phone number of a person to contact at the facility.

II. OWNER/OPERATOR INFORMATION - Record the name, business address and telephone number of the owner of the facility identified in Section I. Also, record the name and telephone number of the operator of the facility.

III. REGULATED SUBSTANCE INFORMATION - Indicate to the best of your knowledge: A) the type of product or products involved; B) the quantity of product or products released; and C) whether the contamination is suspected or confirmed.

IV. REPORTABLE RELEASE INFORMATION - Record the date of confirmation of the reportable release, e.g., "9/18/01"; the date and regional office notified; and the date the local municipality(ies) [provide name of municipality(ies)] was/were sent a copy of this form. Indicate to the best of your knowledge the source/cause of the release, how the release was discovered and the environmental media affected and impacts.

V. INTERIM REMEDIAL ACTIONS - Indicate the interim remedial actions planned, initiated or completed.

VI. SUSPECTED/CONFIRMED CONTAMINATION INFORMATION - Record the date of observation of the suspected or confirmed contamination, e.g., "11/24/01". Indicate to the best of your knowledge the indications of a suspected release or extent of confirmed contamination resulting from the release of the regulated substance.

VII. ADDITIONAL INFORMATION - Provide any additional, relevant, available information concerning the reportable release or suspected or confirmed contamination. Include in this section specific details or problems about the release. For example, if the piping was the source of the release and the cause was corrosion of a metal connector or flexible connector, it is important to include that information here. Use additional 8½" x 11" sheets of paper, if necessary.

VIII. CERTIFICATION - Please print your name, and provide your signature and date of signature. If a certified installer/inspector, provide certification number and company certification number.

IX. ATTACHMENT - If a certified installer/inspector, provide a copy of failed valid tightness test(s), if applicable.

PLEASE SEND COMPLETED ORIGINAL FORM TO:
PA Department of Environmental Protection
Environmental Cleanup and Brownfields Program
Storage Tank Section
(and the appropriate address below,
depending on where the FACILITY is located)

Southeast Region	Northeast Region	South-central Region	North-central Region	Southwest Region	Northwest Region
2 East Main Street Norristown, PA 19401 PHONE: 484-250-5900 FAX: 484-250-5961	2 Public Square Wilkes-Barre, PA 18711-1915 PHONE: 570-826-2511 FAX: 570-820-4907	909 Elmerton Avenue Harrisburg, PA 17110 PHONE: 866-825-0208 FAX: 717-705-4830	208 W. Third Street, Suite 101 Williamsport, PA 17701 PHONE: 570-321-6525/327-3636 FAX: 570-327-3420	400 Waterfront Drive Pittsburgh, PA 15222 PHONE: 412-442-4091/4000 FAX: 412-442-4328	230 Chestnut Street Meadville, PA 16335-3481 PHONE: 814-332-6945 800-373-3398 FAX: 814-332-6121
Counties Bucks, Chester, Delaware, Montgomery, Philadelphia	**Counties** Carbon, Lackawanna, Lehigh, Luzerne, Monroe, Northampton, Pike, Schuylkill, Susquehanna, Wayne, Wyoming	**Counties** Adams, Bedford, Berks, Blair, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Juniata, Lancaster, Lebanon, Mifflin, Perry, York	**Counties** Bradford, Cameron, Centre, Clinton, Clearfield, Columbia, Lycoming, Montour, Northumberland, Potter, Snyder, Sullivan, Tioga, Union	**Counties** Allegheny, Armstrong, Beaver, Cambria, Fayette, Greene, Indiana, Somerset, Washington, Westmoreland	**Counties** Butler, Clarion, Crawford, Elk, Erie, Forest, Jefferson, Lawrence, McKean, Mercer, Venango, Warren

I. FACILITY INFORMATION (Both O/O and I/I)

Facility Name: Finch Petro
Facility I.D. Number: 09-30778
Street Address (P.O. Box not acceptable): 610 York Road
City: Warminster
State: PA
Zip Code: 18974 - 2002
County: Bucks
Municipality: Warminster Twp.
Contact Person: Ali Ijmal
Telephone Number: (484) 678 - 5693

II. OWNER/OPERATOR INFORMATION (Both O/O and I/I)

Owner Name: Finch Petro LLC
Address: 610 York Road
City: Warminster
State: PA
Zip Code: 18974 - 2002
Telephone Number: (484) 678 - 2002
Operator Name: Ali Ijmal
Telephone Number: (484) 678 - 5693

III. REGULATED SUBSTANCE INFORMATION

A. Type of Product(s) Involved (Mark All That Apply ☒): Both O/O and I/I		B. Quantity (Gallons) of Product(s) Released: O/O Only	C. Contamination Suspected [S] or Confirmed [C] (Mark All That Apply ☒): I/I Only	
Leaded Gasoline	☐	___ ___, ___ ___ ___, ___ ___ ___	☐ [S]	☐ [C]
Unleaded Gasoline	☒	___ ___, ___ ___ ___, ___ ___ ___	☐ [S]	☒ [C]
Aviation Gasoline	☐	___ ___, ___ ___ ___, ___ ___ ___	☐ [S]	☐ [C]
Kerosene	☐	___ ___, ___ ___ ___, ___ ___ ___	☐ [S]	☐ [C]
Jet Fuel	☐	___ ___, ___ ___ ___, ___ ___ ___	☐ [S]	☐ [C]
Diesel Fuel	☐	___ ___, ___ ___ ___, ___ ___ ___	☐ [S]	☐ [C]
New Motor Oil	☐	___ ___, ___ ___ ___, ___ ___ ___	☐ [S]	☐ [C]
Used Motor Oil	☐	___ ___, ___ ___ ___, ___ ___ ___	☐ [S]	☐ [C]
Fuel Oil No. 1	☐	___ ___, ___ ___ ___, ___ ___ ___	☐ [S]	☐ [C]
Fuel Oil No. 2	☐	___ ___, ___ ___ ___, ___ ___ ___	☐ [S]	☐ [C]
Fuel Oil No. 4	☐	___ ___, ___ ___ ___, ___ ___ ___	☐ [S]	☐ [C]
Fuel Oil No. 5	☐	___ ___, ___ ___ ___, ___ ___ ___	☐ [S]	☐ [C]
Fuel Oil No. 6	☐	___ ___, ___ ___ ___, ___ ___ ___	☐ [S]	☐ [C]
Other (Specify) _____	☐	___ ___, ___ ___ ___, ___ ___ ___	☐ [S]	☐ [C]
Unknown	☐	___ ___, ___ ___ ___, ___ ___ ___	☐ [S]	☐ [C]

IV. REPORTABLE RELEASE INFORMATION (O/O Only)

Date Reportable Release was Confirmed: ___ / ___ / ___ (m / d / y)

Date Owner/Operator Verbally Notified Appropriate Regional Office of Reportable Release and Office Notified:
Date: ___ / ___ / ___ (m / d / y) Office _____

Date Owner/Operator Sent Copy of this Written Notification to Local Municipality(ies) and Name of Municipality(ies) Notified:
Date: ___ / ___ / ___ (m / d / y) Municipality _____
Date: ___ / ___ / ___ (m / d / y) Municipality _____

Source (Mark All That Apply ☒):

- Tank (DEP Assigned Nos. 001) ☒
- Piping System (Aboveground Regulated) ☐
- Piping System (Underground Regulated) ☐
- Piping System (Non-Regulated) ☐
- Dispenser/Dispensing Equipment ☐
- Spill Catchment Basin ☐
- Accident/Natural Disaster ☐
- Submersible Turbine Pump Head/Fittings ☐
- Containment/Sump Failure ☐
- Other (Specify) _____ ☐
- Unknown ☐

Cause (Mark All That Apply ☒):

- Faulty Installation ☐
- Corrosion ☐
- Physical/Mechanical Failure ☐
- Spill During Delivery ☐
- Overfill at Delivery ☐
- Vehicle Gas Tank Overfill ☐
- Product Delivery Hose Rupture ☐
- Other (Specify) _____ ☐
- Unknown ☐

How Discovered (Mark All That Apply ☒):

- During Closure ☐
- Lining Installation ☐
- Routine Leak Detection ☐
- Third Party Inspection ☐
- Tightness Testing Activities ☐
- Visible Product or Odor Reports ☐
- Water in Tank ☐
- Construction ☐
- Upgrade/Repair ☐
- Supply Well Sample Results ☐
- Monitoring Well Sample Results ☐
- Property Transfer ☐
- Other (Specify) _____ ☐
- Unknown ☐

Environmental Media Affected and Impacts (Mark All That Apply ☒):

- Soil ☐
- Sediment ☐
- Surface Water ☐
- Ground Water ☐
- Bedrock ☐
- Water Supplies ☐
- Vapors/Product in Buildings ☐
- Vapors/Product in Sewer/Utility Lines ☐
- Ecological Receptors ☐

V. INTERIM REMEDIAL ACTIONS (O/O Only)

(Mark All That Apply ☒):

	Planned	Initiated	Completed	Not Applicable
Regulated Substance Removed from Storage Tanks	☐	☐	☐	☐
Fire, Explosion and Safety Hazards Mitigated	☐	☐	☐	☐
Contaminated Soil Excavated	☐	☐	☐	☐
Free Product Recovered	☐	☐	☐	☐
Water Supplies Identified and Sampled	☐	☐	☐	☐
Temporary Water Supplies Provided	☐	☐	☐	☐
Other (Specify) _____	☐	☐	☐	☐

VI. SUSPECTED / CONFIRMED CONTAMINATION INFORMATION (I/I Only)

Date of Observation of Suspected/Confirmed Contamination: 09 (m) / 12 (d) / 2018 (y)

Indication of Suspected Contamination (Mark All That Apply ☒):

- Unusual Level of Vapors ☐
- Erratic Behavior of Product Dispensing Equipment ☐
- Release Detection Results Indicate a Release ☐
- Discovery of Holes in the Storage Tank ☐
- Other (Specify) _____ ☐

Extent of Confirmed Contamination (Mark All That Apply ☒):

- Product Stained or Product Saturated Soil or Backfill ☐
- Ponded Product ☐
- Free Product or Sheen on Ponded Water ☐
- Free Product or Sheen on the Ground Water Surface ☐
- Free Product or Sheen on Surface Water ☐
- Other (Specify) Failed tightness test ☒

VII. ADDITIONAL INFORMATION (Both O/O and I/I)

Provide any additional, relevant, available information concerning the reportable release or suspected or confirmed contamination. Include specific details or problems about the release. For example, if the piping was the source of the release and the cause was corrosion of a metal connector or flexible connector, it is important to include that information here. Provide DEP-assigned and owner/operator-assigned tank number(s), where applicable. Use additional 8½" x 11" sheets of paper, if necessary.

During a ficility operations inspection it was discovered that tank 001 - a 12,000 gallon ultra gasoline tank has been failing the CSLD tank leak tests. The monitor was serviced a few times to correct the problem with unsatisfactory results. The tank continued to fail the CSLD testing.

A tank tightness test was performed to determine if there is a problem with the tank. The tank test indication is an air leak above the liquid level of 27.5". The source of the leak could not be identified.

The owner was notified and has scheduled a follow up tightness test with Crompco to confirm if a problem exists.

VIII. CERTIFICATION (Both O/O and I/I)

I, _____, hereby certify, under penalty of law as provided in 18 Pa.
(Print Name)

C.S.A. §4904 (relating to unsworn falsification to authorities) that I am the owner or operator of the above referenced storage tank facility and that the information provided by me in this notification is true, accurate and complete to the best of my knowledge and belief.

_____ / / _____
Signature of Owner or Operator Date

I, _____, hereby certify, under penalty of law as provided in 18 Pa.
(Print Name)

C.S.A. §4904 (relating to unsworn falsification to authorities) that I am the certified installer who performed tank handling activities at the above referenced storage tank facility and that the information provided by me in this notification is true, accurate and complete to the best of my knowledge and belief.

_____ / / _____
Signature of Certified Installer Date

_____ _____
Installer Certification Number Company Certification Number

I, Ed Guckin, hereby certify, under penalty of law as provided in 18 Pa.
(Print Name)

C.S.A. §4904 (relating to unsworn falsification to authorities) that I am the certified inspector who performed inspection activities at the above referenced storage tank facility and that the information provided by me in this notification is true, accurate and complete to the best of my knowledge and belief.

Ed Guckin 09 / 12 / 2018
Signature of Certified Inspector Date

2552 307
Inspector Certification Number Company Certification Number

2630-FM-BECB0501a Rev. 9/2012

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF ENVIRONMENTAL CLEANUP AND BROWNFIELDS
STORAGE TANK DIVISION

UNDERGROUND STORAGE TANK FACILITY OPERATIONS INSPECTION

FOR DEP USE ONLY
Reviewer _____
Date _____
Entered by _____
Date _____

FACILITY INFORMATION
ID Number 09 – 30778
Name Finch Petro
Location 610 York Rd
Address Warminster, PA 18974-2002
Municipality Warminster Twp

Representative Present During Inspection
Name Hamaadul Qamar
Phone 610-716-6116
☐ Owner ☐ Operator ☒ Employee ☐ None

CERTIFIED INSPECTOR
Name Les Trammel
ID No. 2551
Phone 215-674-1014
E-mail trammeltesting@msn.com

Date of First Site Visit (month/day/year)
9/12/2018

OWNER (must be a person)
Name

OPERATOR (if different than owner)
Name

Financial Responsibility discussed with owner Yes ☒ No ☐
- Provided by USTIF. Owner must have deductibles available as provided in Subchapter H of the regulations.
- Required of all UST owners except state agencies.

Suspected or confirmed contamination observed Yes ☐ (notify proper region within 48 hours) No ☒

Improperly closed or unregistered tanks present Yes ☐ (provide comment) No ☒

Written instructions/notification procedures are available/posted Yes ☒ No ☐

Amended registration form required for (check all that apply):
☐ Added tanks
☐ Closed tanks
☐ Change in tank size
☐ Change in substance stored
☐ Change of operational status (in or out of service)
☐ Change of owner

Inspection summary.
Indicate the compliance status of each item below using the following codes: N = Noncompliant C = Compliant

	Tank No. 001	Tank No. 002	Tank No. 003	Tank No.	Tank No.
Tank Construction and Corrosion Protection	C	C	C		
Piping Construction and Corrosion Protection	C	C	C		
Spill Prevention	C	C	C		
Overfill Prevention	C	C	C		
Registration Certificate Display	C	C	C		
Tank Release Detection	N	C	C		
Piping Release Detection	C	C	C		
Monthly sump checks	N	N	C		

I, the DEP Certified Inspector (IUM), have inspected the entire above referenced facility including examining manways, sumps, monitoring wells and dispensers. Based on my personal observation of the facility and documentation provided by the owner, I certify under penalty of law as provided in 18 PA C.S.A. Section 4904 (relating to unsworn falsification to authorities), that the information provided by me is true, accurate and complete to the best of my knowledge and belief.

Certified Inspector's Signature — Date: 9/12/2018

As the representative of the owner or operator, I have reviewed the completed inspection report. I certify under penalty of law as provided in 18 PA C.S.A. Section 4904 (relating to unsworn falsification to authorities), that the information provided by me is true, accurate and complete to the best of my knowledge and belief.

Signature — Title: Manager — Date: 9/12/2018

Original: Regional Office – Norristown, Wilkes Barre, Harrisburg, Williamsport, Pittsburgh, or Meadville
Copy: Owner
Copy: DEP, Division of Storage Tanks, P.O. Box 8763, Harrisburg, PA 17105-8763
Copy: Inspector

UNDERGROUND STORAGE TANK FACILITY OPERATIONS INSPECTION

Facility Name Finch Petro **Date** 9/12/2018 **Facility ID** 09 – 30778

I. TANK SYSTEM INFORMATION. For each tank, fill in the required information and codes from the following list. Where multiple codes are allowed and used for a specific tank component, describe the arrangement in the COMMENTS section. (See FOI form instructions for details.)

	Tank No. 001	Tank No. 002	Tank No. 003	Tank No.	Tank No.	DEP Use
1. Tank capacity (name plate gallons)	12000	12000	12000			
2. Substance currently stored	GAS	GAS	GAS			
3. Installation date (mm/yyyy)	12/1983	12/1983	12/1983			
4. This drone tank is manifolded to tank number	---	---	002			
5. Product level, in inches, at time of inspection	27.88	37.73	38.20			
6. Total secondary containment on this tank system	N	N	N			(18)
7. Tank construction and corrosion protection	E	E	E			(1)
8. Main piping construction and corrosion protection	J	J	J			(2)
9a. Number of tank top sumps ‡	1	1	1			
9b. Number of tank top sumps tested tight ‡	0	0	0			(21)
9c. Spill containment tested tight	N	N	N			(21)
10a. Number of transition sumps	0	0	0			
10b. Number of transition sumps tested tight	0	0	0			(21)
11a. Number of connected dispensers	4	4	0			
11b. Number of connected dispensers with pans	4	4	0			
11c. Number of dispenser pans tested tight	0	0	0			(22)
12a. Piping flexible joints/connectors construction at tank	I	I	I			(PFLX)
12b. Piping flexible joints/connectors construction at dispenser	I	I	I			(PFLX)
13. Pump (product dispensing) system	C	C	A			(4)
14. Spill protection	Y	Y	Y			(6)
15. Overfill type	S	S	S			(7)
16. Current registration certificate display	Y	Y	Y			(8)
17. Stage I vapor recovery	B	B	B			(19)
18. Stage II vapor recovery	B	B	B			(20)
Evaluate the tank system release detection methods carefully before filling in the following rows.						
19. Tank release detection	E	E	E			(12)
20. Piping small release detection (0.2 gph monthly or 0.1 gph annually)	B	B	I			(5)
21. Pressure (line 13 is C or D) piping line leak detector (LLD function)	A	A	H			(5)
22. LLD function includes a positive turbine pump shutoff	Y	Y	N			(23)

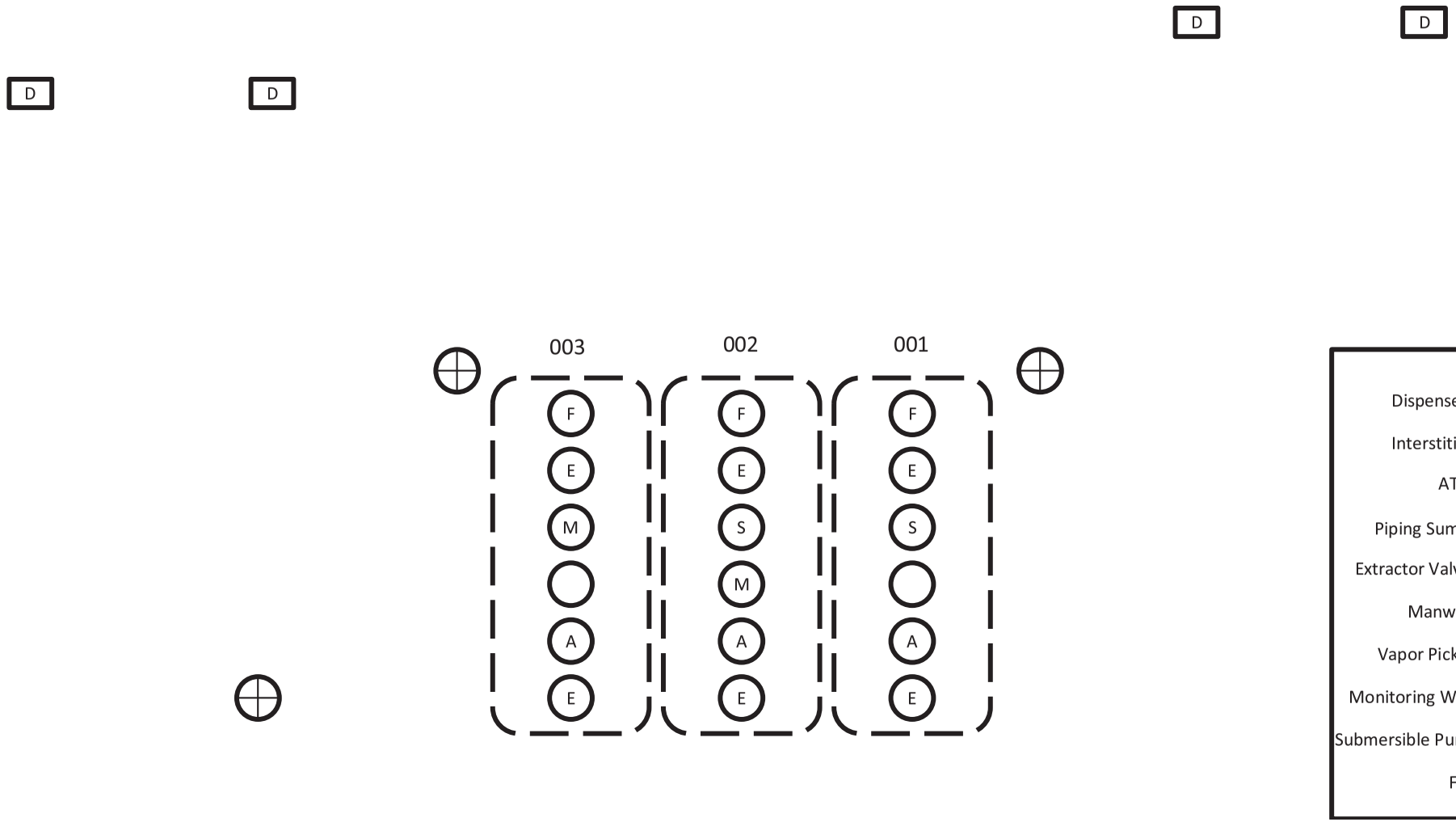
‡ at tank penetrations that have pipe that routinely contains or conveys product.

Site drawing / manifold schematic (not master-drone system):

See Attachment

Original: Regional Office – Norristown, Wilkes Barre, Harrisburg, Williamsport, Pittsburgh, or Meadville
Copy: Owner
Copy: DEP, Division of Storage Tanks, P.O. Box 8763, Harrisburg, PA 17105-8763
Copy: Inspector

Finch Petro – Sunoco 610 York Road Warminster, PA 18974



Tank System Component Codes

6. Total secondary containment
- Y Yes
- N No

7. Tank construction
- A Single-wall steel, unprotected
- B Single-wall, galvanic anodes
- C Impressed current protection
- D Double-wall steel, unprotected
- E Single-wall fiberglass (FRP)
- F Double-wall fiberglass (FRP)
- G Steel with plastic or fiberglass jacket (includes double-wall Act 100)
- H Steel with FRP coating (Act 100 or equivalent)
- I Steel with lined interior
- J Concrete
- N Unknown
- O Double-wall, steel primary, galvanic anodes
- P Cathodically protected and lined
- 99 Other (must provide written comment)

8. Main piping construction
- A Bare steel (including only wrapped or coated)
- B Cathodically protected, metallic
- C Copper, unprotected
- D Fiberglass or rigid non-metallic
- E Single-wall, flexible non-metallic
- F Unknown
- G No dispensing piping (most used oil tanks)
- I Double-wall, metallic primary
- J Double-wall rigid (FRP) primary
- K Double-wall flexible primary
- 99 Other (must provide written comment)

9c. Spill containment tested tight
- Y Yes
- N No

12. Piping flexible joints/connectors
- A Unprotected metallic component(s) (including only wrapped or coated)
- B Cathodically protected, metallic
- C Flexible coupling with protected metallic ends
- F Unknown
- I Completely inside a containment sump, secondary pipe or liner
- M Completely jacketed with sealed boot
- N NO jacket, not in contact with the ground
- X None
- 99 Other (must provide written comment)

13. Pump (delivery) system
- A Suction, check valve at pump or siphon bar only
- B Suction, check valve at tank
- C Pressure
- D Gravity flow to dispenser/pump
- E None

14. Spill protection
- Y Spill containment
- E Filled in less than 25 gallon increments
- N None present or needs repair

15. Overfill type (if code S or B, ensure compatible with delivery method)
- S Drop tube shut off device
- A Overfill alarm (provide description and location in comment section)
- B Ball float valve
- E Filled in less than 25 gallon increments
- N None present or not usable

16. Current registration certificate display
- Y Properly displayed
- N Not displayed

17. Stage I vapor recovery
- A Coaxial
- B 2 port
- N Not complete or none

18. Stage II vapor recovery
- A Complete balance system
- B Complete assist system
- C UG piping only; not complete
- N None of the above

19. Tank release detection
- C Manual Tank Gauging (36 Hour) and Tank Tightness Testing (TTT) every 5 years
- D Statistical Inventory Reconciliation (SIR)
- E Certified Automatic Tank Gauge (0.2 gph Leak Test)
- F Manual Tank Gauging (36 Hour), no TTT
- G44 Manual Tank Gauging, 44 Hours
- G58 Manual Tank Gauging, 58 Hours
- H Interstitial Monitoring (2 Walls)
- J Groundwater Monitoring
- K Vapor Monitoring
- N None
- O Exempt (must provide written comment)

20. Piping small release detection (0.2/0.1 gph)
- B Annual Line Tightness Test (pressure)
- C Line Tightness Test - 3 years (suction)
- D Interstitial Monitoring (monthly – includes visual checking)
- E Groundwater Monitoring
- F Vapor Monitoring
- H None
- I Exempt (must provide written comment)
- J Statistical Inventory Reconciliation (SIR)
- K Electronic Line Leak Detector (0.1 or 0.2 gph test)

21. Piping line leak detection (3 gph within 1 hr.)
- A Mechanical Line Leak Detector (incl. test)
- H None
- K Electronic Line Leak Detector (3 gph test)
- L Continuous Interstitial Monitoring with alarm or pump shut off

22. Positive Turbine pump shutoff
- Y Yes – present and tested
- P Present
- N Not present

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Copy: DEP, Division of Storage Tanks, P.O. Box 8763, Harrisburg, PA 17105-8763
Copy: Inspector

UNDERGROUND STORAGE TANK FACILITY
OPERATIONS INSPECTION

Facility Name Finch Petro **Date** 9/12/2018 **Facility ID** 09 – 30778

II. Release Detection Reference

- Records may be located at the facility or a readily available alternate site.
- The records include all of the information listed below for chosen release detection methods.
- The inspector has actually seen the records.
- A test with an inconclusive result or failure is an indication of a (suspected) product release.

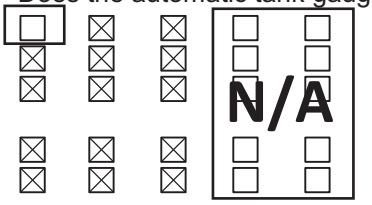
Tank System	*Tank System*	*Tank System*	*Tank System*	*Tank System*
001	002	003	___	___

Instructions: ***Check the box to indicate that a criterion has been met.***
Circle the box to indicate that a criterion has not been met.
Circle with "N/A" when a criterion is not applicable (provide comment).

Automatic Tank Gauging: (Tank only – code E)

ATG manufacturer: Veeder Root ATG model: TLS 350

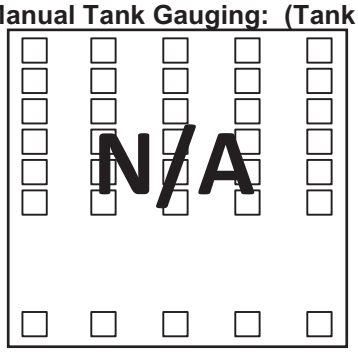
Does the automatic tank gauge perform continuous in-tank release detection? ☒ Yes, ☐ No



valid monthly leak test conducted and documented
manufacturer's certification of ability to detect 0.2 gph release is available
probes and gauge software certified for manifolded tank systems
- when not specifically certified, the siphon must be broken to properly test

maintenance records, for the last year, including calibration, preventative and repair
equipment is operational

Manual Tank Gauging: (Tank only – code C, F, G44 or G58)



tank capacity is 2,000 gallons or less
tank installed before 11/10/2007
performed weekly
1/8th inch accuracy stick readings
average 2 stick readings before and after test
test length appropriate for each tank
- 36 hours minimum
- 44 hours, 551-1000 gallons, 64" diameter
- 58 hours, 551-1000 gallons, 48" diameter

variation is within standard (both weekly and monthly)

Precision Tightness Test (TTT): (Tank only – code C)

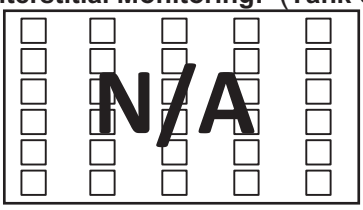
method used (after 10/11/1994): EZY 3 Locator Plus

date of last test: 9/12/2018, result: Failed



complete documentation of tightness test available
performed by UTT certified installer (after 9/28/1996)
manufacturer's certification of ability to detect 0.1 gph release is available

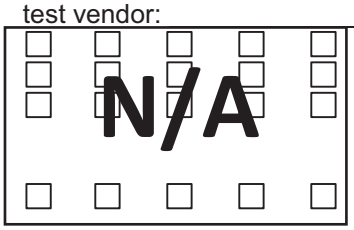
Interstitial Monitoring: (Tank code H; describe monitoring equipment in comments)



interstitial area monitored monthly (required for tanks installed after 11/20/2007)
interstitial sensors properly placed (per manufacturer's instructions)
monitoring wells (secondary barrier) or ports are clearly marked and secured
maintenance records, for the last year, including preventative and repair
equipment manufacturer's performance claims are available
secondary barrier is compatible with and impermeable to the stored substance

Statistical Inventory Reconciliation: (Tank code D and/or Piping code J)

test vendor: version:



manufacturer's certification of ability to detect 0.2 gph release is available
data is collected according to the test vendor's instructions
analysis completed monthly and valid results supplied to owner/operator within 20 days
- valid reports include calculated leak rate, minimum detectible leak rate, leak threshold, probability of detection and probability of false alarm

suspected releases properly investigated within 7 days of inconclusive or failed report to confirm or deny the occurrence of a release

Original: Regional Office – Norristown, Wilkes Barre, Harrisburg, Williamsport, Pittsburgh, or Meadville
Copy: Owner
Copy: DEP, Division of Storage Tanks, P.O. Box 8763, Harrisburg, PA 17105-8763
Copy: Inspector

UNDERGROUND STORAGE TANK FACILITY
OPERATIONS INSPECTION

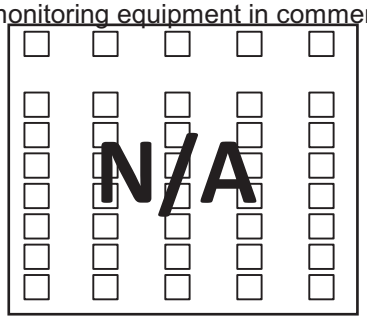
Facility Name Finch Petro **Date** 9/12/2018 **Facility ID** 9 – 30778

II. RELEASE DETECTION REFERENCE (continued)

Tank System	*Tank System*	*Tank System*	*Tank System*	*Tank System*
001	002	003	___	___

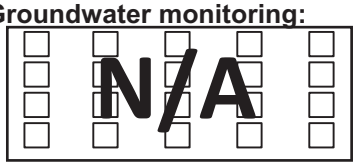
Instructions: ***Check the box to indicate that a criterion has been met.***
Circle the box to indicate that a criterion has not been met.
Circle with "N/A" when a criterion is not applicable (provide comment).

Groundwater or Vapor Monitoring: (Tank code J or K and/or Piping code E or F; describe well locations and monitoring equipment in comments**)**



wells are located according to site evaluation; attach page with evaluator authentication to the inspection report
wells are properly installed in accordance with site evaluation and regulations
wells are monitored and results recorded monthly in accordance with site evaluation
monitoring wells are marked and secured
fill material is sufficiently porous to allow expeditious detection at the monitoring wells
substance stored meets regulatory requirements for type of monitoring
equipment manufacturer's performance claims are available
equipment maintenance records, for the last year, including calibration, preventative and repair

Groundwater monitoring:



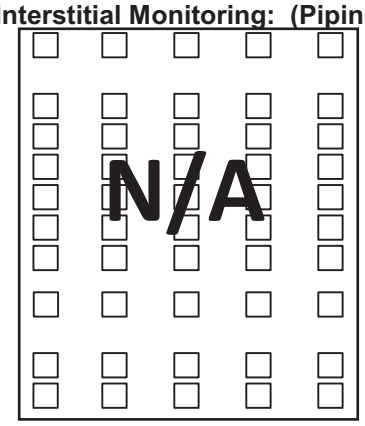
monitoring devices can detect 1/8 inch of product or less on water
groundwater is within 20 feet of surface grade
wells are sealed from ground surface to the top of the filter pack
casing is properly slotted: allows entry of product during all groundwater conditions

Vapor Monitoring:



the monitoring device is not rendered inoperative by moisture
background contamination will not interfere with vapor monitoring
vapor monitors will detect increases in concentrations of stored substance

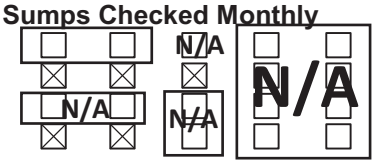
Interstitial Monitoring: (Piping code D and/or L; describe monitoring equipment in comments**)**



interstitial area monitored monthly (required for all totally-contained pressurized piping systems)
secondary enters sump and allows a release to be detected
interstitial sensors properly placed (per manufacturer's instructions)
monitoring wells or ports (when used) are clearly marked and secured
maintenance records, for the last year, including preventative and repair
equipment manufacturer's performance claims are available
secondary barrier (pipe) is compatible with and impermeable to the stored substance

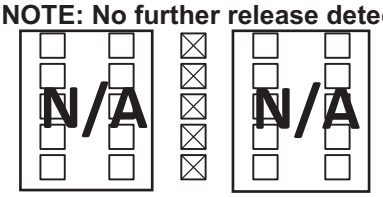
(Code L only) continuous monitoring used as line leak detector (gravity or pressurized piping) – capable of detecting 3.0 gph release within 1 hour
(Code L only) system tested for operability within the last year
(Code L only) monthly "sensor status" (or equivalent) records available

Sumps Checked Monthly



monthly sump checks for the last 12 months documented
tank top sumps dry and clean
transition sumps dry and clean
dispenser pans/sumps dry and clean

Exempt Suction System: (SUCTION piping only – code I)
NOTE: No further release detection required on piping meeting all these criteria.



the tank top is lower than the suction pump inlet
the below grade piping slopes uniformly back to the tank
there is no more than one check valve in the piping
the check valve is located close to or inside the suction pump
compliance with above specifications can be readily determined; describe in comments

Original: Regional Office – Norristown, Wilkes Barre, Harrisburg, Williamsport, Pittsburgh, or Meadville
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Copy: Inspector

UNDERGROUND STORAGE TANK FACILITY
OPERATIONS INSPECTION

Facility Name Finch Petro **Date** 9/12/2018 **Facility ID** 09 – 30778

II. RELEASE DETECTION REFERENCE (continued)

Tank System 001	*Tank System* 002	*Tank System* 003	*Tank System*	*Tank System*

Instructions: ***Check the box to indicate that a criterion has been met.***
Circle the box to indicate that a criterion has not been met.
Circle with "N/A" when a criterion is not applicable (provide comment).

Piping Tightness (Line) Testing: (Piping only – code B or C)

test vendor: EZY CHEK version: PLT

date of last test: 9/12/2018, result: Passed

☒ ☒ ☐ ☐ ☐ test certification of ability to detect 0.1 gph release at 1.5 times operating pressure is available
☒ ☒ ☐ ☐ ☐ performed by UTT certified installer (after 11/10/2008)
☒ ☒ ☐ ☐ ☐ test conducted at proper frequency
- conducted annually for **pressurized** piping without monthly monitoring
- conducted every 3 years for **suction** piping not meeting code I requirements

☐N/A☐ ☐ ☐ ☐ if test device permanently installed, maintenance records, for the last year, including calibration, preventative and repair

N/A

Mechanical Line Leak Detector: (PRESSURIZED Piping only – code A)

manufacturer: FE Petro model: STP-MLD

date last tested: 9/12/2018, result: Passed

☒ ☒ ☐ ☐ ☐ certification of ability to detect a release of 3 gph at 10 psig within 1 hour is available
☒ ☒ ☐ ☐ ☐ operational test of leak detector according to manufacturer's instructions in last 12 months
☒ ☒ ☐ ☐ ☐ maintenance records, in addition to the annual test, for last year, including calibration, preventative and repair

N/A

Electronic Line Leak Detector: (PRESSURIZED Piping only – code K)

manufacturer: model:

date of last 3gph test: result:

☐ ☐ ☐ ☐ ☐ self checking or system tested for operability within the last year
☐ ☐ ☐ ☐ ☐ certification of ability to detect a release of 3 gph at 10 psig within 1 hour is available
☐ ☐ ☐ ☐ ☐ maintenance records, in addition to annual test, for last year, including calibration, preventative and repair
☐ ☐ ☐ ☐ ☐ continuously monitors piping

Is the electronic leak detector performing the "monthly" monitoring function? ☐ Yes, ☐ No If yes:

date of last 0.2gph test: , result:

☐ ☐ ☐ ☐ ☐ third-party certification of ability to detect 0.2 gph release is available
☐ ☐ ☐ ☐ ☐ documentation of monthly test available for last year

N/A

Is the electronic leak detector performing the "annual" monitoring function? ☐ Yes, ☐ No If yes:

date of last 0.1gph test: , result:

☐ ☐ ☐ ☐ ☐ third-party certification of ability to detect 0.1 gph release is available

IUM Release Detection Record Review: (All release detection codes)

- An empty tank (less than 1" of product/sludge) or a tank supplying an emergency generator only is not required to perform release detection. Indicate date emptied or that it is an emergency generator tank in comments.
- Recently installed tank systems must begin performing release detection immediately after receiving product. Indicate date of first product receipt in comments.

☐ ☒ ☒ ☐ ☐ tank release detection records for the last 12 months the system contained product are available
☐ ☒ ☒ ☐ ☐ tank release detection records are valid and passing
☒ ☒ ☐ ☐ ☐ piping release detection records for the last 12 months the system contained product are available
☒ ☒ ☐ ☐ ☐ piping release detection records are valid and passing

N/A

N/A

Original: Regional Office – Norristown, Wilkes Barre, Harrisburg, Williamsport, Pittsburgh, or Meadville
Copy: Owner
Copy: DEP, Division of Storage Tanks, P.O. Box 8763, Harrisburg, PA 17105-8763
Copy: Inspector

UNDERGROUND STORAGE TANK FACILITY
OPERATIONS INSPECTION

Facility Name Finch Petro **Date** 9/12/2018 **Facility ID** 09 – 30778

III. CORROSION PROTECTION COMPLIANCE CRITERIA

Tank System	*Tank System*	*Tank System*	*Tank System*	*Tank System*
001	002	003	___	___

Instructions: ***Check the box to indicate that a criterion has been met.***
Circle the box to indicate that a criterion has not been met.
Circle with "N/A" when a criterion is not applicable (provide comment).

Lined Tanks: (Tank only – code I)

☐ ☐ ☐ ☐ ☐
☐ **N/A** ☐
☐ ☐ ☐ ☐ ☐

tank inspected and lined according to national standard
date lined: _____
tank initially inspected 10 years after lining and every 5 years thereafter
date(s) inspected: _____

Galvanic and Impressed Cathodic Protection: (Tank code B, C, O or P and/or Piping)

☐ ☐ ☐ ☐ ☐
☐ ☐ ☐ ☐ ☐
N/A
☐ ☐ ☐ ☐ ☐
☐ ☐ ☐ ☐ ☐

tank structure to soil potential greater than 0.85 volts, **or**
meets other nationally recognized protection standard: specify: _____
potential on **tank** current monitoring (date) _____
potential on **tank** previously monitored (date) _____

pipe/flex structure to soil potential greater than 0.85 volts, **or**
meets other nationally recognized protection standard: specify: _____
potential on **pipe/flex** current monitoring (date) _____
potential on **pipe/flex** previously monitored (date) _____

Impressed Current Design and Rectifier Output: (Tank code C or P and/or Piping)

☐ ☐ ☐ ☐ ☐
☐ ☐ **N/A** ☐ ☐
☐ ☐ ☐ ☐ ☐

system designed by a corrosion expert
system is turned on and functioning within design limits
documentation of last three amp (plus volt and runtime when meters available) readings, recorded at least once every 60 days:

most recent:	volts: _____	amps: _____	runtime: _____	date: _____
60 days prior:	volts: _____	amps: _____	runtime: _____	date: _____
120 days prior:	volts: _____	amps: _____	runtime: _____	date: _____

If Cathodic Protection or supplemental anodes were added to an existing tank system, fill in the following (Information is Required for Compliance):

Date assessed: _____ Date installed: _____
Tank Shell Assessment Method: _____

IV. Operator Training

☒ list of trained operators designates a class A operator; includes their training certification
☒ list of trained operators designates a class B operator; includes their training certification
☒ list of trained operators designates class C operator(s); date of initial training or last refresher is within the previous 12 months
☒ written instructions and notification procedures are readily available for class C operators at retail facilities; are posted in a location visible to dispenser operators at other facilities

DESCRIBE INFORMAL TRAINING PROVIDED FOR OWNER, CLASS A AND/OR CLASS B OPERATORS – see instructions.

Jimal Ali is the A&B operator, training conducted by Ed Guckin on 7/28/2011. C operators are listed and emergency procedures are available.

Original: Regional Office – Norristown, Wilkes Barre, Harrisburg, Williamsport, Pittsburgh, or Meadville
Copy: Owner
Copy: DEP, Division of Storage Tanks, P.O. Box 8763, Harrisburg, PA 17105-8763
Copy: Inspector

UNDERGROUND STORAGE TANK FACILITY
OPERATIONS INSPECTION

Facility Name Finch Petro **Date** 9/12/2018 **Facility ID** 09 – 30778

☒ IUM checked for water in tank(s) and sump(s) – results below

V. COMMENTS INCLUDING ACTIONS TO BRING INTO COMPLIANCE (Attach additional sheets where necessary) See instructions

Water check - Tank 001 has 0.00", 002 has 0.00", 003 has 0.00" of water
Products:
Tank 001 - Ultra
Tank 002 - Regular
Tank 003 - Regular
Stick Readings:
Tank 001 – 27.75"
Tank 002 – 37.75"
Tank 003 – 38.0"

Tanks 002 and 003 have a manifold tank 002 is the master and tank 003 is the drone.

Tank 001, 002 and 003 are compliant for tank construction and corrosion protection. Tanks 001, 002 and 003 are single fiberglass tanks. The tanks were installed in December 1983.

Pipe 001, 002 and 003 are compliant for piping construction and corrosion protection. Tanks 001, and 002 are double wall fiberglass pipe. The metallic fittings for tanks 001 and 002 are inside tank top sumps and inside dispenser pans all with sensors. The main piping run for tank 003 (manifold) is double wall fiberglass pipe. The metallic fittings and copper tubing are inside a containment sump at tank 002.

Tank 00 001, 002 and 003 are compliant for spill prevention. Tanks 001, 002 and 003 have spill containments in place and in good condition.

Tank 001, 002 and 003 are compliant for overfill protection. Tanks 001, 002 and 003 have overfill drop-tubes with shutoff devices for overfill protection.

Tank 001, 002 and 003 are compliant for tank registration. A current registration is on site.

Tank 001 is non-compliant for tank release protection. They are performing .2 (CSLD) tests, the tank has not passed a CSLD since July 2nd 2018. They have had the ATG serviced twice to try and fix the problem but with no success. The tank was precision tested today 9/12/2018 but failed the tightness test. The owner contacted CROMPCO to retest the tank for confirmation of the results. A notice of contamination was filed, and a copy sent to the owner.
Tank 002 and 003 are compliant for tank release protection. They are performing .2 (CSLD) tests and have 12 months of valid leak detection records on site, tanks 002 and 003 are being tested as a manifolded pair.

Pipe 001, 002 and 003 are compliant for piping release detection. Pipe 001 and 002 are performing annual line and leak detector tests. The product lines and MLLDs were tested today 9/12/2018 both with passing results. Pipe 003 is a safe style manifold and exempt from current piping release detection requirements. The positive shutdown was also tested today 9/12/2018 with passing results. The operator will also begin printing out liquid status reports for all containment sumps.

Tank 001 and 002 are non-compliant for monthly sump checks. Tank 001 and 002 are double wall piping, the operator was unaware that he had to print liquid status reports or visually inspect the sumps and record it in a log book. The operator will begin printing out liquid status reports.
Tank 003 is compliant for monthly sump checks. Tank 003 is a safe style manifold and exempt from current monthly sump check regulations. All tank top sumps and dispenser pans are clean and dry.

Original: Regional Office – Norristown, Wilkes Barre, Harrisburg, Williamsport, Pittsburgh, or Meadville
Copy: Owner
Copy: DEP, Division of Storage Tanks, P.O. Box 8763, Harrisburg, PA 17105-8763
Copy: Inspector

Notice of Reportable Release

RT - July 24, 2019

RT Environmental Services, Inc.

July 24, 2019

Mr. Richard Staron, PG
Pennsylvania Department of Environmental Protection
Southeast Regional Office
2 E. Main St.
Norristown, PA 19401

RE: NOTIFICATION OF RELEASE
WARMINSTER SUNOCO
610 YORK RD.
WARMINSTER TOWNSHIP, BUCKS COUNTY, PA 1897
FACILITY ID NUMBER 09-30778
RT PROJECT # 73057-01

Dear Mr. Staron:

RT Environmental Services, Inc. (RT) is enclosing the Notification of Release Form signed by both the operator and certified installer for a release from a regulated unleaded gasoline underground storage tank, Tank 003 – ultra unleaded gasoline UST. The confirmed release was identified on July 16, 2019 during the removal of this regulated UST, at which time, the certified installer called the Department to make the appropriate notification.

Please contact me with any questions or concerns.

Respectfully Submitted,

RT ENVIRONMENTAL SERVICES, INC.

Craig Herr, PG

Enclosure

cc: Mr. Ali – Finch Petroleum
Mr. Spause – ECI, LLC
Warminster Township

Y:\RT Projects\73000 SERIES\73057-01\NOTIFICATION_OF_RELEASE_-_cov ltr.doc

215 West Church Road ■ King of Prussia, PA 19406 ■ (610) 265-1510 ■ Fax: (610) 265-0687
E-Mail RTENV@AOL.COM ■ Web Address http://www.RTENV.COM

NOTIFICATION OF RELEASE *(Owners and Operators)*

FACILITY I.D. NUMBER 09 - 30778

☒ Initial
☐ Follow-Up

NOTIFICATION OF CONTAMINATION *(Certified Installers and Inspectors)*

INFORMATION FOR OWNERS AND OPERATORS (O/O)

The Storage Tank Program's Corrective Action Process (CAP) regulations establish requirements for owners and operators of storage tank systems and storage tank facilities to report confirmed releases and, in certain cases, suspected releases.

Suspected Release Reporting: Upon the completion of a suspected release investigation from which it could not be determined whether a release has occurred, the owner or operator must, within 15 days of the indication of the suspected release, complete and submit this form to the appropriate regional office of the Department (Subsection 245.304(c)(2)).

Confirmed Release Reporting: The owner or operator must notify the appropriate regional office of the Department by telephone as soon as practicable, but no later than 24 hours, after the confirmation of a release (Subsections 245.305(a) and (b)). Within 15 days of that telephone notification, the owner or operator must complete and submit this form to the appropriate regional office of the Department, to each municipality in which the release occurred, and to each municipality where that release has impacted environmental media or water supplies, buildings, or sewer or other utility lines (Subsections 245.305(c) and (e)). And if new impacts to environmental media or water supplies, buildings, or sewer or other utility lines are discovered after that initial written notification, the owner or operator must, within 15 days of the discovery of the new impact, complete and submit this form to the Department and to each impacted municipality (Subsections 245.305(d) and (e)).

INFORMATION FOR CERTIFIED INSTALLERS AND INSPECTORS (I/I)

In accordance with the Storage Tank Program's certification regulations, certified installers and inspectors must complete and submit this form to the Department within 48 hours of observing any of the following while performing services as a certified installer or inspector: a release of a regulated substance; suspected or confirmed contamination of soil, surface or groundwater from regulated substances; or a regulated substance in a containment structure or facility (Subsections 245.132(a)(4) and 245.132(a)(6)).

INSTRUCTIONS

Record the storage tank facility I.D. number at the top right-hand corner of each page of this form.

Owners and Operators (O/O): Indicate if this is an initial or follow-up notification by marking the appropriate box found in the top right-hand corner of this page.

- To report a Suspected Release, complete all information in Sections I, II, IIIA, IIIC, VI, VIII and IX.
- To report a Confirmed Release, complete all information in Sections I, II, IIIA, IIIB, IIIC, IV, V, VIII and IX.

Certified Installers and Inspectors (I/I): Complete all information in Sections I, II, IIIA, IIIC, VI or VII, VIII, and IX. Attach a copy of the failed, valid tightness test results, if applicable.

PLEASE SEND COMPLETED ORIGINAL FORM TO:

PA Department of Environmental Protection
Environmental Cleanup and Brownfields Program
Storage Tank Section
(and the appropriate address below, depending on where the FACILITY is located)

Northwest Region	North-central Region	Northeast Region
230 Chestnut Street Meadville, PA 16335-3481 PHONE: 814-332-6945 / 800-373-3398 FAX: 814-332-6121	208 W. Third Street, Suite 101 Williamsport, PA 17701 PHONE: 570-327-3636 FAX: 570-327-3420	2 Public Square Wilkes-Barre, PA 18701-1915 PHONE: 570-826-2511 FAX: 570-820-4907
Counties: Armstrong, Butler, Clarion, Crawford, Elk, Erie, Forest, Indiana, Jefferson, Lawrence, McKean, Mercer, Venango, Warren	**Counties:** Bradford, Cameron, Centre, Clearfield, Clinton, Columbia, Lycoming, Montour, Northumberland, Potter, Snyder, Sullivan, Tioga, Union	**Counties:** Carbon, Lackawanna, Lehigh Luzerne, Monroe, Northampton, Pike Schuylkill, Susquehanna, Wayne, Wyoming
Southwest Region	**South-central Region**	**Southeast Region**
400 Waterfront Drive Pittsburgh, PA 15222 PHONE: 412-442-4000 FAX: 412-442-4194	909 Elmerton Avenue Harrisburg, PA 17110 PHONE: 717-705-4705 / 800-541-2050 FAX: 717-705-4830	2 East Main Street Norristown, PA 19401 PHONE: 484-250-5900 FAX: 484-250-5961
Counties: Allegheny, Beaver, Cambria, Fayette, Greene, Somerset, Washington, Westmoreland	**Counties:** Adams, Bedford, Berks, Blair, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Juniata, Lancaster, Lebanon, Mifflin, Perry, York	**Counties:** Bucks, Chester, Delaware, Montgomery, Philadelphia

I. FACILITY INFORMATION (Both O/O and I/I)

Facility Name: Finch Petroleum
Facility I.D. Number: 09-30778
Street Address (P.O. Box not acceptable): 610 York Road
City: Warminister
State: PA
Zip Code: 18974 -
County: Bucks County
Municipality: Warminister Township
Contact Person: Ijmal Ali
Telephone Number: (484) 678 - 5693

II. OWNER/OPERATOR INFORMATION (Both O/O and I/I)

Owner Name: Ijmal Ali
Address: 610 York Road
City: Warminister
State: PA
Zip Code: 18974 -
Telephone Number: (484) 678 - 5693
Operator Name: Finch Petroleum
Telephone Number: (484) 678 - 5693

III. REGULATED SUBSTANCE INFORMATION

A. Type of Product(s) Involved (Mark All That Apply ☒): Both O/O and I/I		B. Quantity (Gallons) of Product(s) Released: O/O Only	C. Contamination Suspected [S] or Confirmed [C] (Mark All That Apply ☒): Both O/O and I/I	
Leaded Gasoline	☐		☐ [S]	☐ [C]
Unleaded Gasoline	☒	u n k n o w n	☐ [S]	☒ [C]
Aviation Gasoline	☐		☐ [S]	☐ [C]
Kerosene	☐		☐ [S]	☐ [C]
Jet Fuel	☐		☐ [S]	☐ [C]
Diesel Fuel	☐		☐ [S]	☐ [C]
New Motor Oil	☐		☐ [S]	☐ [C]
Used Motor Oil	☐		☐ [S]	☐ [C]
Fuel Oil No. 1	☐		☐ [S]	☐ [C]
Fuel Oil No. 2	☐		☐ [S]	☐ [C]
Fuel Oil No. 4	☐		☐ [S]	☐ [C]
Fuel Oil No. 5	☐		☐ [S]	☐ [C]
Fuel Oil No. 6	☐		☐ [S]	☐ [C]
Other (Specify) _____	☐		☐ [S]	☐ [C]
Unknown	☐		☐ [S]	☐ [C]

IV. CONFIRMED RELEASE INFORMATION (O/O Only)

Date Release was Confirmed: 7 (m) / 16 (d) / 2019 (y)

Date Owner/Operator Verbally Notified Appropriate Regional Office of Confirmed Release and Office Notified:
Date: 7 (m) / 16 (d) / 2019 (y) Office: Southeast

Date Owner/Operator Sent Copy of this Written Notification to Local Municipality(ies) and Name of Municipality(ies) Notified:
Date: 7 (m) / 24 (d) / 2019 (y) Municipality: Warminister
Date: ___ (m) / ___ (d) / ___ (y) Municipality: _____

Source (Mark All That Apply ☒):		How Discovered (Mark All That Apply ☒):		Environmental Media Affected and Impacts (Mark All That Apply ☒):	
Tank (DEP Assigned Nos. 003)	☒	During Closure	☐	Soil	☒
Piping System (Aboveground Regulated)	☐	Lining Installation	☐	Sediment	☐
Piping System (Underground Regulated)	☐	Routine Leak Detection	☐	Surface Water	☐
Piping System (Non-Regulated)	☐	Third Party Inspection	☐	Ground Water	☒
Dispenser/Dispensing Equipment	☐	Tightness Testing Activities	☒	Bedrock	☐
Spill Prevention Equipment	☐	Visible Product or Odor Reports	☐	Water Supplies	☐
Submersible Turbine Pump Head/Fittings	☐	Water in Tank	☐	Vapors/Product in Buildings	☐
Containment/Sump Failure	☐	Construction	☐	Vapors/Product in Sewer/Utility Lines	☐
Other (Specify) _____	☐	Upgrade/Repair	☐	Ecological Receptors	☐
Unknown	☐	Supply Well Sample Results	☐		
Cause (Mark All That Apply ☒):		Monitoring Well Sample Results	☐		
Faulty Installation	☐	Property Transfer	☐		
Corrosion	☐	Other (Specify) _____	☐		
Physical/Mechanical Failure	☐	Unknown	☐		
Spill During Delivery	☐				
Overfill at Delivery	☐				
Vehicle Gas Tank Overfill	☐				
Product Delivery Hose Rupture	☐				
Accident/Natural Disaster	☐				
Other (Specify) _____	☐				
Unknown	☒				

V. INTERIM REMEDIAL ACTIONS (O/O Only)

Indicate the Interim Remedial Actions Planned, Initiated or Completed (Mark All That Apply ☒):

	Planned	Initiated	Completed	Not Applicable
Regulated Substance Removed from Storage Tanks	☐	☐	☒	☐
Fire, Explosion and Safety Hazards Mitigated	☐	☐	☒	☐
Contaminated Soil Excavated	☐	☐	☒	☐
Free Product Recovered	☐	☐	☒	☐
Water Supplies Identified and Sampled	☒	☐	☐	☐
Temporary Water Supplies Provided	☐	☐	☐	☐
Other (Specify) _____	☐	☐	☐	☐

VI. SUSPECTED RELEASE / CONTAMINATION INFORMATION (Both O/O and I/I)

Date the Indication of a Suspected Release / Contamination was Observed: ___ / ___ / ___ (m / d / y)

Indication of Suspected Release / Contamination (Mark All That Apply ☒):

- ☐ Unusual Level of Vapors
- ☐ Erratic Behavior of Product Dispensing Equipment
- ☐ Release Detection Results Indicate a Release
- ☐ Discovery of Holes in the Storage Tank
- ☐ Containment Sump Test Failure
- ☐ Spill Prevention Equipment Test Failure
- ☐ Other (Specify) _____

VII. CONFIRMED CONTAMINATION INFORMATION (I/I Only)

Date the Confirmed Contamination was Observed: 7 / 16 / 19 (m / d / y)

Extent of Confirmed Contamination (Mark All That Apply ☒):

- ☒ Product Stained or Product Saturated Soil or Backfill
- ☒ Ponded Product
- ☒ Free Product or Sheen on Ponded Water
- ☒ Free Product or Sheen on the Ground Water Surface
- ☐ Free Product or Sheen on Surface Water
- ☐ Other (Specify) _____

VIII. ADDITIONAL INFORMATION (Both O/O and I/I)

Provide any additional, relevant, available information concerning the release or contamination. If reporting a confirmed release, include specific details about the source and cause of the release, the affected environmental media, and any impacts to water supplies, buildings, or sewer or other utility lines. Owners or Operators reporting a suspected release should describe what procedures were followed to investigate the indication(s) of the suspected release noted in Section VI. Provide both DEP-assigned and owner/operator-assigned tank number(s), where applicable. Use additional 8½" x 11" sheets of paper, if necessary.

Confirmed release identified during closure of Tank 003.

IX. CERTIFICATION (Both O/O and I/I)

OWNER OR OPERATOR CERTIFICATION

I, IJMAL ALI, hereby certify, under penalty of law as provided in 18 Pa.
(Print Name)

C.S.A. §4904 (relating to unsworn falsification to authorities) that I am the owner or operator of the above referenced storage tank facility and that the information provided by me in this notification is true, accurate and complete to the best of my knowledge and belief.

Signature of Owner or Operator — July 24, 2019 Date

CERTIFIED INSTALLER CERTIFICATION

I, DAVID J Stacy, hereby certify, under penalty of law as provided in 18 Pa.
(Print Name)

C.S.A. §4904 (relating to unsworn falsification to authorities) that I am the certified installer who performed tank handling activities at the above referenced storage tank facility and that the information provided by me in this notification is true, accurate and complete to the best of my knowledge and belief.

Signature of Certified Installer — 7 24 2019 Date

4598 Installer Certification Number — 1655 Company Certification Number

CERTIFIED INSPECTOR CERTIFICATION

I, _____, hereby certify, under penalty of law as provided in 18 Pa.
(Print Name)

C.S.A. §4904 (relating to unsworn falsification to authorities) that I am the certified inspector who performed inspection activities at the above referenced storage tank facility and that the information provided by me in this notification is true, accurate and complete to the best of my knowledge and belief.

Signature of Certified Inspector — / / Date

Inspector Certification Number — Company Certification Number

APPENDIX E

Photographic Documentation

Client: Finch Petroleum	**Site Location: 610 York Road Warminster, Pa**
Site Name: Warminster Sunoco	**Project Number: 73057-01**

	Photo 1
Date: 7/16/2019 **Description:** Removal of pea gravel and soil from side of Ultra super tank (001).	

	Photo 2
Date: 7/16/19 **Description:** Continuation of removal of pea gravel and soil on the side of the tank 001 in preparation for removing tank from the excavation.	

Client: Finch Petroleum	**Site Location: 610 York Road Warminster, Pa**
Site Name: Warminster Sunoco	**Project Number: 73057-01**

Date: 7/16/19 **Description:** Suspected contaminated soil emitting strong petroleum odor and high PID readings.	**Photo 3** 
Date: 7/16/19 **Description:** Documentation of product at the bottom of the excavation next to Ultra tank 001.	**Photo 4** 

Client: Finch Petroleum	**Site Location: 610 York Road Warminster, Pa**
Site Name: Warminster Sunoco	**Project Number: 73057-01**

Photo 5

Date: 7/16/19

Description:

Removal of Ultra tank 001 from the excavation pit.



Photo 6

Date: 7/17/19

Description:

Second (002) of the three tanks removed from excavation.



Client: Finch Petroleum	**Site Location: 610 York Road Warminster, Pa**
Site Name: Warminster Sunoco	**Project Number: 73057-01**

	Photo 7
Date: 7/16/19 **Description:** Product and visible staining of pea gravel observed underneath the Ultra tank 001 upon removal.	

	Photo 8
Date: 7/17/19 **Description:** Tank field excavation after removal of second tank (002).	

Client: Finch Petroleum	**Site Location: 610 York Road Warminster, Pa**
Site Name: Warminster Sunoco	**Project Number: 73057-01**

	Photo 9
Date: 7/17/19 **Description:** Petroleum contaminated soil pile on asphalt/concrete surface.	
	Photo 10
Date: 7/17/19 **Description:** Removal of third (003) tank from excavation.	

Client: Finch Petroleum	**Site Location: 610 York Road Warminster, Pa**
Site Name: Warminster Sunoco	**Project Number: 73057-01**

Photo 11

Date: 7/17/19

Description:

Water and product observed on pea gravel bedding upon removal of tank 003.



Photo 12

Date: 7/17/19

Description:

Monarch Environmental used a vacuum truck to remove ~2900 gallons of product/water mixture from the excavation.



Client: Finch Petroleum	**Site Location: 610 York Road Warminster, Pa**
Site Name: Warminster Sunoco	**Project Number: 73057-01**

	Photo 13
Date: 7/17/19 **Description:** Petroleum contaminated pea gravel/soil pile placed on and covered with plastic traps.	

	Photo 14
Date: 7/18/19 **Description:** Remaining pea gravel and soil in excavation.	

Client: Finch Petroleum	**Site Location: 610 York Road Warminster, Pa**
Site Name: Warminster Sunoco	**Project Number: 73057-01**

Photo 15

Date: 7/18/19

Description:

Disposal of fiberglass tanks.

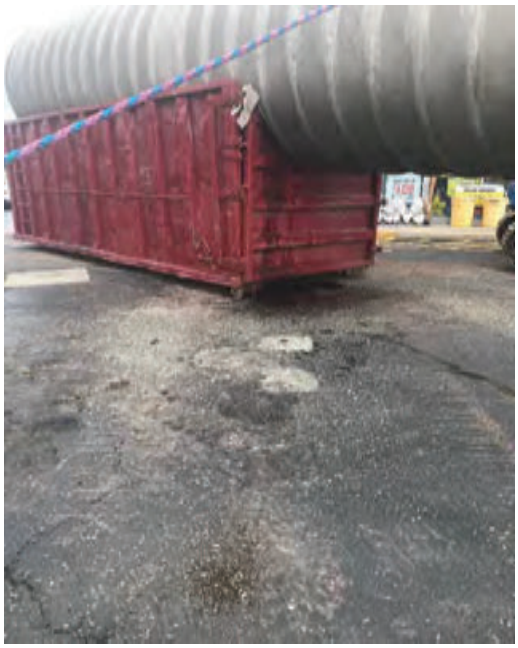
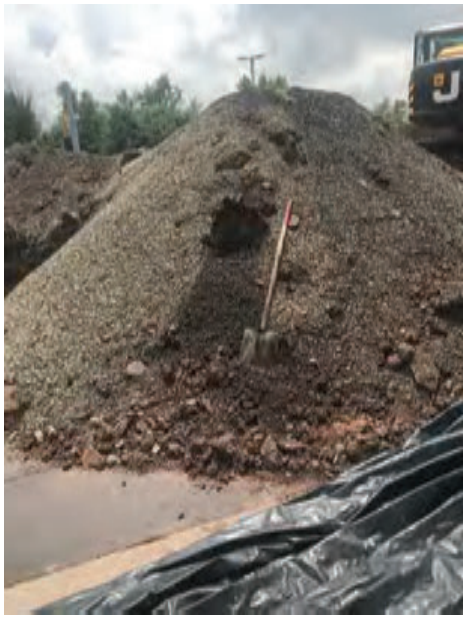


Photo 16

Date: 7/18/19

Description:

View of petroleum contaminated soil pile grab sampling location. A sample was collected in order to profile the material for disposal purposes.



Client: Finch Petroleum	**Site Location: 610 York Road Warminster, Pa**
Site Name: Warminster Sunoco	**Project Number: 73057-01**

Photo 17

Date: 7/18/19

Description:

View of petroleum contaminated pea gravel/soil pile.



Photo 18

Date: 7/18/19

Description:

Petroleum contaminated soil covered in plastic.



Client: Finch Petroleum	**Site Location: 610 York Road Warminster, Pa**
Site Name: Warminster Sunoco	**Project Number: 73057-01**

	Photo 19
Date: 7/19/19 **Description:** Pea gravel removed to a depth of approximately 12-feet. Groundwater encountered at a depth of 12.5-feet.	

	Photo 20
Date: 7/19/19 **Description:** Continuation of the removal of pea gravel and soil from the excavation.	

Client: Finch Petroleum	**Site Location: 610 York Road Warminster, Pa**
Site Name: Warminster Sunoco	**Project Number: 73057-01**

	Photo 21
Date: 7/19/19 **Description:** Suspected contaminated soil pile covered with plastic.	
	Photo 22
Date: 7/23/19 **Description:** Pit water with sheen.	

Client: Finch Petroleum	**Site Location: 610 York Road Warminster, Pa**
Site Name: Warminster Sunoco	**Project Number: 73057-01**

Photo 23

Date: 7/23/19

Description:

Alternate view of contaminated soil pile covered with plastic.



Photo 24

Date: 7/24/19

Description:

Continuation of the removal of pea gravel and soil.



Client: Finch Petroleum	**Site Location: 610 York Road Warminster, Pa**
Site Name: Warminster Sunoco	**Project Number: 73057-01**

	Photo 25
Date: 7/26/19 **Description:** View of contaminated soil stockpile.	
	Photo 26
Date: 7/26/19 **Description:** View of tank pit area upon completion of attainment soil sample collection.	

Client: Finch Petroleum	**Site Location: 610 York Road Warminster, Pa**
Site Name: Warminster Sunoco	**Project Number: 73057-01**

Photo 27

Date: 8/27/19

Description:

View looking northwest from tank field. Photograph shows pump islands and convenience store.



Photo 28

Date: 8/27/19

Description:

View of tank field excavation after installation of new tanks.



Client: Finch Petroleum	**Site Location: 610 York Road Warminster, Pa**
Site Name: Warminster Sunoco	**Project Number: 73057-01**

Photo 29

Date: 8/27/19

Description:

View looking south at pump islands and Giant Shopping Center on south side off Street Road.



Photo 30

Date: 8/29/19

Description:

View of monitoring well MW-7 situated on the north side of parking lot.



Client: Finch Petroleum	**Site Location: 610 York Road Warminster, Pa**
Site Name: Warminster Sunoco	**Project Number: 73057-01**

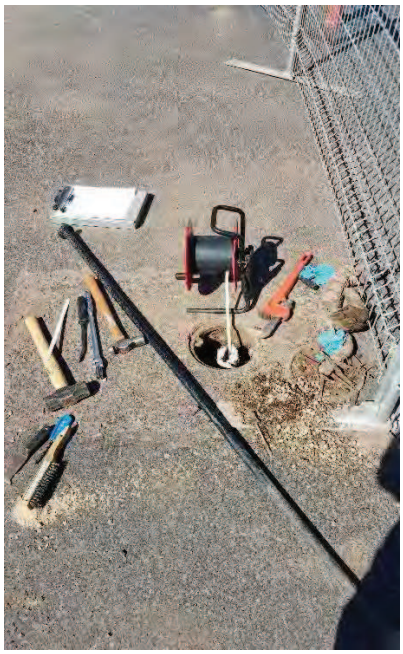
	Photo 31
Date: 8/29/19 **Description:** View looking north at Monitoring well MW-8 at facility entrance from York Road.	

	Photo 32
Date: 8/29/19 **Description:** View of monitoring well MW-4 at facility entrance from Street Road.	

APPENDIX F

PADEP Correspondence

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

March 18, 2020

Mr. Ijmal Ali
Finch Petroleum, LLC
610 York Road
Warminster, PA 18974

Re: Site Characterization Report/Remedial Action Plan Disapproval
Storage Tank System Release: September 12, 2018
Facility ID No. 09-30778
Incident No. 52366
Finch Petroleum, LLC
610 York Road
Warminster Township
Bucks County

Dear Mr. Ali:

The Department of Environmental Protection (DEP) has reviewed the December 2018 document titled "Site Characterization Report" for the release referenced above. This document was prepared by RT Environmental Services, Inc and submitted as a Site Characterization Report (SCR)/Remedial Action Plan (RAP) as required by 25 Pa. Code Sections 245.310(a) and 245.311.

In accordance with 25 Pa. Code Section 245.310(c), DEP disapproves the SCR/RAP based on the following:

Failure to submit in the SCR groundwater quality data collected through field investigations that determines the extent of dissolved-phase contamination and extent of LNAPL in groundwater in accordance with 25 Pa. Code Sections 245.309(b)(4), 245.309(c)(10) and 245.310(a)(16).

Failure to submit in the SCR an ecological receptor evaluation the report in accordance with 25 Pa. Code Section 245.310(a)(28).

Based on this disapproval, you should correct the deficiencies and submit a revised SCR/RAP in keeping with 25 Pa. Code Section 245.310(c) (4).

Any person aggrieved by this action may appeal, pursuant to Section 4 of the Environmental Hearing Board Act, 35 P.S. Section 7514, and the Administrative Agency Law, 2 Pa.C.S. Chapter

5A, to the Environmental Hearing Board, Second Floor, Rachel Carson State Office Building, 400 Market Street, P.O. Box 8457, Harrisburg, PA 17105-8457, 717.787.3483. TDD users may contact the Board through the Pennsylvania Relay Service, 800.654.5984. Appeals must be filed with the Environmental Hearing Board within 30 days of receipt of written notice of this action unless the appropriate statute provides a different time period. Copies of the appeal form and the Board's rules of practice and procedure may be obtained from the Board. The appeal form and the Board's rules of practice and procedure are also available in braille or on audiotape from the Secretary to the Board at 717.787.3483. This paragraph does not, in and of itself, create any right of appeal beyond that permitted by applicable statutes and decisional law.

If you want to challenge this action, your appeal must reach the board within 30 days. You do not need a lawyer to file an appeal with the board.

Important legal rights are at stake, however, so you should show this document to a lawyer at once. If you cannot afford a lawyer, you may qualify for free pro bono representation. Call the secretary to the board (717.787.3483) for more information.

If you have any questions, please contact Lauren Mapleton by email at lmapleton@pa.gov or by telephone at 484.250.5783.

Sincerely,

s/ Ragesh R Patel

Ragesh R. Patel
Regional Manager
Environmental Cleanup and Brownfields

cc: Warminster Township
Bucks County Health Department
Ms. Steiner. USTIF
Mr. Burke. ICF Inc.
Mr. Herr, PG, RT Environmental Services
Mr. Staron, PG, DEP
Ms. Mapleton, DEP