NOTE TO THE COMMUNITY:

The attached Report, "Dissolved Phase Groundwater Investigation and P-60 Free Phase Product Delineation Report" was submitted to the Illinois Environmental Protection Agency on February 18, 2010, completing the investigation required by the Illinois EPA's May 12, 2009 letter. The report and its conclusions are currently under review by the agency, and as such are subject to potential revision.

REPORT SUMMARY

Shell Oil Products US (SOPUS) conducted a multimedia subsurface investigation (e.g., soil, groundwater, soil vapor) in the Village of Roxana as outlined in the *Dissolved Phase Groundwater Investigation and P-60 Free Phase Product Delineation Work Plan for Roxana, Illinois* (January 21, 2009).

The primary objectives of this investigation were to: refine our understanding of the extent of benzene impact in the subsurface; assess the nature and extent of dissolved hydrocarbons in groundwater in the area west of the WRB Refining LLC Wood River Refinery (WRR) west fenceline; and gather data to assist in the delineation of the extent of petroleum product historically observed in groundwater beneath the WRR in the area of Monitoring Well P-60. The field investigation was conducted during multiple mobilizations between June and November 2009. These investigations were used to supplement previous investigations by URS Corporation and others.

From the results of this investigation, SOPUS has concluded:

- "Soil exposure does not pose a risk, except with respect to construction workers along the pipeline corridor. These potential risks are managed via safe work procedures.
- No LNAPL product (*separate phase petroleum product*) has been measured in the village.
- Exposure to groundwater does not pose a risk. Only a limited area of groundwater in the Village exceeds Class I screening criteria. The groundwater ordinance prevents exposure via prohibition on water wells. The use of production water, and Part B permit-required pumping at the WRR has a significant impact on the capture and treatment of groundwater in the area.
- Soil vapors do not appear to pose a risk; however two specific areas will be further evaluated."

As a result of this work and previous investigations, SOPUS submitted recommendations for additional work. The results of the work will be presented to the Illinois EPA along with a revised "Conclusions and Recommendations" in a brief letter report.

Shell Oil Products US May 5, 2010

DISSOLVED PHASE GROUNDWATER INVESTIGATION AND P-60 FREE PHASE PRODUCT DELINEATION

Roxana, Illinois

VOLUME II Appendix A - H

Prepared for:

Shell Oil Products US 17 Junction Drive PMB#399 Glen Carbon, Illinois 62034

February 2010



URS Corporation 1001 Highlands Plaza Drive West, Suite 300 St. Louis, MO 63110 (314) 429-0100

Project 21562289.00010



PHOTOGRAPHIC LOG

Client Name:

Shell Oil Products US

Site Location:

Project No.

Roxana, Illinois

21562289

Photo No.

Date: 07/17/09

Description:

REDI crew setting up the air vac system to perform borehole clearance.



Photo No.

Date: 07/17/09

Description:

REDI crew performing borehole clearance using an air vac system.





PHOTOGRAPHIC LOG

Client Name:

Shell Oil Products US

Site Location:

Project No.

Roxana, Illinois

21562289

Photo No.

Date: 07/22/09

Description:

Locations ROST 9, GWP-7, and VMP-4 backfilled with sand after borehole clearance was completed and prior to drilling activities.



Photo No.

Date: 07/22/09

Description:

Fugro performing CPT/ROST activities at the site.





PHOTOGRAPHIC LOG

Client Name:

Shell Oil Products US

Site Location:

Project No.

Roxana, Illinois

21562289

Photo No.

Date: 08/28/09

Description:

Fugro crew advancing CPT/ROST probes at location ROST-08.



Photo No.

Date: 08/26/09

Description:

Soil cores recovered during drilling and soil sampling activities at GP-10.





PHOTOGRAPHIC LOG

Client Name:

Shell Oil Products US

Site Location:

Project No.

Roxana, Illinois

21562289

Photo No.

Date: 08/24/09

Description:

Soil cores recovered during drilling and soil sampling activities at GP-8.



Photo No.

Date: 08/26/09

Description:

Hollow Stem Auger Rig being used during vapor point installation activities at location VMP-16.





PHOTOGRAPHIC LOG

Client Name:

Shell Oil Products US

Site Location:

Project No.

Roxana, Illinois

21562289

Photo No.

Date: 08/29/09

Description:

Split spoon containing soil recovered during vapor point installation activities at location VMP-9.



Photo No. 10

Date: 08/11/09

Description:

Vapor monitoring point consisting of four stainless steel ports with 6-inch stainless steel screens at location VMP-12.





PHOTOGRAPHIC LOG

Client Name:

Shell Oil Products US

Site Location:

Project No.

Roxana, Illinois

21562289

Photo No.

Date: 07/27/09

Description:

REDI crew advancing a 4-foot long, mill-slotted sampler using a Geoprobe® hydraulic push system at groundwater profiling location GWP-6.

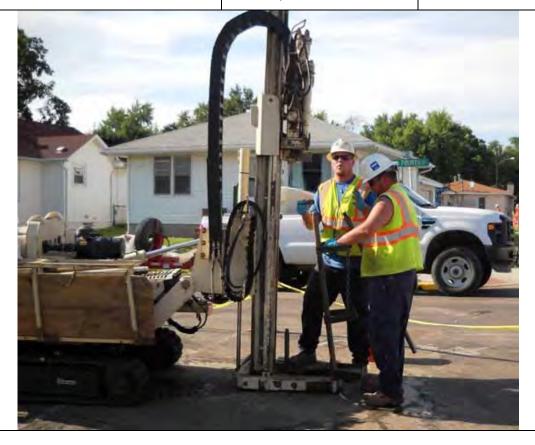


Photo No.

Date: 07/27/09

Description:

Set up of groundwater profiling pump and equipment at location GWP-7.





PHOTOGRAPHIC LOG

Client Name:

Shell Oil Products US

Site Location:

Project No.

Roxana, Illinois

21562289

Photo No.

Date: 08/19/09

Description:

REDI personnel backfilling borehole GWP-7 after completion of groundwater profiling activities.



Photo No.

Date: 08/19/09

Description:

Locations in which a permanent feature was not installed were backfilled and then graded with asphalt.





PHOTOGRAPHIC LOG

Client Name:

Shell Oil Products US

Site Location:

Project No.

Roxana, Illinois 21562289

Photo No.

Date: 10/27/09

Description:

Leak testing performed on the sample train prior to sampling of vapor port.



Photo No. 16

Date: 11/03/09

Description:

Set up of helium leak check shroud (containing summa canister, tedlar bags, valves and tubing) used to isolate sample set up from the atmosphere.



AIR KNIFING FORM SHEET _ l_ of / OBSERVED BY: JOB NUMBER: AIR KNIFING EXCAVATION ARRANGEMENT: B. Craften
DATE COMPLETED: DATE STARTED: 30 June 09 30 June 09 BORING LOCATION: B-8 SUBCONTRACTOR: REDI REASON FOR AIR KNIFING AT THIS LOCATION: clear underground utilities and/or obstructions prior to drilling. AIR KNIFE 1 Description/Location/Observations: 0"-6" bgs, gravel ~ /4-3/4" AIR KNIFE 2 Description/Location/Observations: ~6" bys -> because soil. AIR KNIFE 3 Description/Location/Observations: Complete boring at ~ 5' bgs. No utilities observed AIR KNIFE 4 Description/Location/Observations:

UKS	
AIR KNIFING FORM	

		AITTIM	indo i Ordin	""SHEET/_ of /
AIR KNIFING EXCAVATION	ON ARRANGEMENT:	- (-	JOB NUMBER:	OBSERVED BY:
		*		B. Crafton
	25 16 · · · ·		DATE STARTED:	DATE COMPLETED:
		~	30 June 09	30 June 09
	ς.	***	BORING LOCATION:	
			1 vm	0 ~ 10
			SUBCONTRACTOR:	
1	~		RE	DI
REASON FOR AIR KNIFII		·		
			•	
	To clear	underground	utilities and/	Not to
	1 -	1.1196	writtes and I	or Oletructions
	brion to	dailing.		
	.¥			
	-			:
AIR KNIFE 1				
Description/Location/Obser	rvations:			
	0" (" L	5/1/20	00	
	0"- 6" bso.	2011 / g ra	27	*
		•		
AIR KNIFE 2				
Description/Location/Obser				
Δ.	+ ~ 7.3" 1.	~ ~ 7.01 ~	-6-8" puc pipe	discovered, which .
•	J 62	2 -241.	6-9 bec byte	
	trends Ea	st to west.	(1-00 + na	
			(were step - off	~5' to NW).
AIR KNIFE 3				
Description/Location/Obser	vations:			
	c 1.1.	Λ. ν. Θ.	+ ~ -01.	1
	Complete	His Kuiting	at ~ 5ft who obstruction	logs.
		(No C	who abehuotin	
		(100 4	- Contraction	1 (LILLIAN)
ID KNISE 4			<u>-</u>	
AIR KNIFE 4 Description/Location/Observ	vations:			•
zescription/Location/Cosen	rauviis.			
			è	
	•			
•	*			

	AIR KNIFING FORM	SHEET / of /
AIR KNIFING EXCAVATION ARRANGEMENT:	JOB NAME & NUMBER: Dissolved Phase & P-60 21562175	OBSERVED BY: B. Crafton
	DATE STARTED:	DATE COMPLETED:
	30 June 09	30 Jane 09
	BORING LOCATION:	
	VMP-12	
	SUBCONTRACTOR: Roberts Environme	ental Drilling, Inc.
REASON FOR AIR KNIFING AT THIS LOCATION:	utilities and/or obstruction	ent prior
10 Clear Whitergrown		, .
to drilling	operations.	
AIR KNIFE 1		
Description/Location/Observations:		
0~6" pea gi	rave)	
′ √		
AIR KNIFE 2		
Description/Location/Observations:	•	
26" - become	s soil	
. 3		
AIR KNIFE 3		
Description/Location/Observations:	- 2.	
Conplete air tenif	fing at ~ 5ft bgp.	
	No utilities	exountered
AIR KNIFE 4		
Description/Location/Observations:		
	·	

SHEET __/_ of/ AIR KNIFING FORM AIR KNIFING EXCAVATION ARRANGEMENT: JOB NUMBER: B. Crafton

DATE COMPLETED: DATE STARTED: 30 June 09 30 June 09 BORING LOCATION: VMP-13 SUBCONTRACTOR: REDI REASON FOR AIR KNIFING AT THIS LOCATION: To aftern underground wtilities and/or abstructions prior to drilling operations AIR KNIFE 1 Description/Location/Observations: 0~6" bgs grand ~ 14-3/4" AIR KNIFE 2 Description/Location/Observations: 6" - becomes soil AIR KNIFE 3 Description/Location/Observations: Carplete air brifing at ~ 5 ' bys. No utilities observed AIR KNIFE 4 Description/Location/Observations:

SHEET / of OBSERVED BY: AIR KNIFING EXCAVATION ARRANGEMENT: JOB NAME & NUMBER: Dissolved Phase & P-60 B. Crafton

DATE COMPLETED: 21562175 DATE STARTED: 1 July 09
BORING LOCATION: 1 July 09 B-7 SUBCONTRACTOR: Roberts Environmental Drilling, Inc. REASON FOR AIR KNIFING AT THIS LOCATION: To clear underground utilities and/or obstructions prior to drilling. AIR KNIFE 1 Description/Location/Observations: 0~3" bgs. grass AIR KNIFE 2 Description/Location/Observations: 311 -> becomes soil AIR KNIFE 3 Description/Location/Observations: End of air Knifing @ ~51 bgs. No utilities observed AIR KNIFE 4 Description/Location/Observations:

URS AIR KNIEING FORM

AIR KNIFING FORM OBSERVED BY: AIR KNIFING EXCAVATION ARRANGEMENT: 🗩 JOB NAME & NUMBER: Dissolved Phase & P-60 B. Crafton

DATE COMPLETED: 21562175 DATE STARTED: 1 July 09
BORING LOCATION: 1 July 09 VMP-11 SUBCONTRACTOR: Roberts Environmental Drilling, Inc. REASON FOR AIR KNIFING AT THIS LOCATION: To clear underground utilities and/or obstructions prior to drilling. AIR KNIFE 1 Description/Location/Observations: 0~3" bgs, grass. AIR KNIFE 2 Description/Location/Observations: 3" -> becomes soil AIR KNIFE 3 Description/Location/Observations: End of air Knifng @ ~5' bas AIR KNIFE 4 Description/Location/Observations: No utilities observed

SHEET ____ of ___

AIR KNIFING EXCAVATION ARRANGEMENT:	JOB NAME & NUMBER:	OBSERVED BY:
	Dissolved Phase & P-60	B. Crafton
·	21562175 DATE STARTED:	DATE COMPLETED:
5		1 July 08
[₹] &	1 July 09	1501904
	BORING LOCATION:	
	Vmp	-15
	SUBCONTRACTOR:	<u>;</u>
	Roberts Environmen	tal Drilling, Inc.
REASON FOR AIR KNIFING AT THIS LOCATION:		
	1500	
To clear underground	utilitées and/or o	bstacles
prior to drilling		
5		
AIR KNIFE 1		
Description/Location/Observations:		
0- 12" bgo 14-2"	cravel compacted	
J 3,0 3,	•	
•		
_		
AIR KNIFE 2		
Description/Location/Observations:		
~ 1 -> become soil.		
•		
AIR KNIFE 3		
Description/Location/Observations:		
End of boxing at ~ 1		
Chall by at ~ 1	0' bas X 12'	diameter
Chart haking		
AIR KNIFE 4	ies observed.	
Description/Location/Observations: No んりにか	(4)	
		•

AIR KN	IFING FORM	SHEET / of /
AIR KNIFING EXCAVATION ARRANGEMENT:	JOB NAME & NUMBER: Dissolved Phase & P-60 21562175 DATE STARTED: TOLY OP BORING LOCATION: ROXANA Pub SUBCONTRACTOR: Roberts Environment	OBSERVED BY: C. Smith DATE COMPLETED: 7 July 09 1/1c Works
Clear underground obstacles prior to	ì	tilities found)
AIR KNIFE 1 D'din 5 bys B-7 relocated posseription/Location/Observations: B-7 relocated posseription/Location/Observations: B-7 relocated posseries appears to be junk full lines inspected by street	Roxana Public Jeff Adams	Works to inspect
Description/Location/Observations: VMP-11 Relocate Small metal pipe possibly appears to be junk fill 1/115 Aspected by Street AIR KNIFE 3 Description/Observations: No utili	copper	
AIR KNIFE 3 Description/Location/Observations: AIR KNIFE 4 Description/Location/Observations:	ties found :	
Description/Location/Observations.		·

	AIR KNIFING FORM	1.1
AIR KNIFING EXCAVATION ARRANGEMENT:	JOB NAME & NUMBER:	SHEET of OBSERVED BY:
ANT THE EXOCUTION PROCESSING.	Dissolved Phase & P-60 21562175	C. Smith
`	DATE STARTED: 8 July 09	B July 09
	BORING LOCATION:	
·	WRR North	Property
	SUBCONTRACTOR: Roberts Environn	nental Drilling, Inc.
REASON FOR AIR KNIFING AT THIS LOCATION:	•	·
Locate utilitie	es for installationing wells	on
of monite	oring wells	•
		<u> </u>
·		· · · · · · · · · · · · · · · · · · ·
AIR KNIFE 1 Description/Location/Observations: 205T-\$13/	WRR Property No.	rth
no ufilities found.	gravel area by	Wegman trailer
	Suning Into	hole with
totack only subst	fance with oil od	or
AIR KNIFE 2 Description/Location/Observations: # ROST 13 /	WRR North Pro	perty by frailer
Description/Location/Observations.	5' bgs then quit	to
12" dia 10 bys drilled to 3 empty vac	truck/ resume a	ur Knife (9 July)
no obstruc	truck resume a	z"dia.
AIR KNIFE 3	utilities found	
Description/Location/Observations:		
* ROST-13 r	elocated due to g where box tru	o bollard
obstructing	g where box tru	ck needs
te be		
AIR KNIFE 4		·
Description/Location/Observations:		
,	•	

	AIR KNIFING FORM	1
AIR KNIFING EXCAVATION ARRANGEMENT:	SHEET JOB NAME & NUMBER: OBSERVED BY:	_ of
	Dissolved Phase & P-60 21562175	
	DATE STARTED: DATE COMPLETED: 9 July 09	
	war North Property	
	SUBCONTRACTOR: Roberts Environmental Drilling, Inc.	
REASON FOR AIR KNIFING AT THIS LOCATION:	•	
locate		
to special i	underground utilities for installation	
boring 1	installation	
· ·		
	[No whilities located]	
AIRKNIFE 1 12"dia, 10"bgs ROST-16:/	Gravel area West of tank A-27	
Description/Location/Observations: Soll IS black	Gravel area West of tank A-27 by fence abouting Chaffer St.	
throughut encountered	1 12" corrugated metal pipe appears to be hole 2' west per J. Adams phone conve	c t
		· , , , , ,
bottom seeping in Timished More 48 10	o'bs 12"dia, no obstructions found	
Description/Location/Observations:	Gravel area east side of road to e of ROST 16 trace 5, soil brown to black @ 5'bgs while color wil some black mike	a5t
all clear to 51 ms	: Soil brown to black @ 5/695	,
5' bgs to 10' bgs bro	wn in color wil some black mike	d14
Lho htilities locat	f ca)	
AIR KNIFE 3 ROST 18 97	ravel area south of intersection of M Street \$ 12t st./East of as, soil brown with traces black sto 10'bgs soil same as about throughout	اماما
Description/Location/Observations: [Z'clia, 10/45 all clear to 5' be	of M Street & 127 st, East of	15T 5T.
is one ingrall clear to 5 ba	Lo 101 bac soil same as above	
Ino utilities	throughout	
AIR KNIFE 4	, located	-
Description/Location/Observations:	± 1	
	·	
,		

AIR KN	IFING FORM / /
AIR KNIFING EXCAVATION ARRANGEMENT:	SHEET <u>1.</u> of <u>1.</u> JOB NAME & NUMBER: JOBSERVED BY:
THE DOWNSON WOULD THE THE	Dissolved Phase & P-60 21562175 DATE STARTED: DATE COMPLETED:
	10 July 09 10 July 09
	WKR North Property
	SUBCONTRACTOR: Roberts Environmental Drilling, Inc.
REASON FOR AIR KNIFING AT THIS LOCATION:	Sust south of evegmen Thailer west of bank A28
to clear n	tilities for
well instal	llation
	. X
Description/Location/Observations: Soil Brown wolfBlack traces to 12" dia hold 10 bgs	south of Wegman Tmilers West of tank #28 5' bgs Hyebocarbon vapors from 5' bgs to 10' bgs fly black in color from 5' bgs to 10' bgs
8	
Description/Location/Observations:	Wegman trailers by smoking area
(2" dia, hole 5' bgs to 10' bgs s	in color to 5' bgs/little vapors
No utilities f	ound
AIR KNIFE 3 Description/Location/Observations: RDST 17 / Dest of Function	tank AZI between chaffer st.
12" la 1 1 Soil dark gray	throughout to 10' bgs
10' bgs [no utilities for	sund
AIR KNIFE 4 ROST-12/ Driveway Description/Location/Observations:	to North Prop. OM Building in center
soil brown wl	black spots to 181 bas
le dia hole Ino utilities	found

SHEET / of 2 OBSERVED BY: JOB NUMBER: AIR KNIFING EXCAVATION ARRANGEMENT: C. Smith 21562175 DATE SŢARTĘD: 7/13/09 WRR North Property Mobil 50 SUBCONTRACTOR: Roberts Drilling REASON FOR AIR KNIFING AT THIS LOCATION: to locate withties for drilling and well installation Observations: In gravel east of tence
Silful Sudfill Oth 2.5' bgs black in color with trace gravel
Silful CANY 2.5' to 10' bgs black in color with some gravel AIR KNIFE 1 Description/Location/Observations: 10' bas VMR-16/ South west of bridge to WER North Prop. AIR KNIFE 2 Description/Location/Observations: VMP-16/ Southwest of bridge to WRR North Arg.
In fenced area (Aneline station)
1.5' to 3.5' 5.1ty 8400 Sand Filly moist, low plastic
gray wi some gravel
3.5' to 10' sity CLAY gray, wi some gravel AIR KNIFE 3 Description/Location/Observations: 3" asphalt 2" BOW gravel FILL 12" dia. no utilities found *VMP-16A / 5' East of VMP-16 * Renamed GP-6 see sht. 1 of 4 on 7/4/09 Description/Location/Observations: 6" asphalt 6" dias 6" to 12" hand anger CRA: gravel FILL air monitor PID 493 ppm 101 has 2' to 2'-6" gray, most, the place, silty SAND us trace

air monitor PID 596 ppm

SHEET 2 of 2

AIR KNIFING EXCAVATION ARRAN	IGEMENT:	JOB NUMBER:	OBSERV	_ •
		2156217		Smith
		DATE STARTED: 7/13/09		MPLETED: 3 D. 9
		BORING LOCATION:	1. 0 1	1
			th Propert	y/Mobil 50
		SUBCONTRACTOR: REPI		
REASON FOR AIR KNIFING AT THIS	S LOCATION:			
	to locat	e utilities and well	for install	·
AIR KNIFE 1	*/kA cont. 4'to4i6" enc * moreco	same as ountered so hole 5' son	sheet 1 of teel pipe south w th of UM new hole	est of P-16e
AIR KNIFE 2 Description/Location/Observations:	* Renamed 6			
AIR KNIFE 3		14.		
Description/Location/Observations:			• • • • • • • • • • • • • • • • • • •	
		•		
	v.*.			1 20
		No. B		
AIR KNIFE 4				
Description/Location/Observations:				
	•			
			• ,, ,	

OBSERVED BY: JOB NUMBER: AIR KNIFING EXCAVATION ARRANGEMENT: C. Smith 21562175 7/14/69
BORING LOCATION: WRR N. Property / Mobil 50 REDI REASON FOR AIR KNIFING AT THIS LOCATION: locate utilities for mus installation *Formerly called VMP-16A bout relocated due to utility found on 7/13/09

**SP-6 | West of Bridge at N. fencelme of Mobil 50 AIR KNIFE 1 Description/Location/Observations: 6" dia 16 bgs 12" gravel FILL whand 18" to 10'bgs, moist, sense, fine grained, gray, SAND wil trace PID readings 6" to 12" bgs - 393ppm with gravel + 0
110 to 2' to 2'-6" bgs - 250ppm 2' bgs NAME OF THE PARTY Description/Location/Observations: 4' to 4'-6" bgs - 761 ppm 6' to 6'-6 bgs - 1866eppon 8 to 8'-6 bgs - 1730 ppm \$16.000 CO Description/Location/Observations: AIR KNIFE 4 Description/Location/Observations:

AIR KNIFING FORM

SHEET 2 of 4

AIR KNIFING EXCAVATION ARRANGE	EMENT:	JOB NAME & ŅU Dissolved	MBER; Phase & P-60	OBSERVED BY:	1
		215 DATE STARTED:	62175	DATE COMPLETED:	; ·
		7/14/0	9	7/14/09	
		BORING LOCATI		Property	
		SUBCONTRACTO R	· · · · · · · · · · · · · · · · · · ·	ental Drilling, Inc.	
REASON FOR AIR KNIFING AT THIS I	LOCATION:				
	locate ut	filities for	mw 1	nstallatio	
AID VALLES 1 / II Jun 10/has	: CD. 8/ Exc	Las Acobalt	Roadwas	. heven la	tente Are
Description/Location/Observations:	6 GP-8 Eas-	of Asphalt of today, very of	off, low p	lastic, differen	MAC, ALL
	2'to 2'6"hgs-moi	dk brown st, dk. brown	stiff lo	ow plasticity	w/ 50 m
AIR KNIFE 2 Description/Location/Observations:	f' to 41-6" bgs-m	ioist, designayish l	etoton, sti	ff, low plas	ticity, L
6	'to 6'-6" bgs-r	noist, reddish brow	n, stiff,	low plasticity	CLAY W
AIR**NIFE 2	4081-6" bgs-m	015/, M. gray, 1	ned. deuse,	fine gramed,	silly SAWI
	PID readings	0-1-"bas -	Atm.		•
1	21	to 2'6" bgs - 3	24.8 ppm	1	
		to 4'6" bgs - 4	-		
		106-6" hgs - 2			
Description/Location/Observations:		68'-6" bgs -	• •		
	ho atili	ties found	1		

A	AIR KNIFING FORM	· 4 4
AIR KNIFING EXCAVATION ARRANGEMENT:	JOB NAME & NUMBER:	SHEET t of T
	Dissolved Phase & P-60	C. Smith
	21562175 DATE STARTED:	DATE COMPLETED:
	DATE STARTED.	This completed:
	1/14/01	1/14/09
	BORING LOCATION:	, ,
	WRR N. Pr	openty
	SUBCONTRACTOR:	
	Roberts Environm	nental Drilling, Inc.
REASON FOR AIR KNIFING AT THIS LOCATION:		
Locate un w 1r	utilities for installation	
3" aphalt	outh of OM Buildi	
6" to 12" bgs - di 9 2' to 2-6" bgs - on	ry, grey, loose, medium to ravely FILL wi some onst, dk. brown, stiff, li ul trace gravel	silt on plasticity silty CL
ARKNIFEZ L	ul trace gravel	
6 to 6-6" CLAY	oist, greenish brown, st wl some silt	itt, low plasticity,
Whole has - m	.o 1st, dk. brown to gmy, s	stuff low plasticity,
	ilty CLAY	
Description/Location/Observations 8 + 8'-6" bgs-m SILTY CLAY W	.oist, dk. brown to grey	, soft, low plasticity
PID Reading	trace 15	
AIR KNIEF 4 6"-12" bg 5 - "	22. (ppm -	
Description/Location/Coservations. 2140 2-4 bgs - 11	09 ppm ho	utilities (
4' to 4'-6"hgs -6	• • • • • • • • • • • • • • • • • • • •	sund
9' to 8'-6"bgs - 6	12 ppm	

SHEET 3 of 4

AIR KNIFING EXCAVATION ARRANGEMENT:	JOB NAME & NUMBER: Dissolved Phase & P-60 21562175 OBSERVED BY: C. Swith
	DATE STARTED: DATE COMPLETED: 7/14/09
	WRR N. Property
	SUBCONTRACTOR: Roberts Environmental Drilling, Inc.
REASON FOR AIR KNIFING AT THIS LOCATION:	
locate utiliti	es for mw installation
AIR KNIFE 1 / " JIA 18" . C. D-9 CAPANA	area South of M St. (2) mtersectus
Description/Location/Observations:	area South of M St. @ Intersection St. and 1st St.
6" to 12" grave (FILL work	wl trace silt
2' to 2'-6" bgs - mole	st to dry, dk. smy stiff, low plasticity
AIR KNIFE 2- 51	LT w/ trace grave!
4' to 4'-6" b95 - more CLA	st, dk. brown , stiff, low plasticity, w/ some silt
6' to 6'-6" bgs-mok	st, stiff, low plasticity, SILT
AIR KNIFE-3	
81 to 8 -6" 195-MO SILTY	ist, greenish brown, dense, fine grained SAND
PID readings	
Description/Location/Observations:	
2' to 2-6"hgs-	
4' to 4'-6"bgs - 6' to 6'-6"bgs -1	
8' to 8'-6" bgs-	100 pp
0 40 0 4 My -	177 [

SHEET 1 of Z AIR KNIFING EXCAVATION ARRANGEMENT: JOB NAME & NUMBER: Dissolved Phase & P-60 21562175 DATE STARTED: 7/15/09 Roxanna Village SUBCONTRACTOR: Roberts Environmental Drilling, Inc. REASON FOR AIR KNIFING AT THIS LOCATION: locate utilities for mw installation GWP-11 | Middle of Alley between 1st st. ? 2nd St. AIR KNIFE 1 Description/Location/Observations: O'to 5'bgs - driller comments seems to be silty CLAJ
easy to get through, brown in color
moist, brown, soft, low plastic, silty CLAY
[no utilities found] 6"dia 5 b93 ROST-23/ West side of Alley between 1st st. & 2nd. st. AIR KNIFE 2 Oto 5'bgs - driller comments easy to get through moist, soft, low plastic, silty CLAY Description/Location/Observations: 6"dia. 5 bgs GWP-16/West side of Alley between 1st st, & 2nd st. O to 6"bgs - moist, dk. gray, soft, low plastic, gravely CLAY w/ sift

2' to 2'6"bgs - PID reading-1.7 ppm

[ho utilities] moist, brown, stiff, low plastic, CLAY wil trace silt 6 dia. GP-10 West side of Alley between 1st st. : 2nd st. AIR KNIFE 4 Description/Location/Observations: comments same AIR KNIFEZ 45 6" dia. 5'bas no utilities

> 41 to 416 bgs - PID reading - 3.0 ppm moist, reddish brown, stiff, low plastic, CLAY w/ trace silt

SHEET 2 of 2 OBSERVED BY: AIR KNIFING EXCAVATION ARRANGEMENT: OB NAME & NUMBER: Roxanna Roberts Environmental Drilling, Inc. REASON FOR AIR KNIFING AT THIS LOCATION: locate utilities for mw installation GWP-1 | East side of alley between 1st. ? 2nd st. AIR KNIFE 1 0'to 5'bgs - moist, H. brown, med. dinse, fine grained, SAND 6" dia. 5'655. no utilities found Proller comments 0 to 5'bgs easy appears to be SAND from AIR KNIFE 2 Description/Location/Observations: AIR KNIFE 3 Description/Location/Observations: AIR KNIFE 4 Description/Location/Observations:

AIR P	(NIFING FORM	1.3
AIR KNIFING EXCAVATION ARRANGEMENT:	JOB NAME & NUMBER:	SHEET of OBSERVED BY:
	Dissolved Phase & P-60 21562175	C. Smith
	DATE STARTED:	DATE COMPLETED: 7/16/09
Se Contraction	DODING LOCATION	111001
GWP-Z	Roxanna	1 11
VMP-1-O	SUBCONTRACTOR:	nental Drilling, Inc.
EASON FOR AIR KNIFING AT THIS LOCATION:		
	0	,
locate utilities	es for mw inst	allation
•		,
AIR KNIFE 1 GOP-2 East sid	e of Second St. @	Chaffer St.
Description/Location/Observations:	asy to get throug	L first 31 Bas
further down t	asy to get throng o 5'bgs becomes a . S.17y CLAY	stiffer
		7
l h	o utilities found	↓
AIR KNIFE 2 VMP-1/East side	of second st. 6	Chaffer St.
Description/Location/Observations: 6+6 hgs - PID re	eading 5.3 ppm	
011011111111111111111111111111111111111	ading O.Zppm	F
10 Cita	adias 0 5 mm	no atilities
•	- · ·	found
Annual ote 6" has - moist	dk. brown,	, low posticity, silty C.
	S Outlieb	
21 to 21-6" bgs - moist,	reddish brown, stiff, l	ow plasticity, CLAY will to
4' to 4'-6" bgs - moist, v AIR KNIFE 4 GWP-3/ Alley between	reddish brown, stiff, l	on plasticity, CLAYN to
AIR KNIFE 4 Description/Location/Observations:	a 2nd St. 9 3rd St,	east side @ Chaffer 5
Dreller comment	s easy to get	through to 3'bgs
6"dia. 5" bgs appears to be	sity CLAY wis	Trace sand
get through	r to ho	utilities found
get through		- HITTO SURVA
appears to be a	244 3 to 5 bgs	

AIR KNIFING FORM

SHEET 2 of 3

	SHEET <u>~</u> of		
AIR KNIFING EXCAVATION ARRANGEMENT:	JOB NAME & NUMBER: OBSERVED BY:		
ROST-1	Dissolved Phase & P-60 21562175		
No.	DATE STARTED: DATE COMPLETED:		
GWP-3	7/16/09 7/16/09		
	BORING LOCATION:		
	P		
	Roxuna		
VMP-2	SUBCONTRACTOR:		
	Roberts Environmental Drilling, Inc.		
REASON FOR AIR KNIFING AT THIS LOCATION:			
TELECOTT ON MINE AND AND EDG. MIGH.			
1. 10 . 1.1. five G	or mn installation		
locate utilities in	1		
	·		
	7		
	·		
	6 11 6 12/ 6 1 (0 0 14		
AIR KNIFE 1 ROST-I Alley be	tween 2nd ! 3rd St., East side @ Chaffer		
Description/Location/Observations:	pears to to be CLAY will trace suff		
no utilities Driller comments	Ray hard to get thought		
11 he 5 has an	nears to be CLAY wi		
	trace silt		
G"dia. 5'bgs			
air knife 2 VMP-2/Alley betw	een 2nd : 3rd St., East side @ Chaffe		
Description/Location/Observations:	easy to get through to		
In Liter County	A get many!		
100 willing 71 has ack for	wher affer 3' bgs to 5'bgs		
Inlund be be	silty CLAY to 31 bas turning		
appears.	igher after 3' bgs to 5'bgs silty chay to 3' bgs turning to chay		
12"dia. 5'bys	() 2478(
AIR KNIFE 3 GWP-12/Alley betw	oen 2nd : 3rd St., in middle of alley		
Description/Location/Observations:	and least through		
Driller commonts	easy to get through silty CLAY		
no utilities appears to be	silty CLAY		
\ \ound , , , , =1			
6" dia. 5'bgs.			
AIR KNIFE 4 GIOP+ 17 Alley between	een 2nd ? 3rd. st, west side of alloy		
Description/Location/Observations:	7		
1- III Duller comments	casy to get through		
he utilities present to be sittle (1)			
found (" die 5' bes	ι		
6" dia, 5 bas			

OBSERVED BY: JOB NAME & NUMBER: AIR KNIFING EXCAVATION ARRANGEMENT: Dissolved Phase & P-60 C. Smith 21562175 GWP-4 Koxanna SUBCONTRACTOR: Roberts Environmental Drilling, Inc. REASON FOR AIR KNIFING AT THIS LOCATION: locate utilities for mw installation ROST-4 East side of third st. @ Chaffer AIR KNIFE 1 Driller Comments mid range as far as difficulty air knifing appears to be a sandy SICT ul trace clay Description/Location/Observations: GWP-4/ East side of 3rd. St. @ Chaffer Driller comments mid range as far as difficulty our knifing appears to be a sandy SILT w/ trace AIR KNIFE 2 Description/Location/Observations: utilities 1 CLAY AIR KNIFE 3 Description/Location/Observations: AIR KNIFE 4 Description/Location/Observations:

AIR KN	IFING FORM	SHEET 1 of 2
IR KNIFING EXCAVATION ARRANGEMENT:	JOB NUMBER:	OBSERVED BY:
^	21562175	C. Smith
\	DATE STARTED:	DATE COMPLETED:
	7 17/69 BORING LOCATION:	7/17/69
GP-11)	Rokanna	;
ROST-Z	SUBCONTRACTOR:	
· PEO O () C	REDI	•
ASON FOR AIR KNIFING AT THIS LOCATION:		
	•	1
1. a. L		1.11.1.
socare unity	es for well u	stallatton
	•	
	· Branchis	
	y.	
	T 9.1 CI	
KNIFE 1 6 7-11 West state scription/Location/Observations:	or ord >1.	and a b
Contion/Location/Observations: OP-11 West side Oriller commen get through,	75 9011 15 N	be liky
	_	1
o"dia. 5 bys no wto	litres found	<u>}</u>
KNIFE 2 ROST-2 West Side		
Driller comments 2'	to 6" bgs - 0.1	o ppm
0 wilities Duller comments 2'	to 246"bgs - 6.2	2 ppm
found soil tough to 4"	to 4-6" bgs -0,2	2 00 M
e"dia, 5'bgs set through	,	-
cription/Location/Observations: Other bgs - moist, dk.	brown, stato ose, lou	placticy silty CLAY
o extrateos air ar more de.	brown wordstil Lut	still law plastic
2'to 2'-6"bgs -moist, dk.	The state of the	CLAY w/ sift
1. /5/2 4' to 4'-6" bas -march redal	ich heaven soft. lo	w plact u Costonale
KNIEF 4 PACT 20/4/11/2 The	Hay heleson Zu	1 st. Gardy CL
scription/Location/Observations:	aley respect see	441 st.
no whilities Driller comments,	100 16 2007 to	rest two fact
EXNIFE 4 Scription/Location/Observations: NO while of the scription/Location/Observations: No while of the scription/Location/Observations: The heroman heaveled appears to be six (or dia, 5 has	r to 5 hgs	CIAN So Elhar
round appears to be six	T in top and	CLAL 44 3 MJ3
au dia. 5'1995		

GWF-13 ROSFED ON

OBSERVED BY: JOB NAME & NUMBER: AIR KNIFING EXCAVATION ARRANGEMENT: Dissolved Phase & P-60 C. Smit ZOST-20 21562175 DATE STARTED: GUP-13 MŢ GWP-18 Roxanna ROST-19 Roberts Environmental Drilling, Inc. REASON FOR AIR KNIFING AT THIS LOCATION: locate whileties for well installation GWP-13 | Middle of alley between 3rd 1.4th St. AIR KNIFE 1 Driller commends easy to get through oto 2'bgs then becomes toughter to 5'bgs appears to go from silty CLAY to CLAY Description/Location/Observations: GWP-18 West side of alway between 3rd St. ? 4th St. AIR KNIFE 2 escription/Location/Observations: Driller comments easy to get through from 0' to 3' bas then becomes harder from 3' to 5' bas appears to be silty CLAY to CLAY ROST-19 West side of alley between 3rd st. ! 4th st. AIR KNIFE 3 Driller comments easy to get through from 0'to 3' bgs then becomes harder from 3'to 5'bgs Description/Location/Observations: appears to be sitty CLAY to CLAY Description/Location/Observations:

to the state of the

EROST-5, GWP-5, VMP-3 will be redone in same area relocated south due to gas line located in hole ROST-5 these holes will be cold patched after air knifing locations SHEET of A OBSERVED BY: AIR KNIFING EXCAVATION ARRANGEMENT: JOB NAME & NUMBER: Dissolved Phase & P-60 C. Santa ROST-5 GUP-5 Koxanha SUBCONTRACTOR: Roberts Environmental Drilling, Inc. REASON FOR AIR KNIFING AT THIS LOCATION: locate utilities for mw installation *See sheet 1.13 on 7/21/09 for relocated holes which will be used * GWP-5 | East sick of alley between 3rd St. ? 4th St. AIR KNIFE 1 Driller comments & bgs to 25 bgs easy Description/Location/Observation to get through 251 bgs to 5 bgs harder appears to be silt to 2.5' and clay to 5'by 5 * VMP-3 East side of alley between 3rdst. ? 4th St. PD readings - 0 to 6"bgs - 91.4 ppm AIR KNIFE 2 escription/Location/Observations: 2' to 2-6"bgs - 3.7 ppm 41 to 41-6" bg5 -2. Ppm VIR KNIFE 3 Description/Location/Observations: 0 to 6"bgs -2' to 2'-6" bys- Not finished due to hole 4' to 4'-6" b95 -* ROST-5/ East side of alley between 3rd St. \$ 414 9. Description/Location/Observations: found oranges line approx. 2", spoke with Marty Reynolds instructs is to leave hole open and he would inquire what it is with gas company

	AIR K	NIFING FORM	SHEET 2 of 2
AIR KNIFING EXCAVATION ARRANGEMENT:		OB NAME & NUMBER:	OBSERVED BY:
1057-2 1N		21562175 DATE STARTED:	DATE COMPLETED:
0 2		7/20/09	7/20/09
•	6 ROST-8	BORING LOCATION: ROYANNA	
	6 GWP-L	SUBCONTRACTOR: Roberts Environm	ontal Drilling Inc
REASON FOR AIR KNIFING AT THIS LOCATIO	N:	Roberts Environm	ental Drining, Inc.
		•	
100	ute utiliti	es for mw ins	tellation
		·.	
AIR KNIFE 1 Description/Location/Observations:	-4/ East sid	e of 412 St. @	Chaffer
Drille	er comments	to be silty o	hrough to
no utilities 5'	ogs, appears	to be sitty	.LAY (1008E)
found 6" dia. 5		•	
AIR KNIFE 2 ROST-	8/East sid	e of 4th st. @ nts easy to ge	Chaffer
Description/Location/Observations:	ller comme	nts easy to ge	tthrough to
	gs, appears	to be silty chi	ty (loose)
tound 6"dia.	5 bgs		
AIR KNIFE 3 ROST	-7 Middle a	of 4th St.	6" dea. 5'bg3
Description/Location/Observations:	er comment	ts easy to get	through Crom
no utilities o Lo	31 bgs and	ts easy to get a harder from	3'bgs to 5'bgs
(found) app	curs to be	e silty CLAY to m 3"bgs to 5 c of 4th St.	sings thek
AIR KNIFE 4 ROST-	-6/West sid	c of 4th St.	
Description/Location/Observations:	er comment	s easy to get	through from
Ind utilities of	3'bys and	harder from	3 bys to 3 mgs
Gund appe	char fro	s easy to get harder from silty CLAY m 3 bgs to 5	b95

SHEET 1 of 3

AID VAILEING CYCAVATION ADDANGEMENT	JOB NAME & NUMBER: OBSERVED BY:	
AIR KNIFING EXCAVATION ARRANGEMENT:	Dissolved Phase & P-60 C. Sm1+4	
2059-5 UMP-3 GOP-5 TN 0 (R) O(R) 0 (R)	DATE STARTED: DATE COMPLETED: 7/21/09 7/21/09	
O(R) O(R) O(R)	BORING LOCATION:	
	Roxanna	
	SUBCONTRACTOR: Roberts Environmental Drilling, Inc.	
REASON FOR AIR KNIFING AT THIS LOCATION:		
locate utilities	for well installation	
(7/20/09)		
*Orange pipe found in ROST-5 while Ameren gas line, ROST-5/VMP-3/GNP-	sh Marty Reynolds conterms 13 5 relocated south (Monty Reynolds approves mow locations onsite)	
TRUST - S CRIT CAST S	lat of whity between stars. I fix still	۸.
Description/Location/Observations: Dr. Her comments e	asy to get through to @Chaf	Pe
no utilities 31 bgs then become	harder from 3 to 5 bgs	
6"dia. 5'bas then dense	loose silty CLty to 3' bgs CLty from 3' to 5' bgs	
	of alley between Brelst. +4+2 St. @ Charfer	۲
Description/Location/Observations:		
יין און אין אין אין אין אין אין אין אין אין אי	-6"bg = - 3.7 ppn	
10 and 11 to 4'.	-6 bgs - 211 ppm	
Description/Location/Observations:	bys - moist, dk. grey, loose, medium to coarse, RAVEL	
z'to z'-c"bgs - moist,	dk. grey, staff, low plastic, sitty CLAY	
4' to 4'-4 bgs - worst, b	prown, very siff low plastic, CLAY wl sil-	+
AIR KNIFE 4 # GWP-5(P) East side	of alky between 3rd St. : 4th St, @ Ch. Ac	r
Description/Location/Observations: Driller Comments	of alky between 3rd St.: 44x St. @ Ch. Afer easy to get through to is harder from 3' to 5' bgs	
no utilities 3' bgs then become	is harder from 3' to 5' bgs	
I found annears to be to	ose stry city to 3 bas	
6"dia 5'bgs then dense CL	AY From 3 to 5'bgs	

SHEET 2 of 3 OBSERVED BY: JOB NAME & NUMBER: IR KNIFING EXCAVATION ARRANGEMENT: Dissolved Phase & P-60 C. Snith 21562175 N VMP-4 DATE COMPLETED: 121/09 GWP-7 Koxanna 6WP-14 SUBCONTRACTOR: Roberts Environmental Drilling, Inc. REASON FOR AIR KNIFING AT THIS LOCATION: locate whilities for well installation GWP-7/AEast side of Alley between 4th St. ! 5th St. @ chaffer Driller comments easy to get through from 0 to 4' hgs then becomes harder from 4' to 5' b 5s AIR KNIFE 1 Description/Location/Observations: utilities! tears to be silty CLAY from 0 to 4' bgs then becomes stiff CLAY 4' bgs to 5' bgs appears VMP-4/Eust side of Alley between 4th St.: 5th St. @ Alley
Driller comments of to 4'bgs easy to get
through the 4' to 5'bgs becomes harder
appears to be sandy SILT from 0 to 4'bgs then IR KNIFE 2 viscomes CLAY from 4 bgs to 5 bgs ROST-9/East side of alley between 4th St. : 5th St. @ chaffer AIR KNIFE 3 Driller comments easy to get through from 0 to 4'bgs then becomes harder from 4' to 5'bgs appears to be silty CLAY from 0 to 4'bgs then becomes stiff CLAY 4'bgs to 5'bgs utilities found GWP-14/Middle of alley between 4th St. : 5th St. o' to 2.5'bgs then becomes hereder from 2.5' to 5'bgs appears to be silty CLAY from @ to 2.5' bgs the becomes CLAY from 2.5' to 5' bys

URS

AIR KNIFING FORM

SHEET 3 of 3

GWP-19 AN	GEMENT:	•	DATE STAR	CI/09 CATION: ROXALLA CACTOR:	DATE CO	Sout	,
REASON FOR AIR KNIFING AT THIS		utilities	for a	well m	stallati	Ø ∧ ;	
AIR KNIFE 1 Description/Location/Observations: no utilities found 6"dia. 51 hgs	GWP-19 Driller then appear then	comments becomes to be yecomes	e of all easy harder silty stiff	to get r from CLAY for CLAY f	through 4' to von 8'	5th 5t 60' 5' bg to 4' b	to f bg 5 95 55
AIR KNIFE 2		·			. :	•	
AIR KNIFE 3	,		•				
AIR KNIFE 4 Description/Location/Observations:							

SHEET of OBSERVED BY: JOB NAME & NUMBER: AIR KNIFING EXCAVATION ARRANGEMENT: Dissolved Phase & P-60 C. Smith o Post-21 21562175 DATE COMPLETED: ΛN 122/09 VMP-5 Koxanna GWP-9 POST-10 Roberts Environmental Drilling, Inc. REASON FOR AIR KNIFING AT THIS LOCATION: locate utilities for well installation ROST-21/East side of 5th St. @ Chaffer AIR KNIFE 1 Driller comments easy to get through from 0 to 4'bgs then becomes harder from 4' to 5' bgs appears to be silty CLAY from 0 to 4'bgs Description/Location/Observations: no utilities found then becomes stiff CLAY from 4' to 5' bgs GWP-8 East side of 5th St. @ Chaffer Driller comments easy to get through from Dto4'h 95 then becomes harder from 4' to 5' bg 5 appears to be silty CLAY from 0 to 4' bg 5 Description/Location/Observations: no utilities found then becomes stiff CLAY from 41 to 5' bgs 6" dia. 5'bgs ROST-10 East side of alky between 5th & 4th St. @ chaffer AIR KNIFE 3 Driller comments easy to get through from 0 to 5'bgs, appears to be silty CLLY to 4'bgs then sandy CLLY from 4'to 5'bgs Description/Location/Observations: no ntilities found 6"dia. 5" bgs GWP-9 East sick of alley between 5th : 6th st. @ Chaffer AIR KNIFE 4 Description/Location/Observations: Driller comments easy to get through from no utilities 0 to 5'bgs, appears to be silty CLAY to 4'bgs then sandy CLAY from 4' to 5'bgs found

SHEET 2 of 3 JOB NAME & NUMBER: IR KNIFING EXCAVATION ARRANGEMENT: Dissolved Phase & P-60 C. Smith CWP-9 ROST-10 21562175 DATE COMPLETED: 7/22/09 VMZ-5 CP-12 Roxanna ROST-24 WP-20 Roberts Environmental Drilling, Inc. REASON FOR AIR KNIFING AT THIS LOCATION: 🦼 locate utilities for well installation VMP-5/East side of alley between 5th & 6th St. @ chaffer AIR KNIFE 1 PID Readings - 0 to 6"bgs - 0.5 ppm 2' to 2'-6" bgs - 0.6 ppm 4' to 4'-6"bgs-0.5ppm 12" dia, 5' bgs 0 to 6" bgs - moist, dk brown, stiff, low plastic, silty CLAY w/ trace Description/Location/Observations: 21 to 2'-6"bgs-moist, reddish brown, stiff, low plastic, silty CLAY 41 to 41-6" bgs-moist, red, 8t off, low plastic, sandy CLAY

GWP-15 | Middle of alley between 5th st. 1 6th St.

Driller comments easy to get through from 0 to 3'bgs

pharder to get through from 3' to 5'bgs

appears to be silty CLAY from 0 to 3'bgs

heromes CLAY from 3' to 5'bgs AIR KNIFE 3 Description/Location/Observations: ufilities) found GWP-20/ west side of alley between 5th 4 6th St. AIR KNIFE 4 found metal gas line about 2'bgs
Marty Reynolds comes to site and instructs
us to move hole approx. 3' north in grassy
area adjacent to pavement 7/22/09 15:00 Description/Location/Observations: Also moved are GP-12

information

SHEET 3 of 3 OBSERVED BY: JOB NAME & NUMBER: AIR KNIFING EXCAVATION ARRANGEMENT: C. Smith Dissolved Phase & P-60 21562175 6P-12 DATE COMPLETED: 7/22/09 Loxama Roberts Environmental Drilling, Inc. REASON FOR AIR KNIFING AT THIS LOCATION: locate utilities for well installation Description/Location/Observations: Description/Location/Observations: relocated

AIR KNIFE 2

Description/Location/Observations: relocated Driller comments easy to get through from 0 to 4'bg =
then becomes narder from 4' to 5' bgs
appears to be silty CLAY from 0 to 4' bgs
then becomes CLAY from 4' to 5' bgs *GWP-20 Relocated West side of alley between 5th 16th 5t.

Driller comments easy to get through From 0 to 4'bgs
then becomes harder from 4' to 5'bgs
appears to be silty CLAY from 0 to 4'bgs
then becomes CLAY from 4' to 5'bgs AIR KNIFE 3 Description/Location/Observations * see shet 2 of 3 for relocation justification AIR KNIFE 4 Description/Location/Observations:

URS

AIR KNIFING FORM

JOB NAME & NUMBER: IR KNIFING EXCAVATION ARRANGEMENT: Dissolved Phase & P-60 C. Smith 21562175 6P-12 7/23/09 K85724 R05T-22 Koxanna 6WP-10 Roberts Environmental Drilling, Inc. REASON FOR AIR KNIFING AT THIS LOCATION: Locate utilities for well installation ROGT-3/Middle of 3rd St. AIR KNIFE 1 Description/Location/Observations: Driller comments soil easy to get through from 0 to 5 bgs, appears to be silty CLLY no utilities from 0 to 3' bgs then sandy CLAY from found 31 to 5' bgs AIR KNIFE 2 * ROST-74 West side of a lley between 5th & 6th St.

Description/Location/Observations: relocated Driller comments easy to get through from 0 to 3' bgs then becomes harder from 3'to5'bg. appears to be silty CLAY from 0 to 3' bgs no utilities found then becomes CLAY from 3' to 5' bas ROST-22/East side of 6th St. @ Chaffer Muller comments easy to get through from 0 to 5'bgs, appears to be silty CLAY found from 0 to 5 bgs 6" dia. 5' bgs 6WP-10/East side of 6th St. @ chaffer Priller comments easy to get through from 0 to 5'bgs, appears to be silty CLAY from 0 to 5/bgs

* see sheet 2 of 3 from 7/22/09 for relocation sustificates.

SHEET 2 of 3 AIR KNIFING FORM JOB NAME & NUMBER: OBSERVED BY:

AIR KNIFING EXCAVATION ARRANGE	EMENT:	JOB NAME & NUMBER:	OBSERVED BY:
		Dissolved Phase & P-60 21562175	a Smith
		DATE STARTED: 7/23/09	DATE COMPLETED:
l .	ŕ	BORING LOCATION:	
5	,	Roxanna	
	_	SUBCONTRACTOR: Roberts Environmen	tal Drilling, Inc.
REASON FOR AIR KNIFING AT THIS I	LOCATION:		
10	cate utilities for	well installation	on
		<u> </u>	H 1 - 1 - 0 - 11
ho whilities found 12"dia, 5' bgs	mp-7/East side of Driller comments of to 5' bys, the appropriate from 0 to 3' bo 5' l	easy to get ecomes harder silty CLAY from 3 of 7th st. @ easy to get to pears to be ges then be co	through from 3' to 5' bgs 1' to 5' bgs
AIR KNIFE 4 V	MP-9/East side of	alley between Tt	n i stu st. @
Description/Location/Observations:	Driller comments 0 to 3'bgs then	easy to get the becomes harde	rough from 3'to 3' 6 to 3' bas
found 12" dia. 5'bgs	o to 3'bgs then appears to be sithen becomes CL.	AY from 31 +	o 5'bgs

SHEET 3 of 3 JOB NAME & NUMBER: AIR KNIFING EXCAVATION ARRANGEMENT: Dissolved Phase & P-60 South 21562175 DATE STARTED: Koxanna SUBCONTRACTOR: Roberts Environmental Drilling, Inc. REASON FOR AIR KNIFING AT THIS LOCATION: Locate utilities for well installation VMP-8/Middle of alley between 7th & 8+2 St. AIR KNIFE 1 ogs. Driller comments easy to get through from 045. Dto 2.5'hgs then becomes harder from 2.5 to 5'hgs appears to be asilty CLAY from 8 to 2.5'hgs who then becomes CLAY from 2:5' to 5'hgs ROST-25/4ft south of etatrally bothwar 7th+8th St. and 060 Edwardsville Rd. Description/Location/Observations: 12'diai 5'bgs Initial hole: driller comments tough to get through from 0'to 5'. Appears to be sitty clay with gravel from 0 to \$ 4 to 695. 4'5' Description/Location/Observations: Possible utility found -1.5" copper pipe (e-w) CLAY. Offset hole: dviller comments fairly easy toget from o'tost on south edge of hole. off set 18" to the north. bgs. Appears to be silty CLAY from 0=41 bgs, then CLAY 4'-5'bgs. no utilities found in relocated hole as explained above AIR KNIFE 3 Description/Location/Observations: AIR KNIFE 4

Description/Location/Observations:

SHEET _______ of ______ OBSERVED BY: JOB NAME & NUMBER: AIR KNIFING EXCAVATION ARRANGEMENT: Dissolved Phase & P-60 Mike Corbett 21562175 DATE COMPLETED: DATE STARTED: 7/31/09 BORING LOCATION: VMP-3(A) SUBCONTRACTOR: Roberts Environmental Drilling, Inc. REASON FOR AIR KNIFING AT THIS LOCATION: Hand-anger to 5 ft (12-in.) for the installation of a vapor point screened from 22'to 22.5'. This is a stop-out location of VMP-3, at which the installation of the aforementioned screened interval failed. AIR KNIFE 1 Description/Location/Observations: Driller remarks fairly easy to hand augusto 5f4.

No wtilities encountered. Soft, moist, brown silty clay. AIR KNIFE 1 AIR KNIFE 2 Description/Location/Observations: AIR KNIFE 3 Description/Location/Observations: AIR KNIFE 4 Description/Location/Observations:

SHEET

OBSERVED BY: JOB NAME & NUMBER: AIR KNIFING EXCAVATION ARRANGEMENT: Dissolved Phase & P-60 N. Satam 21562175 DATE COMPLETED: DATE STARTED: 8127/09 BORING LOCATION: ROST-30 SUBCONTRACTOR: Roberts Environmental Drilling, Inc. REASON FOR AIR KNIFING AT THIS LOCATION:

Clear while thes AIR KNIFE 1 ROST-30 Description/Location/Observations: Diamete - 4 mch Depth - 50 feet No whities observed AIR KNIFE 2 Description/Location/Observations: AIR KNIFE 3 Description/Location/Observations: AIR KNIFE 4 Description/Location/Observations:

URS

AIR KNIFING FORM

AIR KNII	FING FORM	SHEET of				
AIR KNIFING EXCAVATION ARRANGEMENT:	JOB NAME & NUMBER: Dissolved Phase & P-60 21562175	OBSERVED BY: Mike Corbett				
	DATE STARTED: 8/27/09	DATE COMPLETED: 8/ンフ/09				
	BORING LOCATION:					
	SUBCONTRACTOR: Roberts Environment	ntal Drilling, Inc.				
REASON FOR AIR KNIFING AT THIS LOCATION: ROST						
·						
·	•					
AID VAHEE 4 DASSE OF						
Description/Location/Observations: Gin. diameter X 12 fact	Description/Location/Observations: (in. diameter x 11 fact deep (12 in. diameter at the suface) 0'-0.5' suffregral.0.5-8' dark brown to black sitty clay, moist. 8 -11'-fine SAND, gray.					
Strong odn. No utilities						
AIR KNIFE 2 ROST-27 Description/Location/Observations: Samuel 6 in Liante X	11 ft deep (12 in. diam	. at surface). Same				
as Rost-26	,	•				
no utilities observed						
Description/Location/Observations: 6 in. x 10ft deep (12 in. degreeter at surface) 0'-0.5' surface gravel. 0.5'-6' dark brown to black silty clay, noist, 6'-10' fine may SAND.						
no utilities observed						
AIR KNIFE 4 ROST-28 Description/Location/Observations: Gin. X 11 ft deep (12 in.	diameter at surface)					
0-0.5' surface grand. 0.5-8' dark from sitty day, noist/dry. 8'-11' fine may SAND.						
no utility obse	, ·					

SHEET ____ of ___

AIR KNIFING EXCAVATION ARRANGEMENT:	JOB NAME & NUMBER:	OBSERVED BY:
l	Dissolved Phase & P-60	Mike Corbett
	21562175 DATE STARTED:	DATE COMPLETED:
		8/31/09
	8/31/09	8/31/04
	BORING LOCATION:	
	SUBCONTRACTOR:	entel Drillian Inc
	Roberts Environme	ental Drung, Inc.
REASON FOR AIR KNIFING AT THIS LOCATION: Clear	nce for geoproling.	
		1
AIR KNIFE 1 GP-4 (hard anger)	1 1 1 1 1 20 30 11	In the diament
Description/Location/Observations: First 2 aftempt	ts (West of location 5H) Could	not allage por
Description/Location/Observations: First 2 afterprise 2.5ft due to an unknown obst	ruction. 3 rd attempt also	West of Total on 341
to 5 Alpes. No unilities objective	•	. 1
Loose, brows	n, silty SAND (SM-SP), moist,	with grave
	, ,	·
·		
AIR KNIFE 2 GP-2 (hand auger)	· · · · · · · · · · · · · · · · · · ·	
Description/(pestion/Observations:	La L	educace next 2564
Description/Location/Observations: First attempt (3ft east of location) contol with	7.37
due to an un	stream obstruction, and or known obstruction, and or this. No utilities observe	tempt (3ft west of
100 por 600	La No utilities observ	ed.'
Manual To ST	7 33.	1
Soft, brown, sitt	och Ay(cl), moist, trace sand a	a graval.
AIR KNIFE 3 GP-1 (hand anger)		
Description/Location/Observations:	1 11 11 11 20 0	
Seven attempts	(all directions 3ft from loc	eation) could not
advance past 2ft due to conc	crete fragments in the subsu	Jace. 8th afterst
occurred 3 ft part of location	to 5A bas Granlly sitt	hard to 2 St
Med stiff bonon with clarifical	maist have a / /accell	L 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
riser sing, order in the stay confi	The sand and gland of	5 H. No William
Description/Location/Observations: Seven attempts Alvance past 2ft due to conce occurred 3ft east of location Med. stiff, brown, silty clay (CL),		ooserveg.
AIR KNIFE 4 GWF-21 (hard arger))	
Describition/Location/Observations:		
First 2 attempts	(north and south 3ft of loc	ation) could not
advance past 2 for due to co	moneto Gramento in the soil	surface 3rd attend
First 2 attempts odvance past 2ft due to car occurred 3ft wested location to stiff, from 1 silty CLAY(cc), moist,	The state of the s	, 3 4 4 7
occurred sty west of location to	- 5ft bgs. Had gravelly si	It to DAY Media
Stiff, Som I SIlty CLAY (cc), moist,	tracesant I	-5-0- 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2
, , . , . ,	and gravel 10	absorbed
		O D DET WELL.

FUGRO CONSULTANTS, INC.



6105 Rookin Road Houston, Texas 77074

Tel: 713-346-4000 Fax: 713-346-4002

September 4, 2009 Report Number 04.19090044

URS Corporation 1001 Highlands Plaza Drive West St. Louis, MO 63110

Attention:

Ms. Wendy Pennington, P.E.

REPORT FOR PIEZOCONE PENETRATION TESTING, RAPID OPTICAL SCREENING TOOL (CPT/ROST™) TESTING AND RELATED SERVICES ROXANA, ILLINOIS WORK ORDER # 21562175

Dear Ms. Pennington:

Fugro Consultants (Fugro) is pleased to present this data report for Cone Penetration (CPT) and Rapid Optical Screening Tool (ROST™) testing at the above-referenced site. CPT/ROST™ provided continuous characterization of stratigraphy and petroleum hydrocarbon distribution at the testing locations. A description of the CPT and ROST™ technologies and a discussion of general ROST™ data interpretation follow. CPT and ROST™ logs and electronic data CD are included as attachments. The final data has been reviewed and has undergone the appropriate QA/QC process.

Cone Penetration Testing

CPT was performed simultaneously with each ROSTTM sounding and yielded real-time stratigraphic data. CPT is a proven method for rapidly evaluating the physical characteristics of unconsolidated soils. It is based on the resistance to penetration of an electronically instrumented cone, which is continuously advanced into the subsurface. In accordance with ASTM Standard D5778-07, the cone was advanced at a rate of two centimeters per second with the driving force provided by hydraulic rams.

The CPT cone used at this site had an apex angle of 60 degrees with a base area of 15 square centimeters (cm²), and friction sleeve with a surface area of 200 cm². The standard geotechnical sensors within the cone measure tip resistance and sleeve friction in tons per square foot (TSF). The combined data from the tip resistance and sleeve friction form the basis of the soil classification (e.g., sand, silt, clay, etc.).

Soil stratigraphy was identified using Campanella and Robertson's Simplified Soil Behavior Chart. Please note that because of the empirical nature of the soil behavior chart, the soil identification should be verified locally. Some soils, such as glacial till, cemented soils and calcareous soils are outside the scope of these soil behavior charts."



URS Corporation
Ms. Wendy Pennington
Page - 2 - Report No.: 04.19090044



ROST™ Testing

Fugro Consultants' ROSTTM Laser-Induced Fluorescence system was used for this investigation to screen soils for petroleum hydrocarbon materials containing aromatic hydrocarbon constituents. The system consists of a tunable laser mounted in the CPT truck that is connected to a down-hole sensor. The down-hole sensor consists of a small diameter sapphire window mounted flush with the side of the cone penetrometer probe.

The laser and associated equipment transmit 50 pulses of light per second to the sensor through a fiber optic cable. The wavelength of the pulsed excitation light is tunable and can be set to wavelengths of 266 nanometers (nm) or to wavelengths between 280 and 300 nm. An excitation wavelength of 290 nm was used for each test during this project.

The laser light passes through the sapphire window and is absorbed by aromatic hydrocarbon molecules in contact with the window, as the probe is advanced. This addition of energy (photons) to the aromatic hydrocarbons causes them to fluoresce. A portion of the fluorescence emitted from any encountered aromatic constituents is returned through the sapphire window and conveyed by a second fiber optic cable to a detection system within the CPT rig. The emission data resulting from the pulsed laser light is averaged into one reading per one-second interval (approximately one reading per 2 cm vertical interval) and is recorded continuously. ROSTTM may be operated in single or multi-wavelength mode, depending on project objectives. For this project, ROSTTM was operated in multi-wavelength mode (MWL).

Multi-Wavelength Mode (MWL). In MWL mode, several characteristics of the emitted fluorescence are measured and recorded simultaneously at four (4) specific wavelengths (340, 390, 440, and 490 nm). These four wavelengths represent the spectrum of fluorescence typically produced by aromatic hydrocarbons ranging from light fuels through heavy contaminants such as coal tar and creosote. The recorded data is then presented as a color graph of fluorescence intensity (the combined fluorescence of all four monitored wavelengths) versus depth (FVD).

On the FVD graph, each of the four monitored wavelengths is assigned a color. These colors are combined based on the proportional fluorescence intensity of each of the individual wavelengths. The combined color is then used on the FVD graph. Changes in color on the FVD graph typically represent changes in product type. Similarly, like colors on the FVD graph typically represent the same product, regardless of the total fluorescence intensity. Changes in the total fluorescence intensity typically indicate changes in contaminant concentration, with higher fluorescence intensities representing proportionally higher concentrations when compared to lower fluorescence intensities.

In addition to the FVD graph, depth specific waveforms are presented at four (4) selected depths throughout the sounding. These waveform graphs are presented to the right of the FVD graph on each plot. In the waveform graphs, the fluorescence intensity and duration of fluorescence of each of the monitored wavelengths is represented by an individual peak, starting at 340 nm and increasing in 50 nm wavelengths as you move to the right. The intensity of each wavelength is represented by the height of the peaks, and the duration of fluorescence is represented by the width of each peak. For general interpretation purposes, lighter aromatic hydrocarbon molecules will emit fluorescence at the shorter wavelengths, and heavier, longer chained hydrocarbons will emit fluorescence at the longer wavelengths. The presented waveforms can be compared to waveforms typical of common hydrocarbon products to determine the likely product type that has been encountered. Please note that the waveforms are available at every two-centimeter interval throughout the entire sounding. Additional waveforms can be generated at any time during or after testing is complete.





Reference Solution. The fluorescence intensity of a reference solution placed on the sapphire window was measured immediately prior to conducting each test. This reference solution measurement serves two purposes. First, as a quality control check, the solution is used to ensure that the performance of the system is within specifications. Second, it allows for normalization of the data from different test locations for variation in laser power, operating conditions, and monitored emission wavelength. The reference solution used for this project was the standard M1 reference, which is a proprietary PHC containing solution. M1 provides consistent fluorescence response across the portion of the spectrum analyzed by ROST and therefore, allows the fluorescence data collected to be consistently normalized to intensities recorded as a percentage of M1.

LIMITATIONS OF ENVIRONMENTAL SUBSURFACE WORK

Fugro Consultants' report is based upon our observations made during fieldwork, the information provided to Fugro and the results of the ROST/CPT survey. Given the inherent limitation of environmental subsurface work, Fugro cannot guarantee that the site is free of hazardous or potentially hazardous materials or conditions or that latent or undiscovered conditions will not become evident in the future. Fugro's report was prepared in accordance with our proposal and the General Conditions agreed to between Fugro and Client and no warranties, representations, or certifications are made.

Fugro Consultants, Inc. appreciates the opportunity to be of service to your organization. Please do not hesitate to contact us if we can be of further assistance. We look forward to working with you in the future.

Sincerely,

FUGRO CONSULTANTS, INC.

Recep Yilmaz

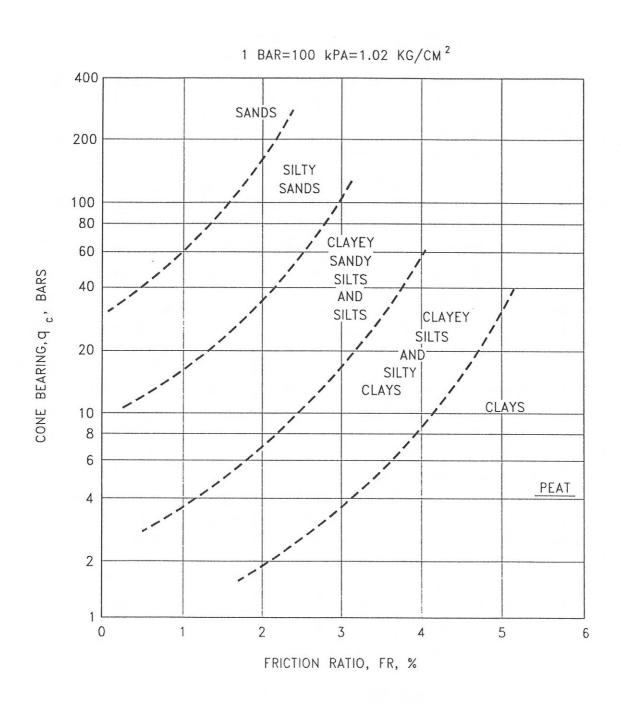
Senior Vice President

RY/tsp

Enclosure: - 1 CD

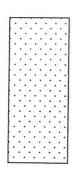




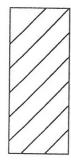




KEY TO SOIL BEHAVIOR TYPE



SAND AND SANDY SOIL

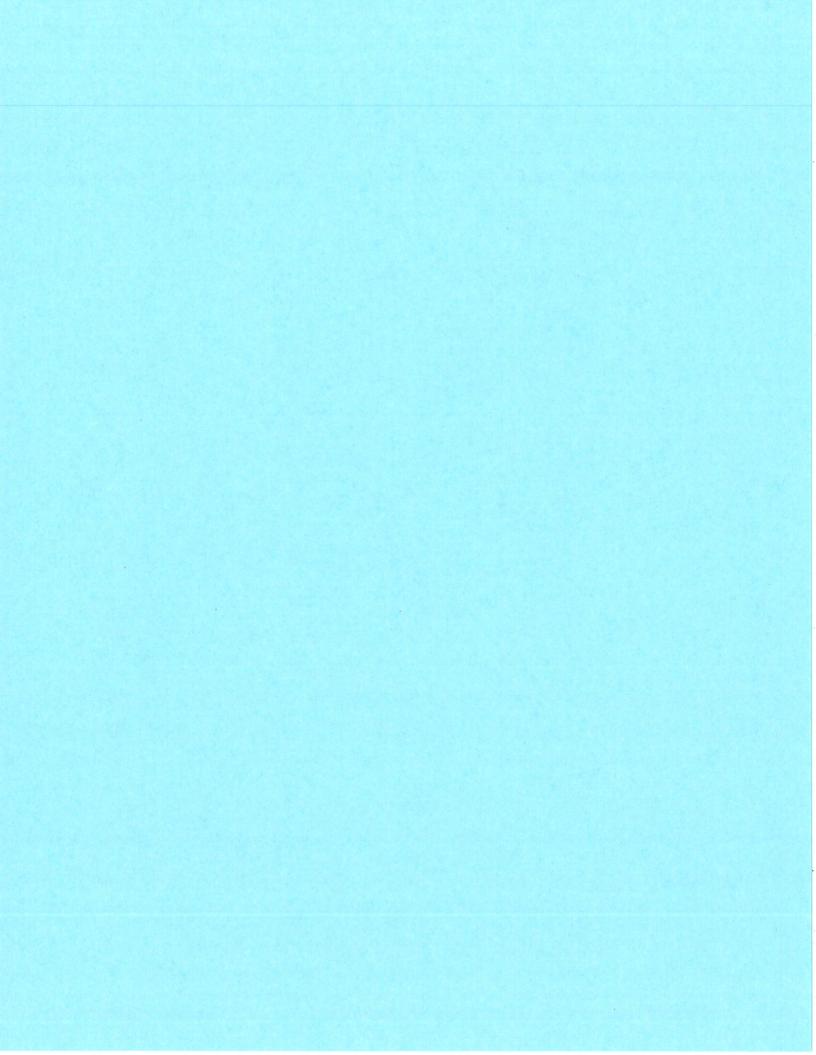


CLAY AND CLAYEY SOIL



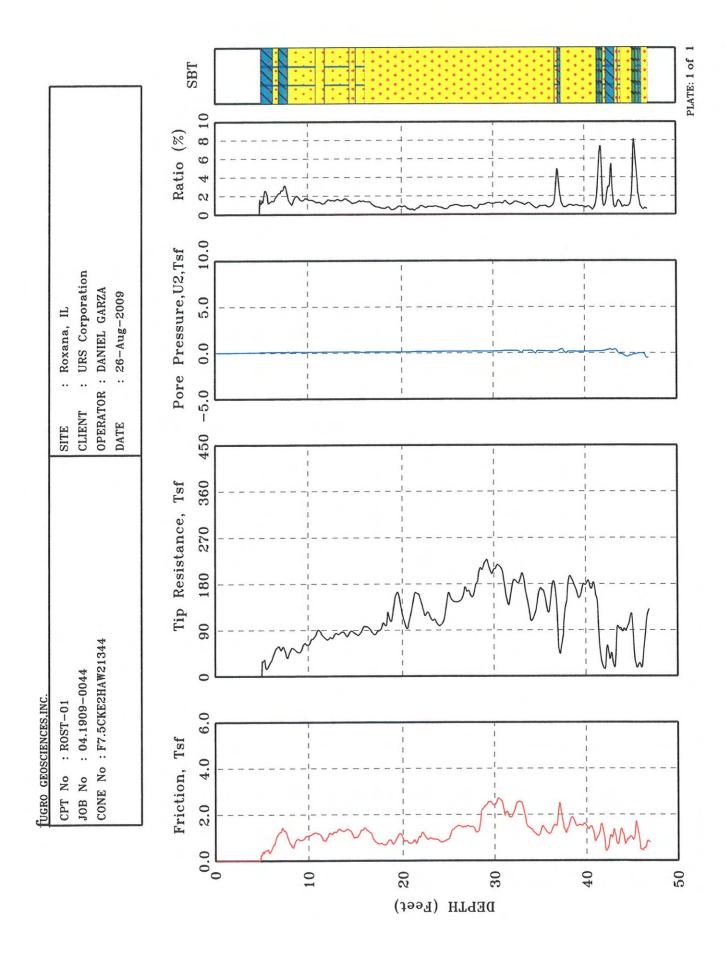
SILT AND SILTY SOIL

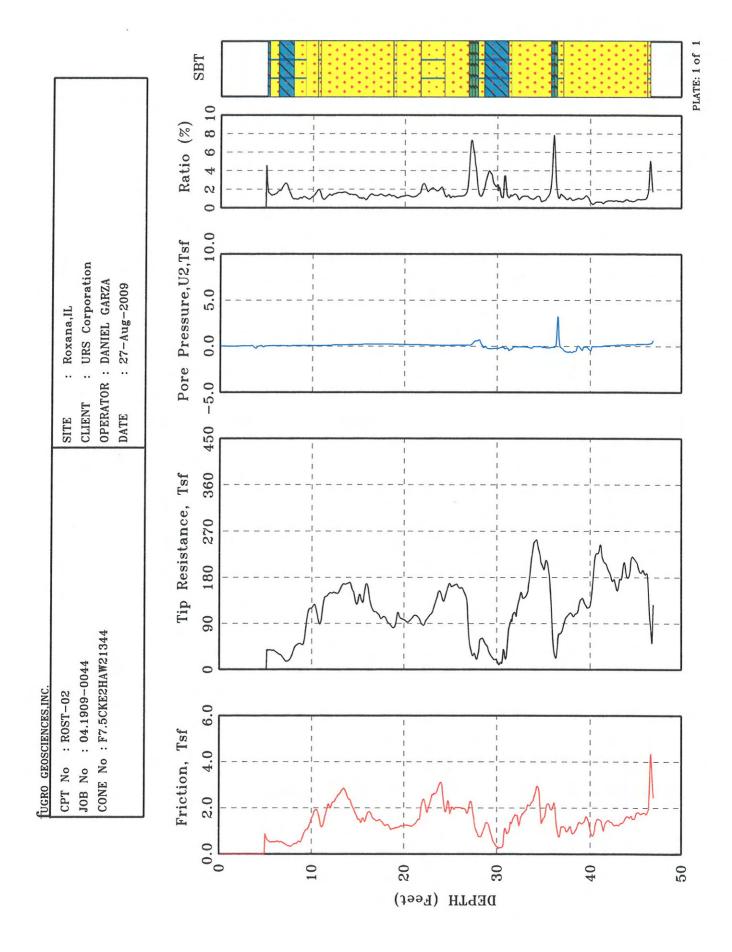


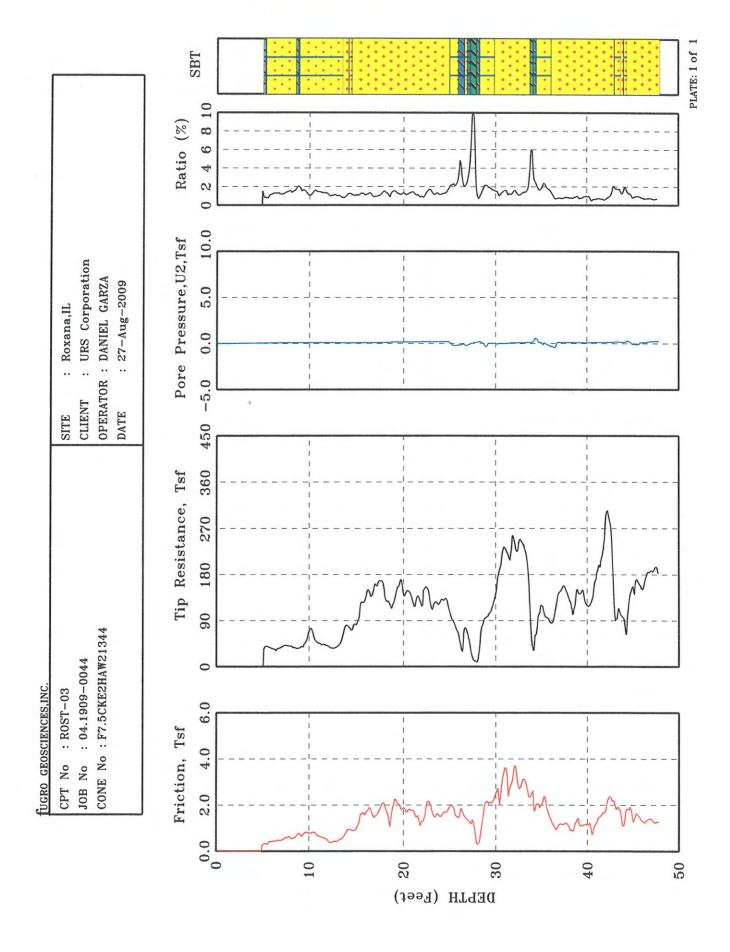


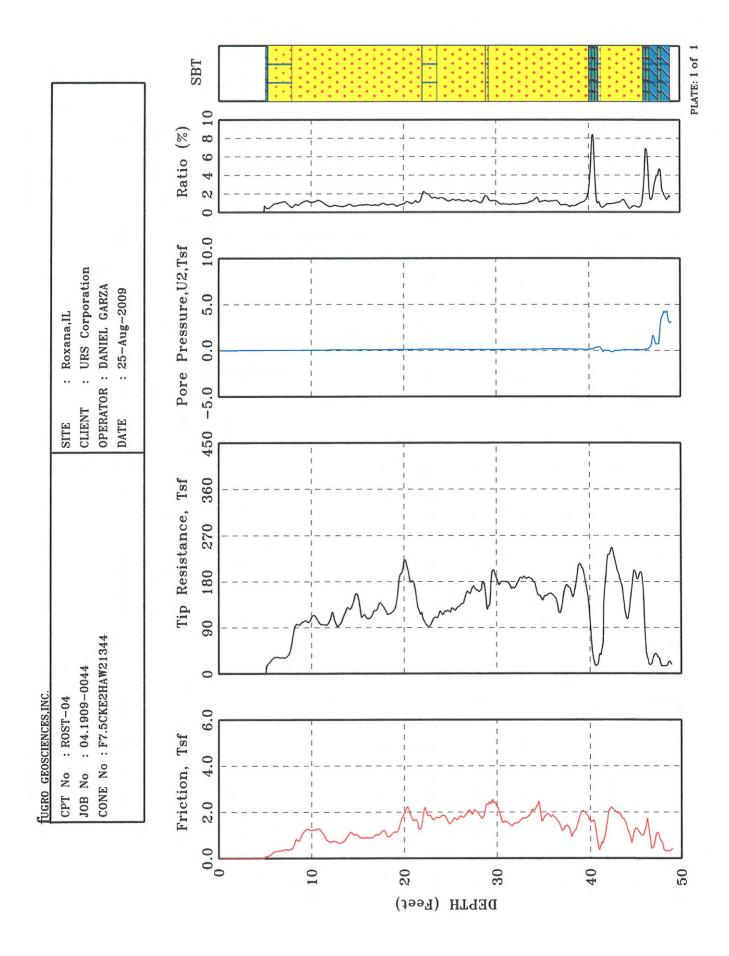
ROXANA, ILLINOIS

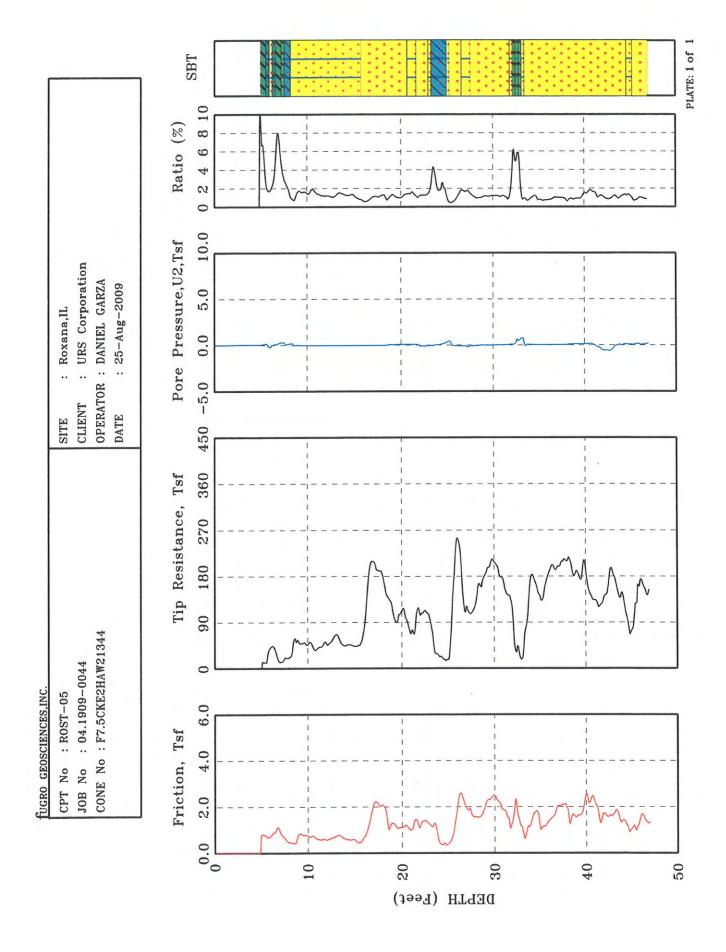
CPT PLOTS

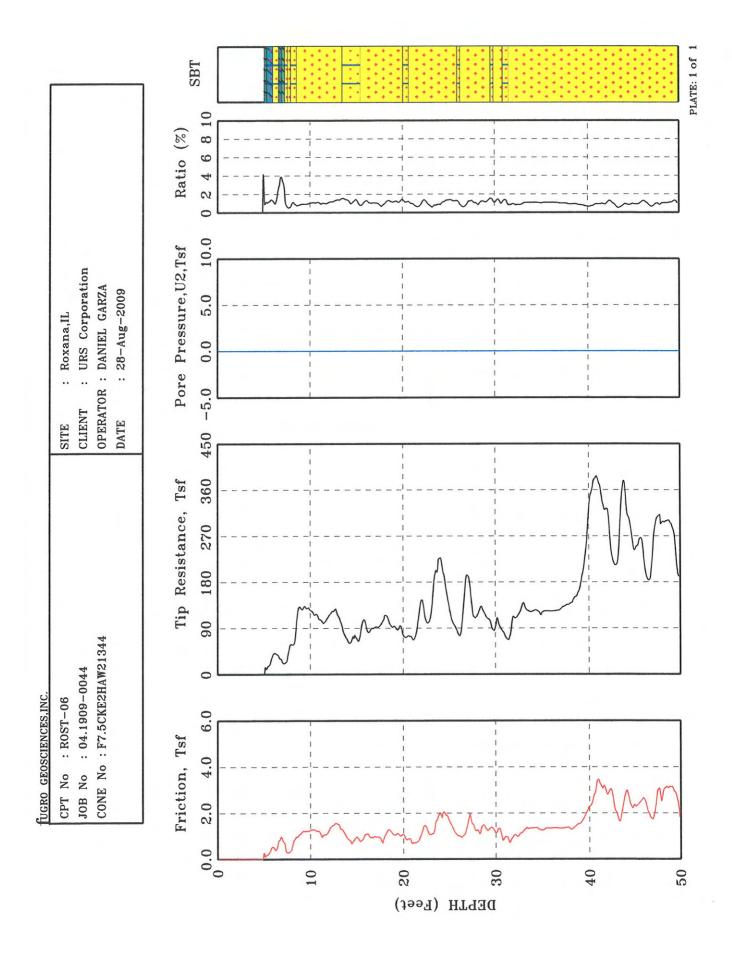


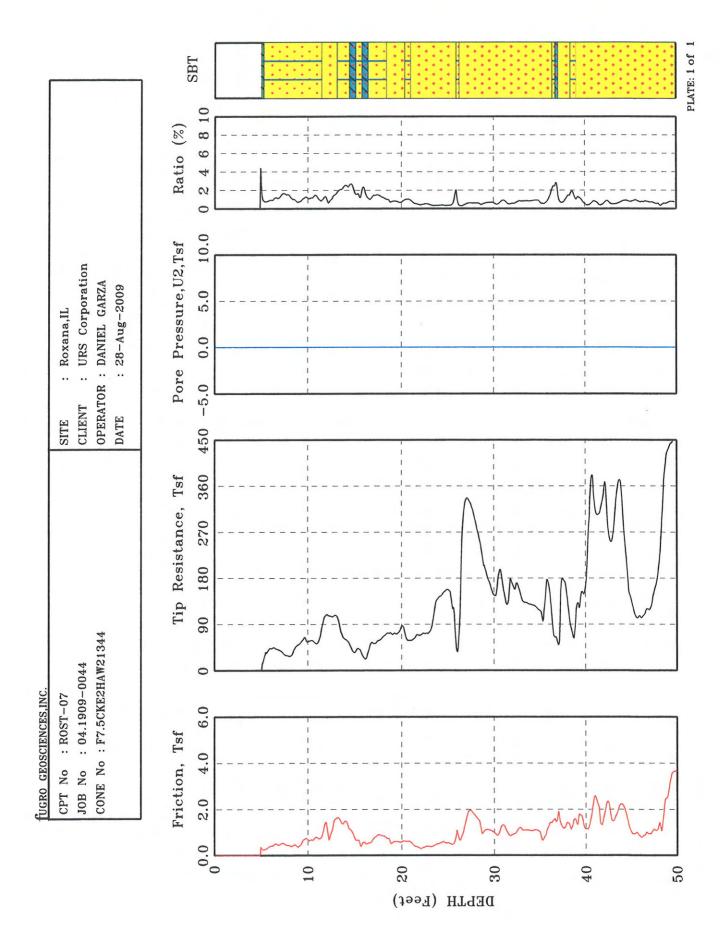


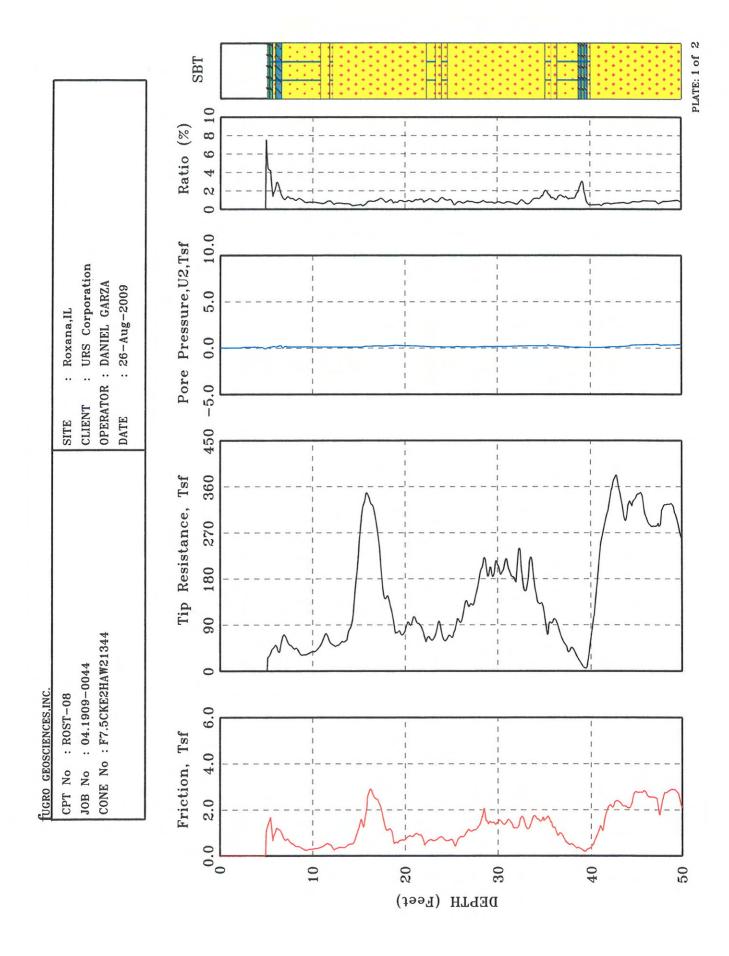


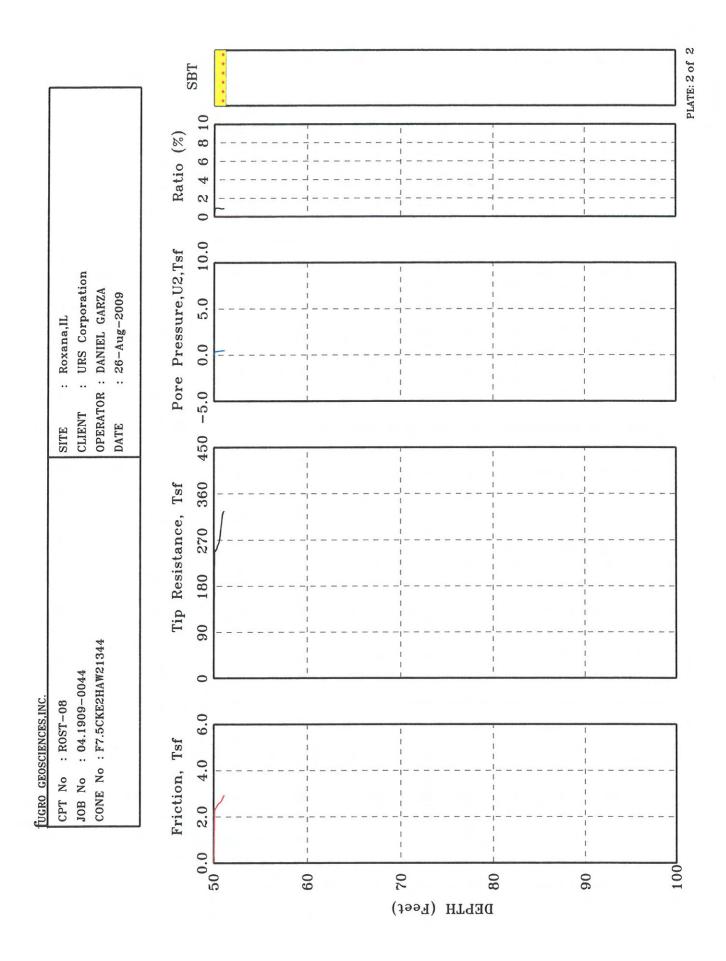


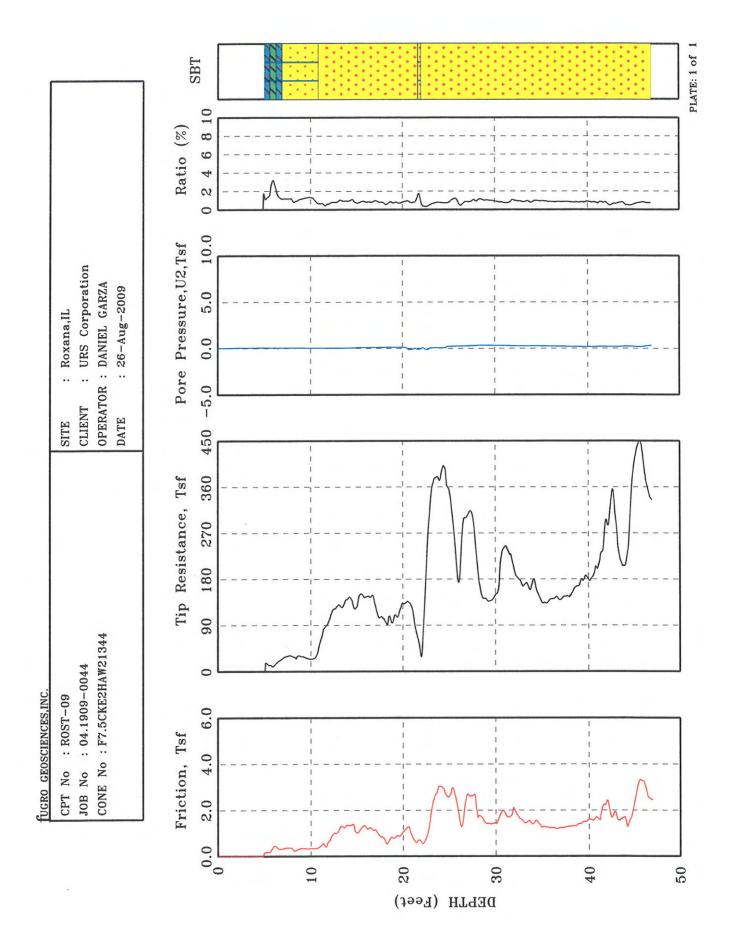


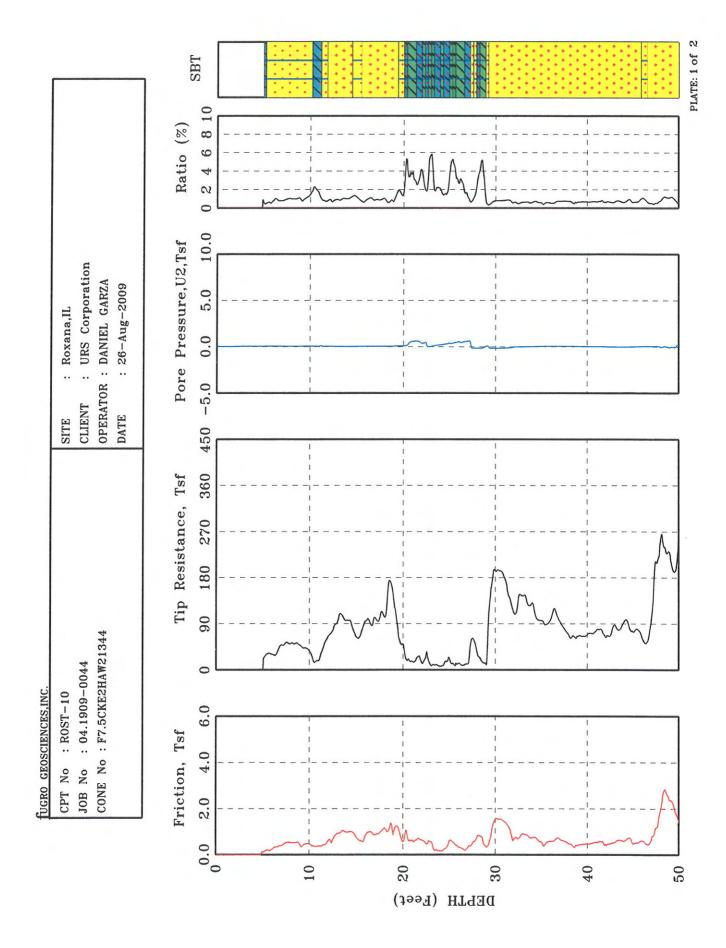


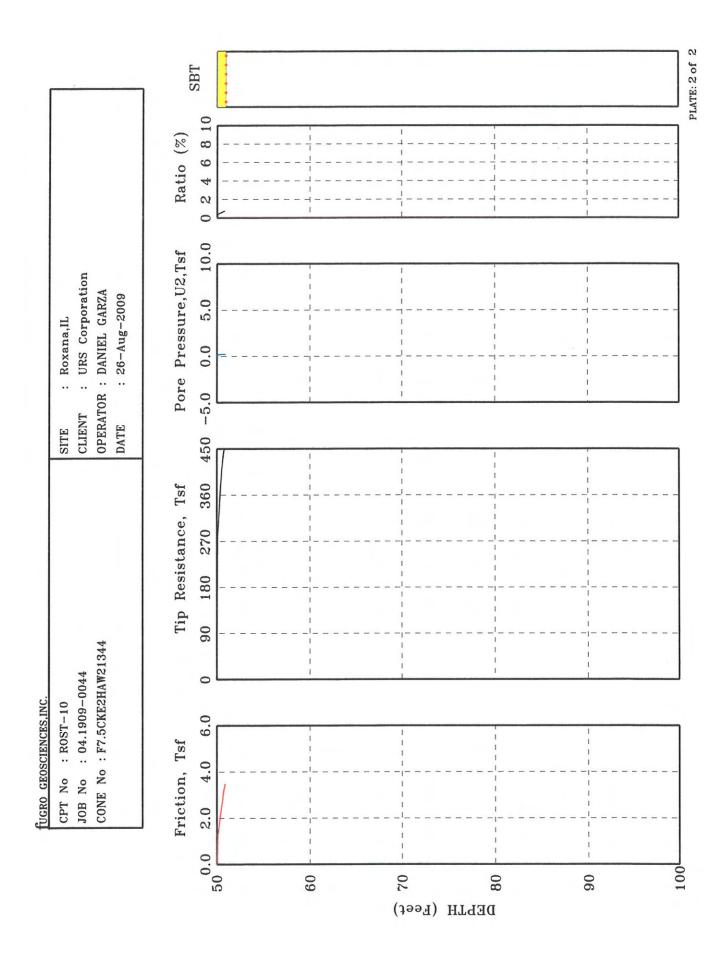


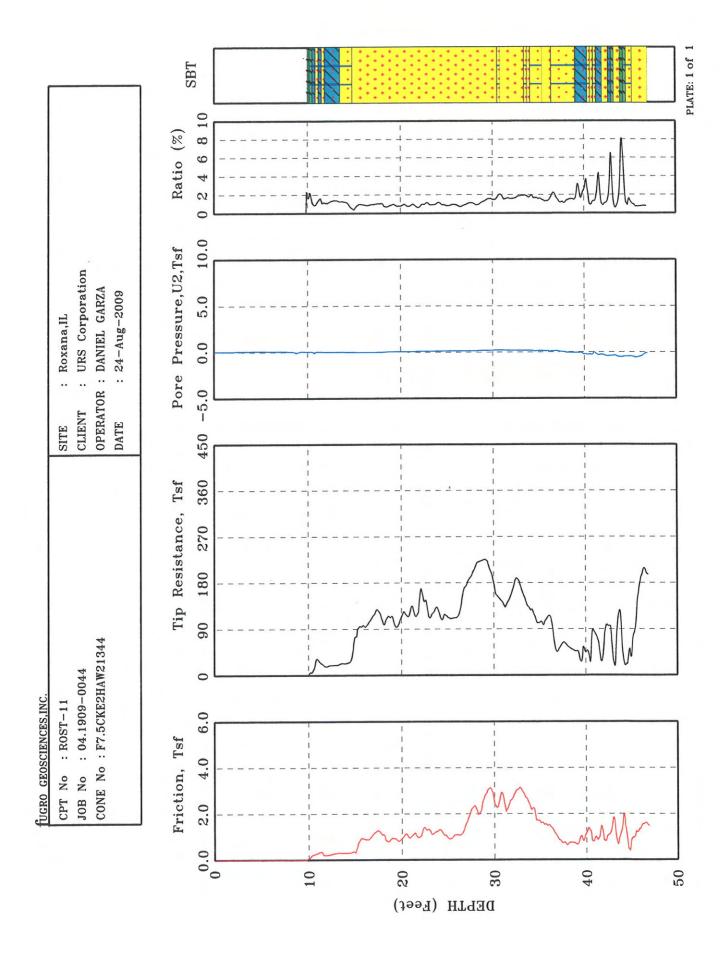


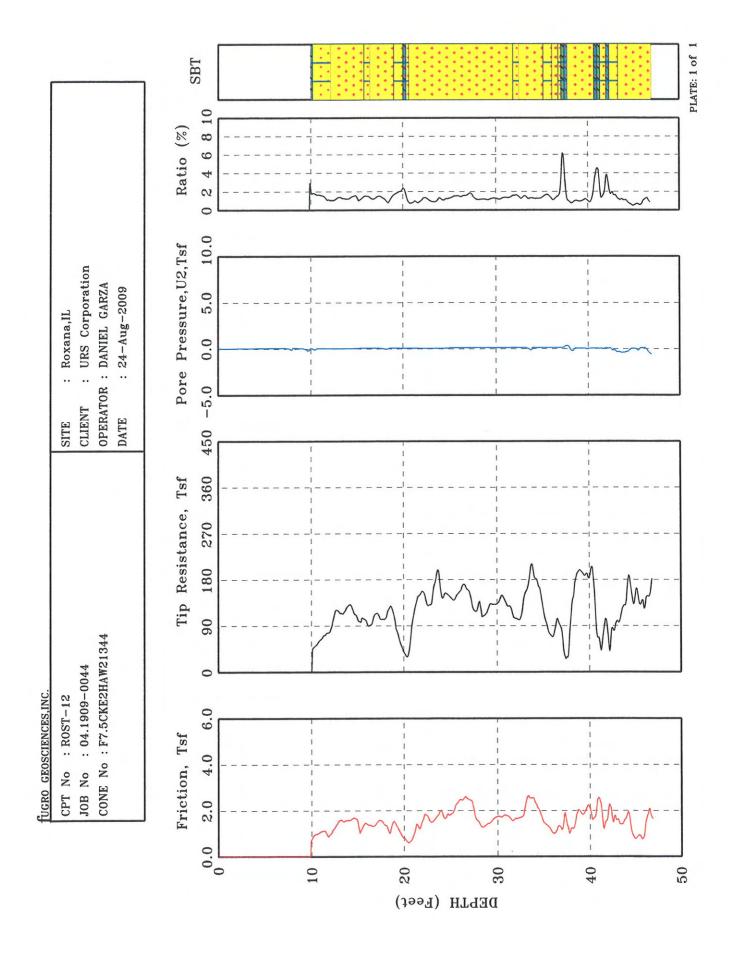


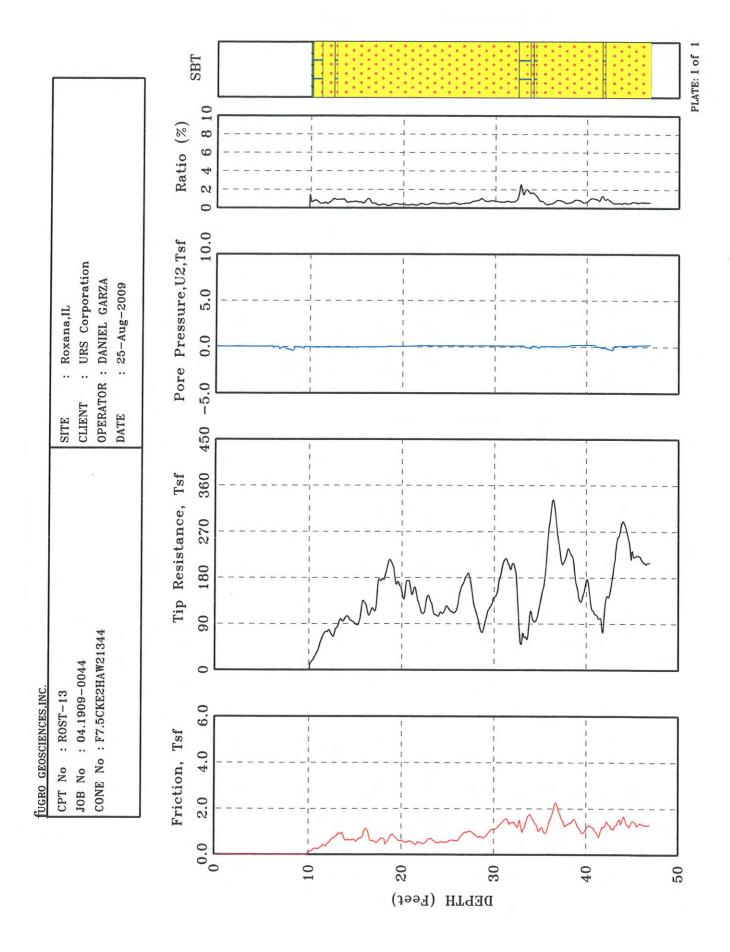


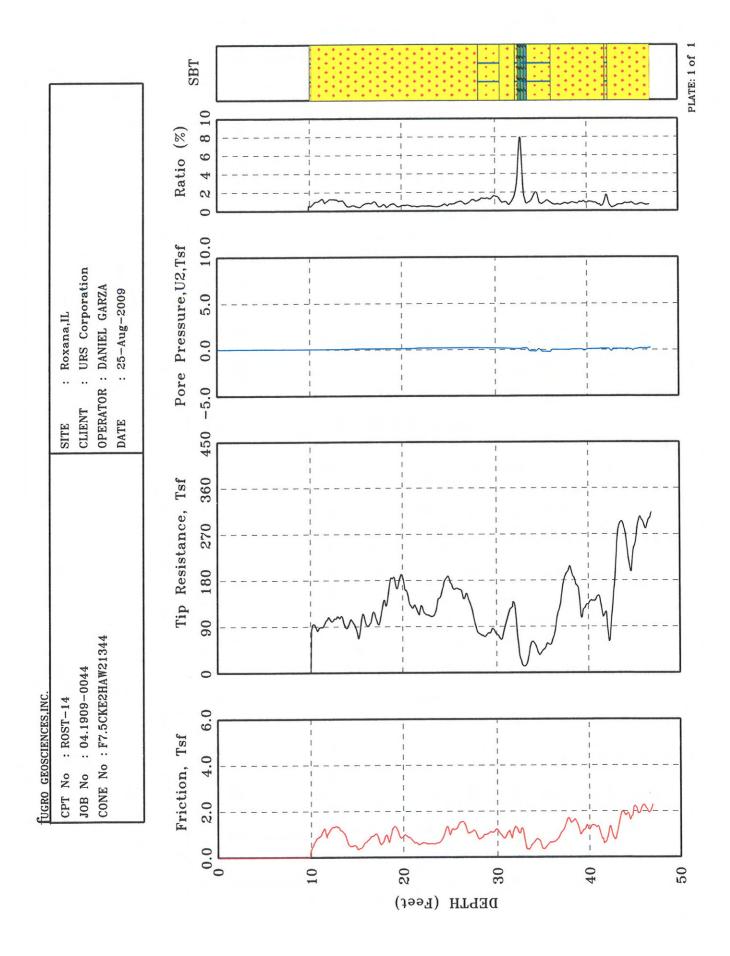


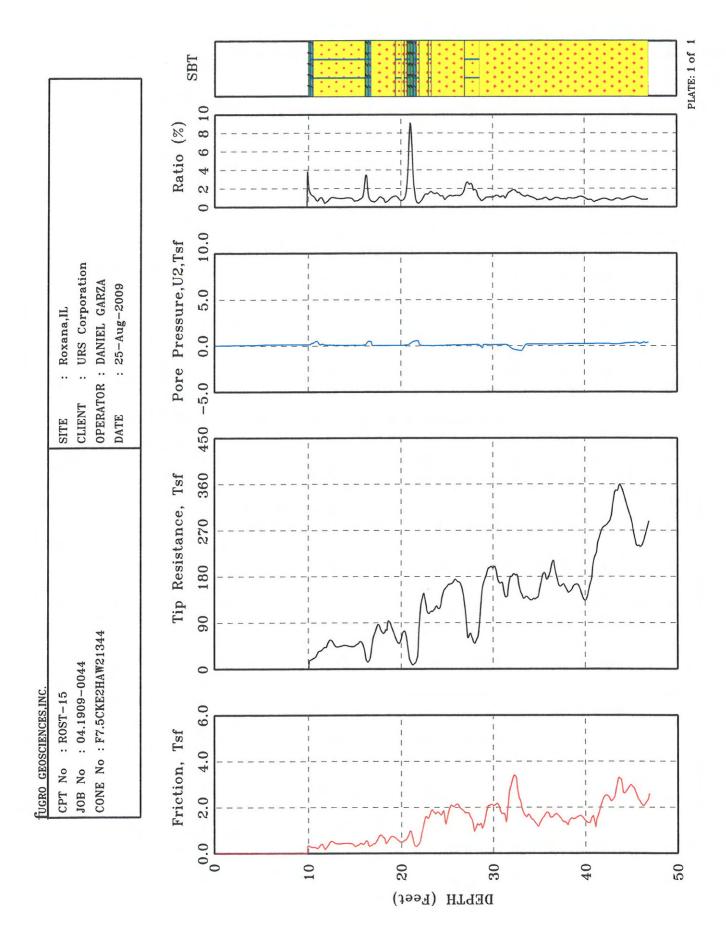


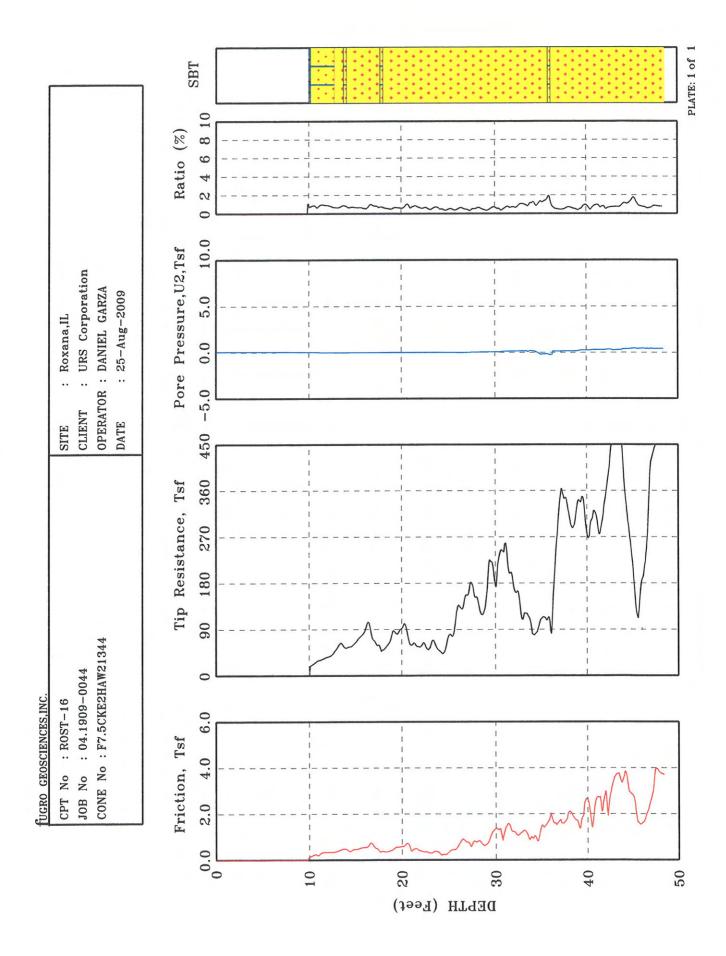


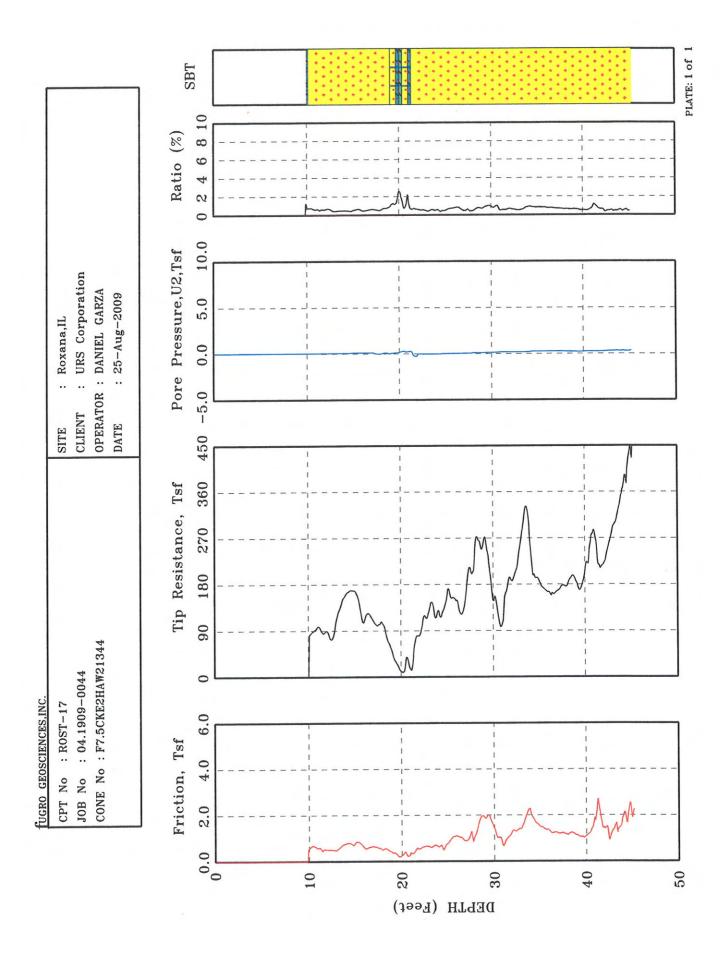


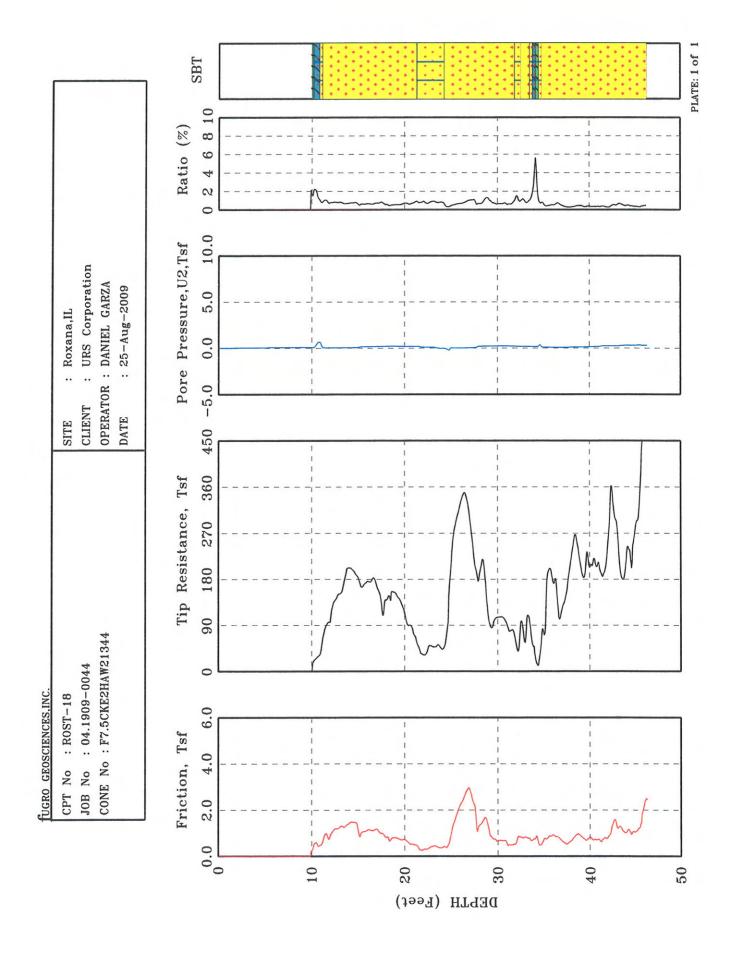


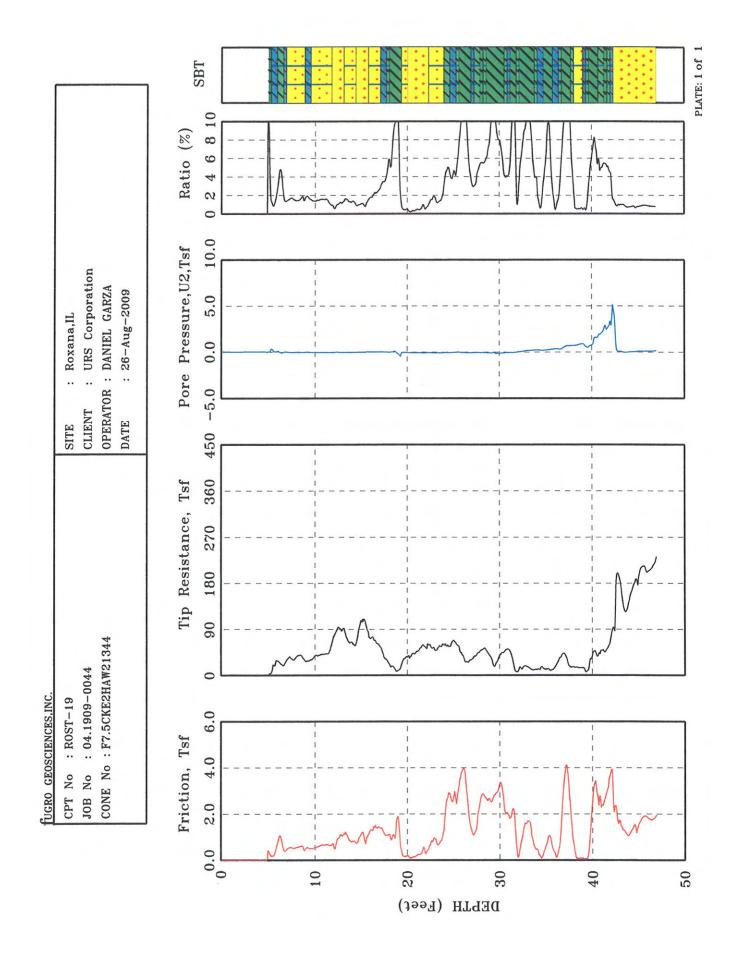


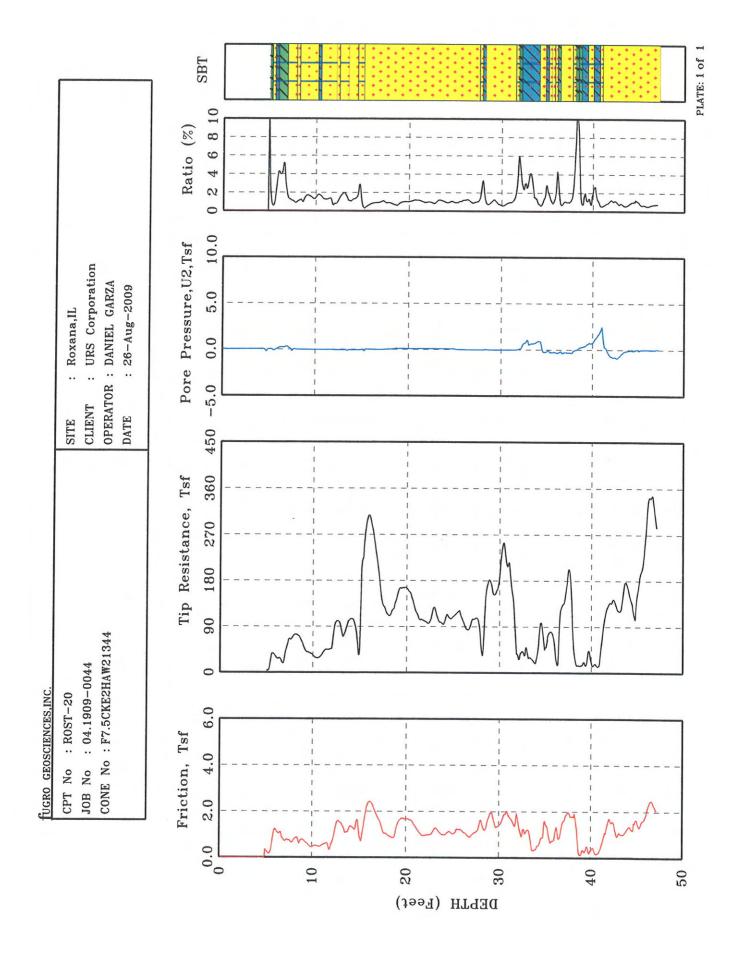


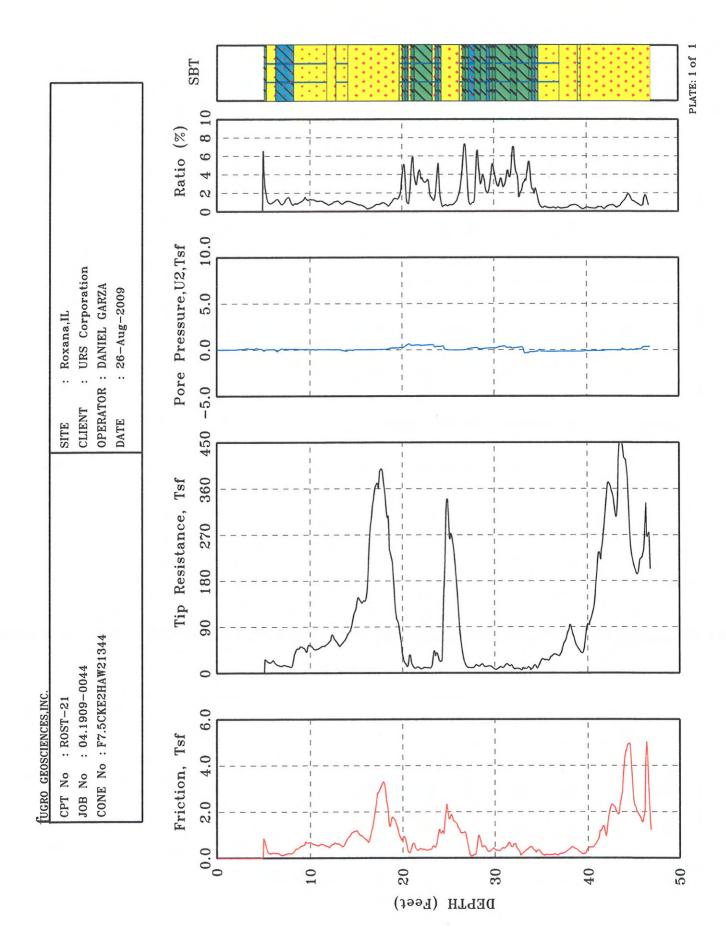


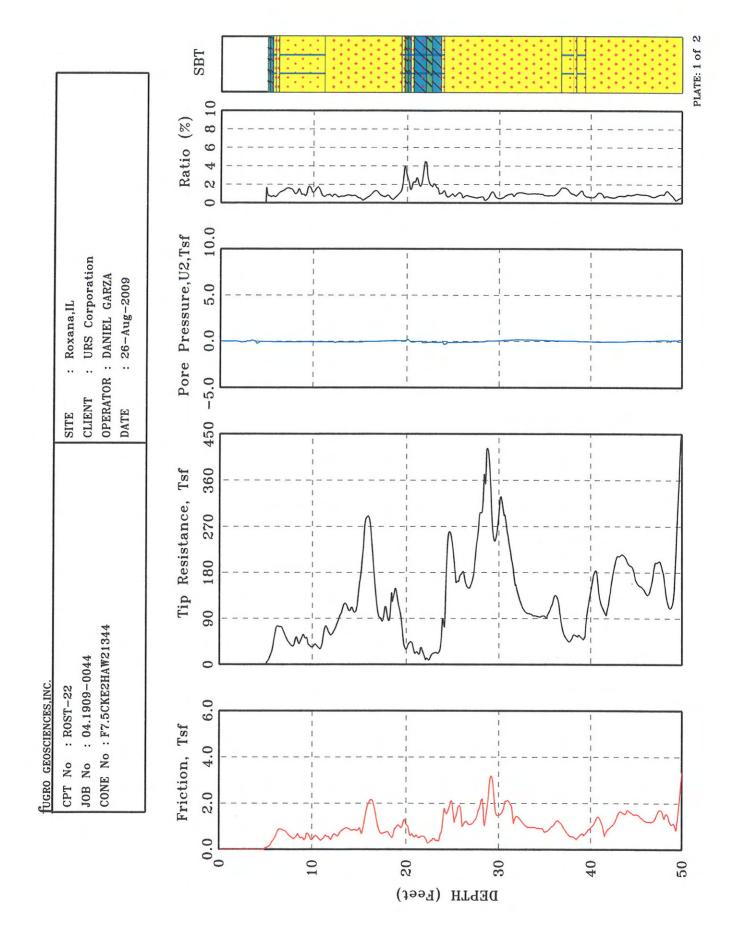


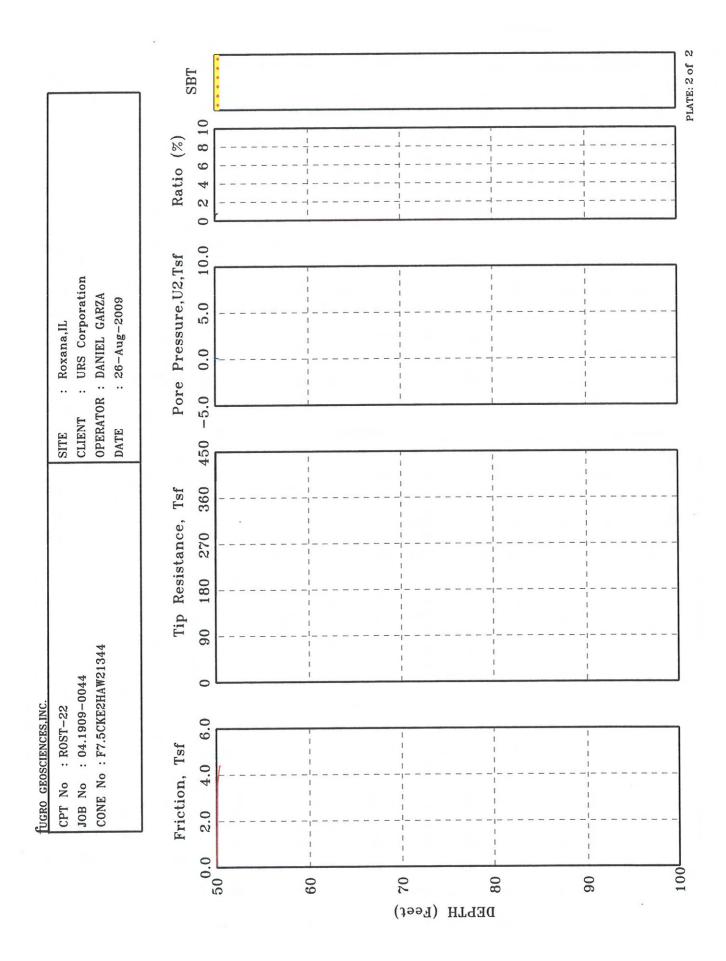


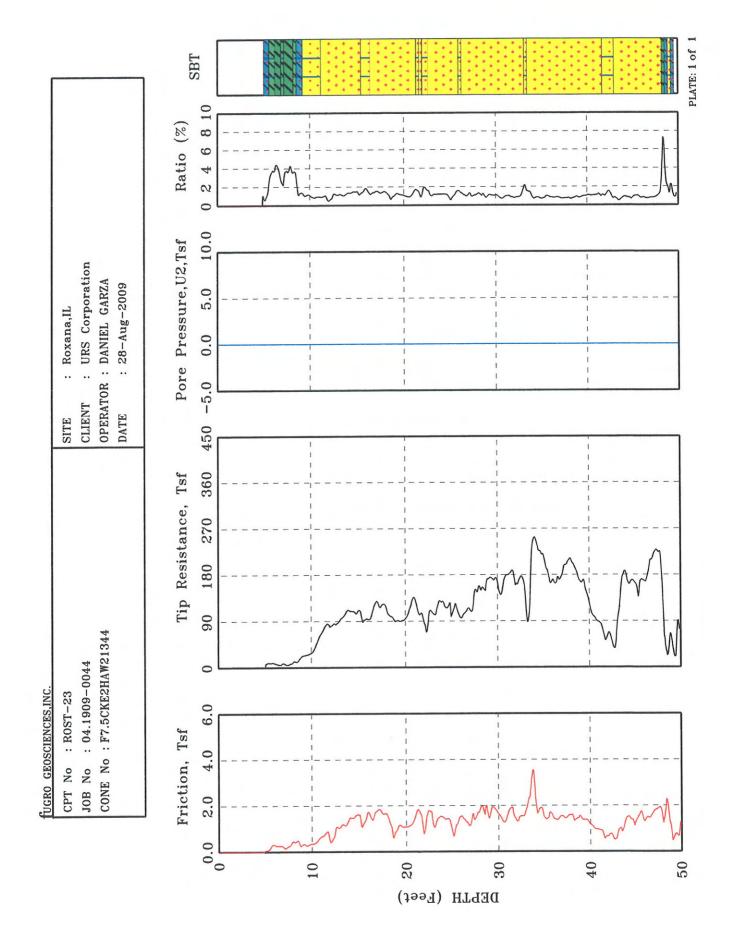


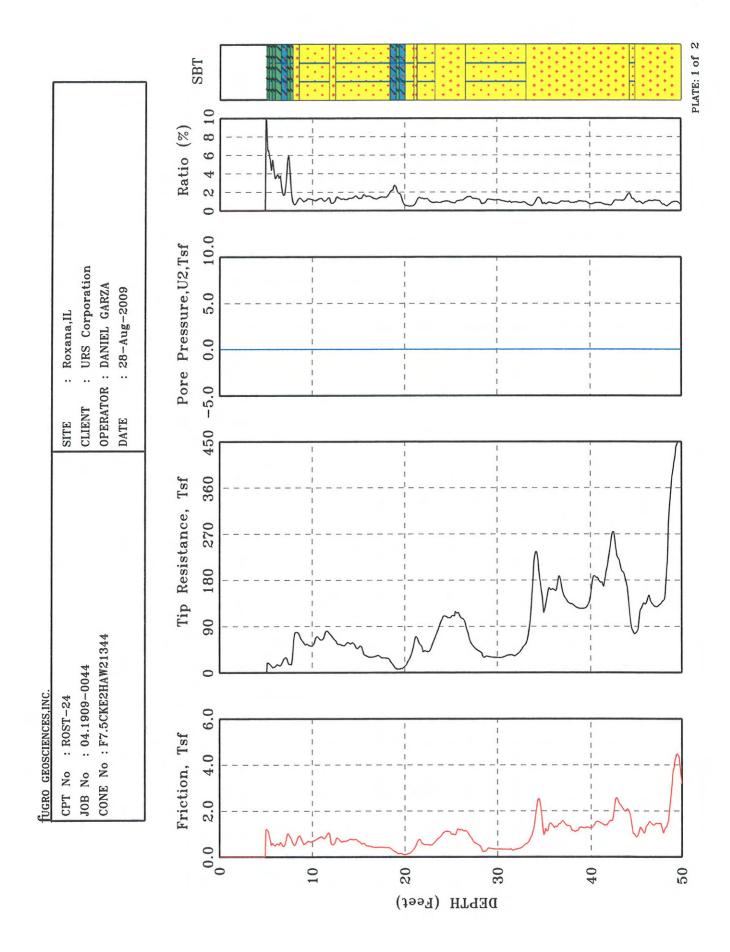


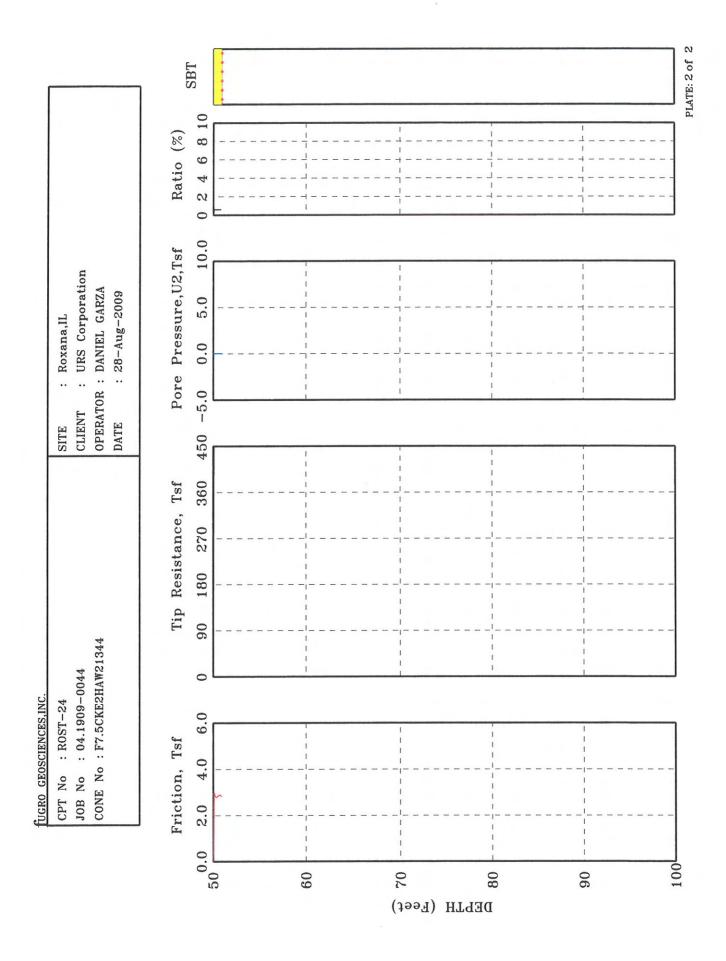


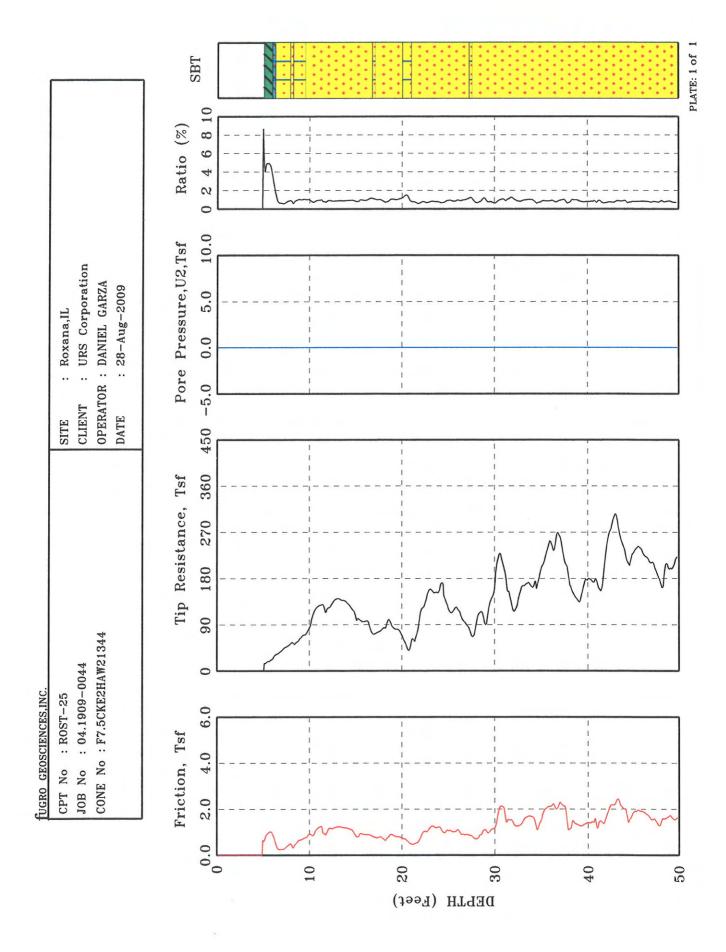


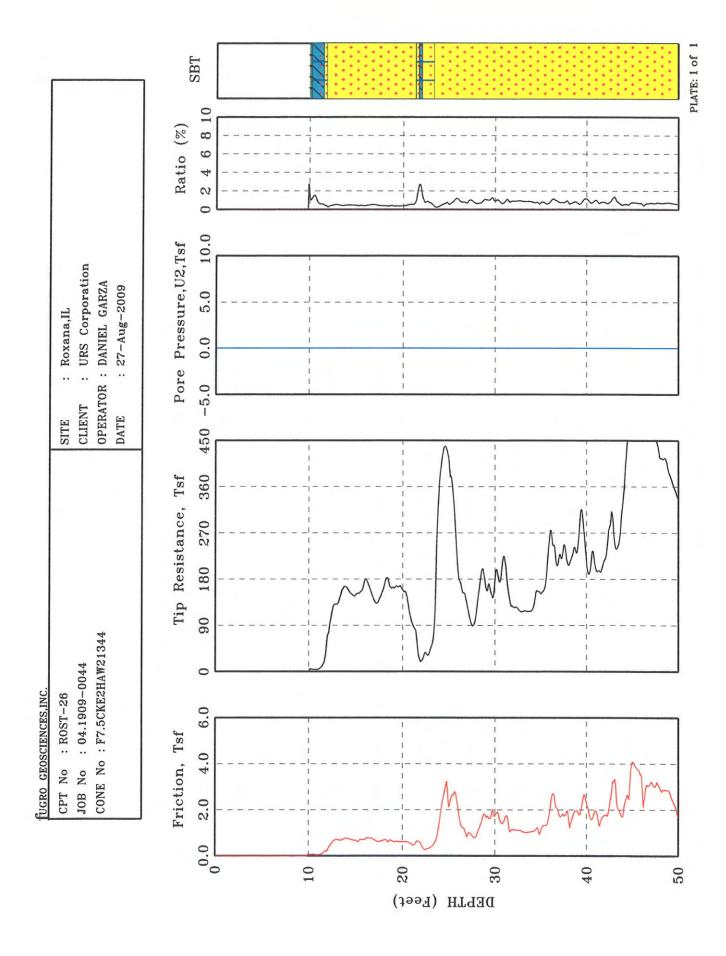


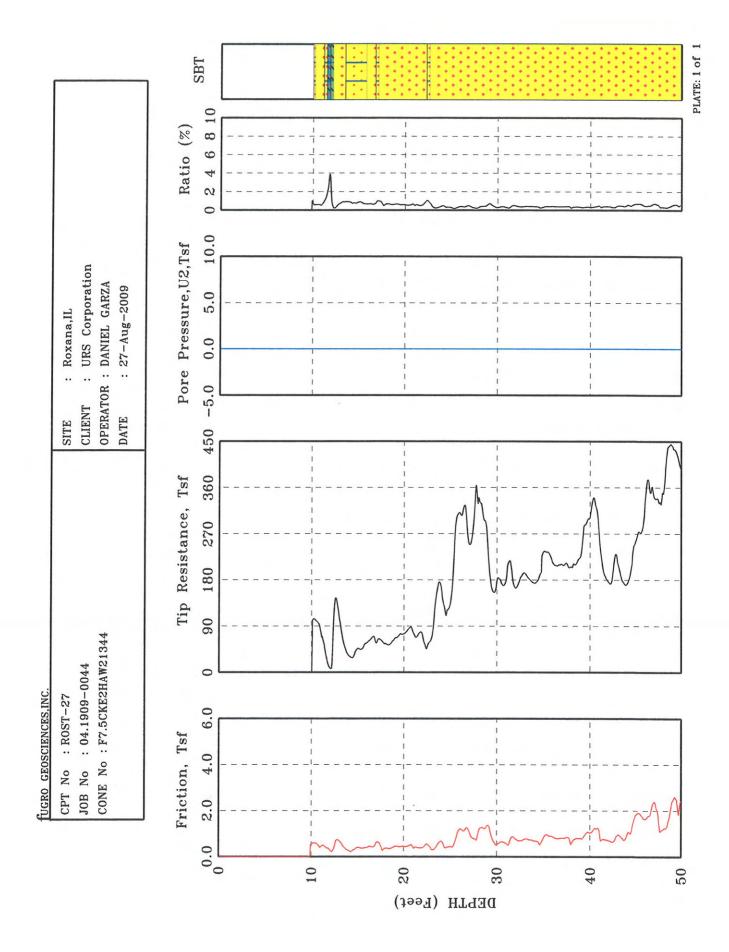


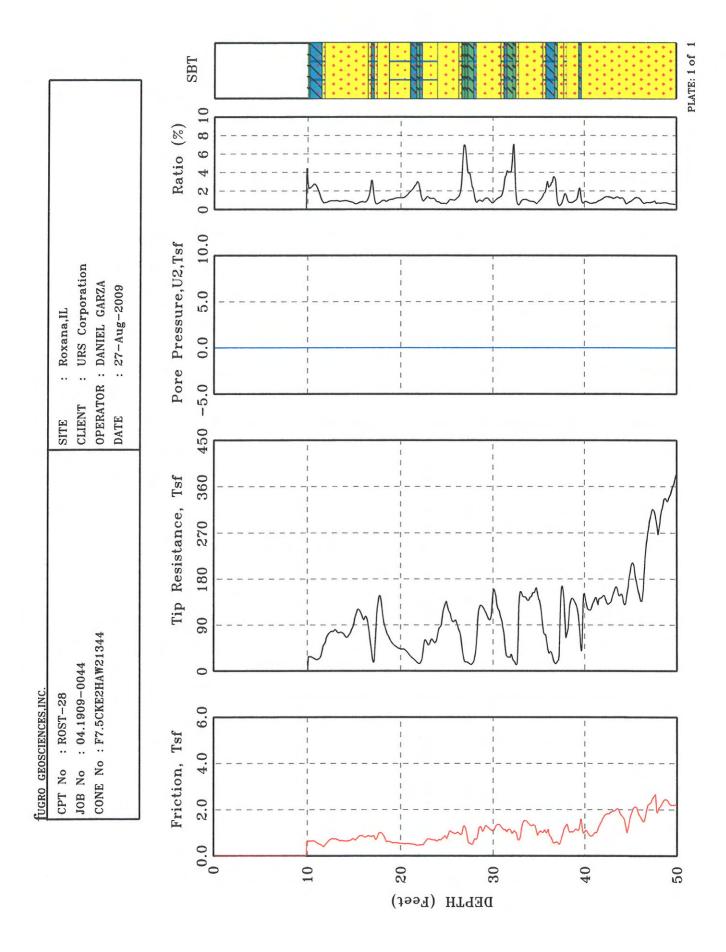


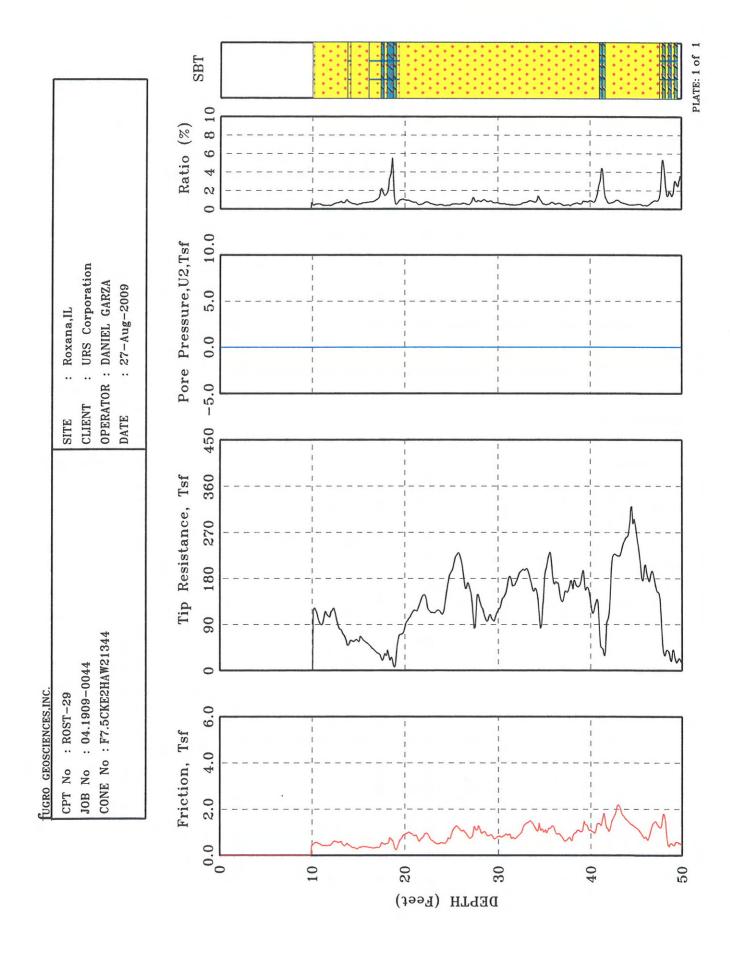


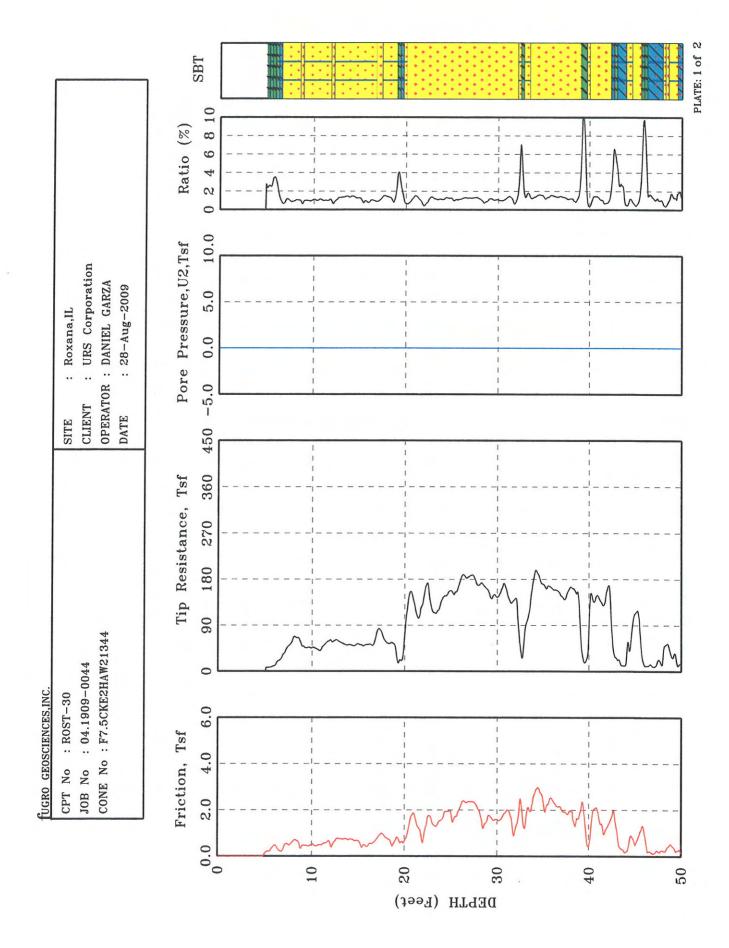


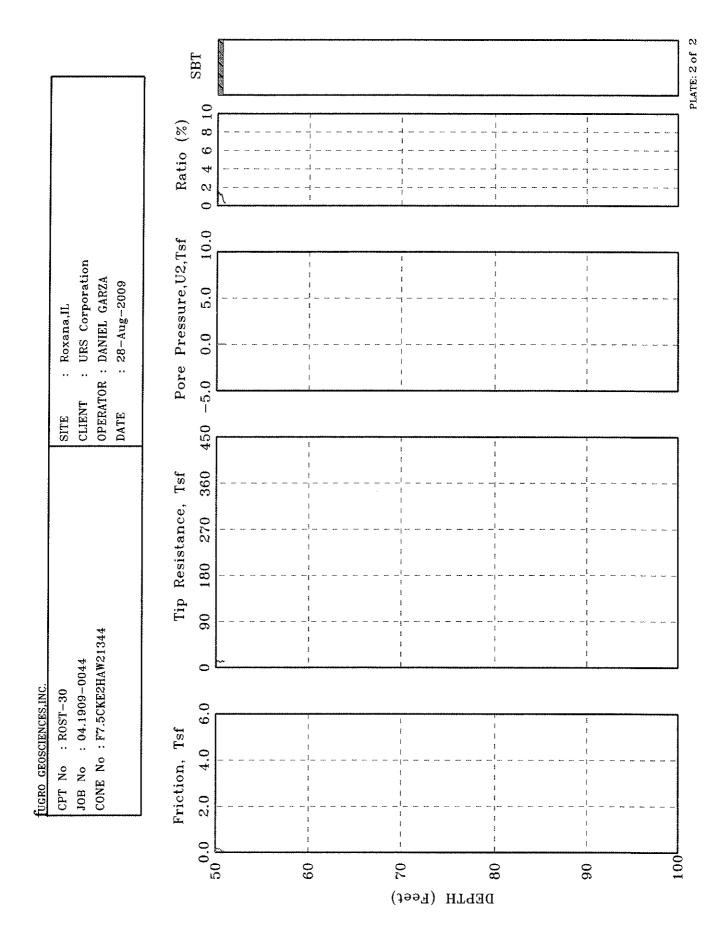


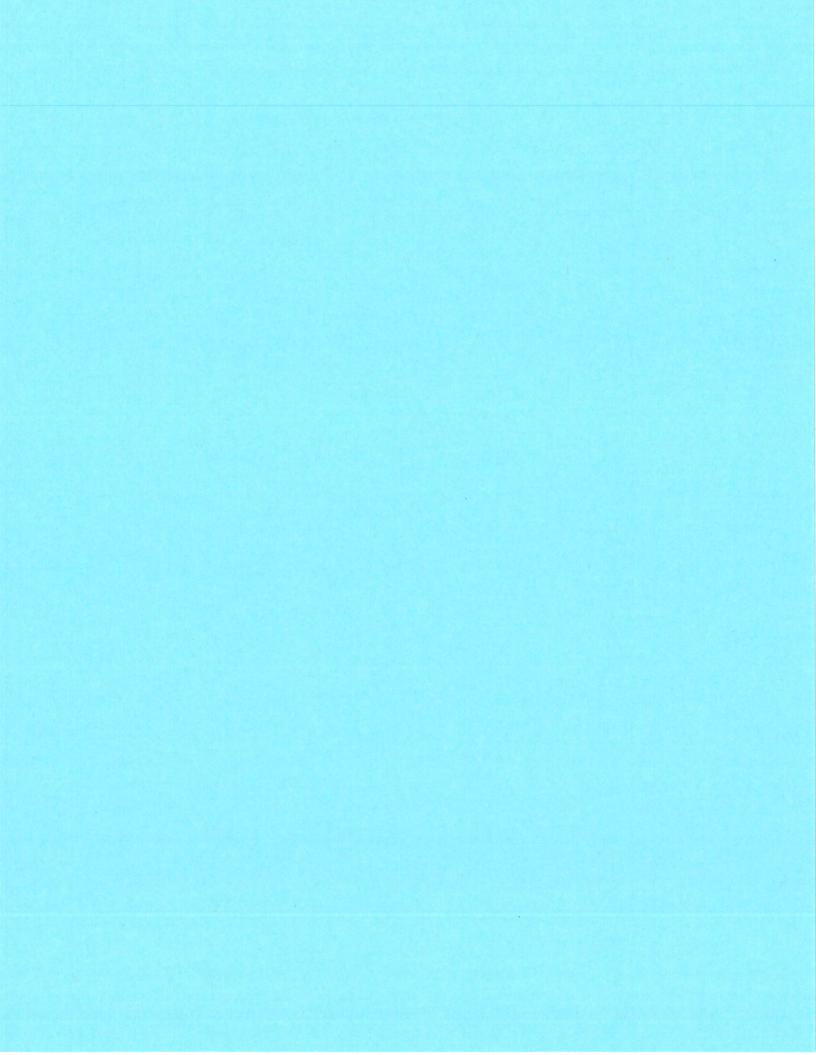












ROXANA, ILLINOIS
ROST PLOTS

Site: Conoco-Roxana,IL

Client: URS

Date/Time: 8/26/2009 @ 8:39:27 AM

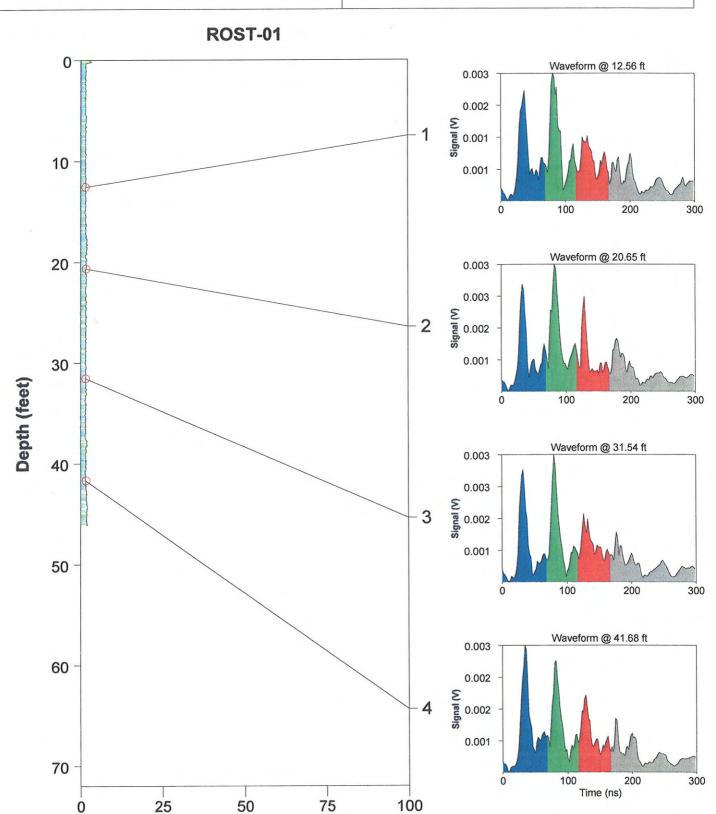
ROST Unit: Houston

Operator: Robert Biehle

Fugro Job #: 04.1909-0044

Max fluorescence: 3.27% @ 0.20 ft

Final depth BGS: 46.10 ft



Fluorescence (%RE)

Site: Conoco-Roxana, IL

Client: URS

Date/Time: 8/27/2009 @ 9:16:44 AM

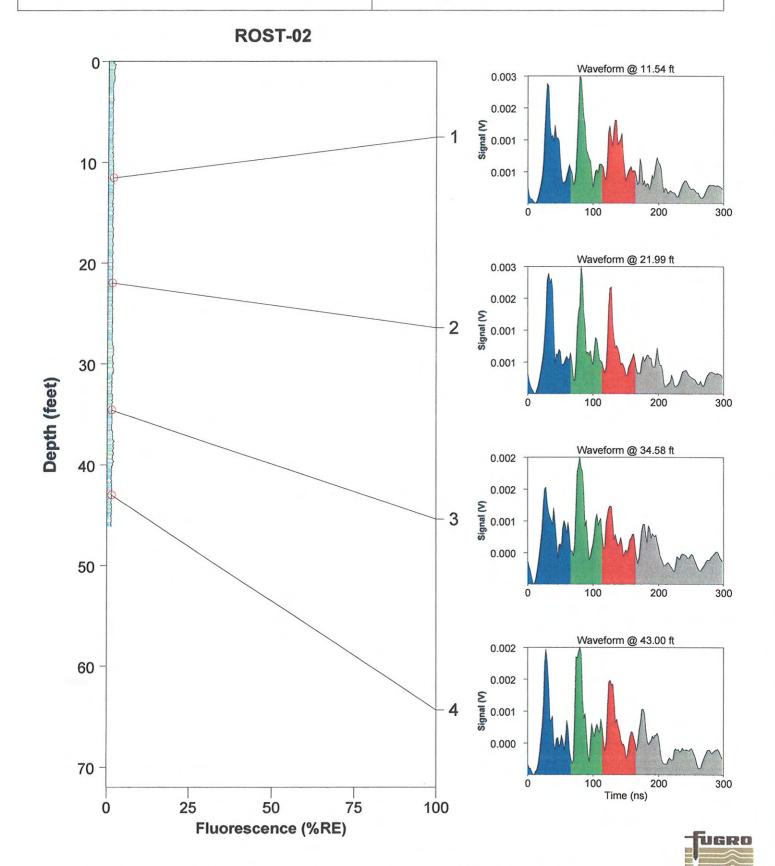
ROST Unit: Houston

Operator: Robert Biehle

Fugro Job #: 04.1909-0044

Max fluorescence: 2.23% @ 0.35 ft

Final depth BGS: 46.11 ft



Site: Conoco-Roxana,IL

Client: URS

Date/Time: 8/27/2009 @ 8:26:18 AM

ROST Unit: Houston

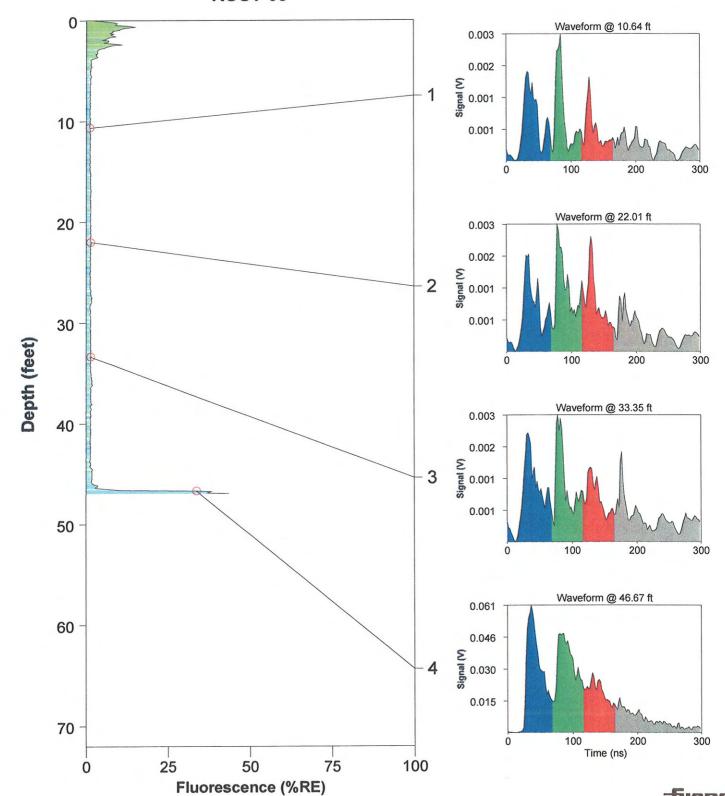
Operator: Robert Biehle

Fugro Job #: 04.1909-0044

Max fluorescence: 43.60% @ 46.93 ft

Final depth BGS: 46.93 ft

ROST-03



Site: Connoco-Roxana,IL

Client: URS

Date/Time: 8/25/2009 @ 4:27:38 PM

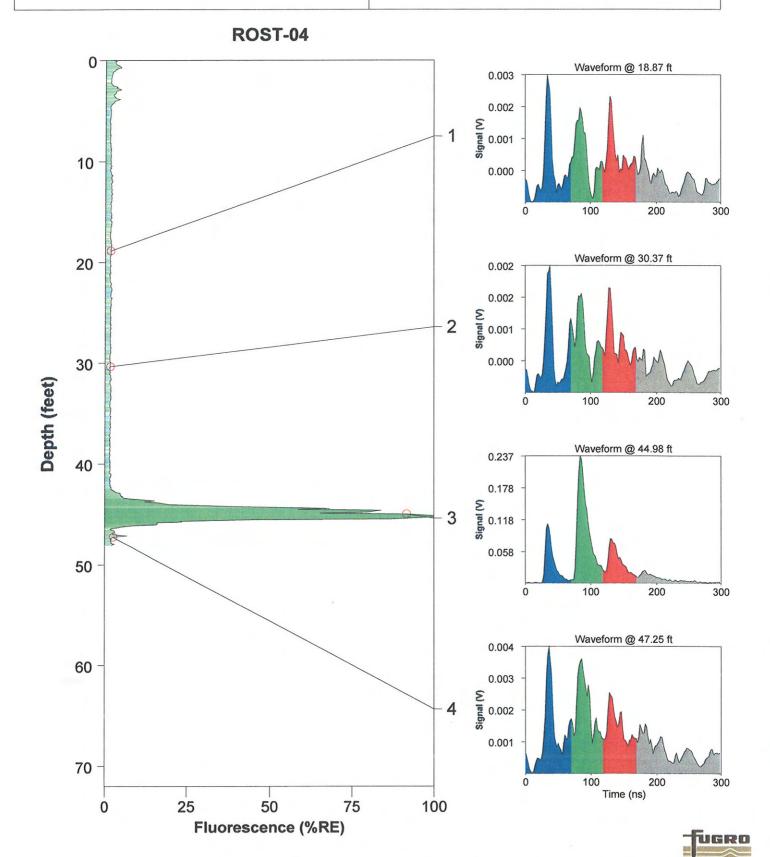
ROST Unit: Houston

Operator: Robert Biehle

Fugro Job #: 04.1909-0044

Max fluorescence: 122.74% @ 45.27 ft

Final depth BGS: 48.08 ft



Site: Connoco-Roxana,IL

Client: URS

Date/Time: 8/25/2009 @ 5:29:23 PM

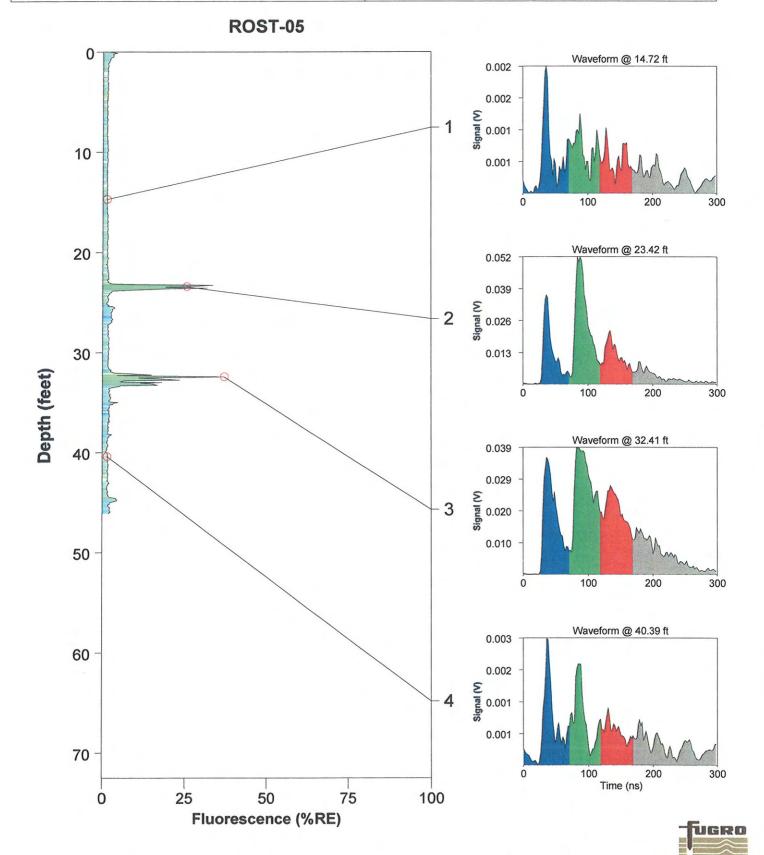
ROST Unit: Houston

Operator: Robert Biehle

Fugro Job #: 04.1909-0044

Max fluorescence: 37.25% @ 32.41 ft

Final depth BGS: 46.12 ft



Site: Connoco-Roxana,IL

Client: URS

Date/Time: 8/28/2009 @ 8:14:37 AM

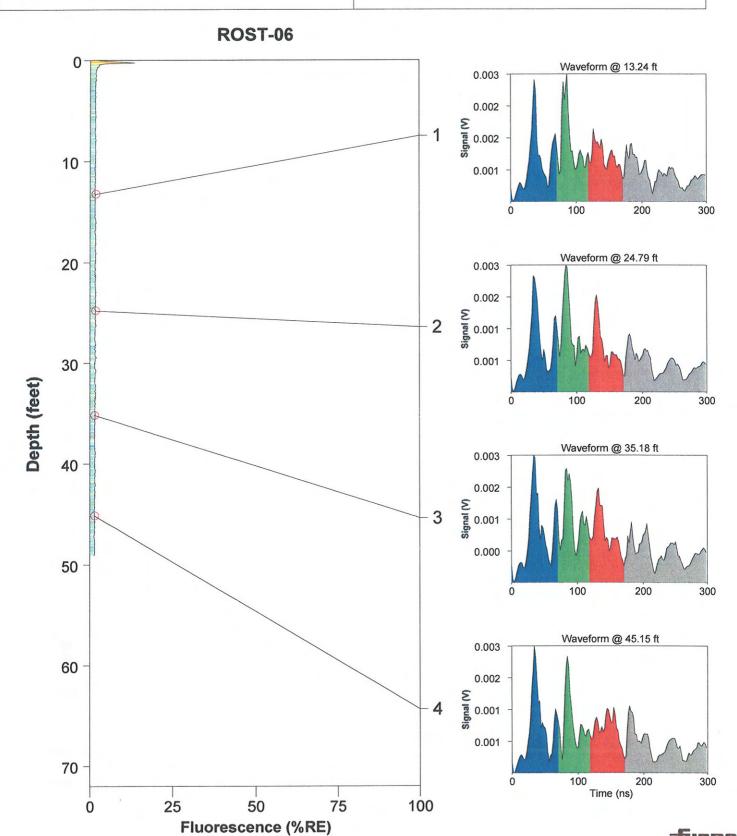
ROST Unit: Houston

Operator: Robert Biehle

Fugro Job #: 04.1909-0044

Max fluorescence: 13.37% @ 0.26 ft

Final depth BGS: 49.05 ft



Site: Conoco-Roxana,IL

Client: URS

Date/Time: 8/28/2009 @ 8:59:51 AM

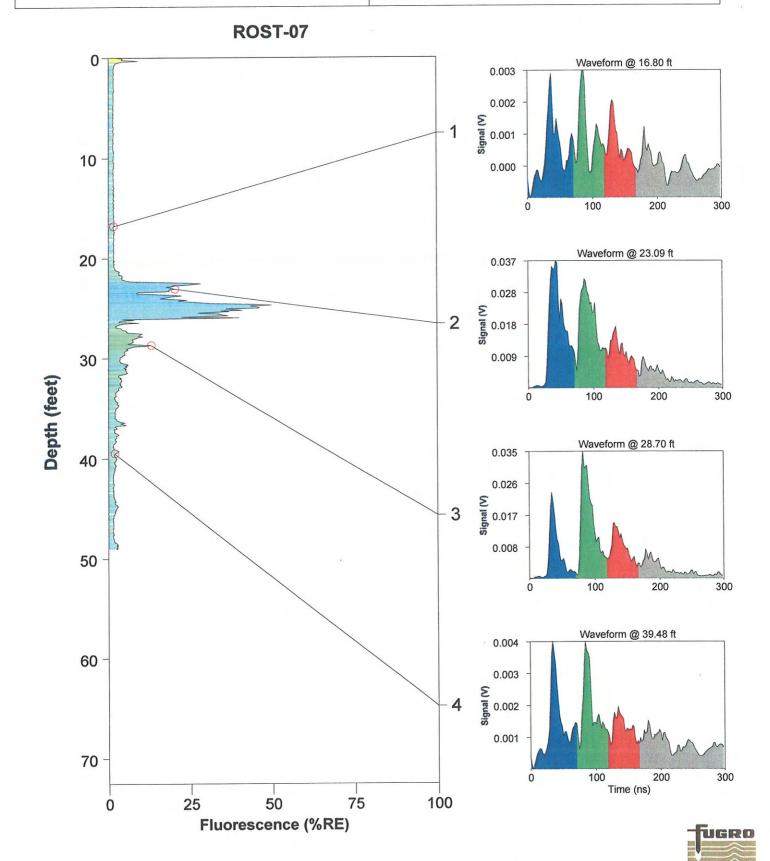
ROST Unit: Houston

Operator: Robert Biehle

Fugro Job #: 04.1909-0044

Max fluorescence: 49.79% @ 24.71 ft

Final depth BGS: 49.05 ft



Site: Conoco-Roxanna,IL

Client: URS

Date/Time: 8/26/2009 @ 9:31:38 AM

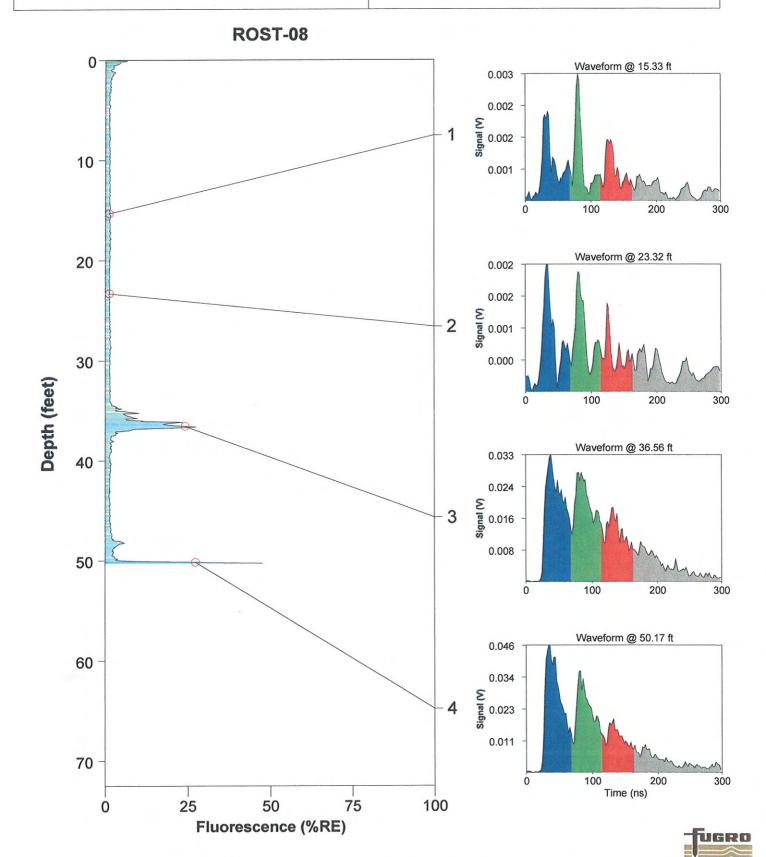
ROST Unit: Houston

Operator: Robert Biehle

Fugro Job #: 04.1909-0044

Max fluorescence: 47.57% @ 50.27 ft

Final depth BGS: 50.27 ft



Site: Conoco-Roxana, IL

Client: URS

Date/Time: 8/26/2009 @ 10:29:41 AM

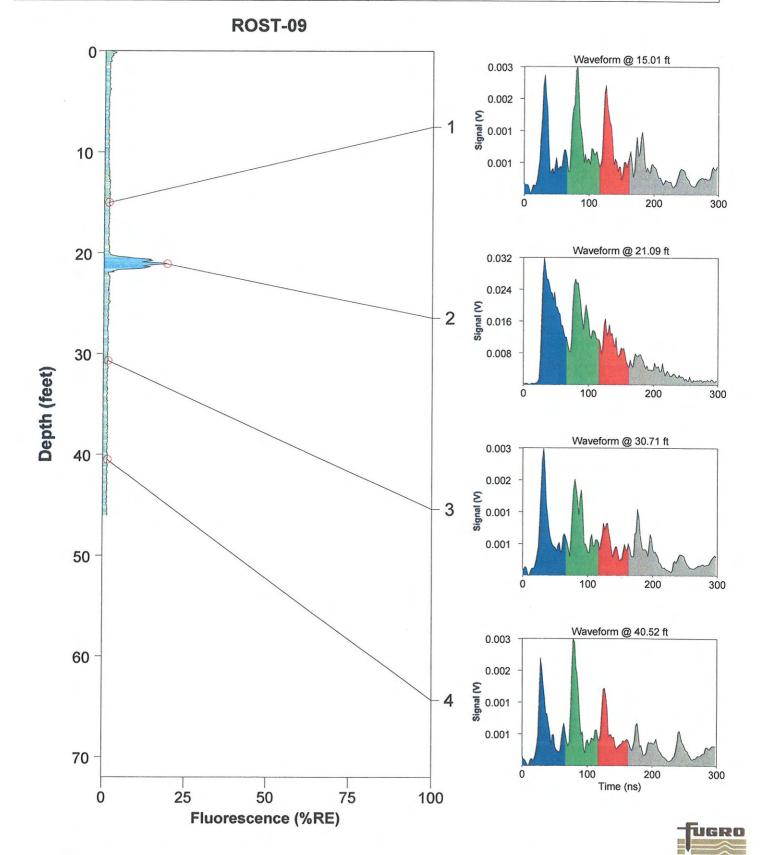
ROST Unit: Houston

Operator: Robert Biehle

Fugro Job #: 04.1909-0044

Max fluorescence: 19.34% @ 21.09 ft

Final depth BGS: 46.05 ft



Site: Conoco-Roxana, IL

Client: URS

Date/Time: 8/26/2009 @ 12:14:11 PM

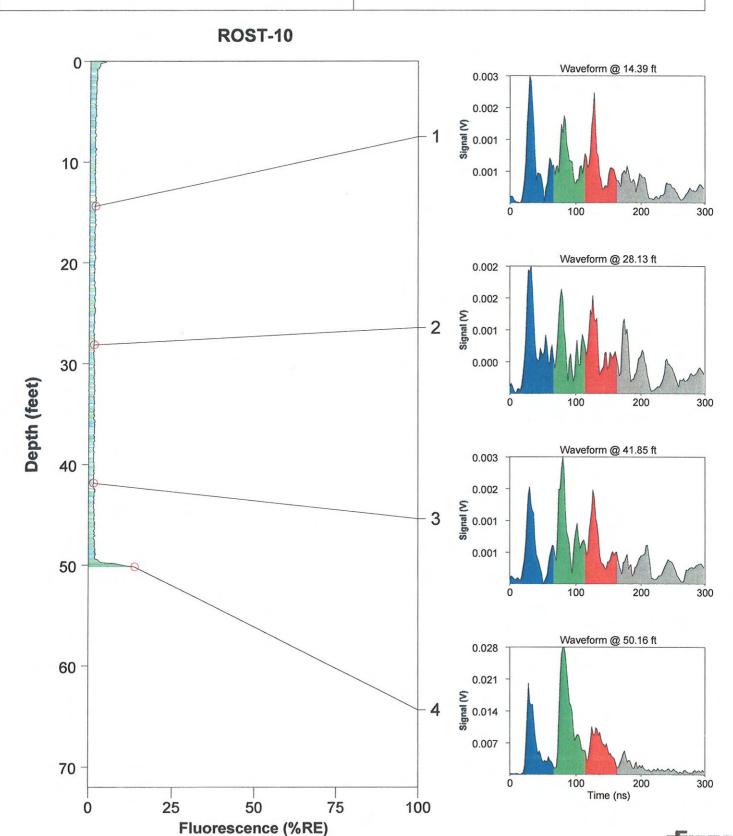
ROST Unit: Houston

Operator: Robert Biehle

Fugro Job #: 04.1909-0044

Max fluorescence: 13.79% @ 50.16 ft

Final depth BGS: 50.16 ft



Site: Conoco-Roxana,IL

Client: URS

Date/Time: 8/24/2009 @ 3:46:24 PM

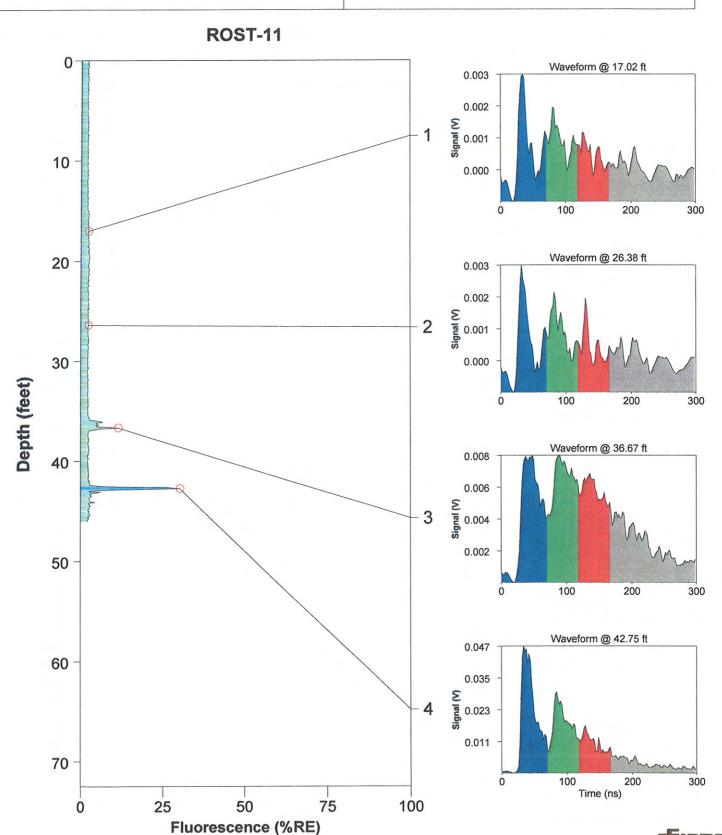
ROST Unit: Houston

Operator: Robert Biehle

Fugro Job #: 04.1909-0044

Max fluorescence: 30.31% @ 42.75 ft

Final depth BGS: 46.03 ft



Site: Conoco-Roxana,IL

Client: URS

Date/Time: 8/24/2009 @ 4:49:05 PM

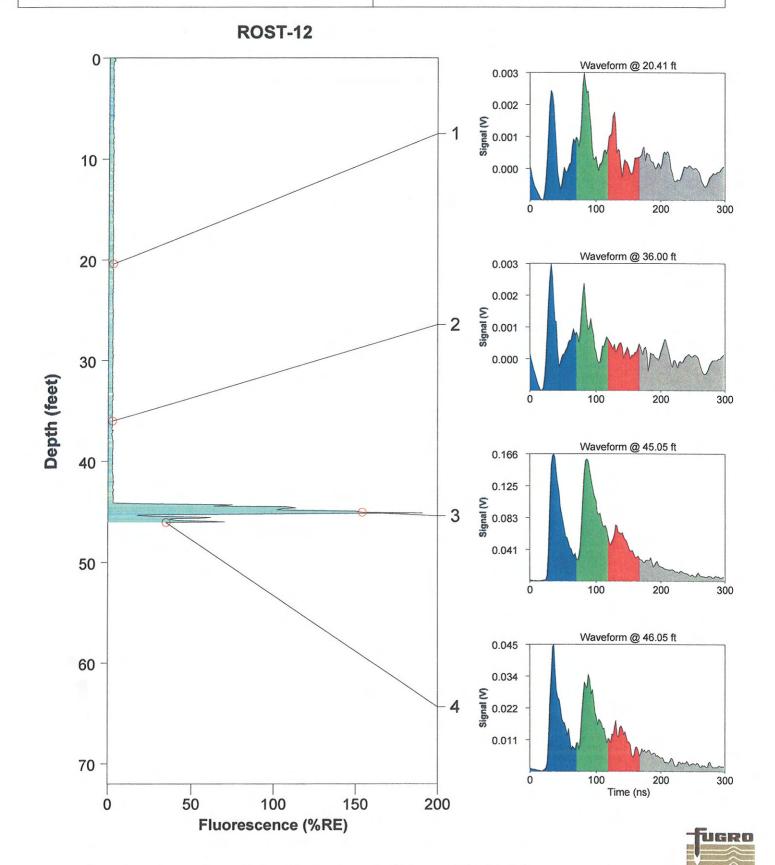
ROST Unit: Houston

Operator: Robert Biehle

Fugro Job #: 04.1909-0044

Max fluorescence: 190.95% @ 45.11 ft

Final depth BGS: 46.05 ft



Site: Conoco-Roxana,IL

Client: URS

Date/Time: 8/25/2009 @ 12:49:24 PM

ROST Unit: Houston

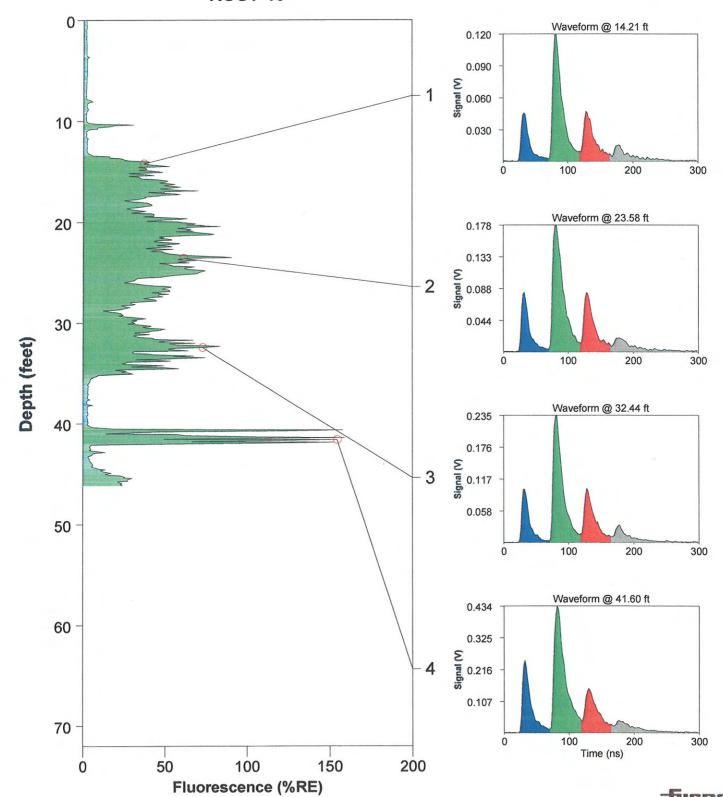
Operator: Robert Biehle

Fugro Job #: 04.1909-0044

Max fluorescence: 158.84% @ 41.40 ft

Final depth BGS: 46.14 ft





Site: Conoco-Roxana,IL

Client: URS

Date/Time: 8/25/2009 @ 1:46:59 PM

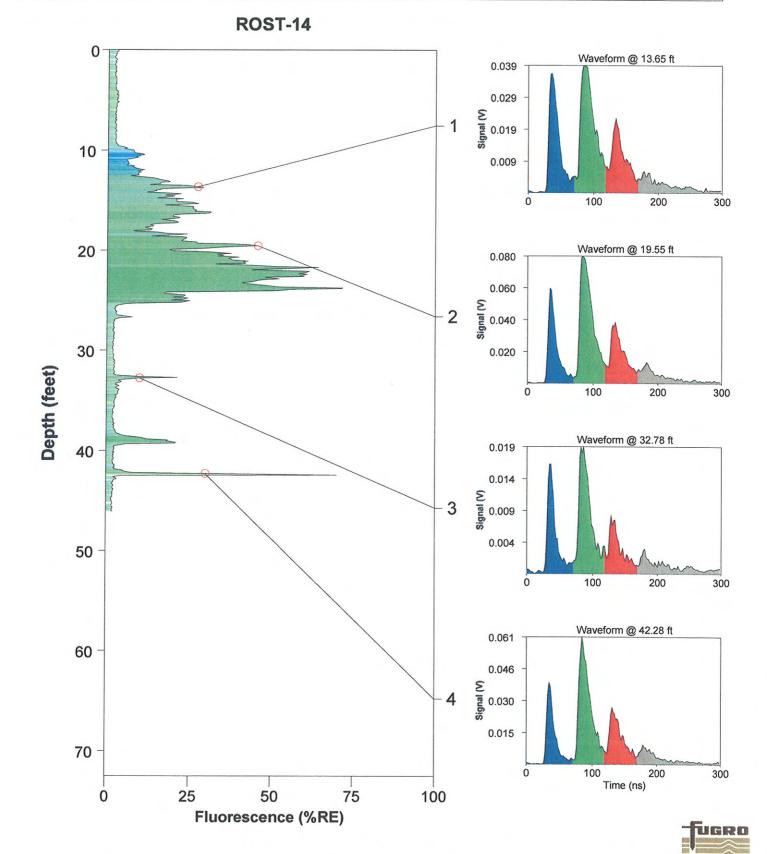
ROST Unit: Houston

Operator: Robert Biehle

Fugro Job #: 04.1909-0044

Max fluorescence: 71.70% @ 23.75 ft

Final depth BGS: 46.05 ft



Site: Conoco-Roxana,IL

Client: URS

Date/Time: 8/25/2009 @ 7:39:08 AM

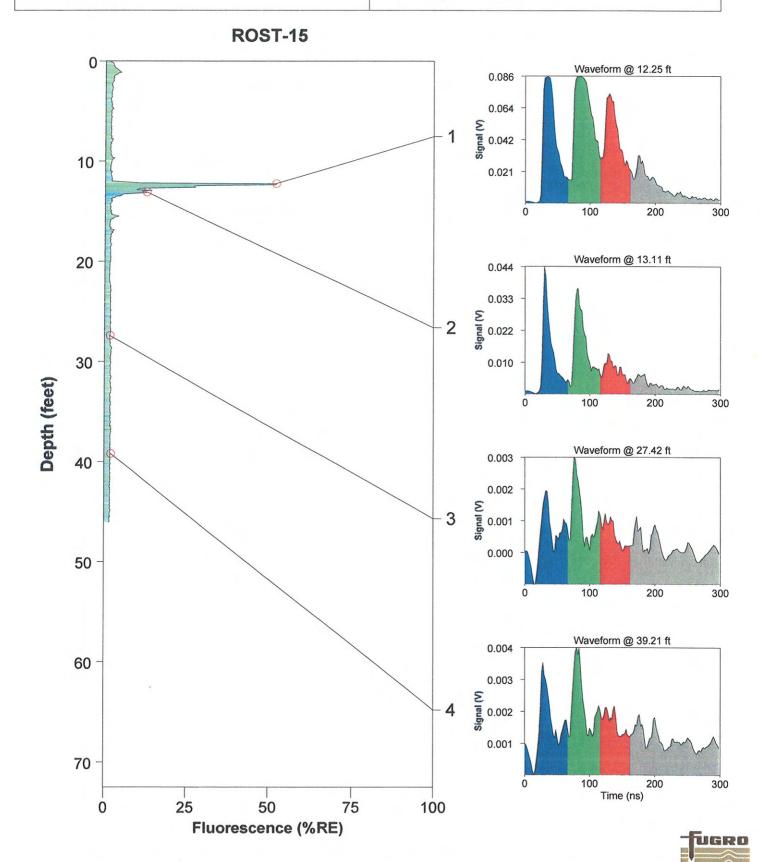
ROST Unit: Houston

Operator: Robert Biehle

Fugro Job #: 04.1909-0044

Max fluorescence: 52.20% @ 12.25 ft

Final depth BGS: 46.07 ft



Site: Conoco-Roxana,IL

Client: URS

Date/Time: 8/25/2009 @ 10:38:02 AM

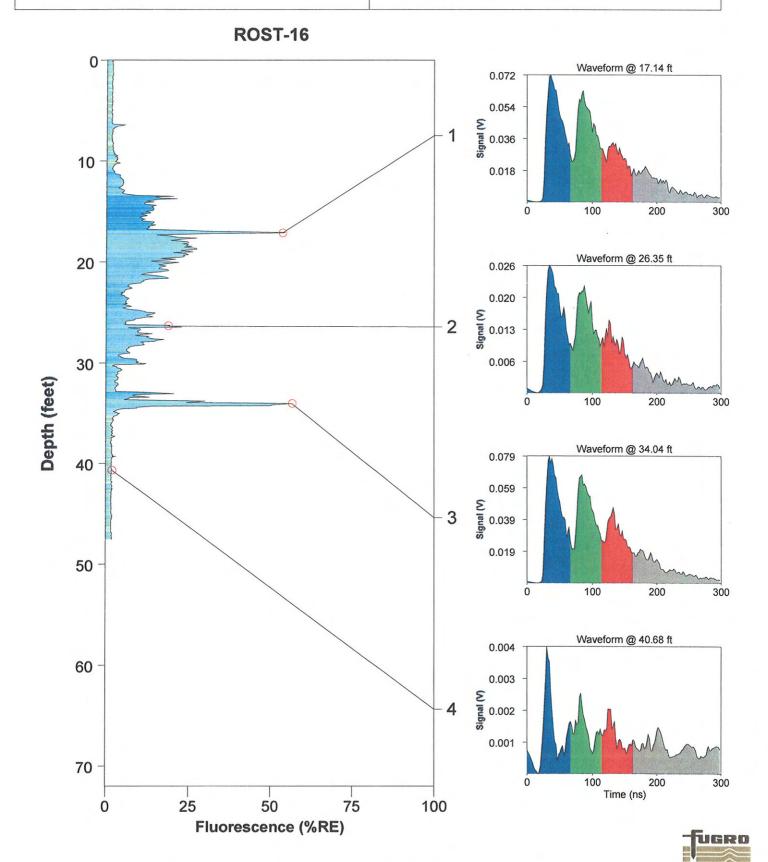
ROST Unit: Houston

Operator: Robert Biehle

Fugro Job #: 04.1909-0044

Max fluorescence: 56.66% @ 34.04 ft

Final depth BGS: 47.53 ft



Site: Conoco-Roxana,IL

Client: URS

Date/Time: 8/25/2009 @ 9:35:47 AM

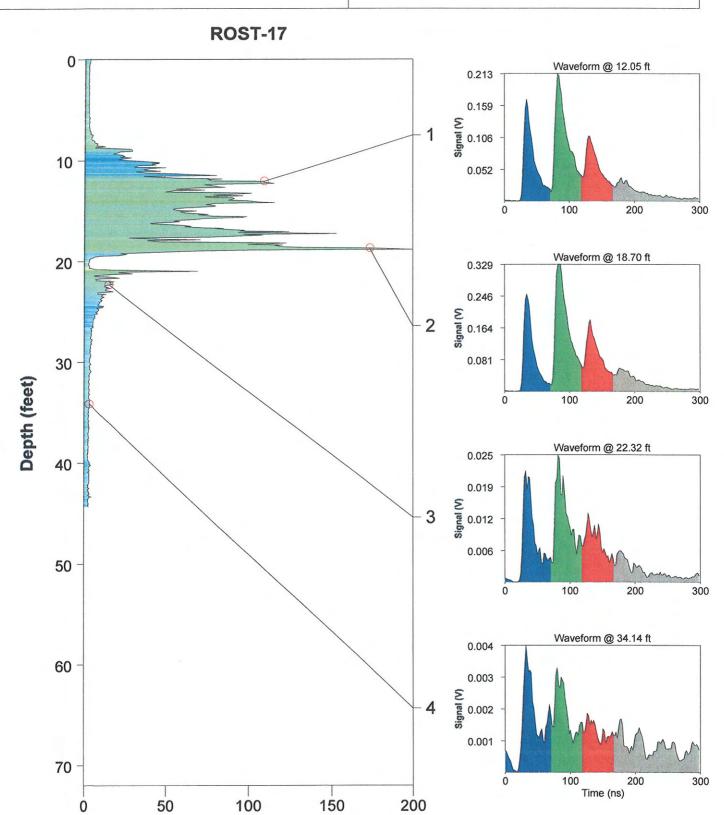
ROST Unit: Houston

Operator: Robert Biehle

Fugro Job #: 04.1909-0044

Max fluorescence: 218.68% @ 18.83 ft

Final depth BGS: 44.32 ft



Fluorescence (%RE)

Site: Conoco-Roxana, IL.

Client: URS

Date/Time: 8/25/2009 @ 8:47:25 AM

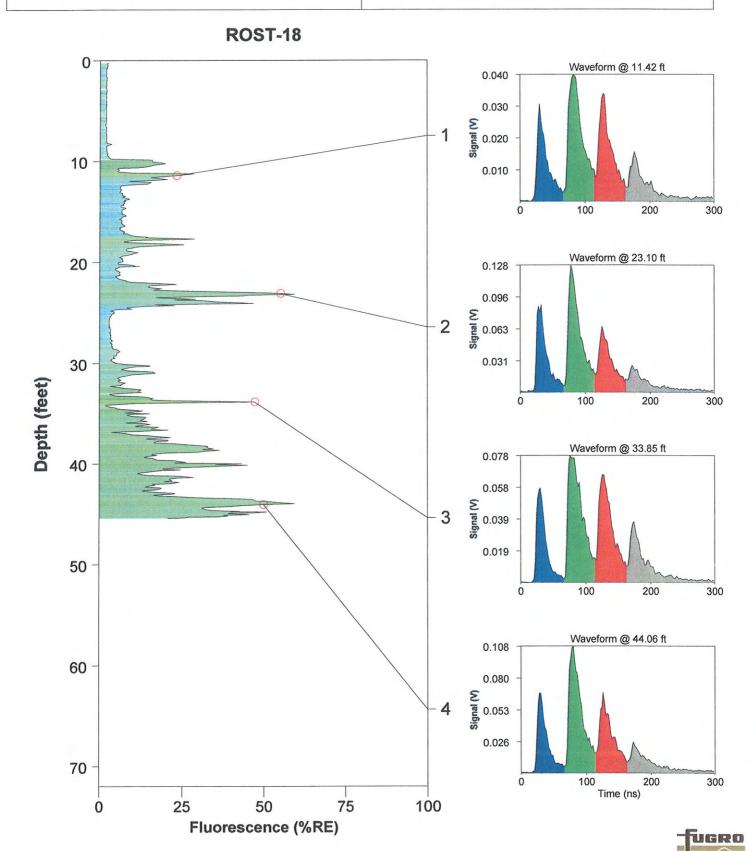
ROST Unit: Houston

Operator: Robert Biehle

Fugro Job #: 04.1909-0044

Max fluorescence: 59.56% @ 23.17 ft

Final depth BGS: 45.41 ft



Site: Conoco-Roxana,IL

Client: URS

Date/Time: 8/26/2009 @ 4:24:34 PM

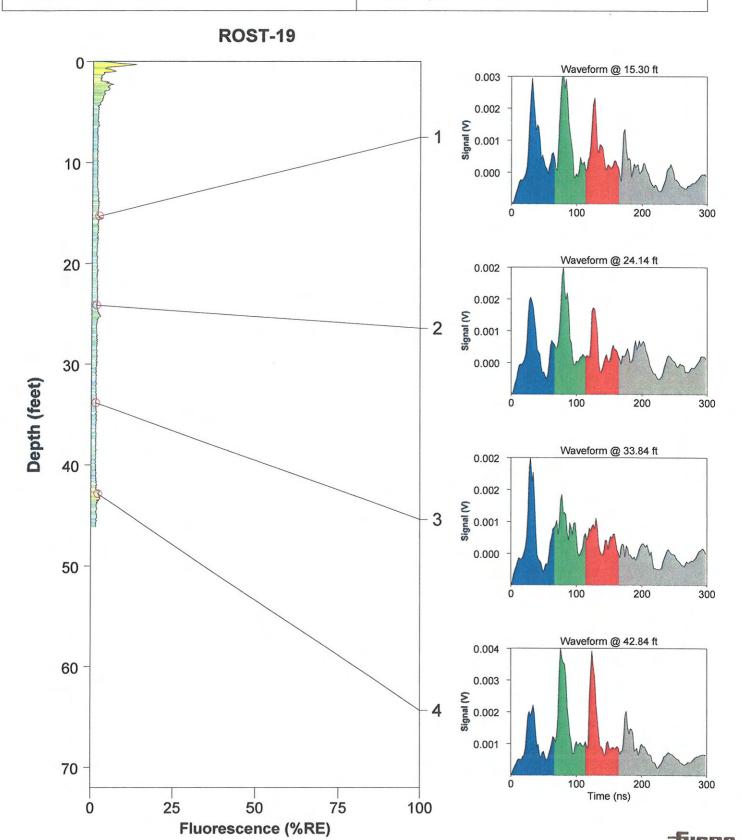
ROST Unit: Houston

Operator: Robert Biehle

Fugro Job #: 04.1909-0044

Max fluorescence: 13.26% @ 0.30 ft

Final depth BGS: 46.14 ft



Site: Conoco-Roxana,IL

Client: URS

Date/Time: 8/26/2009 @ 3:33:30 PM

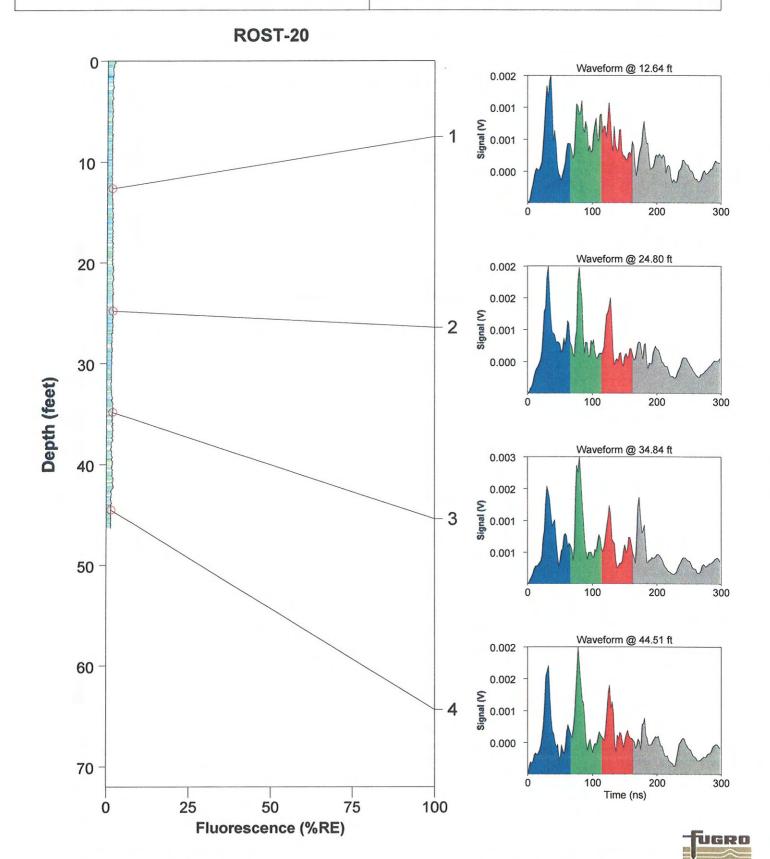
ROST Unit: Houston

Operator: Robert Biehle

Fugro Job #: 04.1909-0044

Max fluorescence: 2.43% @ 0.16 ft

Final depth BGS: 46.31 ft



Site: Conoco-Roxana,IL

Client: URS

Date/Time: 8/26/2009 @ 11:18:03 AM

25

0

50

Fluorescence (%RE)

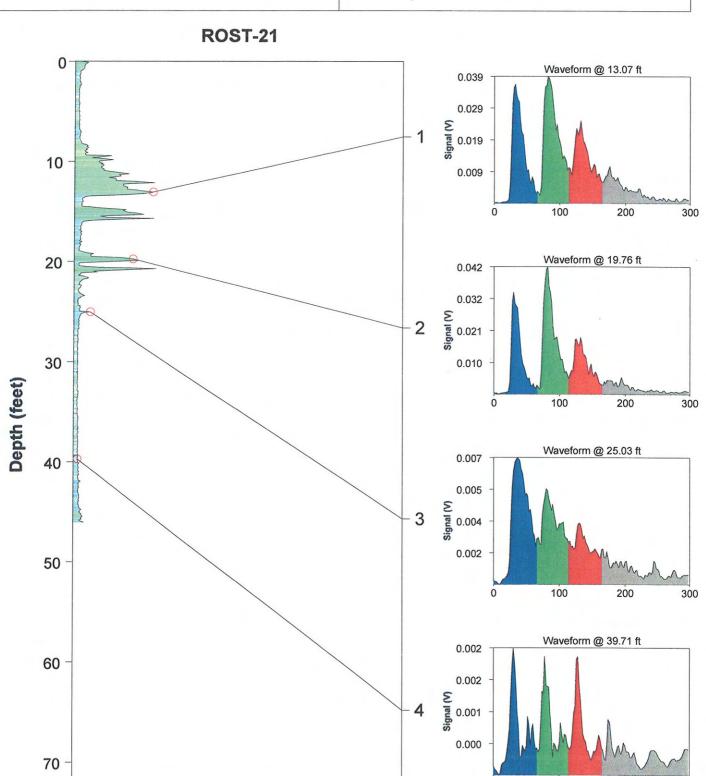
ROST Unit: Houston

Operator: Robert Biehle

Fugro Job #: 04.1909-0044

Max fluorescence: 24.90% @ 20.73 ft

Final depth BGS: 46.07 ft





300

100

200

Time (ns)

Fugro Geosciences, Inc., 6105 Rookin, Houston, TX 77074 (713) 346-4000 www.geo.fugro.com

100

75

Site: Conoco-Roxana,IL

Client: URS

Date/Time: 8/26/2009 @ 2:37:36 PM

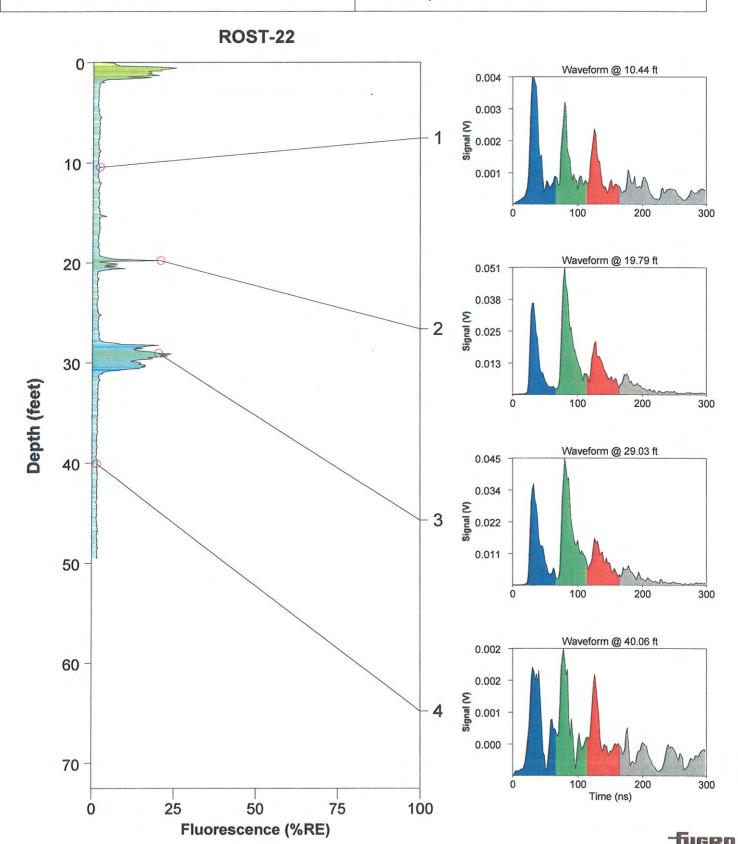
ROST Unit: Houston

Operator: Robert Biehle

Fugro Job #: 04.1909-0044

Max fluorescence: 25.61% @ 0.56 ft

Final depth BGS: 49.51 ft



Site: Conoco-Roxana,IL

Client: URS

Date/Time: 8/28/2009 @ 9:49:30 AM

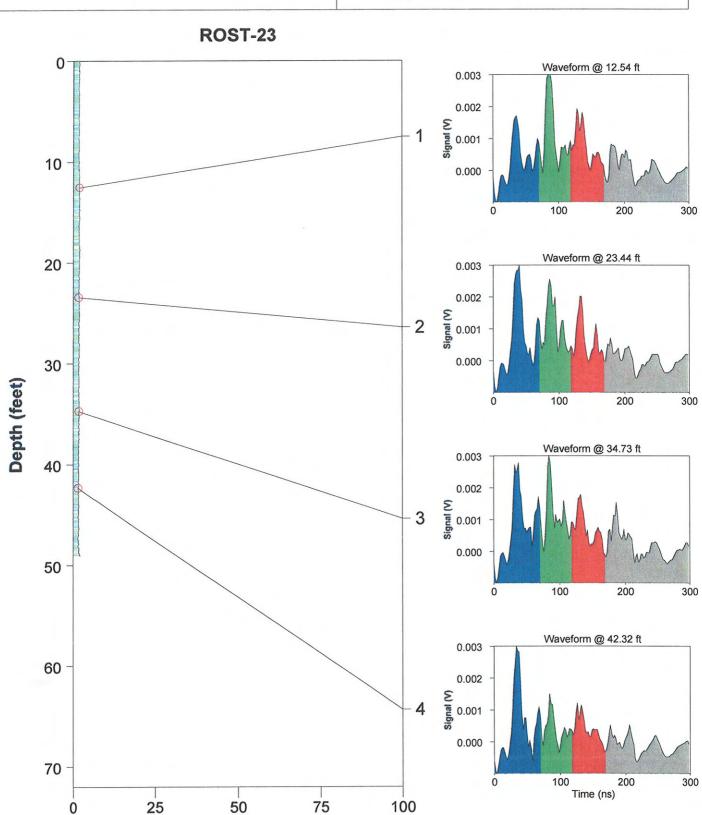
ROST Unit: Houston

Operator: Robert Biehle

Fugro Job #: 04.1909-0044

Max fluorescence: 2.03% @ 49.05 ft

Final depth BGS: 49.05 ft



Fluorescence (%RE)

Site: Conoco-Roxana,IL

Client: URS

Date/Time: 8/28/2009 @ 11:51:21 AM

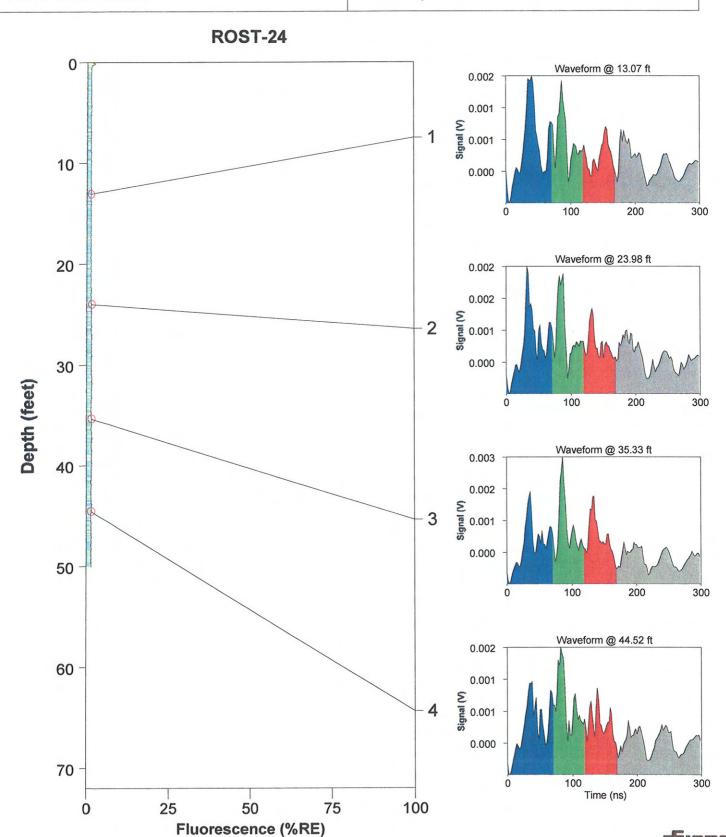
ROST Unit: Houston

Operator: Robert Biehle

Fugro Job #: 04.1909-0044

Max fluorescence: 2.87% @ 0.13 ft

Final depth BGS: 50.07 ft



Site: Conoco-Roxana,IL

Client: URS

Date/Time: 8/28/2009 @ 1:29:32 PM

ROST Unit: Houston

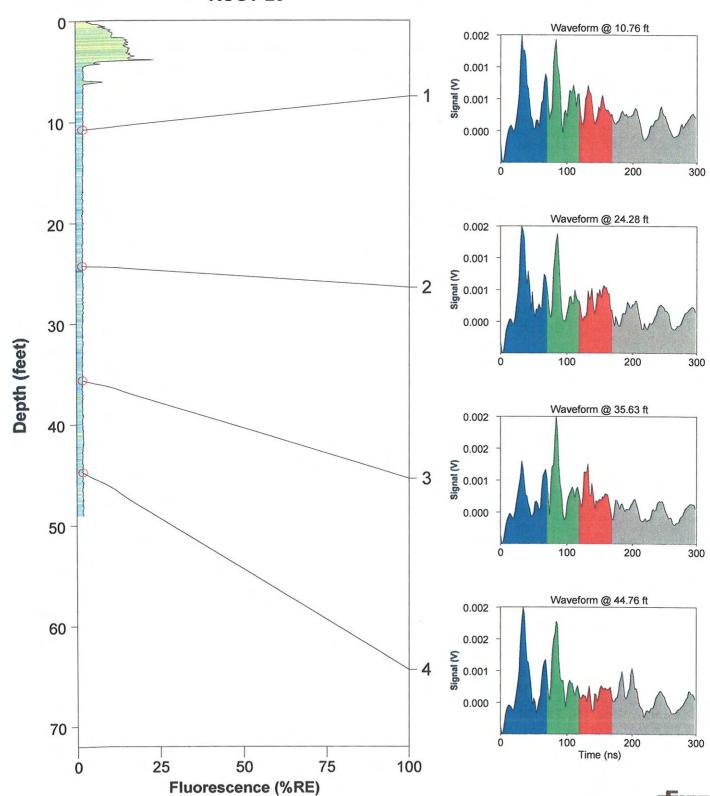
Operator: Robert Biehle

Fugro Job #: 04.1909-0044

Max fluorescence: 21.93% @ 3.90 ft

Final depth BGS: 49.06 ft

ROST-25



Site: Conoco-Roxana,IL

Client: URS

Date/Time: 8/27/2009 @ 4:01:40 PM

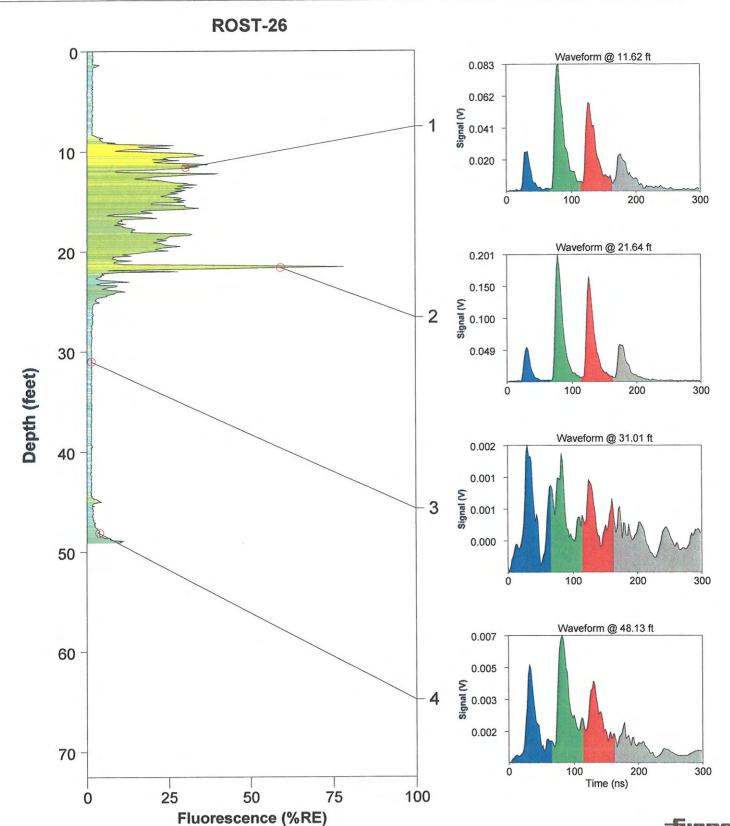
ROST Unit: Houston

Operator: Robert Biehle

Fugro Job #: 04 1909-0044

Max fluorescence: 78.45% @ 21.57 ft

Final depth BGS: 49.11 ft





Fugro Geosciences, Inc., 6105 Rookin, Houston, TX 77074 (713) 346-4000 www.geo.fugro.com

Site: Conoco-Roxana,IL

Client: URS

Date/Time: 8/27/2009 @ 3:12:32 PM

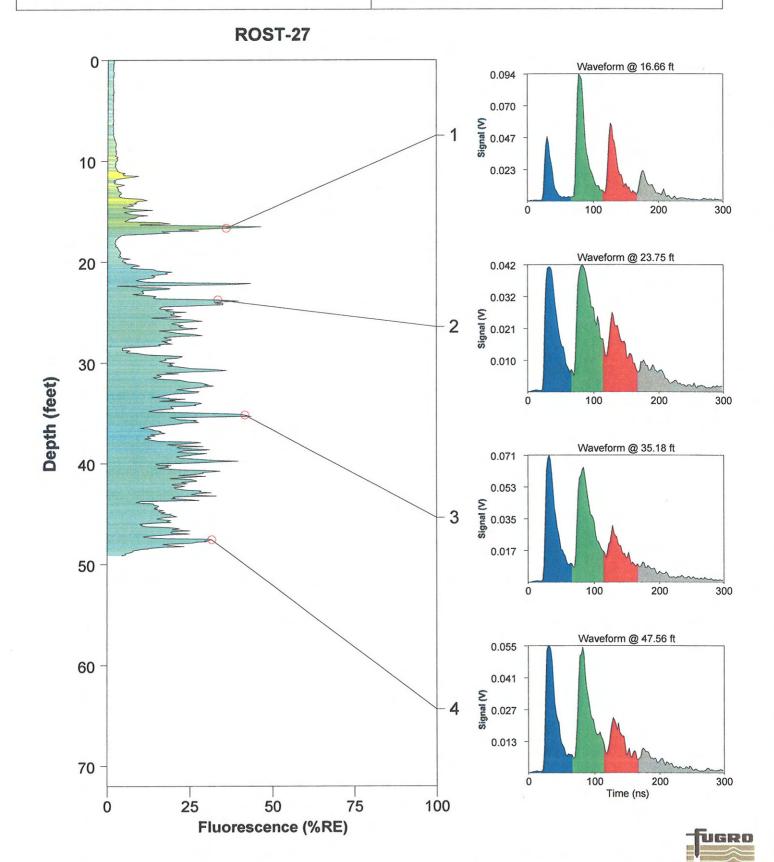
ROST Unit: Houston

Operator: Robert Biehle

Fugro Job #: 04.1909-0044

Max fluorescence: 46.38% @ 16.52 ft

Final depth BGS: 49.12 ft



Site: Conoco-Roxana, IL

Client: URS

Date/Time: 8/27/2009 @ 1:51:43 PM

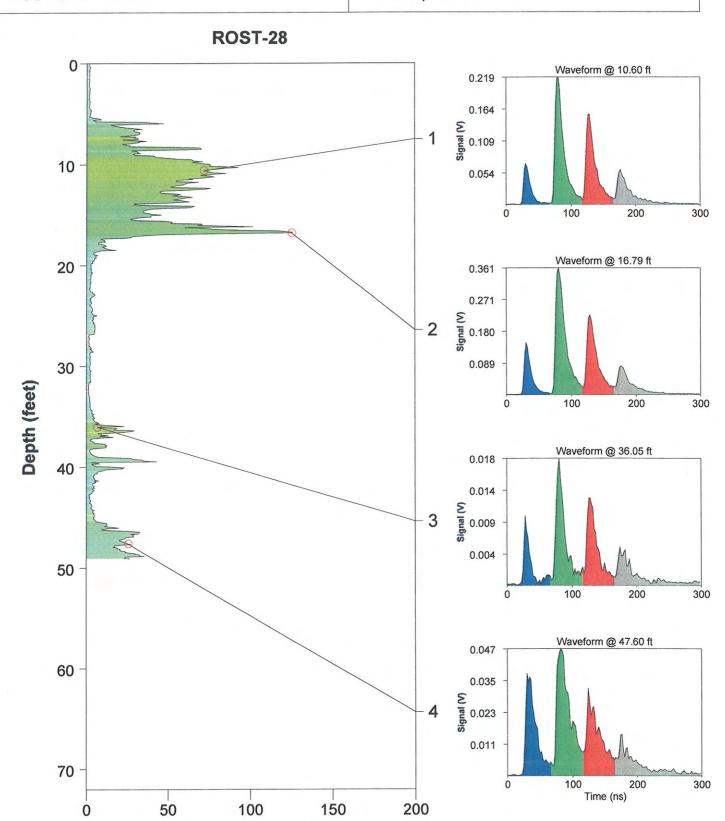
ROST Unit: Houston

Operator: Robert Biehle

Fugro Job #: 04 1909-0044

Max fluorescence: 126.21% @ 16.73 ft

Final depth BGS: 49.07 ft



Fluorescence (%RE)

Site: Conoco-Roxana, IL

Client: URS

Date/Time: 8/27/2009 @ 4:57:18 PM

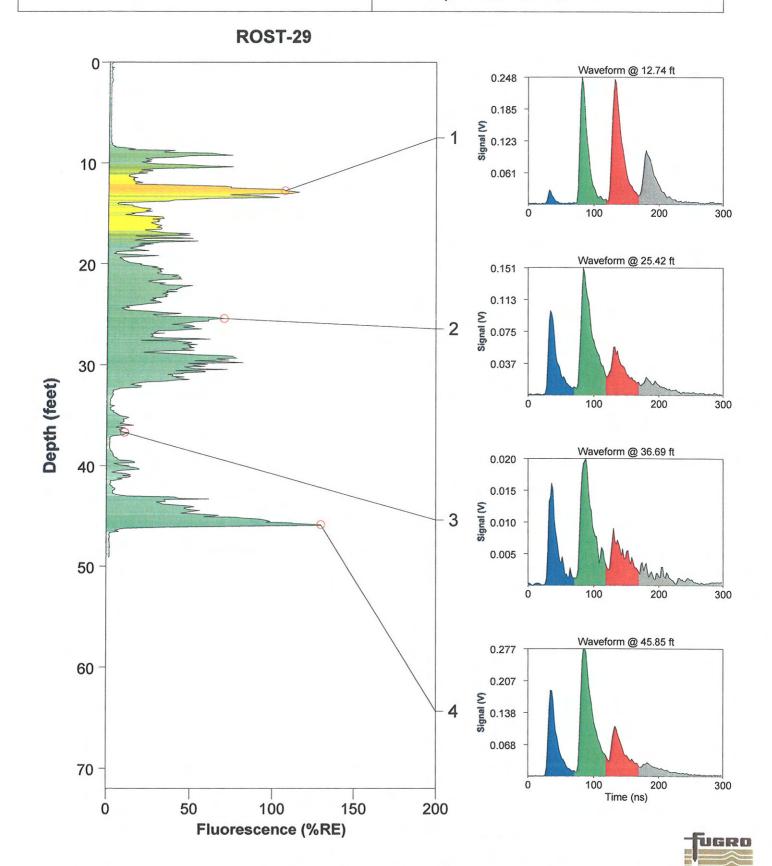
ROST Unit: Houston

Operator: Robert Biehle

Fugro Job #: 04 1909-0044

Max fluorescence: 129.67% @ 45.85 ft

Final depth BGS: 49.10 ft



Site: Conoco-Roxana,IL

Client: URS

Date/Time: 8/28/2009 @ 10:40:02 AM

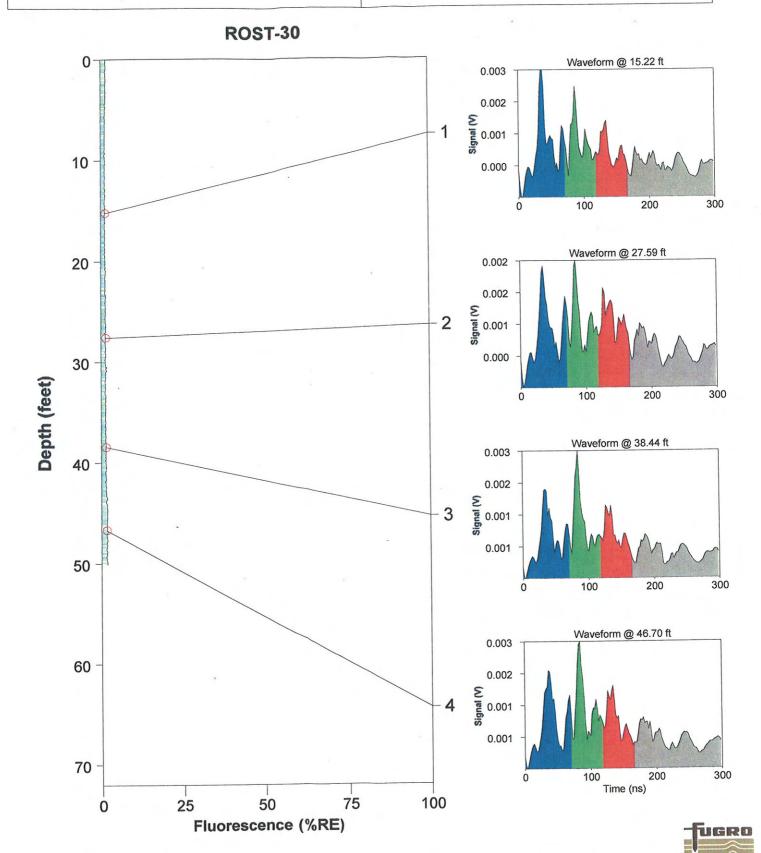
ROST Unit: Houston

Operator: Robert Biehle

Fugro Job #: 04.1909-0044

Max fluorescence: 1.82% @ 46.90 ft

Final depth BGS: 50.05 ft



Monitoring Well Locations

MW-7

MW-8

Soil Boring Location

GP-1

GP-2

GP-4

GP-7

GP-8

GP-9

GP-10

GP-11

GP-12

Vapor Monitoring Points Location

VMP-1

VMP-2

VMP-3

VMP-4

VMP-5

VMP-6

VMP-7

VMP-8

VMP-9

VMP-10

VMP-11

VMP-12

VMP-13

VMP-14

VMP-15

VMP-16

KEY TO BORING LOGS

SUBSURFACE MATERIAL LEGEND

WELL CONSTRUCTION LEGEND

	SUBS	SURFACE MATERI	AL LEGEND	
	Graphic Symbol	Description	USCS Classification	
		GRAVEL with little or no fines	GP or GW	
\VEL		Silty GRAVEL	GM	
GRAVE		Clayey GRAVEL	GC	
		SAND and GRAVEL	SP/GP	
		SAND with little or no fines	SP or SW	
SAND		Silty SAND	SM	
_		Clayey SAND	SC	
C AYS		Inorganic low plastic SILT	ML	
LOW PLASTIC SILTS AND CLAYS		Inorganic low plastric CLAY	CL	
SILTS		Organic low plastic SILT or CLAY	OL	
AYS		Inorganic high plastic SILT	МН	
LOW PLASTI SILTS AND CLA		Inorganic high plastric CLAY	СН	
SILTS		Organic high plastic SILT or CLAY	ОН	
ROCKS		LIMESTONE		
SURFACE MATERIALS		FILL		
ω¥				



Concrete with Schedule 40 PVC riser pipe



Grout with Schedule 40 PVC riser pipe



Bentonite chip seal with Schedule 40 PVC riser pipe



20/40 silica filter sand with Schedule 40 PVC riser pipe



 $20/\!40$ silica filter sand with 0.010 inch slot size Schedule 40 PVC well screen



20/40 silica filter sand



Native Backfill

ABBREVIATIONS USED

HSA = Hollow Stem Auger ATD = At Time of Drilling AD = After Drilling WOR = Weight of Rod WOH = Weight of Hammer

Page 1 Of 3

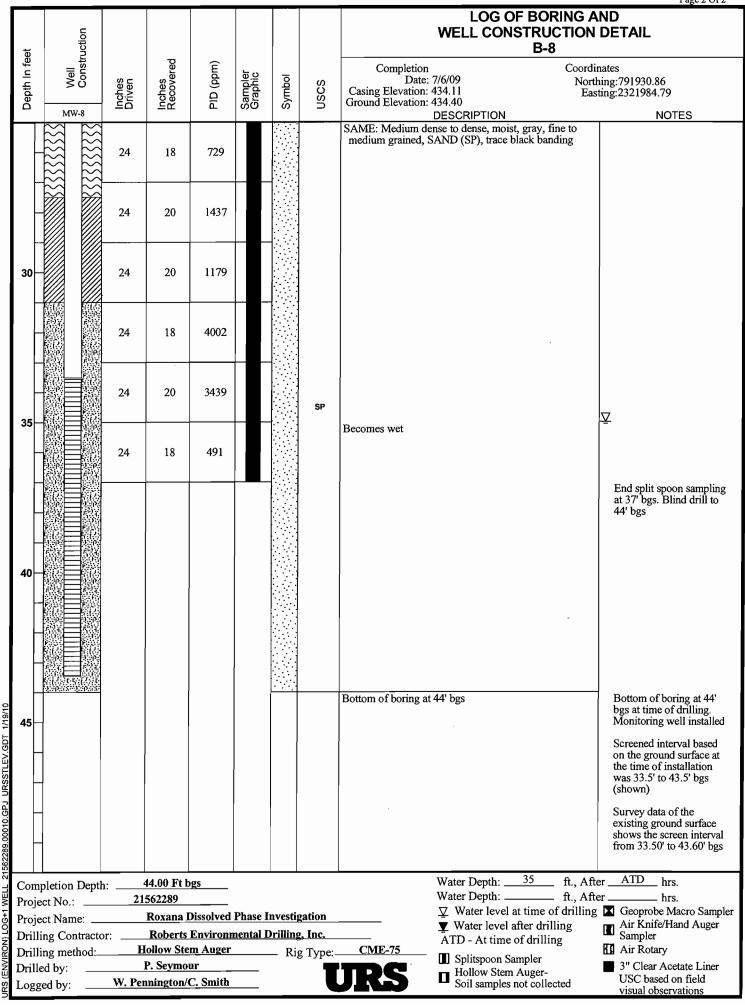
et	Well							LOG OF BORING AND WELL CONSTRUCTION DETAIL B-7				
Depth In feet	Constr	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	nscs	Completion Date: 7/9/09 Casing Elevation: 443.19 Ground Elevation: 443.49	Coordi D Nort O Eas G CRIPTION	inates hing:792024.62 sting:2322181.25 NOTES		
	\$							Not logged		Boring advanced to a depth of 5' via air knife to clear utilities, then continued with 4.25" HSA		
5-	\$	24	18	0.4				Loose, moist, brown, fine (SP)	to medium grained, SAND			
	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	24	12	0.3								
10	\$\$\$\$\$\$\$\$ \$\$\$\$\$\$\$\$	24	12	0.3								
-	\$\$\$\$\$\$\$ \$\$\$\$\$\$\$	24	18	0.3				Becomes medium dense				
15	\$\$\$\$\$\$\$ \$\$\$\$\$\$\$	24	18	0.2			SP					
-	\$\$\$\$\$\$\$ \$\$\$\$\$\$\$	24	18	0.2				1" sandy clay				
-	\$\$\$\$\$\$\$ \$\$\$\$\$\$\$	24	20	0.2				Becomes grayish brown				
20	\$\$\$\$\$\$\$\$ \$\$\$\$\$\$\$	24	22	0.1								
	\$\$\$\$\$\$\$ \$\$\$\$\$\$\$	24	20	0.1								
000000000000000000000000000000000000000	\$\$\$\$\$\$\$ \$\$\$\$\$\$	24	18	0.1								
Con	Completion Depth:55.00 Ft bgs								er Depth: 45 ft., Aft			
-	Project No.: 21562289								er Depth: ft., Aft			
Project Name: Roxana Dissolved Phase						nvesti	gation		Water level at time of drilling Water level after drilling	Geoprobe Macro Sampler Air Knife/Hand Auger		
_	Drilling Contractor: Roberts Environmental							<u>——</u> ĀТ	D - At time of drilling	Air Knife/Hand Auger Sampler		
-	Drilling method: Hollow Stem Auger			Rig Type: CME-75 Splittmoon Sampler				Air Rotary				
-	Drilled by: P. Seymour M. Corbett/W. Bonnin						T		Hollow Stem Auger- Soil samples not collected	3" Clear Acetate Liner USC based on field		
Log	ged by:	M. Corbett/W. Pennington							Soil samples not collected	visual observations		

Page 2 Of 3

								Page 2 Of 3				
1	_							LOG OF BORING AND				
	Well							WELL CONSTRUCTION DETAIL B-7				
Depth In feet	struc		<u> </u>	<u></u>								
드	Vell	Si C	vere	ppm	흔	 	Ø					
ept		Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	nscs	Date: 7/9/09 Northing: 792024.62 Casing Elevation: 443.10 Easting: 2322181.25 Ground Elevation: 443.46				
Δ	MW-7	_=0	_ =∝	<u>а</u>	တ်လ	S	_	DESCRIPTION NOTES				
	$\bowtie \bowtie$							SAME: Medium dense, moist, grayish brown, fine to				
	<u>_</u> XX	24	20	6.7				medium grained, SAND (SP)				
								1" clay				
	$+$ \approx	 				-						
	\approx		10	4.7.0								
	- ₩	24	18	17.8								
	\approx											
30	-₩ ₩	24	20	19.2								
	\approx	1										
	$\sim \sim \sim$					1::::1						
		24	20	84.7								
		2"	20	04.7								
	-₩ ₩											
	$\stackrel{\leftarrow}{\bowtie}$	24	15	376								
35												
	\bowtie	1										
	-83 85	24	18.5	229								
						[:::]	SP	Very hard drilling at 37'				
		24	6	16.9			3F					
		2.		1017								
						1						
			2.	251								
40	-W// W//	24	21	351				2" black bands				
								D				
								Becomes gray				
		24	20.5	658				2" coal				
								Becomes grayish brown				
		24	16	2605								
01/6								∑				
≝ 45 -								Becomes wet, medium grained, with fine grains				
105.		24	20	9999								
EV.		2-7	20	,,,,		[::::]		Becomes dense				
SS S						:::i		Becomes medium dense				
2				. =								
5.0		24	0.5	4958								
000.						:::		D. Landau and C. Carlotte and				
9228		24	14.5	3186		. ::		Becomes loose, gray, some coarse grains, trace gravel				
Con Proj Dril Dril Log. Log.	W. D. d. ATD. 1											
Con Pro:	Project No: 21562289 Water Depth: hrs.											
Proj	ect No.:		Roxana l	 Dissolved	Phase 1	(nvesti:	gation	Water level at time of drilling M. George Magra Samul				
Dril	ling Contract	_						▼ Water level at time of drilling ▼ Water level after drilling ATD - At time of drilling ATD - At time of drilling				
2 Dril	ling method:	<u>F</u>	Hollow Ste	m Auger			g Type:-	CME-75 Splitspoon Sampler ATD - At time of drining Air Rotary				
Dril	led by:		P. Seymo				1	Hollow Stem Auger- Soil samples not collected 3" Clear Acetate Liner USC based on field using a characteristic acets.				
Log	Logged by: M. Corbett/W. Pennington Soil samples not collected visual observations											
				_								

	Well								LOG OF BORING L CONSTRUCTION B-7		
n fee	ell		red	(E)	5 O	_		Completion	Co	ordinates	
Depth In feet	>ိဝိ	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	nscs	Date: 7/9/09 Casing Elevation: 443.10 Ground Elevation: 443.46]	Northing:792024.62 Easting:2322181.25	
	MW-7	<u>=</u> 0	드따	Δ.	დი	Ś	<u> </u>	DESCR	RIPTION	NOTES NOTES	
								Becomes medium dense			
-		24	16	1015			SP	Becomes dense			
							3F			End split spoon sampling	
	Property of the second							1		at 53' bgs. Blind drill to 55' bgs	
	(2) t-t-(2) t- 2-P-2-1-P-23										
55	120000000000000000000000000000000000000							Bottom of boring at 55' bgs		Bottom of boring at 55' bgs at time of drilling. Monitoring well installed	
										Screened interval based	
										on the ground surface at the time of installation was 43' to 53' bgs (shown)	
	1									Survey data of the	
60										existing ground surface shows the screen interval	
00										from 43.28' to 53.28' bgs	
	1										
	1										
65	1										
	1										
]]										
]					Ì					
	1 1										
70	-										
	-										
_											
									45	ATD	
	pletion Deptlect No.:		55.00 Ft b 562289	ogs			Depth: ft., Depth: ft.,				
Powers Dissolved Phase Investigation Water level at time of drilling Geoprobe Macro Samp											
Drilli	ing Contracto		Roberts follow Ste	Environn	nental D			—— ATD	- At time of drilling	Air Knife/Hand Auger Sampler Air Rotary	
	ing method:_ ed by:		onow Ste P. Seymo			– Rig	g Type:	CME-75	litspoon Sampler	3" Clear Acetate Liner	
,	orged by: M. Corbett/W. Pennington Hollow Stem Auger- Soil samples not collected USC based on field visual observations										

et	Well							LOG OF BORING AI WELL CONSTRUCTION I B-8	
Depth In feet	Well Constr	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	nscs	Ground Elevation: 434.40	ing:791930.86 ing:2321984.79
-	\$							DESCRIPTION Not logged	NOTES Boring advanced to a depth of 5' via air knife to clear utilities, then continued with 4.25" HSA
	\$\$\$\$\$\$\$\$ \$\$\$\$\$\$\$	24	12	0.2				Loose to medium dense, moist, brown, fine to medium grained, SAND (SP)	
	\$	24	24	0.2					
10		24	18	0.1					
	\$\$\$\$\$\$\$\$ \$\$\$\$\$\$\$	24	18	0.4				Becomes grayish brown	
15	\$\$\$\$\$\$\$ \$\$\$\$\$\$\$	24	20	1.4			SP		
	\$\$\$\$\$\$\$\$ \$\$\$\$\$\$\$	24	12	22.1					
	\$\$\$\$\$\$\$\$ \$\$\$\$\$\$\$	24	12	29.8					
20	\$\$\$\$\$\$\$\$ \$\$\$\$\$\$\$	24	16	112					
	\$\$\$\$\$\$\$\$ \$\$\$\$\$\$\$	24	20	75.0					
	\$\$\$\$\$\$\$ \$\$\$\$\$\$\$ \$\$\$\$\$\$\$	24	18	271				Becomes medium dense to dense, gray, trace black banding	
	pletion Depth	-	14.00 Ft b 562289	gs				Water Depth: 35 ft., After Water Depth: ft., After	r <u>ATD</u> hrs. r hrs.
•	ct No.: ct Name:		Roxana L	Dissolved	Phase Ir	<u>ıvesti</u> g	gation		
Drilli	Drilling Contractor:				nental D	tal Drilling, Inc.			Air Knife/Hand Auger Sampler
•	ing method:		ollow Ster P. Seymou			– Rig	g Type:_	CME-75 Splitspoon Sampler	Air Rotary 3" Clear Acetate Liner
	ed by: ed by:		nington/C				J	Hollow Stem Auger- Soil samples not collected	USC based on field visual observations



Page 1 Of 2

Γ								LOG OF BORING			
ı								GP-1			
ı	Depth In feet		D.	<u></u>				Completion Coord	dinates		
ı	h n	S C	es evere	udd)	pler Pic	2	ψ	Date: 9/2/09 No.	rthing:791975.34 asting:2321614.60		
ı)ept	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	nscs	Casing Elevation: Ea Ground Elevation: 433.07	asting:2321614.60		
L	<u> </u>				0,0	· · · · · · · · · · · · · · · · · · ·		DESCRIPTION	NOTES		
ı						\bowtie		Gravelly silt, FILL (FILL)	Boring advanced to a depth of 5' via hand auger to clear utilities, then		
ı					4	\bowtie			continued with direct push dual tube		
ı	-				Ь	XXX		Becomes medium stiff, moist, brown, low plastic,			
ı						\bowtie		silty clay, trace sand and gravel			
ı						\bowtie					
ı						XXX					
ı					4	XXX					
ı	5-					XXX	FILL				
ı	-				V	\bowtie		With gravel			
		36	21		I X	\bowtie		Will Bravox			
ı				3.8		\bowtie		Becomes dark brown, silty gravel			
ı	-					XXX					
ı				6.1		\ggg					
ı				0.1		\bowtie		Becomes wet, clayey			
ı	10	48	41		X			Medium stiff, moist, gray, medium plastic, CLAY			
				2.4				(CL)			
ı				2.7							
ı	\vdash										
ı				3.7							
				5.7	V						
		48	48		X			Trace iron staining	·		
	15—			4.3				The state of the s			
ı								Becomes stiff			
ı	-						CL	Becomes brown and light gray			
ı				5.1			02				
ı											
L		48	48								
l	-			4.9							
l	-										
5	20										
18/	\vdash			5.5	V			Becomes soft, moist to very moist, gray, low plastic,			
901		48	37					sandy			
		40	31						Sampled GP-1-22.5 for VOC at 0950		
1200				4.9				Medium dense, moist, grayish brown, fine to medium	Sampled O1 -1-22.5 101 VOC at 0550		
2					8		SP	grained, SAND (SP), trace clay	Collected Sudan kit at 23.5'		
0.010.0											
7.88. C	Completion Depth: 40.00 Ft bgs					gs	,	Water Depth:32	ft., After <u>ATD</u> hrs.		
P	Project No.:							□ 177 . 1 1	ft., After hrs. e of drilling Geoprobe Macro Sampler		
Project Name: Roxana Dissolved Phase Investigation Project Name: Roberts Environmental Drilling Contractor: Roberts Environmental Drilling								Water level ofter			
2	Drilling Contractor: Roberts Environmenta Drilling method: Geoprobe (Direct Push							h Dual Tube)			
_		g meu d by:			Corbet			Splitspoon Sample:	211 Class Assista I is a		
SPO								Hollow Stem Auge Soil samples not co	ullected USC based on field visual observations		

Page 2 Of 2

							LOG OF BOF GP-1	RING	
e e							GI-1		
Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	nscs	Date: 9/2/09 Not Casing Elevation: Ea Ground Elevation: 433.07	dinates rthing:791975.34 asting:2321614.60	
			6.9			SP	DESCRIPTION Same: Medium dense, moist, grayish brown, fine to	NOTES	
	48	39		V	777	SC	medium grained, SAND (SP), trace clay Loose, moist, gray, low plastic, Clayey SAND (SC)		
			7.9	Å		<u> </u>	Medium dense, moist, grayish brown, fine to medium grained, SAND (SP), trace clay	Collected Sudan kit at 27'	
-							Becomes light brown		
30	48	33	5.1	Y					
			5.3				፟	Sampled GP-1-31 and GP-1-31D for VOC at 0940 Collected Sudan kit at 31.5'	
				V			Becomes wet, trace gravel	Concord Sadah Kit at 31.5	
			9.2	V		SP		Collected Sudan kit at 33'	
1	48	40		X			Becomes medium grained, clay grades out		
35			6.3						
l							Becomes fine to medium grained		
			6.0	V			becomes the to inculant granted		
1	40	40	0.0	V					
	48	40	7.1				Becomes brownish gray Coal seam Becomes light brown, trace gravel		
40 —									
							Bottom of boring at 40' bgs		
-									
-									
45									
	Completion Depth: 40.00 Ft bgs						Water Depth: 32	ft., After <u>ATD</u> hrs.	
Project No.: 21562289							Water Depth:	ft., After hrs.	
Projec	t Name	e:				l Phase Inv	Woter level offer d	e of drilling Geoprobe Macro Sampler drilling Air Knife/Hand Auger Sampler	
•	-	tractor: 10d: —				mental <u>Dri</u> t Push <u>Du</u>	al Tube) ATD - At time of dri	RI Air Rotary	
Logge	-			Corbet			Splitspoon Sampler Hollow Stem Auge	3" Clear Acetate Liner	
	Soil samples not collected USC based on field visual observations								

								LOG OF BO	RING	
								GP-2		
eet		p								
<u>=</u>	s c	s ⁄ere	mdc	ig ig	<u>-</u>	(0)	Completion Date: 8/31/09		rdinates	
Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	SOSN	Casing Elevation:	Ë	orthing:791928.10 asting:2321630.26	
Ŏ	드	₽Š	<u> </u>	ഗ്ര്	6	ے ا	Ground Elevation: 432.47 DESCRIPT	ION	NOTES	
				Б	\bowtie		Soft to medium stiff, moist, br	rown, silty clay, trace	Boring advanced to a depth of 5' via	
					\bowtie		sand and gravel, FILL (FILL)		hand auger to clear utilities, then continued with direct push dual tube	
				18	XXX				_	
-					XXX					
					$\otimes\!$					
					XXX					
l -					888					
				18	\bowtie					
5					888	FILL				
					888		Becomes medium dense sandy	v oravel trace silt		
	36	26	2.8	X	$\otimes\!$		Decomes mediam dense sand	y graver, trace sitt		
			2.7		XX	•				
					XXX					
					XXX					
				V	XXX					
10	48	27	3.7	X	\ggg		Becomes wet			
			2.0		XXX		Becomes wet			
			3.2				Soft, moist, gray, high plastic,	CLAY (CH)		
							Becomes medium stiff			
	48	46	3.7	Y						
4.5						СН				
15			4.0				Becomes stiff			
			7.0							
			7.8						Collected Sudan kit at 17' Sampled GP-2-17 for VOC at 1630	
	48	44.5		X					Sampled G1-2-17 for VOC at 1030	
							Soft, moist, brownish gray, lov	w plastic, Silty CLAY	1	
			5.1				(CL),			
20						CL	Becomes sandy			
						OL.	Decomos saray			
	48	29	7.5	l X			Medium dense, moist, brownis	sh gray, fine to medium		
			5.0			SP	grained, SAND (SP)			
			5.2			CL	Medium stiff, gray, medium pl Becomes sandy	astic, CLAY (CL)	** , , ,	
							Medium dense, moist, brownis	sh grav fine to medium	Hydrocarbon staining Collected Sudan kit at 23.5'	
	SP SP		grained, SAND (SP), trace silt		Sampled GP-2-23.5 for VOCs at 1650					
-	Completion Depth: 40.00 Ft bgs					ft., After ATD hrs.				
	Project No.: 21562289 Project Name: Roxana Dissolved Phase In			l Phasa Inc.	estigation		ft., After hrs. le of drilling Geoprobe Macro Sampler			
		ractor:					■ Water level after drilling Air Knife/Han			
Drillin	_					t Push Du		ATD - At time of dr	RI Air Rotary	
Logged by: M. Corbett					t		TTDC	Splitspoon Sampler Hollow Stem Auger 3" Clear Acetate Liner		
UKS							OK2	Soil samples not co	bllected USC based on field visual observations	

Page 2 Of 2

								LOG OF BO	RING	
								GP-2		
Depth In feet		70	<u>~</u>				Co. Latina	C	di	
ᄓ	S E	ss vere	'ppr	pler	<u> </u>	ဟ	Completion Date: 8/31/09	No	dinates rthing:791928.10	
Sept	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	SOSN	Casing Elevation: Ground Elevation: 432.47	Ea	asting:2321630.26	
Ц,			4.3	0,0	, ,,		DESCRIPT		NOTES	
			4.3	V			Same: Medium dense, moist, l medium grained, SAND (SP),	trace silt		
	48	39					Becomes brownish gray			
I ⊢			3.3							
							Í			
I ⊢			3.8	V						
30	48	39					Becomes light brown			
I -			4.0							
								Ā		
							Becomes wet	-		
I ⊢			5.0				Becomes brownish gray, medi	um to coarse grained		
	40	41					Becomes brownish gray, medi	um to coarse gramed		
	48	41					Becomes dense, light brown, f	ine to medium grained		
35			7.7						Collected Sudan kit at 35'	
							Becomes brownish gray			
l ⊦			4.6							
	48	48								
	40	40					Becomes light brown			
ľ			4.5							
40										
							Bottom of boring at 40' bgs			
45										
_										
	Consolition Donth				re			Water Denth: 32	ft., After <u>ATD</u> hrs.	
-	Completion Depth: Project No.:			00 Ft bg 289	53	•			ft., After hrs.	
_	Project No.: Project Name:				issolved	d Phase Inv	estigation	Water level at time of drilling Common Many Common		
-	Drilling Contractor:					mental Dri		▼ Water level at time of drilling ▼ Water level after drilling ATD - At time of drilling ATD - At time of drilling		
Drillin	_	od:	Geoprobe (Direct Push Dual Tube) M. Corbett					Air Rotary Splitspoon Sampler		
Logge	d by:		M.	Corpet	τ		ZATI	Hollow Stem Auge Soil samples not co	3" Clear Acetate Liner USC based on field	
							ATM	- Soil samples not co	visual observations	

Page 1 Of 2

							LOG OF BORING				
							GP-4				
Depth In feet		pe.	Ē					dinates			
후	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	SSS	Date: 8/3/09 No. Casing Elevation:	rthing:791837.03 asting:2321684.23			
Dec	Die Die	Rec	문	Sar	Syr	S n	Ground Elevation: 433.13 DESCRIPTION	NOTES			
_				ł			Loose, moist, brown, silty sand, with gravel, FILL (FILL)	Boring advanced to a depth of 5' via hand auger to clear utilities, then continued with direct push dual tube			
5-		·	1.1	}							
-	36	18	1.2	X		FILL					
10-	48	14	18.0	X			Becomes wet Soft, moist, low plastic, Sandy CLAY (CL)	Collected Sudan kit at 11'			
								Sampled GP-4-11 for VOC at 1205			
	40	40	3.0	V			Becomes medium stiff to stiff, gray, medium plastic, sand grades out				
15	48	48	2.7	A							
	48	45	3.0	V		CL	Becomes brownish gray				
20	40	43	4.0				Becomes sandy				
	48	39	3.1	V			Personnes soft brown				
_		-	3.1	4		SP	Becomes soft, brown Becomes, wet, gray, low plastic Medium dense, moist, brownish gray, fine to medum grained, SAND (SP), trace silt	Sampled GP-4-22.5 for VOC at 1215 Black staining, petroleum - like odor Collected Sudan kit at 23.5'			
				X				ATTO			
Completion Depth: 41.00 Ft bgs Project No.: 21562289						-		ft., After <u>ATD</u> hrs. ft., After hrs.			
Project Name: Roxana Dissolved Phase Investigation Project Name: Roxana Dissolved P						nmental Dr	westigation ✓ Water level at time of drawn at time of d	te of drilling Geoprobe Macro Sampler drilling Air Knife/Hand Auger Sampler			
Drillin Logge	_	hod:		oprobe			Splitspoon Sample Hollow Stem Auge Soil samples not co	Air Rotary or 3" Clear Acetate Liner USC based on field visual observations			

Page 2 Of 2

							LOG	OF BOF GP-4	RING
Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	nscs	Completion Date: 8/3/09 Casing Elevation: Ground Elevation: 433.13	No	dinates rthing:791837.03 asting:2321684.23
Н			3.7				DESCRIPTION Same: Medium dense, moist, brownish gramedum grained, SAND (SP), trace silt	y, fine to	NOTES
	48	39	3.8	X			2" soft, moist, gray, clay 3" soft, moist, gray, clay Becomes light brown		
30-	48	40	4.3						
-			4.0				1" soft, moist, gray, clay, trace gravel		
l							Becomes wet	$\bar{\Delta}$	
I ⊦			27.1	V					Collected Sudan kit at 33'
	48	41		Y					Sampled GP-4-33 for VOC at 1225
35			20.1						
-	40	40	9.4	V					
	48	48	12.1				2" moist, gray, medium plastic, clay Trace coal seams		
40							Bottom of boring at 40' bgs		
-									
45									
_									
_	Completion Depth: 41.00 Ft bgs				z s				ft., After ATD hrs.
Projec Projec			21562 Ro		issolve	d Phase Inv	estigation <u>V</u> Water	ft., After hrs. e of drilling Geoprobe Macro Sampler	
Drillin	g Con	ractor:	R	oberts I	Enviror	mental Dri	lling, Inc. ▼ Water	level after of t time of dri	lling Sampler
Drillin Logge	-	od:		oprobe Corbet		t Push <u>D</u> u	Splitsp	oon Sample	Air Rotary
Dogge	Hollow Stem Auger- Soil samples not collected W. Corbett USC based on field visual observations								

Page 1 Of 2

							LOG OF BORING			
								GP-7		
eet		33								
<u>=</u>	,,,,	ere,	md' ()	<u></u>	- I		Completion Date: 8/20		linates	
Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	SOSN	Casing Elevation: Ground Elevation: 444	Eas	thing:793706.85 sting:2322424.53	
Ď	امَع	ĒŘ	□	ഗ്ര	· ώ ·	Ë		I.00 SCRIPTION	NOTES	
					\bigotimes	FILL	Asphalt and gravel, F	ILL (FILL)	Boring advanced to a depth of 10' via air knife to clear utilities, then continued	
					\Longrightarrow		<u> </u>		knife to clear utilities, then continued with direct push dual tube	
							Stiff, moist, dark brow (CL), with gravel	wn, low plastic, Silty CLAY	_	
5										
						CL				
				1			Becomes brown, some	e silt		
							Becomes soft, gray, si	iltv. trace sand		
							, ,	,		
				4						
10	$\overline{}$				////4	<u> </u>	T assa maist brown	fine grained, Silty SAND (SM)		
							Loose, moist, otown,	Time granied, only order (ord)		
	24	14	43.9							
		L								
							Becomes brownish gr	ay		
-			36.7			SM				
H	48	36								
15			28.9							
'			20.7							
-	\longrightarrow				لنبلنا		Loose to medium den	se, moist, grayish brown, fine		
			35.4				grained, SAND (SP)	30, III.0101, gray 1011 010,		
			27.4							
	48	39		Y						
		ا								
			41.3							
20						SP	Becomes fine to medi	um grained, trace silt		
			19.3		, : : : <u> </u>	-				
	48	36			, : : : i					
			7.9							
			1.7							
, -										
				X	<u> :::::</u> :					
Comp	Completion Depth: 44.00 Ft bgs						ft., After ATD hrs.			
Project No.: 21562289					_			ft., After hrs.		
Project Name: Roxana Dissolved Phase Inversional Drilling Contractor: Roberts Environmental Drilling							✓ Water level at time✓ Water level after di	e of drilling rilling Air Knife/Hand Auger Sampler		
•	_	tractor:						ATD - At time of dril	1111112	
Drillin				_		t Push Dua		■ Splitspoon Sampler	Air Rotary	
Logge	d by:	1	I. Satam/	W. Fen	ningion	1	URS	Hollow Stem Auger Soil samples not col	3" Clear Acetate Liner USC based on field	
							OTA	— Soil samples not col	visual observations	

Page 2 Of 2

								LOG OF BORING GP-7		
) feet			eq	Ê					linates	
Depth in feet	.	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	nscs	Date: 8/26/09 Nor	thing:793706.85 sting:2322424.53	
					0,0			DESCRIPTION	NOTES	
ı				127.0				Same: Loose to medium dense, moist, grayish brown, fine to medium grained, SAND (SP)	Collected Sudan kit at 25' Sampled GP-7-25 for VOC at 1045	
l	Н	48	37						•	
ı										
ı	Н			21.3					•	
ı							SP			
ı							0	Becomes dense		
ı	Н	- 1	39	69.7						
l										
30	H	48			l X					
ı				22.1						
1	П			33.1			SM	Medium dense to dense, dry to moist, gray, fined grained, Silty SAND (SM)		
	\perp							Medium dense to dense, dry, gray, fine grained,		
								SAND (SP), trace silt		
	Н			54.6						
		40	40							
	П	48	48	557			SP			
35	<u>, </u>						:		Ctroma matualarum lilea adam	
``									Strong petroleum - like odor	
ı	+					::::::				
				1,510				Soft, wet, gray to dark gray, Silty CLAY (CL)	Collected Sudan kit at 36.5'	
	П			1519			CL		Very strong petroleum - like odor, possible slight sheen	
ı	Ц	48	45		 ▼		02		Sampled GP-7-37 for VOC at 1015	
								Dense to medium dense, moist, grayish brown,		
	Н	-		1700				medium grained, SAND (SP)	Collected Sudan kit at 39'	
ı							SP			
40	'							Becomes dark gray	Strong petroleum - like odor	
	Ц			46.2				Medium dense to dense, wet, gray, fine grained, Silty SAND (SM)	G 1-1 CD 7 41 6 VOC -+ 1000	
				10.2				SAIND (SINI)	Sampled GP-7-41 for VOC at 1020	
	Н	48	48		X		SM			
							0			
	H			40.0					Collected Sudan kit at 43'	
	Ш									
								Bottom of boring at 44' bgs		
45	i ⊢								•	
2										
2	Н									
g										
À										
200	Н									
5										
Š	Н									
					20.5			W 5 1 405	A AA ATD	
Completion Depth: 44.00 Ft bgs Water Depth: 40.5 ft., After ATD hrs. Project No.: 21562289 Water Depth: ft., After hrs.										
. ·	-					Niceobyo	- d Phase Inv	₩	a of duilling M. Coomaha Masas Commlan	
`		Name					<u>u Phase inv</u> imental Dr	Water level after of	drilling Air Knife/Hand Auger	
_	_	g Con	tractor:				t Push Du	al Tube)	RI Air Rotary	
-	_	by:		l. Satam	_			Splitspoon Sampler	3" Clear A actate Liner	
	,500	٠,٠,٠						Hollow Stem Auge Soil samples not co	USC based on field	
5								<u> </u>	visual observations	

Page 1 Of 2

							LOG OF BORING		
.							GP-8		
Depth In feet		Led De	Ē	L				dinates	
	Inches	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	SSS	Date: 8/26/09 No	rthing:793350.77 asting:2322347.98	
Deg	25	Region	믑	Sar	Syr	Š	Ground Elevation: 442.64	-	
					XXX		DESCRIPTION Stiff, moist, dark brown, low plastic, silty clay, FILL	NOTES Boring advanced to a depth of 10' via air	
	_			ł		FILL.	(FILL)	knife to clear utilities, then continued with direct push dual tube	
5-				}		CL	Stiff, moist, grayish brown to brown, low plastic, CLAY (CL), some silt		
				ł		SM	Medium dense, moist, gray, fine grained, Silty SAND (SM)		
10	-					ML	Soft to medium stiff, moist, gray with brown, low		
	_ 24 24	24	72.0	X			\tag{Plastic, Sandy SILT (ML)} Medium dense, moist, gray and brown, fine to medium grained, SAND (SP), trace silt		
-	48	26	445	331			Becomes grayish brown, silt grades out	Collected Sudan kit at 13' bgs Sampled GP-8-13 for VOC at 1345	
15			331				SP		
_			211			Becomes moist to wet, gray 6" wet, brown, clayey silt			
	48	30					Becomes moist, grayish brown		
20			23.0						
20			30.0	V			Becomes, moist to wet, gray, medium grained		
_	48	48			CL	Soft, moist to wet, brown, some gray, low plastic, CLAY (CL), with silt			
					SP	Medium dense to dense, moist, grayish brown, fine to medium grained, SAND (SP)			
							Medium grain grades out for 6"		
Com	oletion	Depth:	48.00 Ft bgs				Water Depth: 44	ft., After ATD hrs.	
	ct No.:	-	21562	•			Water Depth:	ft., After hrs.	
Proje	ct Nan	ie:				l Phase Inv	Weter level ofter o	e of drilling Geoprobe Macro Sampler Air Knife/Hand Auger Sampler	
	-	tractor:				mental Dri t Push Du	ATD - At time of dri	lling	
	_	hod:	Ge I. Satam				Splitspoon Sample	Air Rotary T 3" Clear Acetate Liner	
Logg	Logged by: N. Satam/W. Pennington Whollow Stem Auger- Soil samples not collected 3" Clear Acetate Liner USC based on field visual observations								

Page 2 Of 2

							LOG OF BOI GP-8	RING		
Depth In feet	Inches	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	nscs	Date: 8/26/09 No	dinates orthing:793350.77 asting:2322347.98		
	1.0		24.4	V			Same: Medium dense to dense, moist, grayish brown, fine to medium grained, SAND (SP)			
-	48	43	60.9	A						
30-	48	37	32.0			SP				
		37	16.9	A			Becomes dense, brown and gray, medium grained			
	- 48	42	31.0	V		SM	Loose, wet, brown to grayish brown, Silty SAND (SM)			
35-	40	42	124				Dense, moist, brown gray, medium grained, SAND (SP)	Collected Sudan kit at 35' Sampled GP-8-35 for VOC at 1350		
			10.2	V			Becomes medium dense to dense, moist to dry, grayish brown, medium to coarse grained, sand			
40-	48	36	7.0	À						
	- 48	34	37.4			SP				
			17.5			Becomes wet at 44'	Mild petroleum like odor			
45	48	48	233				position wet at TT	And podolodili like odol		
			586					Collected Sudan kit at 47' Sampled GP-8-47 for VOC at 1410		
							Bottom of boring at 48' bgs			
Com	letion	Depth: _	48.	00 Ft bs	gs		Water Depth:44	ft., After <u>ATD</u> hrs.		
Proje	ct No.:		21562	2289		1 DL -	Water Depth:	ft., After hrs.		
		e: tractor:				nental Dri	water level at time of drilling ☐ Geoprobe Macro Sample ☐ Water level after drilling ☐ Air Knife/Hand Auger ☐ Air Knife/Hand Auger			
	ng Con	hod:	Ge	<u>oprobe</u>	(Direc	t Push Du	ish Dual Tube) ATD - At time of drilling Ri Air Rotary			
	ed by:		. Sa <u>tam</u> /	W. Pen	ningtor	1	Splitspoon Samples Hollow Stem Auge Soil samples not co	3" Clear Acetate Liner USC based on field		
	Soil samples not collected visual observations									

Page 1 Of 2

							LOG OF BO GP-9	RING	
Depth In feet	Inches	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	nscs	Date: 8/25/09 No	rdinates orthing:792931.19 :asting:2322420.46 NOTES	
	+			Б			Gravelly, FILL (FILL)	Boring advanced to a depth of 10' via air	
-	_			ł		FILL	Becomes stiff, moist to dry, dark gray, silt, trace gravel	knife to clear utilities, then continued with direct push dual tube	
				4			Becomes moist, dark brown, low plastic, clay, some silt		
5				1		ML.	Stiff, moist, brown to gray, low plastic, SILT (ML)		
-	-			{		SM	Dense, moist, grayish brown, fine grained, Silty SAND (SM)		
10				•			Loose, dry, gray, fine grained, SAND (SP)	Petroleum - like odor present	
	24	24	1982	À				Collected Sudan kit at 12'	
	-	1267	1267	V					
	48			X			Becomes medium dense		
15									
		44	1808	V		SP			
	48		1704	À				Collected Sudan kit at 18' Sampled GP-9-18 for VOC at 1250	
20	- 48	44	1663	53					
_	-		1459				Becomes wet, with silt	Collected Sudan kit at 23'	
				X					
Completion Depth:							Water Depth: 44		
•	ct No.:		21562289 Roxana Dissolved Phase Inv				Water Depth: ft., After hrs. ✓ Water level at time of drilling ✓ Geoprobe Ma		
Project Name: Drilling Contractor:							Water level after	drilling Air Knife/Hand Auger	
Drilling method:			Geoprobe (Direct Push Dua				ΔII) Δt time of dr	RI Air Rotary	
•	ed by:		I. Miller	W. Pen	ningto	<u> </u>	Hollow Stem Aug	er-	
	Soil samples not collected visual observations								

								LOG OF BOR GP-9	RING
Depth In feet		Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	nscs	Date: 8/25/09 No	dinates rthing:792931.19 asting:2322420.46 NOTES
				192				Becomes medium dense, dry, brown, fine to medium grained, silt grades out	
		48	40	185	X			granics, on grade out	Collected Sudan kit at 27'
30)	48	40	831	Y		SP		
				1315					Slight sheen Collected Sudan kit at 31'
	L			1511	V		CL	Soft, moist, greenish gray, low plastic, Sandy CLAY (CL)	
35	5-	48	40	1139	À			Medium dense, dry, brown, fine to medium grained, SAND (SP) Trace clay lenses for 6"	
				1000				Becomes moist, fine to coarse grained	
		48	40	1233	X				Slight sheen, petroleum - like odor Sampled GP-9-37 for VOC at 1255 Collected Sudan kit at 37'
	_			1217				2" clay	
40) -	48	40	1387	Y		SP	·	Strong petroleum like - odor
				1250					
45	; H	48	48	1187	V			Becomes dense, wet	Collected Sudan kit at 44'
URS (ENVIRON) LOG 21562289 000010.GPJ URSSTLEV.GDT 1/19/10 Com Diril Com Diril		40	40	1350					
0010.GPJ URS								Bottom of boring at 48' bgs	Install piezometer GP-9-PZ at 48' bgs with 10" screen
68 Con	•		Depth: _		00 Ft bg	s		Water Depth: 44	ft., After ATD hrs.
Proj		t No.: t Name		21 <u>562</u> Ro		issolved	Phase Inv	estigation	e of drilling Geoprobe Macro Sampler
Dril	lin	g Con	tractor:				mental Dri t Push Dua	A LII. At time of dri	lling Sampler
Dril Log		g meth d by:		. Miller/	_			Splitspoon Sampler	5" Clear Acetate Liner
JRS (E	_							Hollow Stem Auge Soil samples not co	I- TIGG! 1 6 11

								LOG OF BOF	RING	rage r Orz
								GP-10		
et										
ln fe		ered	(mc	in O	_		Completion		dinates	
Depth In feet	Inches	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	nscs	Date: 8/24/09 Casing Elevation: Ground Elevation: 445.39	· Nor Ea	rthing:794064.87 asting:2321752.05	
De		Re	=	S S S S S S S S S S S S S S S S S S S	Sy	ŝ	Ground Elevation: 445.39 DESCRIPTI			OTES
\vdash	+			Ь			Soft, moist, brown, low plastic	, Silty CLAY (CL)	Boring advanced to	o a depth of 5' via air es, then continued
l	_								with direct push du	al tube
	-			1						
						CL				
	1			1						
5	-									
	36	24	6.3	Y						
I⊢	-									
							Loose to medium dense, moist, SAND (SP), some silt	, brown, fine grained,		
					.::::		SAND (SF), some sin			
1	1		7.6	V			Silt grades out			
10-	48	34		Y						
	1		7.2							
	<u> </u>									
			(2)							
	1		6.2							
1	48	33								
15			6.0							
			0.0							
1	+									
	_		5.2	V						
						SP				
	48	42					Becomes medium dense, fine t	o medium grained		
			4.3							
20										
20										
60	-		7.5							
3	48	40		🔻						
LEV.	10						Becomes wet			
2			7.2				1.5" clayey sand to sandy clay			
<u> </u>										
00100				X						
		Depth: .		00 Ft b	gs			Water Depth: 46	ft., After AT	D hrs.
Proje	ct No.:		2156		Niggol	d Dhasa I	vertigation	Water Depth:		
		e: tractor:		oberts	<u>zassorve</u> Enviror	d Phase Inv imental Dr	illing, Inc.	▼ Water level after of	drilling Air	Knife/Hand Auger
2	ng Cor					t Push Du		ATD - At time of dri	RT Air	Rotary
	ed by:		1. Miller	/W. Per	nningto	<u>n</u>	URS	Splitspoon Sample Hollow Stem Auge Soil samples not co	r 3" (Clear Acetate Liner
CK3							UKS	Soil samples not co	ollected US visu	C based on field ual observations

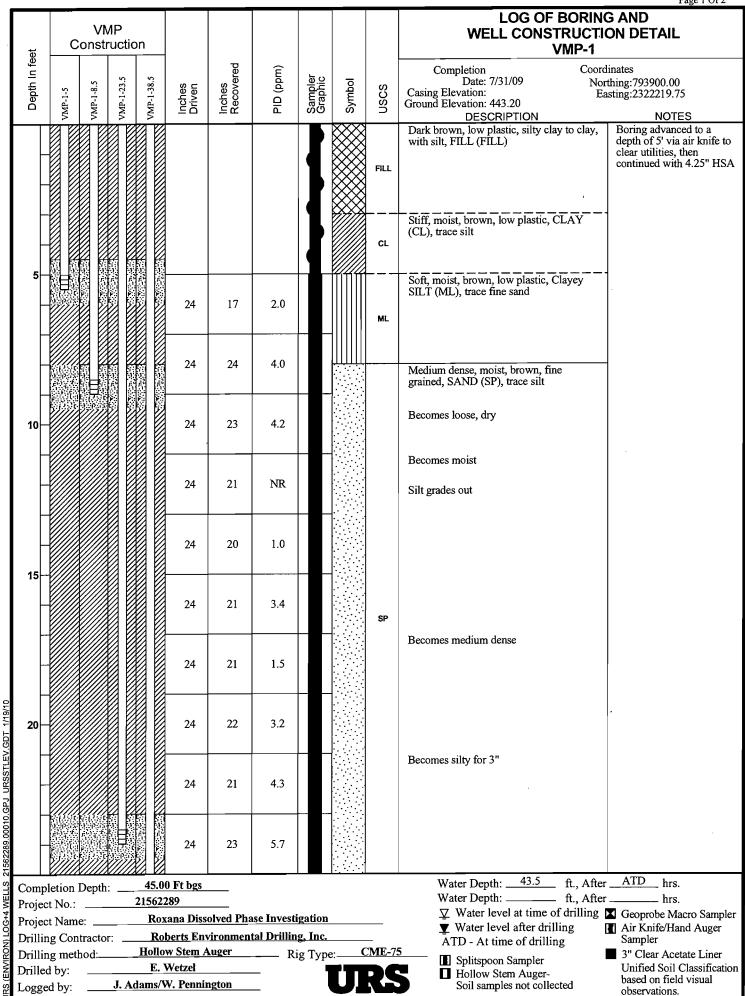
							LOG OF BORING GP-10
Depth In feet	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	nscs	Completion
			5.0			-	Same: Medium dense, wet, brown, fine to medium grained, SAND (SP)
	48	39	7.2	X		SP	
						CL	Soft, moist to wet, brown, low plastic, CLAY (CL), some sand and silt
30	48	37	7.8	X		SP	Medium dense, moist, grayish brown, medium to coarse grained, SAND (SP)
-			6.5	V			
35	48	39	7.0	A		CL	Soft, moist to wet, brown, low plastic, Silty CLAY (CL) Medium dense, moist, grayish brown, medium to coarse grained, SAND (SP)
	48	36	6.4				
40			5.0	4			
	48	35	7.3	Y		SP	
			7.6				Becomes gray
45	48	38	4.9	V			∇
			3.9	A			Becomes wet at 46' bgs
							Bottom of boring at 48' bgs
		Depth: _		00 Ft b	ζs		Water Depth: 46 ft., After ATD hrs.
Projec Projec			21562 Re		<u>iss</u> olved	I Phase Inv	Water Depth: ft., After hrs. ✓ Water level at time of drilling ☑ Geoprobe Macro Sampler
Drillir	g Con	tractor:	R	oberts I	Environ	mental Dri	Water level after drilling ATD - At time of drilling ATD - At time of drilling
Drillin Logge	-		Ge 1. Miller			t Push Du n	Splitspoon Sampler
							Hollow Stem Auger- Soil samples not collected USC based on field visual observations

							LOG OF BO	RING
							GP-11	
Depth In feet		red	Ē	٠,,				rdinates
pth 1	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	nscs	Date: 8/24/09 No Casing Elevation: E Ground Elevation: 442.25	orthing:793595.19 asting:2321767.31
å	<u> </u>	Inc	🖥	လွှတ်	Sy	Sn	Ground Elevation: 442.25 DESCRIPTION	NOTES
				Б	XXX	FILL	Asphalt and gravel, FILL (FILL)	Boring advanced to a depth of 5' via air knife to clear utilities, then continued
				4			Stiff, moist, brown, low plastic, CLAY (CL), with	with direct push dual tube
I				Ь			silt and sand	
						CL		
5-							Loose, moist to dry, brown, fine grained, Silty SAND	_
							(SM)	
	36	18	0.4	X		SM		
I⊢						20	Loose, dry, light brown, fine grained, SAND (SP)	1
			3.2		,,,,,,	SP CL	Soft, moist, brown, low plastic, Sandy CLAY (CL)	<u> </u>
							Loose, dry, light brown, fine grained, SAND (SP)	
10	48	40						
			3.1					
_								
			4.5					
			4.3					
	48	40						
15			2.5				Becomes fine to medium grained	
							20001100 1110 10 In g	
			6.1			SP		
-	48	35						
			5.1					
20 ─								
			3.9				Becomes fine grained, with silt	
25	48	42		Y				
0 10			3.5					
20			5.5					
-				Y				
G Comm	lation 1	Depth: _	44	00 Ft bg	::::: <u> </u> !S		Water Depth: 43	ft., After <u>ATD</u> hrs.
- ·		Эерип: _	21562	2289			Water Depth:	ft., After hrs.
_		e:				l Phase Inv	Water level offer	drilling Geoprobe Macro Sampler Air Knife/Hand Auger Sampler
Drillir Drillir		ractor:				mental Dri t Push Du	ATD - At time of dr	RI Air Rotary
Logge			I. Miller				Splitspoon Sample	T 2" Class Asstate Times
) CYC							Hollow Stem Aug Soil samples not co	ollected USC based on field visual observations

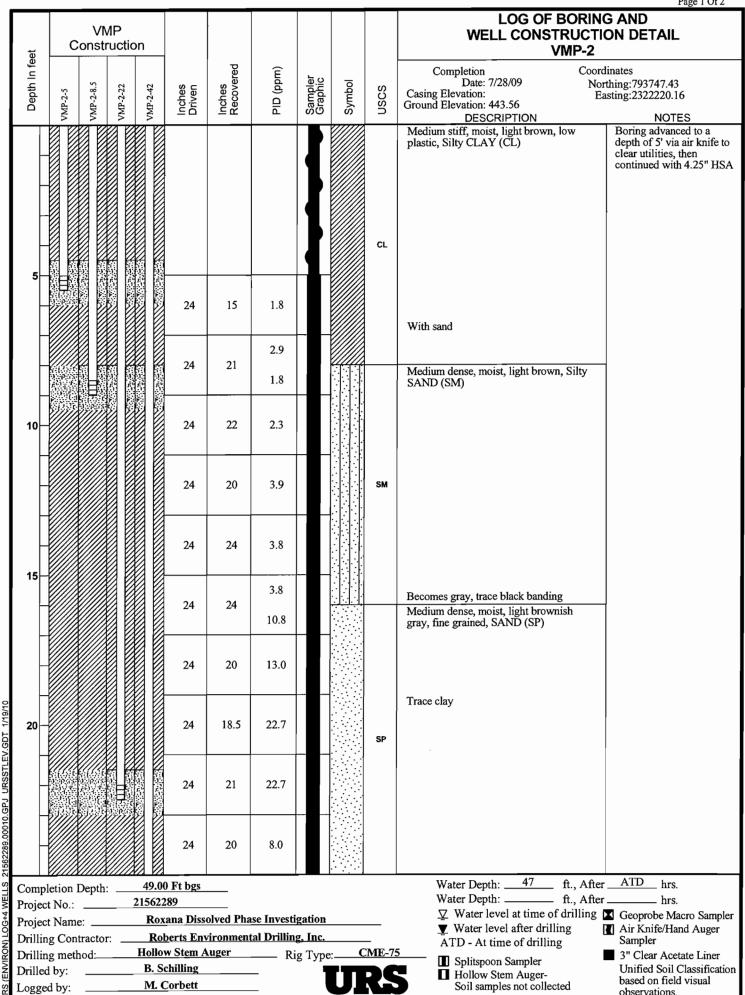
								ge 2 Of 2
							LOG OF BORING	
							GP-11	
feet		X	<u> </u>				Completion	
r	χ c	SS	ppm	pler	👨	ဟ	Completion Coordinates Date: 8/24/09 Northing:793595.19	
Depth In feet	Inches	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	nscs	Casing Elevation: Easting:2321767.31 Ground Elevation: 442.25	
	_=0	<u>-</u>	1	000	o)	ر	DESCRIPTION NOTES	
			2.9				Same: Loose, dry, light brown, fine grained, SAND (SP), with silt	
	48	36						
			4.7		::::	SP		
			7./		::::		Posomos maist	
-							Becomes moist Medium stiff, wet, gray, low plastic, Silty CLAY	
			5.2				(CL)	
			3.2			21		
30	48	48				CL		
			3.6					
			3.0				CoA maint amariah hannya Con J. CH T (AII) to City.	
							Soft, moist, grayish brown, Sandy SILT (ML) to Silty SAND (SM)	
			15.9			ML-SM		
			15.9				Becomes brown	
-	48	38			ЩИ		Medium stiff, moist to dry, fine grained, SAND (SP)	
35			8.0				· · · · · · · · · · · · · · · · · · ·	
35	7		8.0			SP		
							Becomes gray, fine to medium grained	
			10.4				Soft, wet, gray, low plastic, CLAY (CL)	
			10.4					
	- 48	48		🛛			With sand	
			60			CL	11.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.	
			6.8					
40								
			16.7				Medium dense, moist, brown, fine to medium	
			10.7				grained, SAND (SP)	
-	48	42				SP		
			54.8				$oldsymbol{ar{ abla}}$	
			54.0				Becomes wet	
-					2000		Bottom of boring at 44' bgs	
45								
-							·	
100								
LE.								
-								
2								
9								
	1-4'-	D-#4 ¹ -	44.4	00 Ft bg			Water Depth: 43 ft., After ATD hrs.	
.i∎ -	letion let No.:	_	21562		,s		Water Depth: 43 ft., After ATD hrs. Water Depth: ft., After hrs.	
Projec	et Name				issolved	Phase Inv	vestigation	o Sampler
Drilli		tractor:	R	oberts E	<u>nvironr</u>	nental Dri	Water level after drilling ATD At time of drilling Sampler	Auger
Drillin	ng meth			•		Push Dua	al Tube) Air Rotary	
Logge	ed by:	M	I. Miller	W. Pen	nington		Hollow Stem Auger- Soil samples not collected 3" Clear Acetate USC based on fi	
5							Soil samples not collected visual observation	

		_					LOG OF BORING
							GP-12
Depth In feet		pe.	Ê				Completion Coordinates
pth Ir	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	nscs	Date: 8/25/09 Northing: 793749.46
De	를	Reg	물	Sal	Syr	Sn	Casing Elevation: Easting:2322024.18 Ground Elevation: 443.24 DESCRIPTION NOTES
-				}		CL	Soft, moist, brown, low plastic, Silty CLAY (CL) Boring advanced to a depth of 5' via air knife to clear utilities, then continued with direct push dual tube
5-	36	30	8.8	Y			
		26	6.8	V			Loose to medium dense, moist, brown, fine to medium grained, SAND (SP)
10	48	36	7.4	Å			
	48	35	7.0	V			
15-	40		6.1	A			
	48	35	0.9			SP	Becomes grayish brown, fines grades out
20	40	33	7.7				
20	48	34	9.4				
	40		7.3				
				X			
Comp	letion	Depth:		00 Ft b	gs		Water Depth: 44 ft., After ATD hrs.
Projec	t No.:		21562		- licentro	I Phase Inv	Water Depth: ft., After hrs.
Projec Drillir		e: tractor:				mental Dri	Water level ofter drilling — Air Knife/Hand Auger
Drillir	ng metl		Ge			t Push Du	al Tube)
Logge	ed by:		W. <u>I</u>	enning	ton		Hollow Stem Auger-Soil samples not collected 3" Clear Acetate Liner USC based on field visual observations

to to									LOG OF BO GP-12	RING
	Depth In feet	Inches · Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	nscs	Completion Date: 8/25/09 Casing Elevation: Ground Elevation: 443.24 DESCRIPT	No E	rdinates orthing:793749.46 asting:2322024.18
r			2.5	9.7	V			Loose to medium dense, moist medium grained, SAND (SP)		
		48	36	8.0	A					
				12.1	V					
	30	48	35	9.3	Å					
				9.1	V					
	35	48	36	10.8	À			Trace black banding		
	_			8.0	V		SP	Becomes coarse grained Trace black banding		
l		48	34	6.8						
	40	48	38	10.4	V					
١		70	36	9.0					Σ	
01.6	45			9.3	Y			Becomes wet		
וביי, סביו	_	48	43	8.1				Trace black banding		
SCAU CLS								Bottom of boring at 48' bgs	-	
-					20.50				W . 75 3 44	C. A.C. ATD.
NI I	_		Depth: _	21562	00 Ft bg 2289	ţs			Water Depth:	ft., After <u>ATD</u> hrs. ft., After hrs.
ğ]	Projec	t Nam	e:				l <u>Phase Inv</u> mental Dri			ne of drilling Geoprobe Macro Sampler drilling Air Knife/Hand Auger Sampler
		g Con g metl	tractor: nod: —				mentai Dri t Push Du		ATD - At time of dr	Air Rotary
	Logge			<u>W. P</u>	enningt	con		URS	■ Splitspoon Sample ■ Hollow Stem Auge Soil samples not co	T 211 C1 4 4



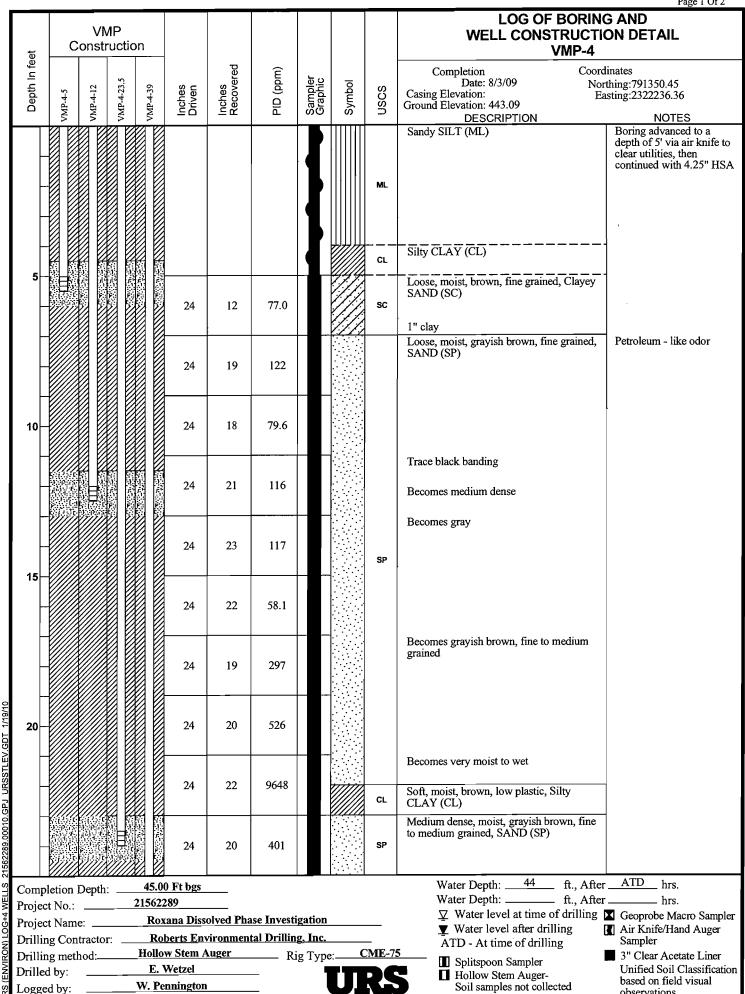
et	С	VN	ИР ructi	on							LOG OF BORIN WELL CONSTRUCTI VMP-1	
Depth In feet	VMP-1-5	VMP-1-8.5	VMP-1-23.5	VMP-1-38.5	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	nscs	Date: 7/31/09 No Casing Elevation: E Ground Elevation: 443.20 DESCRIPTION	dinates rthing:793900.00 asting:2322219.75 NOTES
					24	23	4.0			SP	4" silty sand Becomes fine grained, some silt	
-					24	24	5.2			CL	Medium stiff, moist, brown, low plastic, Silty CLAY (CL), trace fine sand Becomes wet Becomes black, clayey silt	
30-					24	24	11.0				Medium dense, moist, light gray, fine grained, SAND (SP), some silt	
					24	24	99.3			SP		
35-					24	24	- 76.1					
					24	22	43.8				Becomes grayish brown, fine to medium grained	
-					24	20	36.8			ML	Soft, moist to wet, gray, SILT (ML), trace sand	
40					24	23	143				Medium dense, moist, grayish brown, medium grained, SAND (SP)	Petroleum - like odor.
					24	20	104			SP	3" wet, gray, silt	
45					24	18	213				Becomes wet	
	-										Bottom of boring at 45' bgs	
-	_											
	oletion 1				00 Ft bgs						Water Depth: 43.5 ft., After Water Depth: ft., After	r ATD hrs.
_	ct No.: ct Name			21562 Ro		olved Pha	se Investi	gation				✓ Geoprobe Macro Samp
Orillin	ng Con	tracto		R			tal Drillin			_	ATD - At time of drilling	Air Knife/Hand Auger Sampler
	ng meth d by:	nod:		_Holle E.	ow Stem A Wetzel	Auger	Ri	g Type	: <u> </u>	CME-7:	■ Splitspoon Sampler	3" Clear Acetate Liner Unified Soil Classifica
	ed by:		J. A		W. Pennii	ngton	_				Hollow Stem Auger- Soil samples not collected	based on field visual

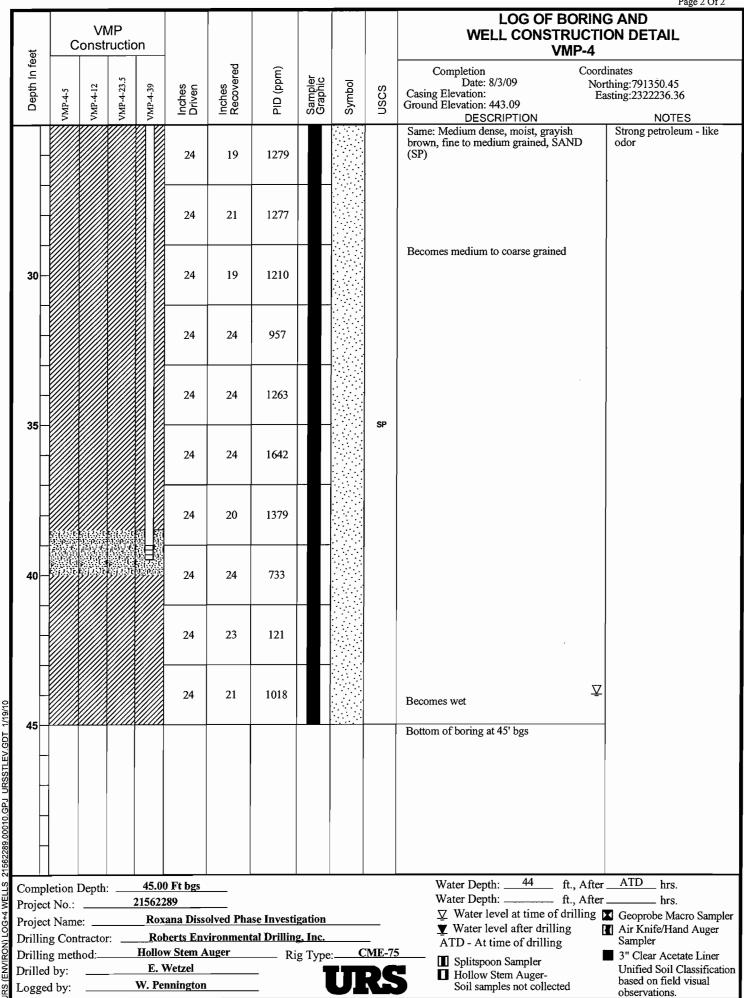


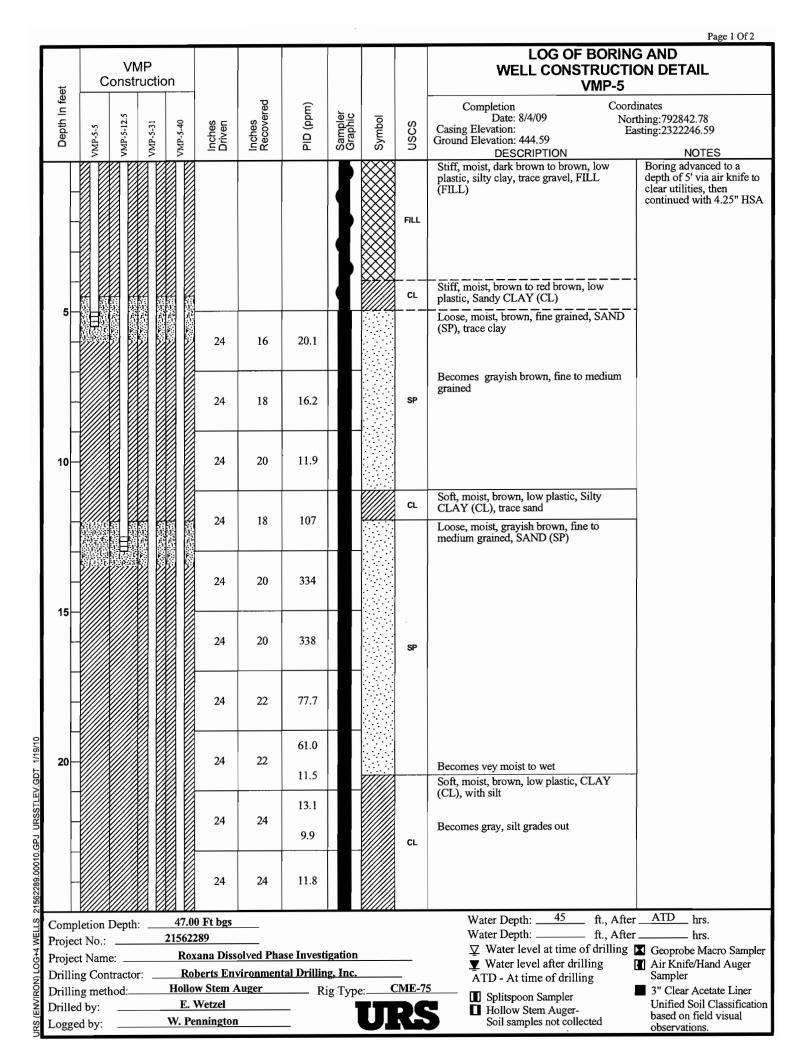
at o	С		ИР ructio	on							LOG OF BORING AND WELL CONSTRUCTION DETAIL VMP-2
Depth In feet	VMP-2-5	VMP-2-8.5	VMP-2-22	VMP-2-42	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	nscs	Completion Coordinates Date: 7/28/09 Northing: 793747.43 Casing Elevation: Easting: 2322220.16 Ground Elevation: 443.56 DESCRIPTION NOTES
-					24	23	3.5				Same: Medium dense, moist, light brownish gray, fine grained, SAND (SP), trace clay
-					24	24	7.4				Becomes light gray
30					24	22	16.6			SP	Becomes light brownish gray
					24	24	12.4			5	Becomes very moist
35					24	21	28.0				Some clay Becomes wet Becomes moist, fine to medium grained
35					24	20	4.1			CL	Medium stiff, moist, medium plastic,
					24	20	105			S P	CLAY (CL) Medium dense, moist, light gray, fine grained, SAND (SP), trace clay
40					24	17	44.5			5	Becomes fine to medium grained, clay grades out
					24	17	7.8			SC CL	Medium stiff, moist, gray, low plastic, Sandy CLAY (SC) Medium stiff, moist, gray, medium plastic, CLAY (CL)
					24	19	89.3			SC SP	Medium dense, wet, gray, Clayey SAND (SC) 2" clay Medium dense, very moist, brownish gray, fine to medium grained, SAND (SP)
45					24	22	86.4			CL SC	Medium stiff, moist, gray, medium plastic, CLAY (CL) Medium dense, moist, gray, Clayey
					24	17	780		<i>/././</i>	SP	Medium dense, moist, gray, Clayey SAND (SC) Medium dense, wet, brownish gray, SAND (SP)
	<i>Y/////</i>										Bottom of boring at 49' bgs
Projec Projec Drillin	g meth	e:		Rox Rox Ro Hollo B. S	kana Diss berts Env	olved Pha rironment	al Drillin	g, Inc.	; C		Water Depth: ft., After hrs. Water Depth: ft., After hrs. Water level at time of drilling

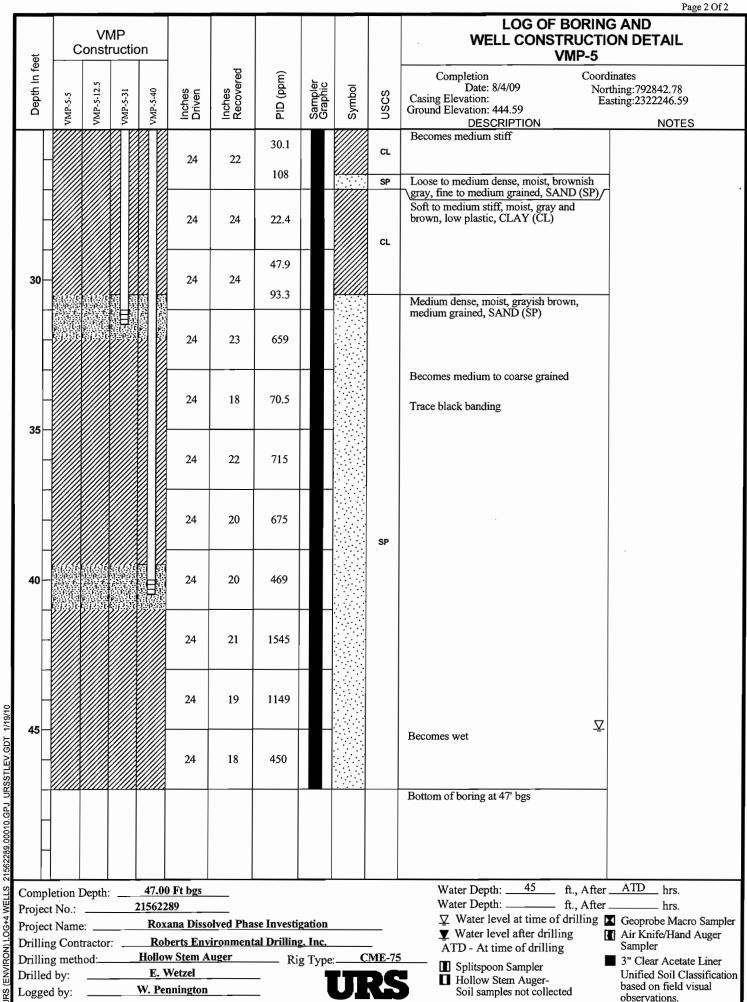
					_				,			Page 1 Of 2
		٧N	/IP								LOG OF BORING WELL CONSTRUCTION	
*	c		uctio	n							VMP-3	ONDEIAL
Depth In feet	VMP-3-5	VMP-3-22	VMP-3-31.5	VMP-3-39	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	nscs	Completion Coord Date: 7/29/09 Nor Casing Elevation: Ea Ground Elevation: 442.21 DESCRIPTION	linates thing:793442.63 ssting:2322229.28 NOTES
								}		FILL	Dark gray, silty gravel to silty clay, FILL (FILL)	Boring advanced to a depth of 5' via air knife to clear utilities, then continued with 4.25" HSA
_							•	ł		CL	Stiff to very stiff, moist, brown, low plastic, CLAY (CL), with silt	
5	#				24	20	0.2	·		sc	Medium dense, moist, brown, Clayey SAND (SC)	
					24	18	6.9				Loose, moist, grayish brown, fine to	
10-					24	20	16.3				medium grained, SAND (SP) Becomes gray, fine grained	
					24	19	16.9			SP		
1					24	16.5	9.5				Becomes light gray	Petroleum - like odor
15					24	18	5.5 35.8			SM	Medium dense, moist, gray, fine grained, Silty SAND (SM)	
					24	18	16.9			cp.	Medium dense, moist, light gray, fine grained, SAND (SP)	
20					24	19	5.3			SP	Trace clay	
Comp Project Project Drilling Drilling Logge					24	22	1071			SM	Medium dense, moist, gray, fine grained, Silty SAND (SM) Becomes dark gray	Petroleum - like odor Possible staining, Petroleum - like odor
-					24	20	387 117		//////	SP CL	Loose, moist, gray, fine grained, SAND (SP) Medium stiff, moist, brown, medium	
							144			SM	\plastic, CLAY (CL), with silt	1550
Comp	letion 1	_			Ft bgs						Water Depth: 44 ft., After	
Projec	t No.:			215622			ao T'				Water Depth: ft., After	
Projec	t Name						se Investi al Drillin				▼ Water level after drilling	Air Knife/Hand Auger
Drillin	ng Con ng metl						— Ri		e: C	- :ME- <u>7:</u>	ATD - At time of drilling	Sampler 3" Clear Acetate Liner
Drille	d by:			B. Sc	chilling Corbett		_	3 - JP		56	Splitspoon Sampler Hollow Stem Auger- Soil samples not collected	Unified Soil Classification based on field visual
Logge	ed by:			1V1. C	આ ગુદ્ધા	_	_	,			Son samples not confected	observations.

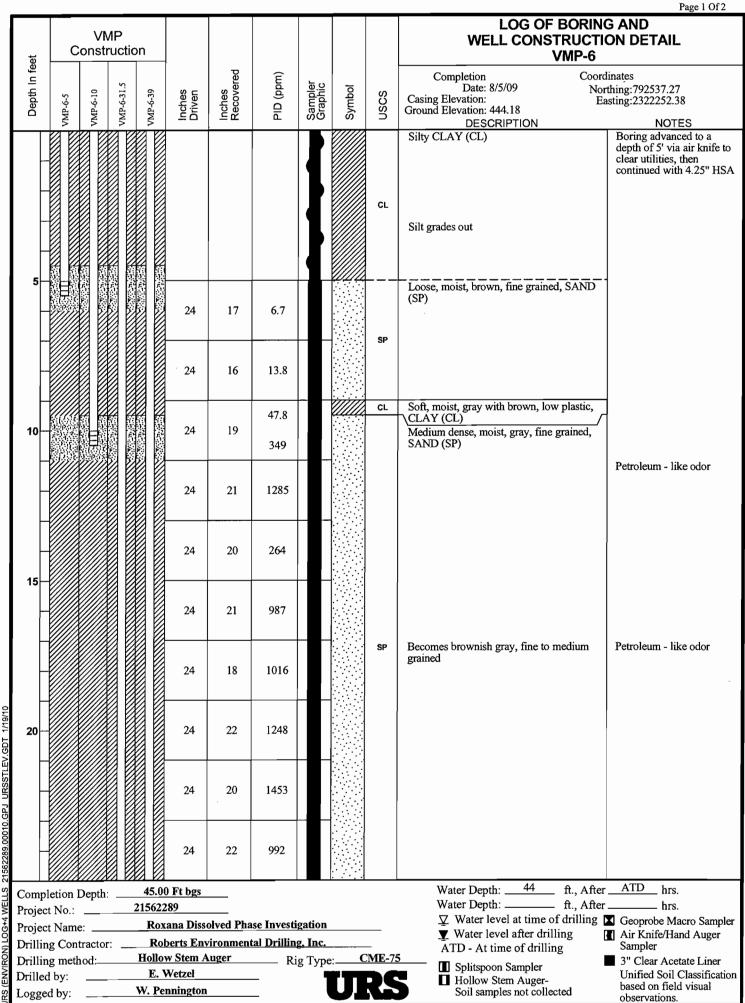
			_		I	1		1	ı	_	LOC OF BODING AND	Page 2 Of 2
to to	С	VI onst	MP ructio	on							LOG OF BORING AND WELL CONSTRUCTION DI VMP-3	
Depth In feet	VMP-3-5	VMP-3-22	VMP-3-31.5	VMP-3-39	Inches Driven	Inches Recovered	PID (ppm)	Sampler Graphic	Symbol	nscs	Completion Coordinates Date: 7/29/09 Northing:79 Casing Elevation: Easting:23 Ground Elevation: 442.21 DESCRIPTION	3442.63 22229.28 NOTES
					24	18	117			SM	Dense, moist, light brown, fine grained, Silty SAND (SM) Becomes medium dense	
					24	14	45.2			J	Becomes light gray Becomes dense	
30-					24	15	81.9			SP	Medium dense, moist, light brown, fine grained, SAND (SP)	
					24	16	525			CL	Beomes brownish gray, silty Stiff, moist, brownish gray, low plastic,	
					24	14	57.1			SM	Silty CLAY (CL) Medium dense, moist, brownish gray, Silty SAND (SM)	
35-					24	16	184				Medium dense, moist, brownish gray, fine grained, SAND (SP), trace silt Becomes dense	
					24	18	345			SP	Becomes medium dense Becomes fine to medium grained	
40					24	16	693			CL	Stiff, moist, gray, Sandy CLAY (CL)	
					24	21	187			SM	Medium dense, very moist, brownish gray, Silty SAND (SM), trace clay Medium dense, moist, grayish brown, fine	
					24	19	793			SP	to medium grained, SAND (SP) Decomes wet, brownish gray	
45					24	24	863					
											in an a	3-22 was installed djacent hole due to ications duing ation
Project Project Drillin	-	e: tracto		Rox Rollo Hollo B. S	ana Diss berts Env	olved Pha vironment	al Drillin	g, Inc.		CME-75	ATD - At time of drilling Samp Splitspoon Sampler Hollow Stem Auger- Soil samples not collected Soil samples not collected	— hrs. robe Macro Sampler Inife/Hand Auger

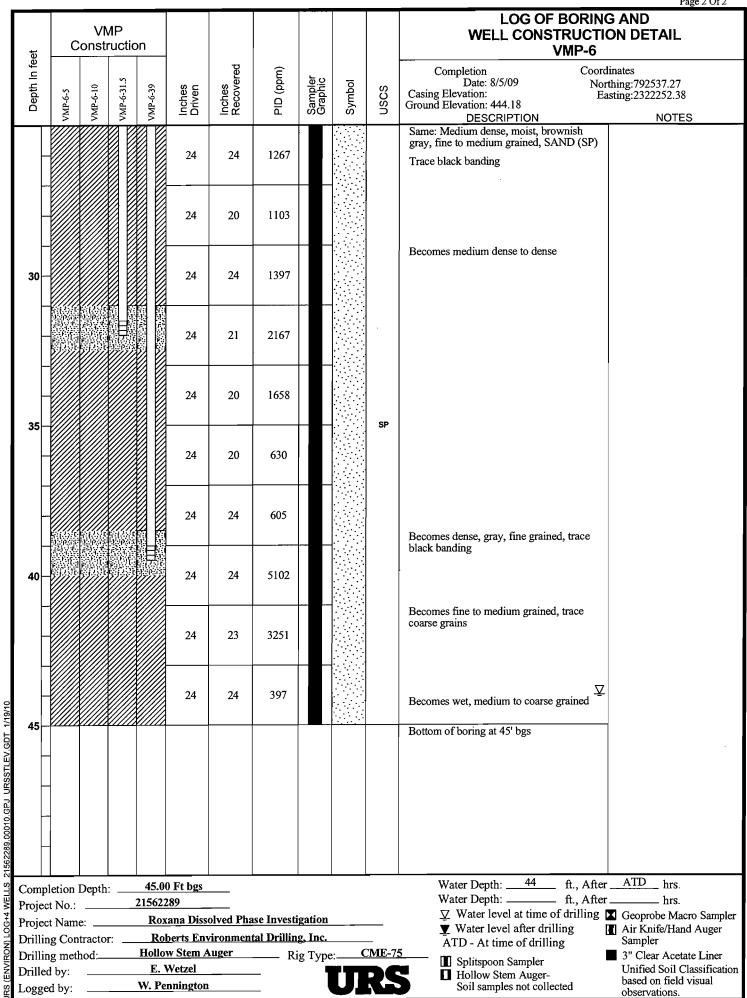


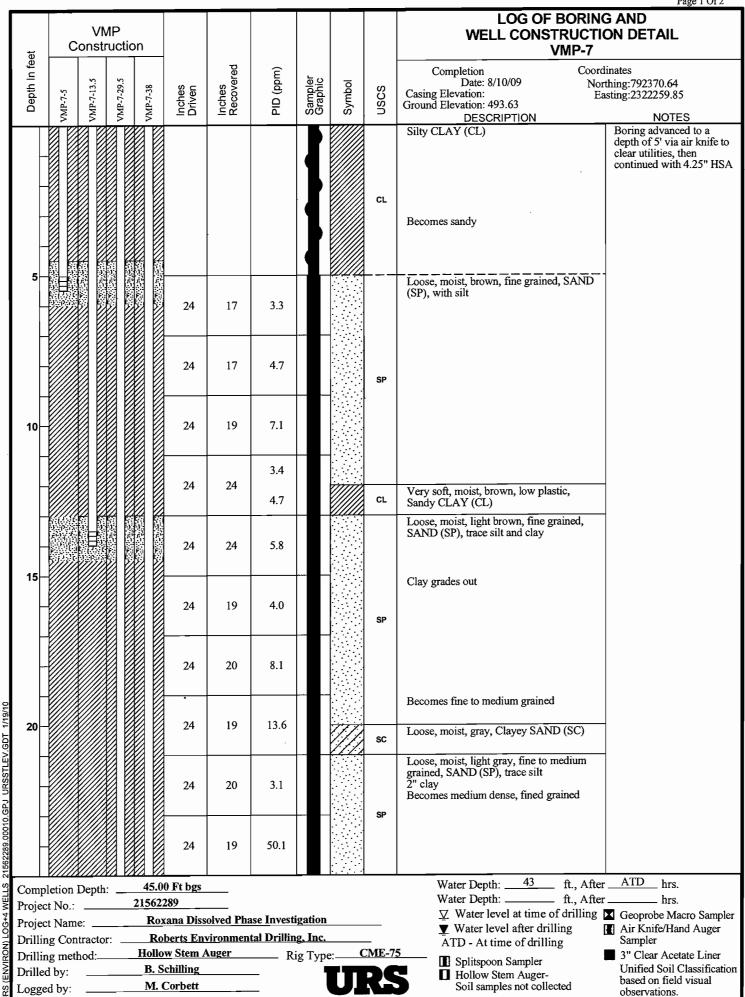


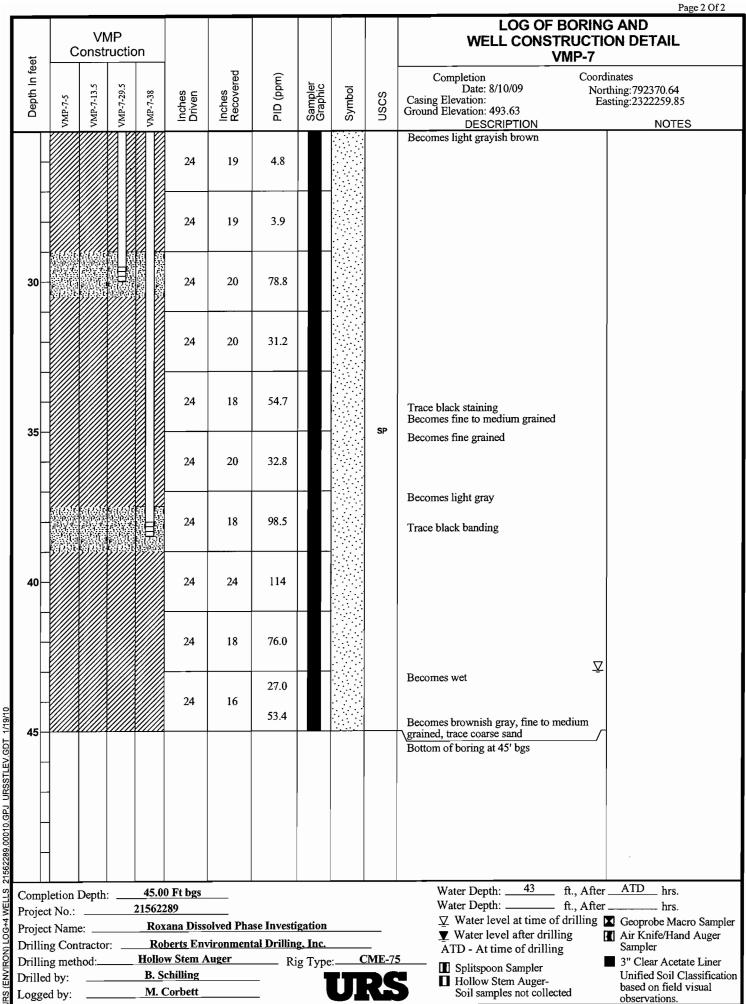


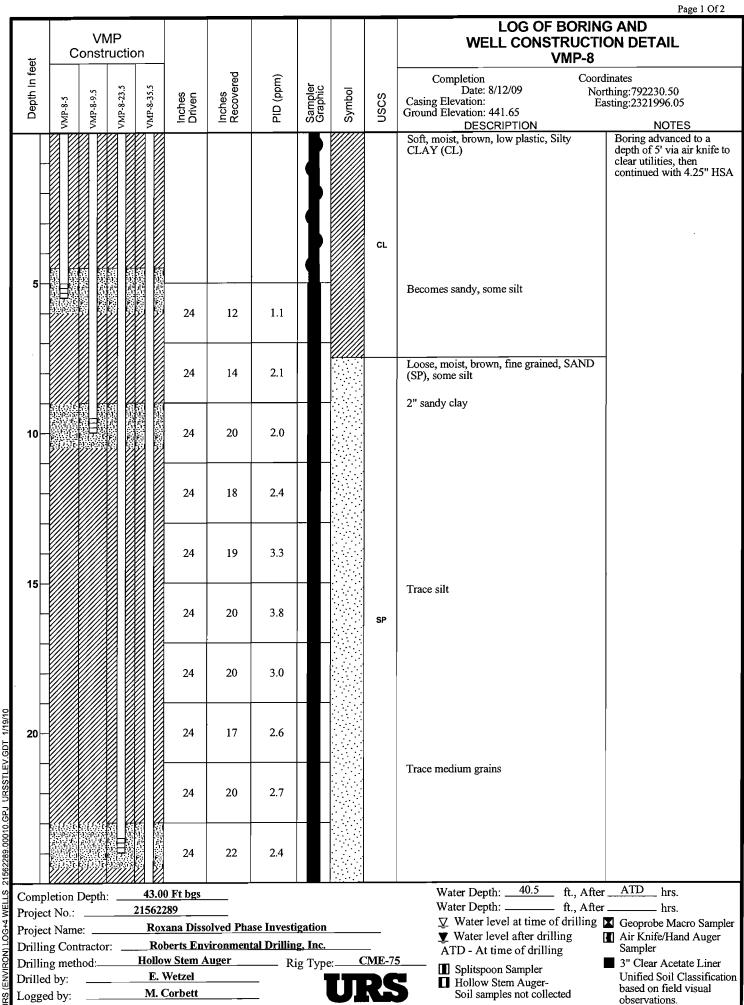


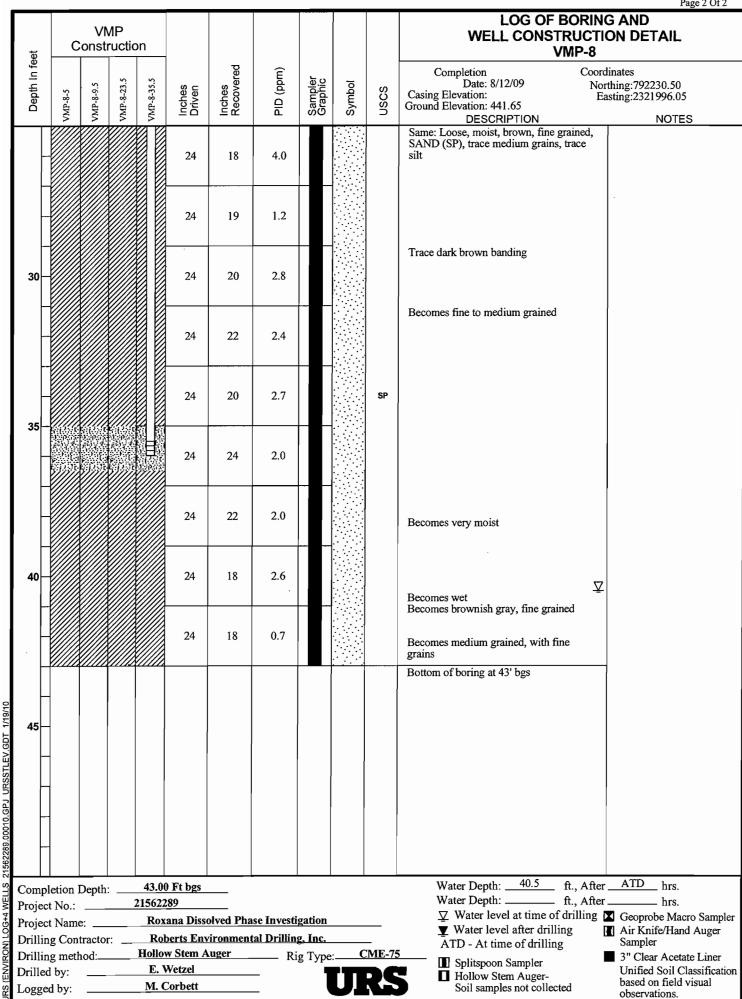


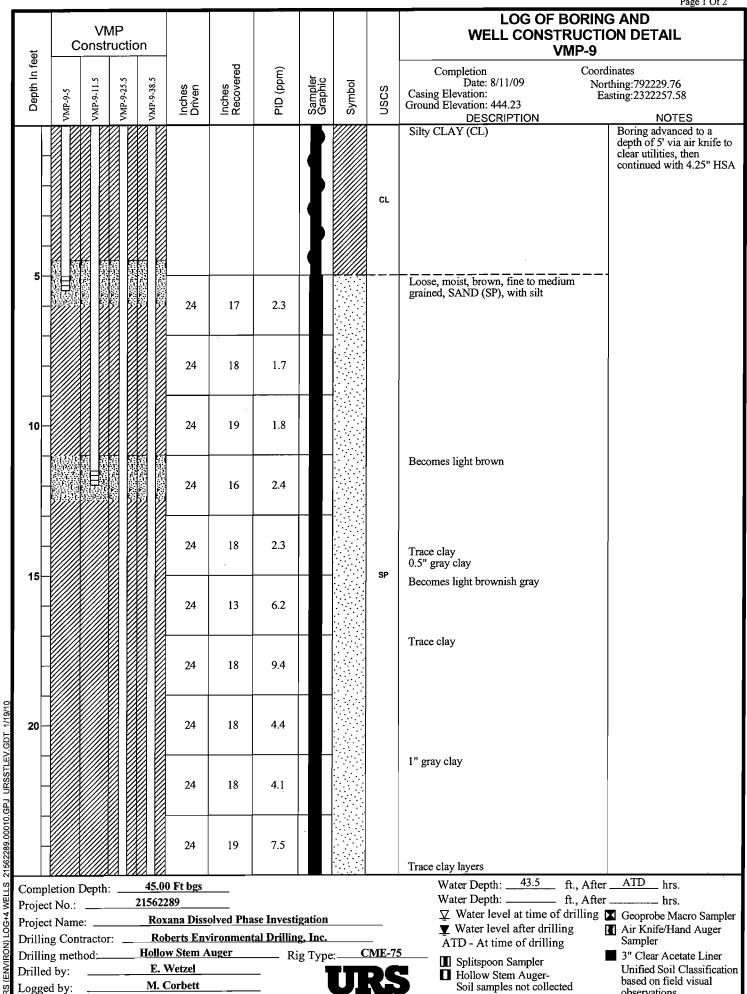


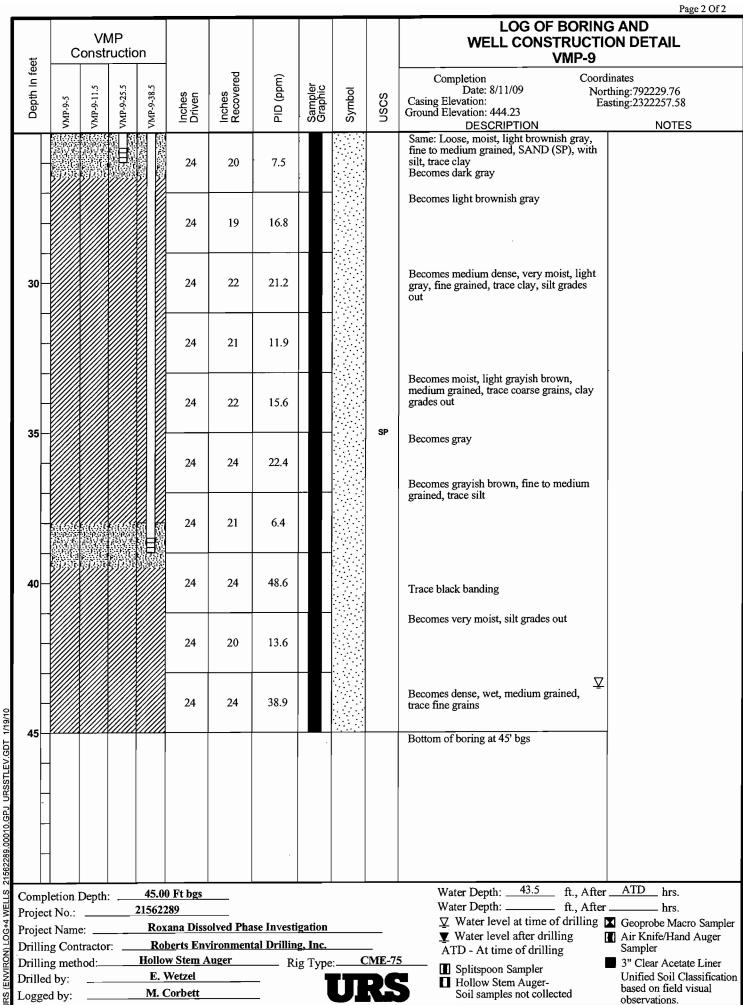


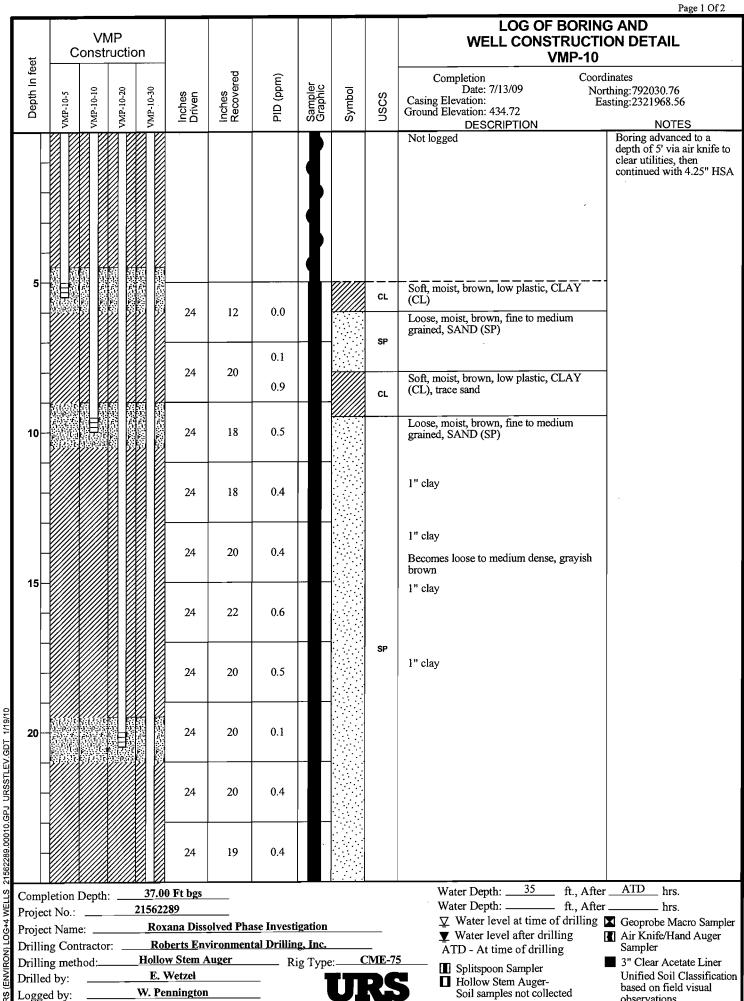


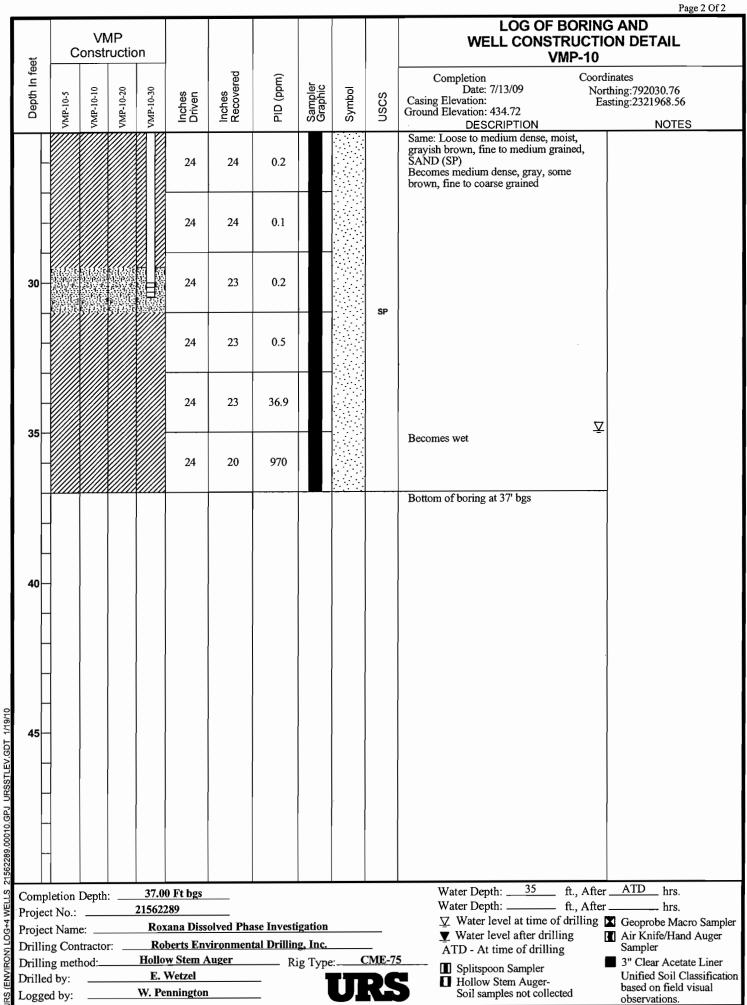


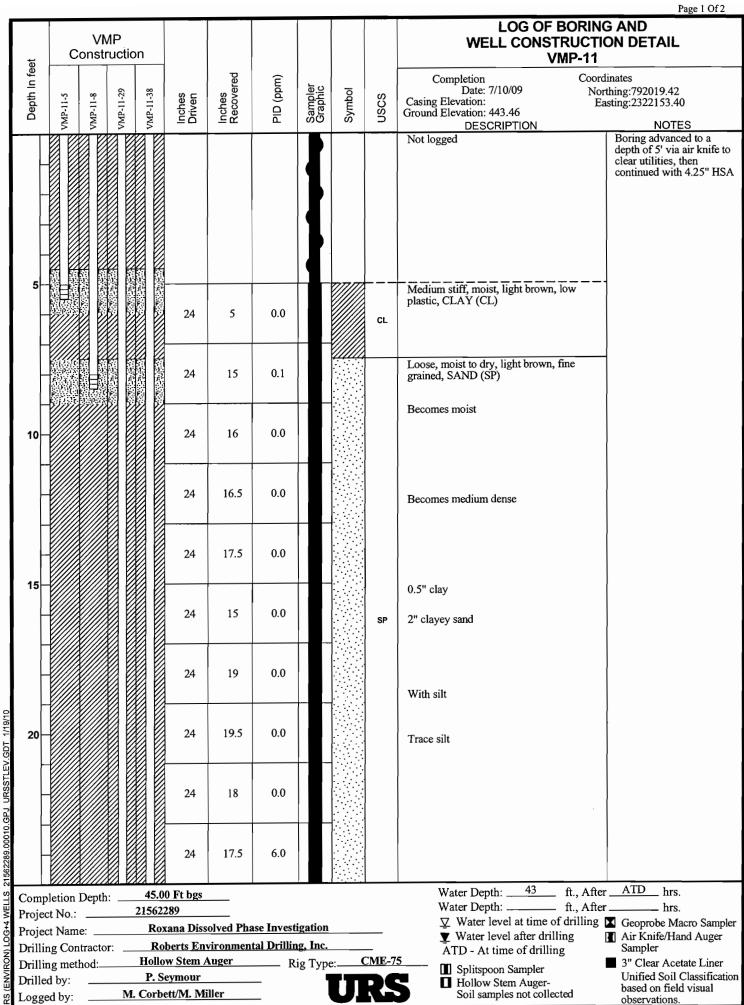


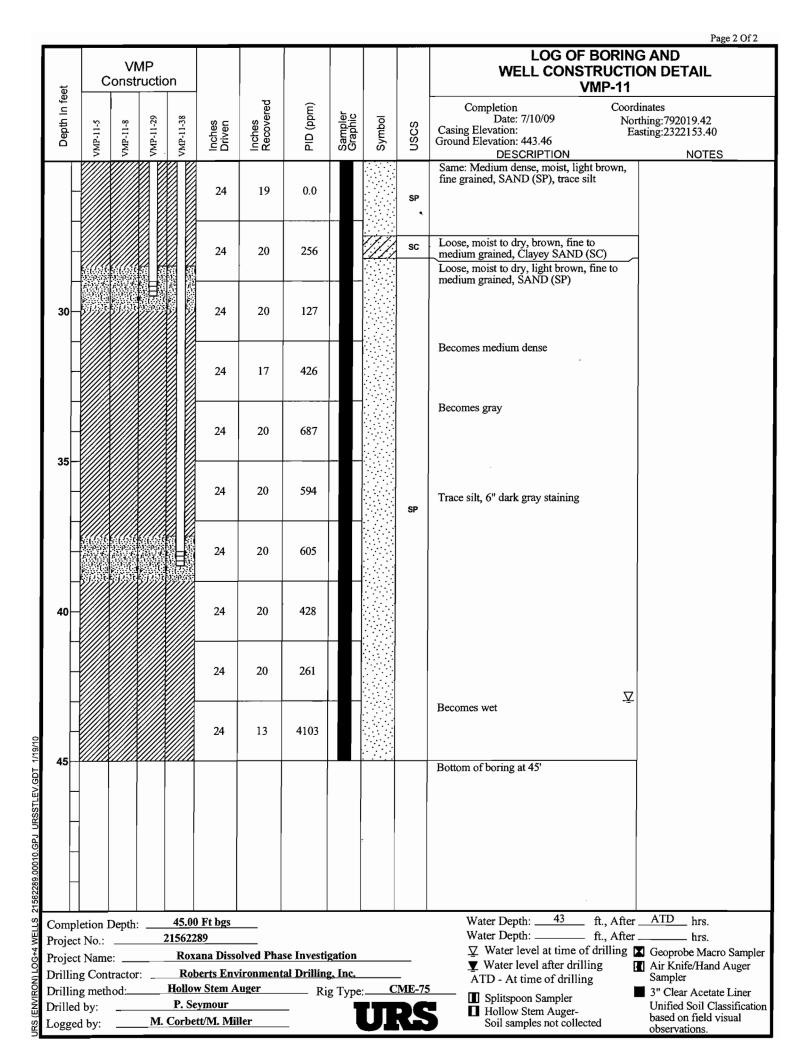


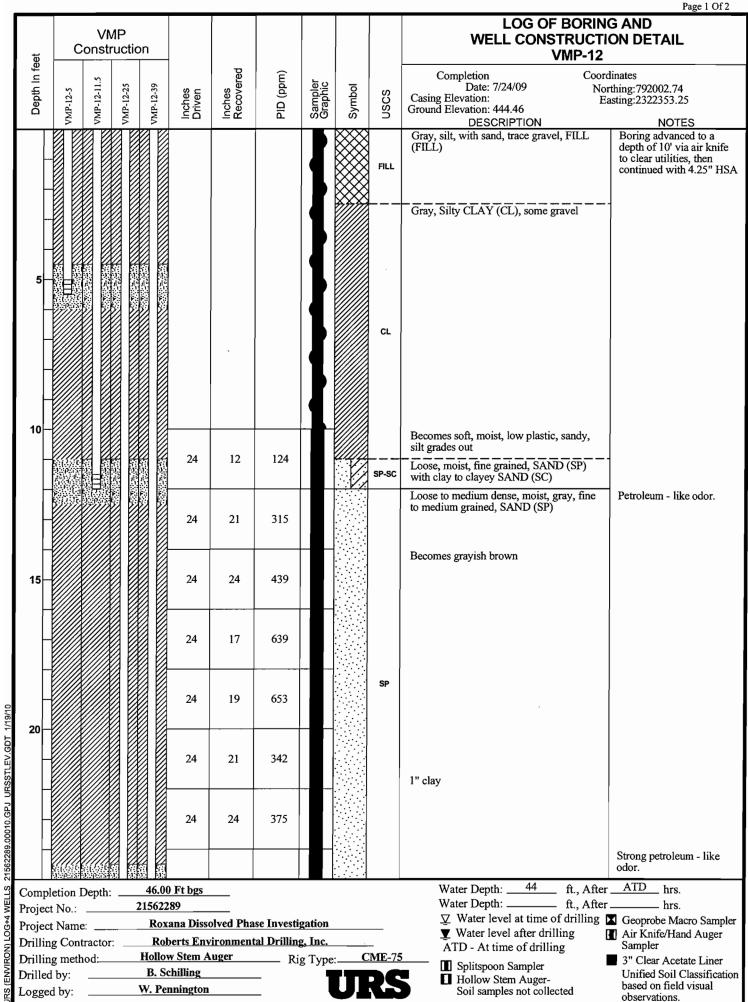


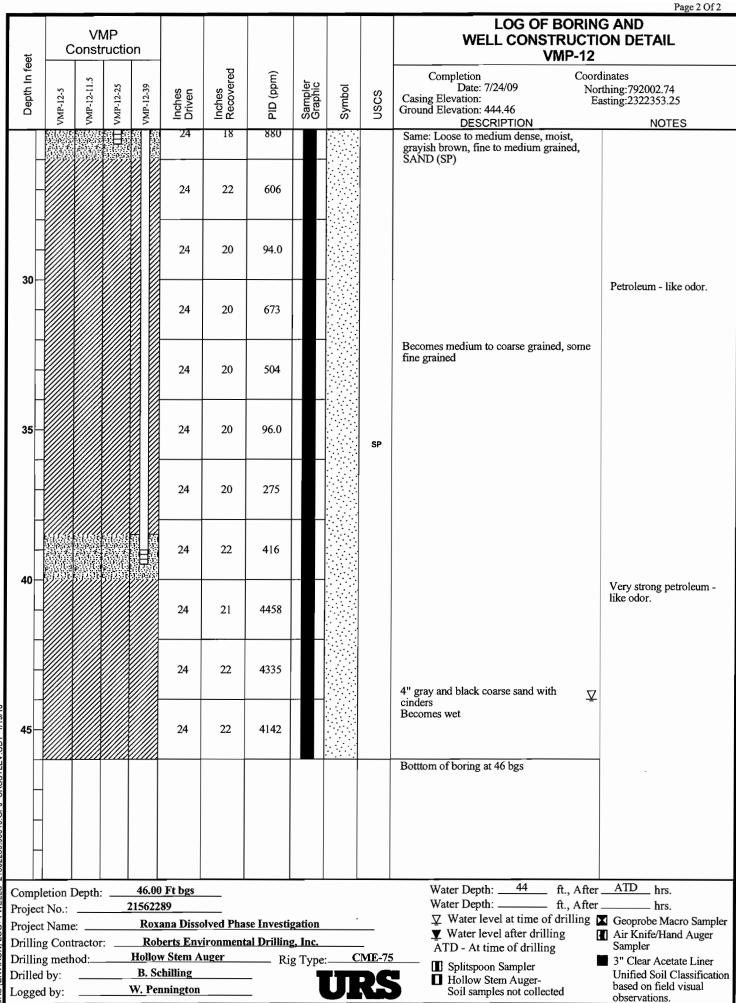


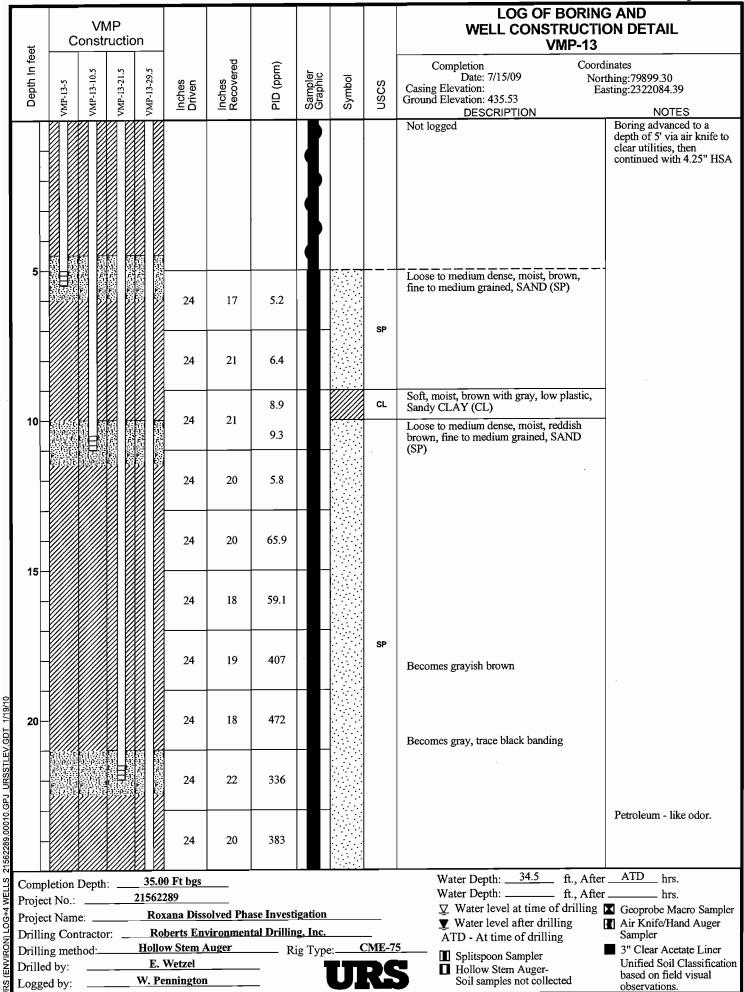


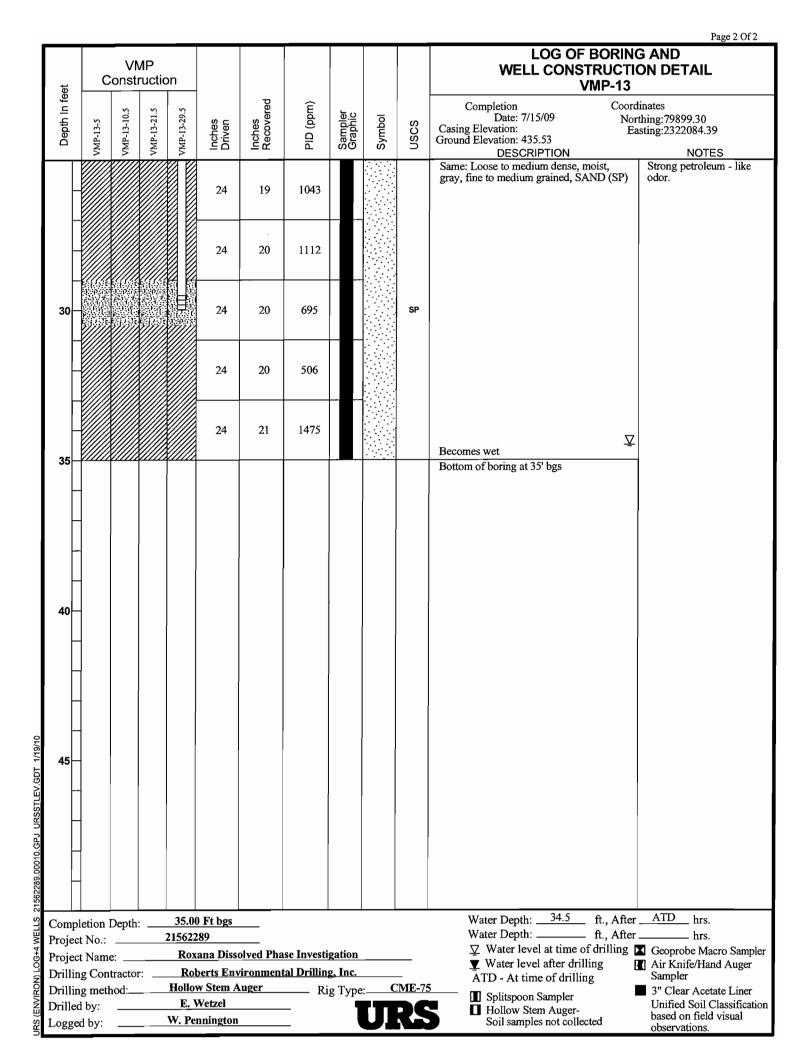


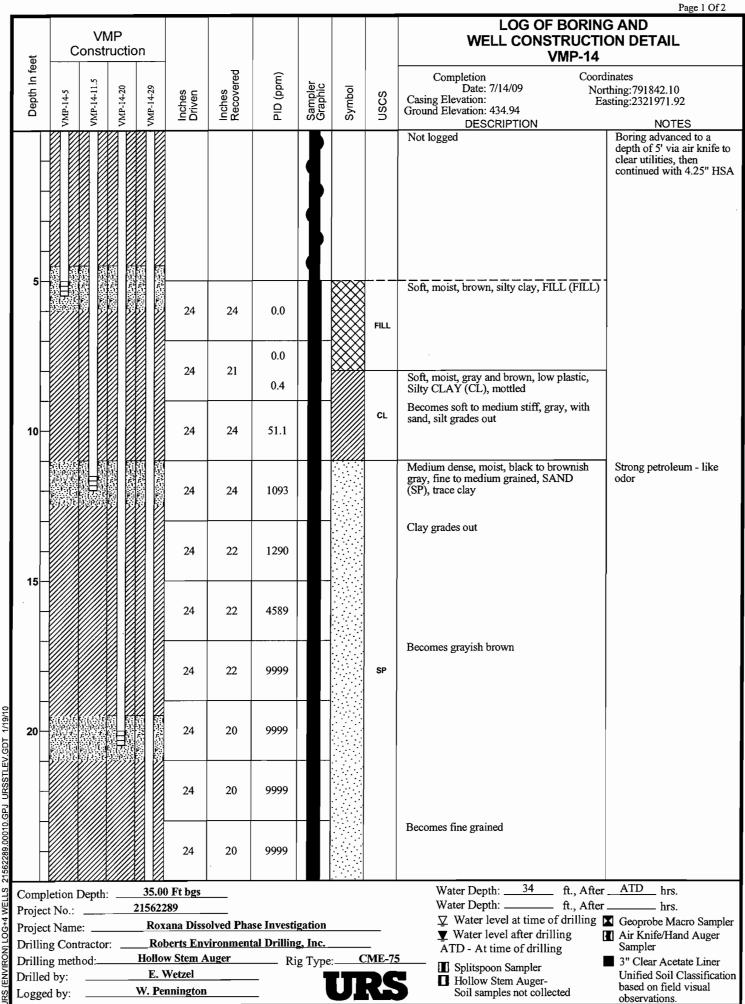


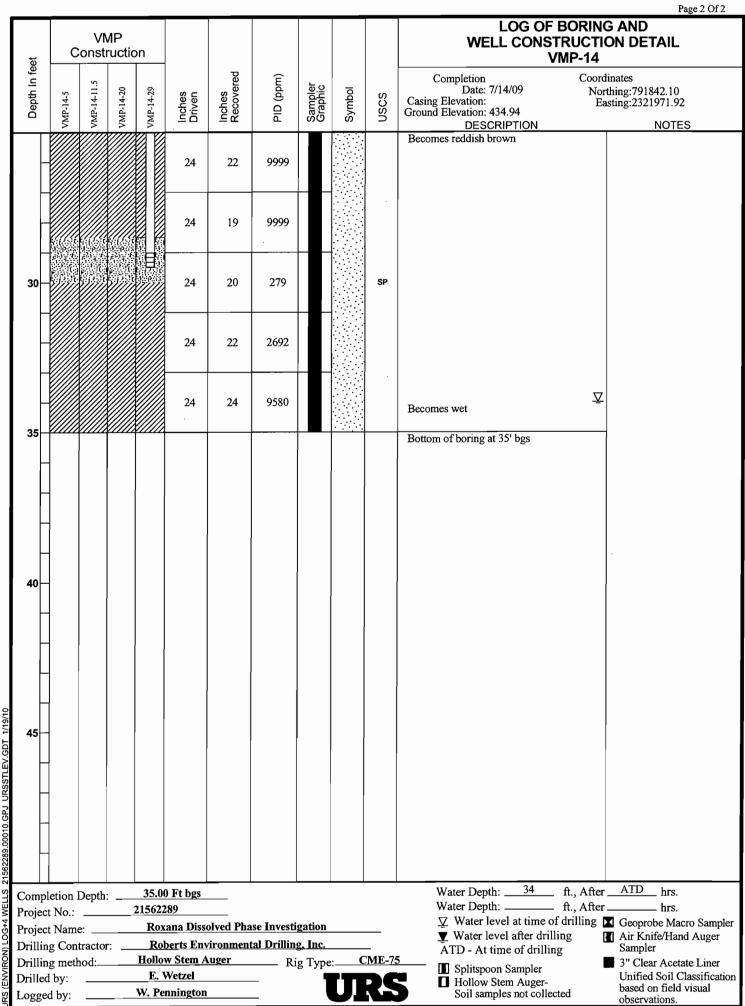


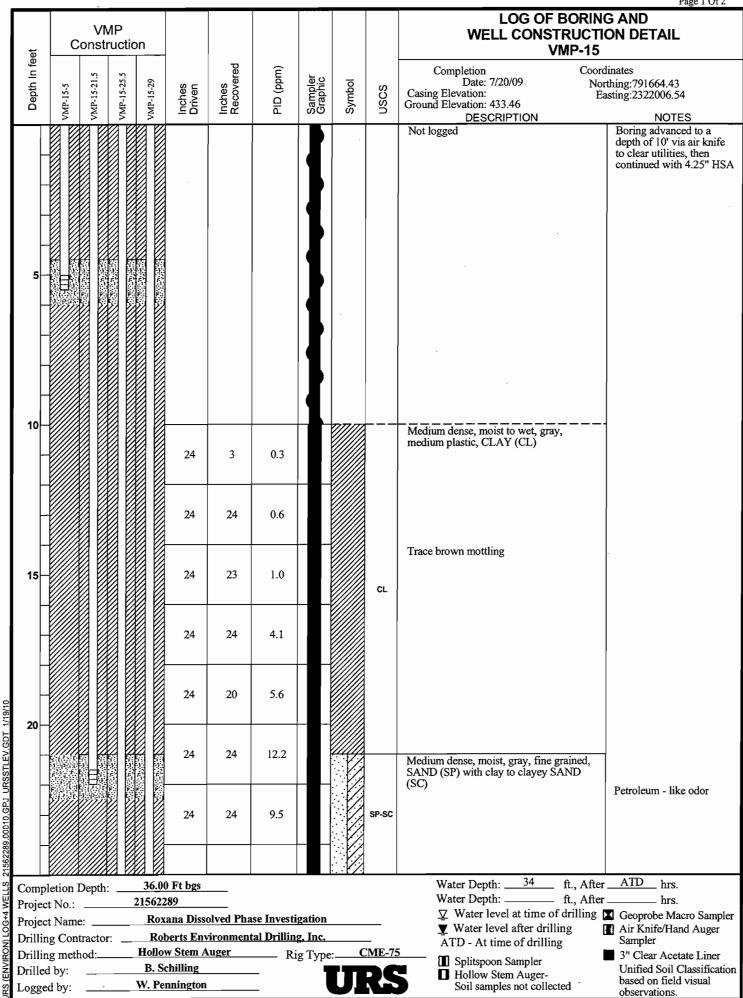






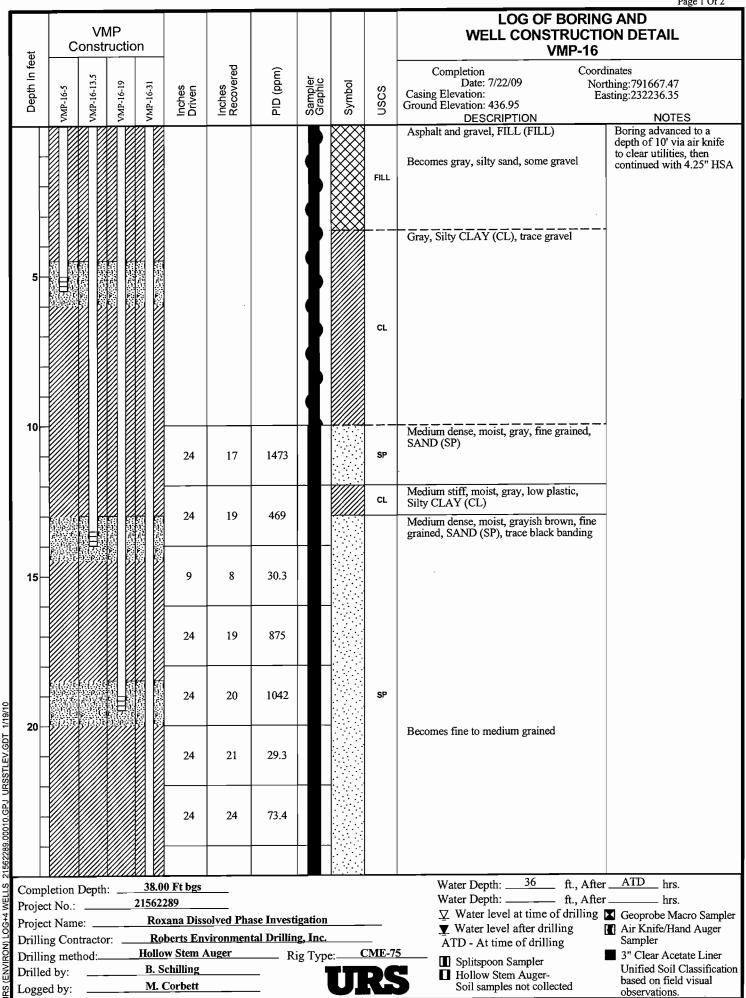


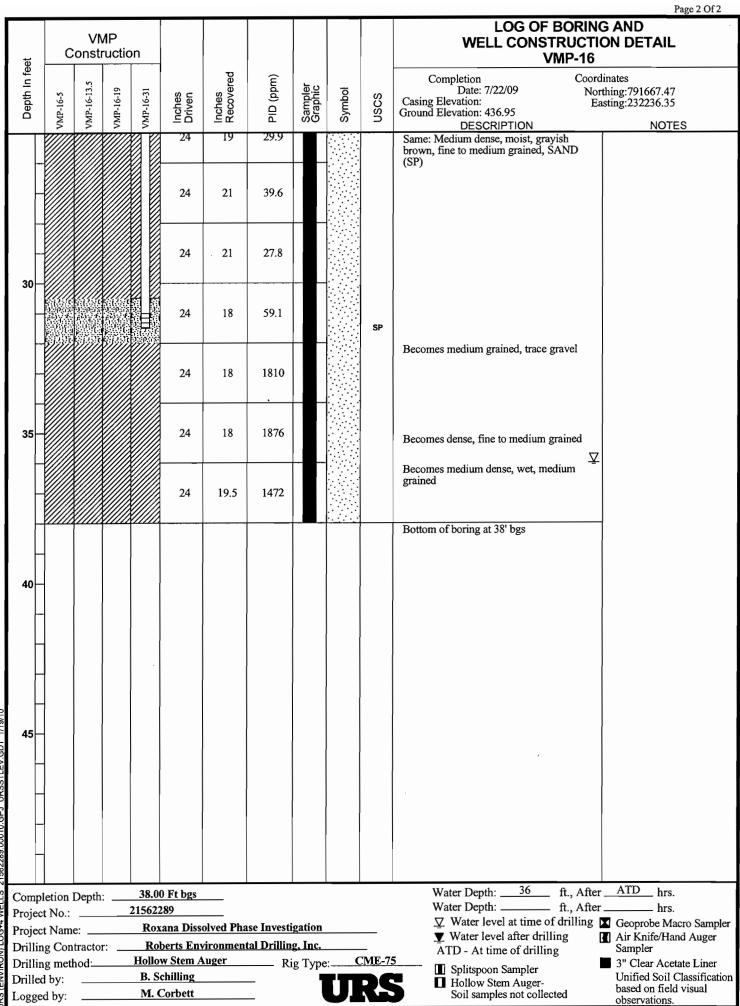




	,				_	_	_				Page 2 Of 2
		\/!	MP								LOG OF BORING AND WELL CONSTRUCTION DETAIL
+	(Const	ructio	n							VMP-15
Depth In feet		T .				pe	<u></u>				Completion Coordinates
후	٠.	VMP-15-21.5	VMP-15-25.5	-29	S L	Inches Recovered	PID (ppm)	Sampler Graphic	lod	တ္	Date: 7/20/09 Northing: 791664 43
Dep	VMP-15-5	/P-15	₫P-15	VMP-15-29	Inches Driven	nche Reco	요	Sam Srap	Symbol	nscs	Casing Elevation: Easting:2322006.54 Ground Elevation: 433.46
<u> </u>	≶	\$ 60000000	\$ 3021 1 02	\$ 190 190 190	24	14	33.4	0,0	7. 17.11		DESCRIPTION NOTES Loose to medium dense, moist, grayish
	13 (P.) 7 (1)				21	^.					brown, fine to medium grained, SAND
			t Z t								(SP)
		<i>}////</i>			24	18	20.2				·
		<i>X////</i>	<i>X/////</i>	8							
-	////	<i>X////</i>	X ////								Some coarse grains
					24	24	26.5				
					2.	~.	20.0				·
30	////			////							Becomes reddish brown
		<i>X////</i>			24	22	55.9			SP	
		X////			24	22	55.9				
	<i>\\\\\</i>					•					
		<i>X////</i>			24	18	56.5				
											Because and empirical because modification to
											Becomes wet, grayish brown, medium to coarse grained
35					24	16					
											Bottom of boring at 36'
1	-										
l	-										
40											
i l											
1	-										
	1										
_l ⊦	4										
19/10											
45	1										
5											
200											
<u> </u>	-										
G G											
0010											
0.689.0	-										·
45 - Compression of the Project Projec											
Comr	letion	n Depth	1:	36.0	0 Ft bgs			•	•		Water Depth: 34 ft., After ATD hrs.
Project				215622							Water Depth: ft., After hrs.
Project				Rox	ana Diss	ol <u>ved Ph</u> a	se Investi	gation			 ✓ Water level at time of drilling ✓ Geoprobe Macro Sampler ✓ Water level after drilling ✓ Air Knife/Hand Auger
Drilli		ntracto	or:				tal Drillin	g, Inc.		_	ATD - At time of drilling Sampler
Drillin	_	thod:_	_		w Stem A	Luger	Ri	ig Type	:	CME-7:	5 3" Clear Acetate Liner
Drille					chilling		_	1			Hollow Stem Auger-
Logge	ed by:	_		w. Pe	nnington		_			74	Soil samples not collected observations.

Page 1 Of 2





Groundwater Profiling Field Sheets

PROJECT NAME:	Dissolved Phase	GW Investigation	PRO	OJECT NUMBER:	21562175	FIELD PE	RSONNEL:	like Corbet	+, Wardy	, Pennington
DATE: 9/2	109	WEATHER:	Sunn	1,705			<u> </u>			
MONITORING WEL	LID: GP	-1-34		<u> </u>	SAMPLE ID:	GP-1-3	54			
Screen Length):): 31.50 ft APL (btoc): the sen (btoc): 32.00 ft 4.00 ft	If Depth to Top of Place Pump at: 1 If Depth to Top of Place Pump at: 1 If Screen Length	of Screen is > Depth of Formal Well Depth = 0.0 of Screen is < Depth Formal Well Depth = (0.0 of and/or water column	to Water AND Water (.5 X Water Column He n height is < 4 ft, Plac	Length is (4 feet, NAPL Column Height) Column Height and So Light + DNAPL Columi	= 34.00 creen Length are < 4ft,	ft btoc An	iume of Flow Through nimum Purge Volume i nbient PID/FID Reading allbore PID/FID Reading	= (3 x Flow Cell Vo :	mL lume): <u>3,450</u> mL ppm ppm
PURGE DATA Purge Volume	Pump Type:	Depth to	s Steel Submersible F	ump		Temp	Cond.	Turbidity	DO	ORP
(mL)	Time	Water (ft)	Color	Odor	pH	(°C)	(mS/cm)	(NTUs)	(mg/L)	(mV)
6,000*	1105	N/A	light brown	slight hydroc.	6.58	20.92	1.501	804.4	2.44	-157.0
7,200	1109	1	- 	· · · · ·	6.61	20.89	1.486	7/2.4	2.69	-161.2
8,400	1113				6.62	20.76	1.463	662.6	1.80	-166.1
9,600	1127	++			6.63	20.66	1.447	492.7	1.59	-167.0
12.000	1125				6.62	20.43	1.416	458.7	0.68	-/7/.0 -/7/.5
13,200	1129				6.60	20.24	1.39/	395. 2	0.45	-172.6
141400	1133	-+			6.60	30.18	1.383	396.7	-0.33	- 159.7
15,600	1132				6,59	20.10	1.376	398,8	-0.21	-148.1
16,800	1141	- 1				REMENT - C		LOW-THROVE		7.7.7.7.7
18,000	1145	_			6.55	19.20	1.340	265.0	0-15	-137.8
19.200	1149	- ·			6.55	19.52	1.336	237.7	-0.30	-144.9
20,400	1153				6.53	19.59	1.340	2.44.0	0.31	-147.7
21,600	1157				6.51	19.69	1.343	268.8	0.83	-151.6
33.800	1201				6.50	19.70	1,341	250.7	1.35	-/52.5
24,000	1205		V	<u> </u>	6.50	19.67	1.338	258.9	1.63	-153.7
Start Time:	1105		Elap	sed Time (min):	60 mi	n	Water Qual	lty Meter ID: YSI 6820		
Stop Time:	1205		Aver	age Purge Rate (mL/n	nin):3 <u>00</u>		Date Calibr	ated: 9/2/0	9	
SAMPLING DAT	A 9/2/0	9	Sam	ple Time:	121	0	Lab Analys	sis: VOC, SVOC		
Sample Method:	Monsoon / Low Flow		Sam	ple Flow Rate (mL/ml	in): -	300	QA/QCSan	iples:	cn - (0)	-24 400
VOA Vials, No Head	space 🔀 initials:	MC	_		·			145/M.	<u>sD — GP-1</u> GP-	<u>-37 MS</u> 1-34 MSD
COMMENTS:	aking readis	gs after	parge wat	er became	sediment-fr	ce			·	
			· ·					Total Bur	ge Volume:	14,000 mL
								IOLA FUI	ge tolullie	17,000 IIL

PROJECT NAME:	Dissolved Phase G	W Investigation	PI	ROJECT NUMBER:	21562175	FIELD PE	ERSONNEL:	Mike Corbe	H, Wendy	Pennington
DATE: 9/	2/09	WEATHER	sun	y to partly	cloudy,					
MONITORING WEI	LLID: GP	-1-42		, , , , , , , , , , , , , , , , , , ,	SAMPLE ID:	GP-1	-42			
		If Depth to Top or Place Pump at: If Depth to Top Place Pump at: If Screen Length	of Screen is > Depti Total Well Depth — (of Screen is < Dept Total Well Depth — (te LNAPL or DNAPL): to Water AND Screen L 0.5 (Screen Length + DNA th to Water AND Water Co 0.5 X Water Column Helg nn helght is < 4 ft, Place	ength is (4 feet, APL Column Height); olumn Height and Sc ght + DNAPL Column	reen Length are < 4ft,	ft bloc Ar	olume of Flow Through Inimum Purge Volume = Inbient PID/FID Reading elibore PID/FID Reading	(3 x Flow Cell Vol	ppm
Purge Volume	rump type.	Depth to	S Cicel Cavinolator			Temp	Cond.	Turbidity	DO	ORP
(mL)	Time	Water (ft)	Color	Odor	pH	(°C)	(mS/cm)	(NTUs)	(mg/L)	(mV)
4.500*	1305	NA	light brown	SI. petr-like	6.82	19.30	0.983	469.9	2.47	-109.2
5.200	1309		1	1	6.61	19.68	0.985	384.9	2.23	-113.7
6 900	1313				6.55	19.81	0.992	398.8	2.74	-118.7
8,100	1317				6.54	19.88	0.955	359.0	2.54	- 122.2
9,300	1321				6.55	19.83	0.997	370.7	2.34	- /23.7
10.500	1324				6.53	19.78	0.997	330.1	2.78	-125.4
11.700	13.28				6.53	19.82	0 996	3/4.4	2.33	-126.1
12,900	1332				6.53	19.82	0.996	303.5	2.47	-/26.2
14.100	1336				10.52	19.74	0.994	268.1	2.32	-126.3
15.300	1340				6.51	19.70	0.994	248.7	2.17	- 126.2
16,500	1344				6.51	19.81	0.993	225.6	2.18	-126.6
17,700	1348				6.51	19.96	0.994	211.7	1.99	-124.9
18,900	1352				6.51	19.86	0.994	205.8	2.34	-127.0
20,100	1354				6.51	19.78	0.993	201.1	2.02	-126.9
21,300	1400				6.50	19.77	0.994	177.2	2.05	-127.0
22.500	1404	<u> </u>	V	V	6.51	17.88	0.995	177.8	\$ 1.96	-126.8
Start Time:	1305		Ele	psed Time (min):	60		_ Water Qua	lity Meter ID: YSI 6820	ionp	
Stop Time:	1405		Av	erage Purge Rate (mL/mi	in):300		_ Date Calib	rated: <u>9/2/</u> 0	9	
SAMPLING DAT	ra 9-2-	09		mple Time:	1405	5	Lab Analy			
Sample Method:	Monsoon / Low Flow		Şa	mple Flow Rate (mL/mln); 24	o	QA/QCSar	mples:		
VOA Vials, No Head	ispace 🏻 Initiale:	MC		•				nony		
COMMENTS:	taking reading	gs aften	purge wat	er became	sediment-fr	<u>e</u>				
				<u> </u>				Total Pur	ge Volume:	500 mL
				`				i Otal Pul	go volulito.	nr.

PROJECT NAME:	Dissolved Phase G	W Investigation		PROJECT N	UMBER: _	21562175	FIELD PE	RSONNEL:	like Corbett	Kelly Hu	15-
DATE:	1/1/09	WEATHER:	Sw	nny, 2	0s		<u>. </u>				
MONITORING WE	LL ID: GP-4	-34				SAMPLE ID:	GP-4-	3 4			
Depth to Top of Screen Length):		If Depth to Top o Place Pump at: T	f Screen is > Do otal Well Depth f Screen is < D otal Well Depti	epth to Water A n - 0.5 (Screen bepth to Water A n - (0.5 X Water	ND Screen Le Length + DNA AND Water Co Column Heig	ength is (4 feet, NPL Column Height Numn Height and S Int + DNAPL Colum	creen Length are < 4ft,	ft Stoc	olume of Flow Through inimum Purge Volume mblent PiD/FID Reading ellbore PiD/FID Reading	(3 x Flow Cell Vo	mL
PURGE DATA	Pump Type:	Monsoon Stainles	s Steel Submers	sible Pump							
Purge Volume		Depth to	Oale:)dor	-11	Temp	Cond. (mS/cm)	Turbidity (NTUs)	DO (maril)	ORP (mV)
(mL)	7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Water (ft)	Color			рН 6.72	(°C)		(NIUS) 4/3.6	(mg/L)	-/67.4
4,500 *	0958		gray 154 6	roun hydra	carbon	6.72	19.00	1.022	440.6	2.03	-179.4
6,700	1002			_	 	6.80	18.97	1.011	451.0	1.45	-180.0
8 100	1006		light brown		 	6.80	18.98	1.009	440.1	1.42	-181.7
8, 100	1010		IIINI DIENA	` 	+		19.01	1-001	389.2	1. 33	-180.0
10.500	1014			1:4+4	ydrocarb.	6.77	19.02	0.998	341.1	1.29	-179.4
11,700	1018			121800 11	1	6.76	19.03	0.992	307.7	1.25	-178.9
12. 900	1033				1 - 1	6.74	19:12	0.989	255.5	0.85	-175.6
14.100	1026				 	6.73	19.11	0.985	251.0	0.72	-173.4
15.300	1030					(2.71	19.09	0.981	206.6	0.69	-170.9
16.500	1034		-+			6.70	19.07	0.980	194.6	0.61	-168.5
17.700	1038			 -	1	6.68	19.17	0.977	195.8	0.30	-/62.9
18,900	1042				1 -	6.67	19.19	0.975	178.7	0.27	-158.1
20.100	1046					6.67	19.20	0.972	166.4	0.27	-156.3
21,300	1050				1.	6.66	19.22	0.970	151.0	0.26	-155.9
32,500	1054		——Ψ		$lue{f V}$	6.66	19.19	0.970	157.0	0. 23	-154.3
Start Time:	0954			Elapsed Time	/min)•	60			lity Meter ID: YSI 6820		
Otart Time				Liupaca Timo	\			. *************************************			
Stop Time:	1054			Average Purge	Rate (mL/mi	n):3 <i>00</i>	<u> </u>	Date Calib	rated: 09/01/0	<u> </u>	
SAMPLING DA'	TA 9/1/09			Sample Time:			100	Lab Anaiy			·
Sample Method:	Monsoon / Low Flow			Sample Flow	Rate (mL/min): <u>3</u>	00	QA/QCSai	nples: Duplia	nte -	
VOA Vials, No Hea	dspace 🔀 Initials:	MC			•					ate - GP-4-34	'-D
COMMENTS:	were records	ed after to	pure-	er becan	me sedi	ment-free	•				
_HSOM SPACE	· PID reading:	<u>. 1.8 ρρπ</u>							T-1-1 D		-
									Total Pur	ge Volume: 🛮 🗟	2,500 mL

PROJECT NAME:	Dissolved Phase Gl	W investigation		_ PROJECT NU	MBER: 2	1562175	FIELD PI	ERSONNEL:	Mike Corbe	H, Kelly	Yurst
DATE: 9	11/09	WEATHER	: <u>.</u>	sunny, 70		-					
MONITORING WE		-4-42				SAMPLE ID:	GP-4-4	12			
INITIAL DATA Well Diameter): Total Well Depth (bit Depth to Water (biton Depth to LNAPL/DN. Depth to Top of Screen Length): PURGE DATA		If Depth to Top of Place Pump at: If Depth to Top of Place Pump at:	of Screen is > Total Well De of Screen is < Total Well De n and/or wate	epth – (0.5 X Water (er column height is	ID Screen Len ength + DNAP ND Water Colu Column Height	L Column Height imn Height and S I + DNAPL Colum	creen Length are (4ft	Mir ft btoc Am ; We ft btoc	lume of Flow Through nimum Purge Volume s iblent PID/FID Reading nilbore PID/FID Reading	(3 x Flow Cell Vol :	ppm
Purge Volume	Fump type.	Depth to	35 Otogi Copii	ISTOIDIO I UTIP			Temp	Cond.	Turbidity	DO	ORP
(mL)	Time	Water (ft)	Colo	r Oc	or	рH	(°C)	(mS/cm)	(NTUs)	(mg/L)	(mV)
3,600*	1146		light b	rown klighth	edrecarb.	6.97	20./3	0.766	481.8	0.97	-/60.7
4.800	1150		7	- 1.0 -		6.97	20.08	0.764	411.0	0.76	-163.9
6,000	1154				<u> </u>	6.96	19.97	0.762	300.3	0.52	-168.3
7 200	1157					6.96	20.02	0.759	168.5	0.57	-168.4
8,400	1200				1	6.95	20.03	0.685	167.3	0.44	- 168.3
9.600	1203		<u> </u>			6.95	19.91	0.682	110.7	0.38	-167.7
10,800	1206					6.94	19. 92	0.681	106.9	0.35	-166.9
12,006	1209				 	6.93	19.87	0.681	111.8	0.21	-165.9
13,200	1212		1			6.92	19.87	0.679	145.9	0.29	-145.3
14,400	1215		colorie	g	\vdash	6.92	19.82	0,677	144,3	0.23	-164.5
15,600	1218		colorie	55	}	4.91	19.81	0.676	137.0	0.19	-163.4
16,800	12.8		 			4.91	19.74	0,674	122.7	0,02	-162.9
18,000	1224		 	- 	┼	6.91	19.71	0.673	124,9	0.04	-162,8
19,200	1230		 		1	6,92	19.43	0,648	117.0	0,04	142.1
21,600	1233		 		1/	6,94	19.51	0.471	100.5	0.15	-161.6
	1146			Element Time (r	-fals	60	יניטו –				142,2
Start Time:	1/-180			Elapsed Time (nin):			_ vvater Qual	ity Meter ID: YSI 6820		
Stop Time:	1246			Average Purge	Rate (mL/min):	:40	<u> </u>	Date Callbr	ated:	09	
SAMPLING DAT	TA 9/1/0	9		Sample Time:		1250		Lab Analys	ls:VOC, \$VOC		
Sample Method:	Monsoon / Low Flow			Sample Flow R	ate (mL/min):	40	0	QA/QCSam	ples: 100	e	
VOA Vials, No Head	dapace 🔯 Initials:	M C		_							
COMMENTO:											
COMMENTS:		0	4 .	1	, <u> </u>	Can.					
* Keadings	were recorded a	atten. putigi	e water	became sed	(imen	tree.					
<u>Headspace</u>	were recorded of PID reading: 18	<u>√ 28 γρ</u>									
				<u> </u>					Total Purg	ge Volume: 📿	6, <u>400 </u>

URGE DATA CONTINUED: GP-4-42

Purge Volume (mL) 22.800 24.000 25.200 26.400	Time	Depth to Water (ft)	Color	Odor	pH 6.96 6.96 6.97 6.98	Temp (°C) 19.46 19.35	Cond. (mS/cm)	Turbidity (NTUs) 92.8	DO (mg/L)	ORP (mV)
22 800	Time /2.3 4	11401 (10)	colories	Odor slight hydroc.	1. 91	19 41	2 249	928	0.18	-162 8
24 000	1239 1242 1246		1	Silver Myarow.	4.76	1935	0.749	66.1	0.16	-162.8 -162.9 -163.2 -163.9
26 200	1242				6 97	19 09	0 248	80.8	0.14	-1133
26.400	1246		 	//	7.46	19.59	1 748	85.8 96./	0.10	-1/3 9
	1210		──		W. 10	11.00	0,778	76.1	<u> </u>	-/604/
									· -	
									_	

OMMEN 15:		

PROJECT NAM	E: Dissolved Phase	GW Investigation	PRO	JECT NUMBER:	21562175	FIELD P	ERSONNEL: N	<u>) undy tenni</u>	bus noty	Neeta Laters
DATE: 1	27/09	WEATHER	: <u>10 85</u>	F, Seur	щ					
MONITORING V	VELLID: GWP-	1-50			SAMPLE ID:	GNP-1	- 50			
Depth to LNAPL/	toc): 43.47 ft DNAPL (btoc):ft Screen (btoc): 48.0 ft	If Depth to Top of Place Pump at: If Depth to Top of Place Pump at: If Screen Length	leight (do not include lof Screen is > Depth to Total Well Depth – 0.5 of Screen is < Depth to Total Well Depth – (0.5 h and/or water column	o Water AND Screen (Screen Length + Di o Water AND Water 6 5 X Water Column He height is < 4 ft, Plac	NAPL Column Height Column Height and S bight + DNAPL Colum e Pump at: Total Wel	creen Length are 〈 4ft n Height) =	Mi ft btoc Ar	olume of Flow Through nimum Purge Volume nbient PID/FID Readin ellbore PID/FID Readin	= (3 x Flow Cell Vol	ppm ppm
Purge Volume		Depth to				Temp	Cond.	Turbidity	DO	ORP
(mĽ)	Time	Water (ft)	Brown	Mone	6.67	22·36	(mS/cm)	(NTUs) 495	(mg/L)	-508· 7
1800	1056	٠,٠	Light Grown	Manl	6.40	20.85	1.243	2027	0-79	- 86.8.
3.000 4200	1132	Clear	War Proces	None	6.38	19.45	1.242	537	0.32	-101-9
5400	1144		Clean	None	6.33	14.29	1.253	40.2	0.15	- 133.5
	7,7,1									
	· .					- , ;				
	.									
										·
								<u> </u>		- .
		_ de			_					
· .		· ·	<u> </u>							
Start Time:	<u> 150 </u>		Elaps	ed Time (min):	1:06		_ Water Qua	lity Meter ID: YSI 682	0	
Stop Time:	15b	•	Avera	ge Purge Rate (mL/r	nin): 100 ml	1 mis	Date Calib	rated: 7-2	7-09	
SAMPLING DATA Sample Date: 7-27-09 Sample Method: Menseon/LowFlow Wattera VOA Vials, No Headspace Initials: NS Average Purge Rate (mL/min): 100 ml min Date Calibrated: 7-27-09 Lab Analysis: VOC, SVOC QA/QCSamples: None										
COMMENTS:		a sout	bas : (52)	Bet untake	point of	so' due to	groundreel	n recharge	rge Volume: v-	4.0 Mml getto
					•				a)	6600 mL

PROJECT NAME:	Dissolved Phase	e GW Investigation	PF	OJECT NUMBER:	21562175	FIELD PE	RSONNEL: 1	Jendy Keunis	Aton and	N. Satam
DATE: + 27	101	WEATHER:	N90'F	Sunn	1			V	V 	
MONITORING WEL	L ID: G	MP-1-5	8		SAMPLE ID:	GWP-12-	58			
INITIAL DATA Well Diameter): Total Well Depth (bt Depth to Water (btoo Depth to LNAPL/DNA Depth to Top of Screen Length): PURGE DATA	APL (btoc):	ft If Depth to Top of Place Pump at: ft If Depth to Top of Place Pump at: If Screen Length	of Screen is > Depth Fotal Well Depth – 0 of Screen is < Depth Fotal Well Depth – (te LNAPL or DNAPL):_ to Water AND Screen .5 (Screen Length + DI to Water AND Water of 0.5 X Water Column He nn height is < 4 ft, Place	Length is (4 feet, NAPL Column Height) Column Height and So eight + DNAPL Colum	creen Length are (4ft, n Height) =	ft btoc	Volume of Flow Through Minimum Purge Volume Ambient PID/FID Readin Wellbore PID/FID Readin	= (3 x Flow Cell Volu	mL ume): <u>3,450</u> mt _{->} ppm ppm
Purge Volume	Pump Type:	Denth-to-		Pump		Temp	Cond.	Turbidity	DO	ORP
(mL)		Color Water (ft)	-Color	Odor	pH	(°C)	(mS/cm)	(NTUs)	(mg/L)	(mV)
1600	1359 1400	promy	NA	none	<i>6.49 5.94</i>	27.53	1.255 1.340	1300.4	0.13 3.12	-606.3 -564.1
2800	1424	clearing			5.68	22.09	1.294	298.0	18.84	-491.3
4000	1436	1			5.99	22.57	1.290		19.3.88	-447.8
5200 6400	1448			+ +	5.79 5.90	20.3/	1.271	301. C	8.83	~302.j -286-0
Wali R		arametris	NOT S	table . U	Oell San	1614A - 16	114	nuge	Complete	
	many p		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	• 102	W	apud ap		5 ()	y	
Start Time:	/500'	1356	Ela	psed Time (min):		<u> </u>	_ Water Q	tuality Meter 10: YSI 682		
Stop Time:	/500		Av	erage Purge Rate (mL/	min):	<u> </u>	_ Date Ca	librated: 7 -	27-09	
SAMPLING DAT	A 7-27	!-09	Sa	mple Time:	1500		Lab Ana	alysis: VOC, SVOC		
Sample Method:	Monsoon / Low Flor	w .	· Sa	mple Flow Rate (mL/m	nin):	•	QA/QC	Samples:	·	
VOA Vials, No Head	ispace 🗹 Initials:	N>				· .				
COMMENTS:										
		· ·		•				Total Pu	rge Volume: 2	400 mL

PROJECT NAME:	Dissolved Phase	e GW Investigation	PROJ	IECT NUMBER:	21562175	FIELD PE	RSONNEL: N	· Saturn		
DATE: 712	819	WEATHER:	N80'1	F, Sunn	¥					
MONITORING WE	LL ID: G	WP-2-		·*	SAMPLE ID:	GWF	- 2 - 46	.50		
Depth to Water (btoo Depth to LNAPL/DN Depth to Top of Sci		ft if Depth to Top o ft Place Pump at: T ft if Depth to Top o t Place Pump at: T	eight (do not include L f Screen is > Depth to otal Well Depth - 0.5 (f Screen is < Depth to otal Well Depth - (0.5 and/or water column i	Water AND Screen I Screen Length + DN Water AND Water C X Water Column He neight is < 4 ft, Place	APL Column Height) = column Height and Scr ight + DNAPL Column e Pump at: Total Well [een Length are < 4ft, Height) =	Minis	me of Flow Through C mum Purge Volume = ient PID/FID Reading: bore PID/FID Reading	(3 x Flow Cell Volume	
PURGE DATA	Pump Type:	Menseon Stainles	e Steel Submersible Pu	mp Watter	, e					
Purge Volume (mL) 1500 2400	Time 1008 1016	Depth to Water (ft)	Color Cham	Odor Mons m. Mons	14:1 6:16 7:02	Temp (°C) 2[•9 22•3 8•32	Cond. (mS/cm) 1.036 (D.024	Turbidity (NTUs)	DO (mg/L) (2.00	ORP (mV) -495 -351
5100 6300 7500 8300	1040 1040 1048		Lt brown	Mone Mone Mone	6.43 6.61 6.63	23.45 25.64 26.83 27.11	1.037	935 697 495 425	2.32 1.76 2.14	-43.0 -269.0 -43.0 -43.0
		4								
<u> </u>	Quality 958	Data pai	Elapse	d Time (min):	BLE WELL 1 hr 150 mc	Louipled	` []	/ Meter ID: YS 6820	ge count	leti
SAMPLING DAT Sample Date: Sample Method:	7 28 0°	- Wattera		e Time: _\O\S e Flow Rate (mL/mi	n): 150 n		Lab Analysis QA/QCSamp	les: No	ne	
VOA Vials, No Head	Watu -	mtake poe	w <u>@ 4,6</u>	1 B	down g mater	influy stop	, w	setty lower p_weut-	al Cintoke dry . ke	dulled
	2 700 -	- Nation	- WY WE		20 19	• _ `		Total Purg	e Volume: C	1000 mL

PROJECT NAME:	Dissolved Phase	GW Investigation	PRO	JECT NUMBER:	21562175	FIELD PE	RSONNEL: _	N. Saltan)	
DATE:	7 28 9	WEATHER:	N 85°F	Sunny						
MONITORING WEI	LLID: GW	mp GWP		·	SAMPLE ID:	GWP-	2-58			
NITIAL DATA	1. 2m in	Mater Column He	eight (do not include	LNADL es DNADL):	+3 46-27 14.4	.1	ft btoc	Valuma of Claus Through	Cally 1 150	l
Vell Diameter): otal Well Depth (bt	oc): 60	ft If Depth to Top of	f Screen is > Depth to	Water AND Screen	Length is <4 feet,			Volume of Flow Through (Minimum Purge Volume =	(3 x Flow Cell Volu	mL me): <u>3,450</u> mL
Depth to Water (btoo Depth to LNAPL/DN	c): 43-51 f	t Place Pump at: T	otal Well Depth - 0.5	(Screen Length + DN	IAPL Column Height)	= <u>58</u> creen Length are (4ft,		Ambient PID/FID Reading: Wellbore PID/FID Reading	Beekground	ppm ppm
Depth to Top of Scr	een (btoc): 56	ft Place Pump at: T	otal Well Depth - (0.5	X Water Column He	ight + DNAPL Column	n Height) =	ft btoc	Trembore From to Reading	· Starpet	
Screen Length):	_ ft	If Screen Length	and/or water column	height is < 4 ft, Place	e Pump at: Total Well	Depth - 2 ft =	ft btoc			
PURGE DATA	Pump Type:	Monsoon Stainles	s Steel Submersible Pi	imp Watter	g					
Purge Volume		Depth to				Temp	Cond.	Turbidity	DO	ORP
(mL) 500m	Time	Water (ft)	Color Chil promi	Odor	5.67	21.13	(mS/cm) 1.397	(NTUs) 1339.0	(mg/L)	(mV))430
2300	1137		Light proces	now	5.62	21.04	1.400	1281.0	5.40	1287
2300 3300	1149		Leblet he new	War.	5.5	20.97	1.404	- 1080	40.53	-400.3
4-700	12.01		herest brown	more	C.58	21.87	1.407	1046	38.0	-391.]
5900	12.13		Jean- Grown	none	5.82	21.12	1.412	845	48.39	- 343.2
7100	12:18		hefut been	Mari	5.74	21.01	1.410	7 73	40.32	-324.2
			_							
						-		·		
							 			
wali	Quality	baranulis	NOT ST	AGIE. W	ell sample	ed allie	Thou	burse Con	ustelid	
West.	J J J J J J J J J J J J J J J J J J J	- Paramera	1401 31	ME W		in agein	Nou	parge un	mouria	
Start Time:	20 '	<u> </u>	Elaps	ed Time (min):	1 m		_ Water C	uality Meter ID: YSI 6820		
Stop Time:	220		Avore	ige Purge Rate (mL/n	nin): 100 m	124	Data Ca	librated: >\2	8/9	
stop rane:			Avera	ige Furge Rate (IIIL/II	nin):		_ Date Ca	iibiateu:		<u></u>
0 4 3 4 D 1 1 1 1 0 D 4 7	• •		4							
SAMPLING DAT	7128)7			.t. T	1220		1 -1- 4	-it \/00 0\/00		
Sample Date:		•					Lab An	alysis: VOC, SVOC		
Sample Method:	Monsoon / Low Flev	<i>Watterg</i>	Samp	ole Flow Rate (mL/m	in): 100	mc/nii	QA/QC	Samples:		
VOA Vials, No Head		M 6				•				
•										
COMMENTS:		1							1 1 0	1 1- 14
		at 58 ft	Bolton	a grods	@ 60°. 1	catalle po	ut 2 fe	et above both		du to
	-low theogh	Cell appea	and very 1	<u>iltl. Rius</u>	ed flow the	would cell	<u> 1127</u>	<u> </u>		
_		. 19						Total Purg	ge Volume: 🗸 🎉	DDO mL

PROJECT NAME:	_Dissolved Phase G	W Investigation	PRO	DJECT NUMBER:	21562175	FIELD PE	RSONNEL: _	M - 70 m2		
DATE: 712	8 19	WEATHER	N 85 F	Overcast	:					
MONITORING WE	ELL ID: GW	P-3-5	0		SAMPLE ID:	GNP-	3-50			
		If Depth to Top Place Pump at: If Depth to Top Place Pump at: If Screen Lengt	Height (do not include of Screen is > Depth to Total Well Depth = 0.5 of Screen is < Depth to Total Well Depth = (0.5 h and/or water column	o Water AND Screen I (Screen Length + DN to Water AND Water C 5 X Water Column He I height is < 4 ft, Place	IAPL Column Height) Column Height and Sc ight + DNAPL Column e Pump at: Total Well	reen Length are (4ft, Height) =	ft btoc ft btoc ft btoc	Volume of Flow Through MinImum Purge Volume = Ambient PID/FID Reading Wellbore PID/FID Reading Puy & Bucket	(3 x Flow Cell Volu	ppm ppm
Purge Volume		Depth to	- Stadi Gasmordisia	unip Value 11 -		Temp	Cond.	Turbidity	DO	ORP
(mĽ)	Time	Water (ft)	Color	Odor	pH	(°C)	(mS/cm)	(NTU <u>s</u>)	(mg/L)	(mV)
500 ml	1400	AL)	Dank Drown	Petro lean like	13.36	23.03	1.047	1709	7.04	- 202.3
1900	14 12		Light brown	Sauce	5.65	23.69	045	1/208	3.71	-215-3
2100	14 24	.	Light brown		5.53	20.62	1.037	1170	6.3.3	- 587.0
4100	1436		hart brown		5.80	21.08	1.019	1498	5.32	-706.3
6500	1 4 48 n 1600 145		Light brown	· ·	5.98	23.64	1.031	433	6.80	-147.7
0.200	M HOLLO (D)		MAC DIGAR		5.78		1.034	<u> </u>	7-35	-146.5
								-		
				·						
	ļ			·		202.40				
					47 7				<u> </u>	
	 		-							
	- 1	-					-	-	-	
Water	Duality na	anillas	NOT STAY	BLE . HACE	lamble a	olletta a	Mi.	u Plugo	Timo	
Start Time:	1355	,	Elaps	sed Time (min):			Water	Quality Meter ID: YSI 6820		
						11.				
Stop Time:			Aver	age Purge Rate (mL/n	nin):	l mn	Date Ca	alibrated: 128	<u> </u>	
SAMPLING DA	TA 7/2819		Sam	ple Time:	455		Lab An	alysis: VOC, SVOC		
Sample Method:	- Mensoon / Low-Flow	Wattera	Sam	ple Flow Rate (mL/mi	in):	uel nu	QA/QC	Samples:		
VOA Vials, No Hea	dspace 🗹 Initials:	N								
COMMENTS:			2.0° Pu					dul tone wil	h mtujace	pube
puch to	Community b	wit.	Poscible	Very 86	ght Shew	ou top 8	puje.	Total Pur	ge Volume: _07	6000 mL

PROJECT NAME: Dissolved Phase GW Investig		OW FLOW GROUND	OWATER SAMPLING	DATA SHEET FIELD PERSONNEL:	N·Satano	
MONITORING WELL ID: GW-9-	THER: N 80	, <u>(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>	SAMPLE ID:	GWP-3-5	58	
Total Well Depth (btoc): 60 ft If Depth to Depth to Water (btoc): 45-8 ft Place Pun	umn Height (do not include o Top of Screen is > Depth np at: Total Well Depth – 0. o Top of Screen is < Depth	to Water AND Screen Le 5 (Screen Length + DNA	ngth is (4 feet, PL Column Height) =	ft btoc ft btoc Length are (4ft,	Volume of Flow Through Cell): 1,150 Minimum Purge Volume = (3 x Flow Cell Volume): 3, Ambient PID/FID Reading: 0.9	mL 450 ml ppn ppr

Place Pump at: Total Well Depth - (0.5 X Water Column Height + DNAPL Column Height) =

If Screen Length and/or water column height is < 4 ft, Place Pump at: Total Well Depth - 2 ft = _

Sample Flow Rate (mL/min):

batten

Purge Volume		Depth to				,Temp	Cond.	Turbidity	DO	ORP
(mĹ)	Time	Water (ft)	Color	Odor	pH	(°C)	(mS/cm)	(NTUs)	(mg/L)	(mV)
15 25 500 M	1525	NA	Light brown	Petrolem like	(.85	24.78	1.199	1089	3.77	-438.6
OOF	1537	•	helght bushu		5.29	19.96	1.197	1089	5.75	-357.D.
2900	1549		and broken		2.11	19.14	1.120	653	6.59	-248-9
4100	16-0		west begut		5.87	9.06	1.131	542	6.64	- 187-1
53000	16.13		Real brees		5.80	18.29	.17-3	508.3	8.63	-1700
6500	16:13		hard-broa	1,	5.80	8.29	1.77.4	4221	5.65	161-3
0,00	1000		- 10) ~ 10 ~ 1					1		12.
		- \psi.		2	,	A 1. A 1	10 11			
Valu	quality	parameter	NOT ST	MONE S	ample	Collected	allin h	r Dure	Cours	100,A
	1	A.co.			, ,~1			7	T	
Start Time:	520			ed Time (min):	LM		_ Water Qualit	y Meter ID: <u>YSI 6820</u>		
	. 10							9/201	4	
Stop Time:	620		Aver	age Purge Rate (mL/i	min): 1004	16/m	_ Date Calibra	ted: 7\2 8\	<u></u>	
						-				
0.1151.010.01	- 4							•		
SAMPLING DAT					22					
Sample Date:	7/2/19		Sam	ple Time: 6	20		Lab Analysi	s: VOC, SVOC		

Bottom of the rods at 60 ft - Purp vitalia at 58 ft - Possible very lyw- Sheen over mater

100 ml/m

Total Purge Volume: V 6 DOD mL

Punge bucket

ft btoc

_ft btoc

QA/QCSamples:

Monsoon / Low Flew

Wattera

Depth to Top of Screen (btoc): 54

Pump Type:

Screen Length):_

PURGE DATA

Sample Method:

VOA Vials, No Headspace Initials:

PROJECT NAME:	Dissolved Phase G	W Investigation	PRO	DJECT NUMBER:	21562175	FIELD PE	RSONNEL:	N. Zapens		
DATE: 712	9/09	WEATHER	·	F; Sun	MJ					
MONITORING WE	- 1	-4-50			SAMPLE ID:	GWP-4	-50			
INITIAL DATA Well Diameter): Total Well Depth (b Depth to Water (bto Depth to LNAPL/DN Depth to Top of Sc Screen Length):	c): 46-7 ft IAPL (btoc): - ft reen (btoc): 48 ft 4-0 ft	If Depth to Top of Place Pump at: If Depth to Top of Place Pump at: If Screen Length	of Screen is < Depth Total Well Depth - (0.	o Water AND Screen 5 (Screen Length + D to Water AND Water 5 X Water Column H n height is < 4 ft, Pla	Length is (4 feet, NAPL Column Height) Column Height and Sc eight + DNAPL Column ce Pump at: Total Well	reen Length are (4ft, Helght) =	ft btoc	Volume of Flow Through Minimum Purge Volume Ambient PID/FID Reading Vellbore PID/FID Readin Purge Bucker	= (3 x Flow Cell Vol g: 0.0	mL lume): <u>3,450</u> mL ppm ppm
PURGE DATA Purge Volume	Pump Type:	Depth to	ss steel subm ersible r	ump Varie	<u>•</u>	Temp	Cond.	Turbidity	DO	ORP
(mĹ)	Time	Water (ft)	Color	Odor	рН	(°C)	(mS/cm)	(NTUs)	(mg/L)	(mV)
1000	0945	NA	Dank brown	petroleun ut	5.31	24.8	1.342	26	6.40	-413.5
2200 3400	0957		Last brown		6.43	24.66 22.52	1.345	162.8	4.65	-369.7
7600	10.21		Many promy		6.34	22.32.	1.075	90.6	4.41	-214:3
5600	10 .33		Latel brown	4	6.48	21.6	1.046	28.3	4.96	- 248.
			. 100	7				71 4-1		
			Water	Quelly p	granetis No	T stable.	Sample	collected all	ti he	puge
			·	1 1	·-			— <i>V</i>		<u> </u>
				·					 	
								•		
·	ļ		-	 						
			/						<u> </u>	
Start Time: 00	135		Elap	sed Time (min):	1 ke		Water Qu	rality Meter ID: YSI 682	D	
Stop Time: L-D4	15m 1040		Aver	age Purge Rate (mL	/min): 160 m	Umi	Date Cali	brated: 7 2	9109	
SAMPLING DA	TA 7 29 09		Sam	ple Time: 10	40		Lab Ana	lysis: VOC, SVOC	•	
Sample Method:	Monsoon/Low-Flow	Wattera	Sam	ple Flow Rate (mL/r	min):\DO WL	luia	QA/QCS	amples:		
VOA Vials, No Hea	dspace 🗖 Initials:	rs - one	liels (seefictionnes walls of	(But)	. A. laublales					
COMMENTS;		_	were wells of	VIAL WAS BOUT	A COLUMN	(-			•	
anound a	catic draw de	run dum	Luitial	Durge Had	" Set Screen			netaut pure.		
Possib		مر مناه	top of pe	use mater	. Probe de	d not lud	icale pre	sence of pro	duct demi	wala
	measurement	Measu	red -trubia	til at wal	i puried out	a tabima	disconned	by Totall Pur	ge Volume: 🏑	V6500 mL
•		Tw	ubiduty 3.2	16 TU	Germany	www.tell	1 How Hrow	491) day 1		
			4	•	N		, 4	y -		

PROJECT NAME:	Dissolved Phase	GW Investigation	PRO	JECT NUMBER:	21562175	FIELD PE	RSONNEL:	N. Satero		
DATE: 7/2	9/07	WEATHER	. N. 85 1	Sunna						
MONITORING WE	LL ID: GW	P-4-58		7	SAMPLE ID:	GNP-4	-58			
INITIAL DATA Well Diameter): Total Well Depth (bt Depth to Water (btot Depth to LNAPL/DN Depth to Top of Screen Length): PURGE DATA	:): <u>45·32</u> f	If Depth to Top of Place Pump at: If Depth to Top of Place Pump at: If Screen Length	of Screen is < Depth t Total Well Depth – (0.5	Water AND Screen I (Screen Length + DN o Water AND Water C i X Water Column He height is < 4 ft, Place	IAPL Column Height) = Column Height and Scr Ight + DNAPL Column e Pump at: Total Well [een Length are (4ft, Height) =	Mir ft btoc Am We	lume of Flow Through (nimum Purge Volume = nbient PID/FID Reading: Nibero PID/FID Reading	(3 x Flow Cell Volume	mL me): <u>3,450</u> mL ppm ppm
Purge Volume	r unip r ype	Depth to	OS OCCO O ADMICISIDAÇÃO			Temp	Cond.	Turbidity	DO	ORP
(mL)	Time	Water (ft)	Color	Odor.	рH	(°C)	(mS/cm)	(NTUs)	(mg/L)	(mV)
5op	1120	NA	dark brown	Very mild	6.13	19.90	1.390	1120	5.04	- 235.6
1700	1132		Leekt banes	petroleun	5.20	19.48	1.320	880	11.43	-137.7
3900	1144		hant brown	odel	5.55	19.15	1.312	4142	4:36	-143.6
4100	11.56		halit brown		₹.96	9.68	1.310	218.3	8.40	-149.3
5300 6500	12.08	- .	halit mean		6.07	14.82	[2010	V 1-7	(14.6
6300	To bot hally		Party Datora							
		_4			i i					
<u> </u>					y					
				·						
								· ·		
					_				_	
					 			 		
		•			-					
							-			
Ctart Time:	11:5		Flana	ed Time (min):	1:05	la &	Mate: Out	lity Meter ID: YSI 6820		
			Elaps	ea i ime (min):		<u> </u>	water Quai	•		
Stop Time:	1215		Avera	ige Purge Rate (mL/n	nin): 100 m	l vie	Date Calibr	ated: 1129	109	
SAMPLING DAT Sample Date:	7 29/09 Monsoon/Low Flow	hlatter -		ole Time:	1220	.1 .	Lab Analys			
		Pour nock		(mem	in): [00 m	nu				
VOA Vials, No Head	ispace 🗹 Initials: 🖠	<u> </u>	· <u>, </u> .	٠,						
COMMENTS:	take parut 51	B' Rods at	60 ¹	• •		·	·	<u>.</u>		
	-				-			. Total Puro	ge Volume: 🔷	6 600mL
				N.						

			LC	W FLOW GROUN	IDWATER SAMPL	ING DATA SHEE	:T.			
PROJECT NAME	: Dissolved Phase G	SW Investigation	PR0	DJECT NUMBER:	21562175	FIELD PE	RSONNEL:	N. Satar	<u>m</u>	
DATE: 31	30 9	WEATHER	: N78	F, ONE	reast					
MONITORING WI	ELL ID: GWP	-5-50			SAMPLE ID:	GWP-	5-50			
INITIAL DATA Well Diameter): Total Well Depth (I Depth to Water (bto Depth to LNAPL/Di Depth to Top of So Screen Length): PURGE DATA	oc): <u>45. 36</u> ft NAPL (btoc): <u>ft</u> creen (btoc): <u>48</u> ft	If Depth to Top Place Pump at: If Depth to Top Place Pump at: If Screen Lengt	Height (do not include of Screen is > Depth t Total Well Depth - 0.8 of Screen is < Depth Total Well Depth - (0.8 th and/or water column	o Water AND Screen I 5 (Screen Length + DN to Water AND Water C 5 X Water Column He n height is < 4 ft, Place	APL Column Height) column Height and Sc ight + DNAPL Column e Pump at: Total Well	reen Length are (4ft, Height) =	ft btoc Am Wei	ume of Flow Through imum Purge Volume : bient PID/FID Reading Ilbore PID/FID Reading	= (3 x Flow Cell Volum p: 0 - 3	mL ne): <u>3,450</u> mL ppm ppm
Purge Volume	Pump Type:	Depth to	SS Steel Submersible F	i		Temp	Cond.	Turbidity	DO	ORP
(mL)	Time	Water (ft)	Color	Mild Odor .	рН	(°C)	(mS/cm)	(NTUs)	(mg/L)	(mV)
1200	1450	ΝĄ	Light bround	petrolem ble	6.02	21.49	0.950	1385	31.46	-63·3 -66·3
3400	1502			- Wart	6.72	21.60	0.930	1200	26.12	-67.4
4600	54		Clearing		5.73	20.04	6.937	536	28.65	20.2
5800	1544.38		1		6.01	19.05	0.931	401	23.23	-73.9
W \$000	5250	+/	,	*	5.98	19.35	0.925	329	21.50	-76.2
Start Time:	1440		Flon	sed Time (min):	1 ku 5 m		Water Quali	ity Meter ID: YSI 6820	`	
	154-5			rage Purge Rate (mL/n			Date Calibra	212-1		
SAMPLING DA Sample Date:	ATA 7130K Monsoon/Low Flow	ha.de .		ple Time:	1545		Lab Analys		· 	
·				.p.o . ion itale (iiia)iii		ellm			 -	
COMMENTS:		<u>K</u>								
		_								
								Total Pur	ge Volume:	GOO ML

PROJECT NAME: Dissolved Phase GW Investigation			PR				FIELD PERSONNEL: N. Saltano			
DATE:	30/09	WEATHER:	2 7	8°F ove	uast sk	<u>y</u>				
MONITORING WEI	LLID: GWP-5	5 - 5 8			SAMPLE ID:	uwp-	5-58			
INITIAL DATA Well Diameter): Total Well Depth (bt Depth to Water (btoo Depth to LNAPL/DN/ Depth to Top of Scr Screen Length): PURGE DATA	in oc): 60 ft	if Depth to Top of S Place Pump at: Tol If Depth to Top of S Place Pump at: Tol If Screen Length a	Screen is > Depth tal Well Depth - 0 Screen is < Depth tal Well Depth - (nd/or water colum	te LNAPL or DNAPL): to Water AND Screen .5 (Screen Length + D to Water AND Water 0.5 X Water Column H nn height is < 4 ft, Pla	Length is (4 feet, NAPL Column Heigh Column Height and leight + DNAPL Colur ce Pump at: Total We	Screen Length are < 41	ft btoc	Volume of Flow Through Minimum Purge Volume Ambient PID/FID Readin Wellbore PID/FID Readir	= (3 x Flow Cell Volum g: <u>6・3</u>	mL ne): <u>3,450</u> mL ppm ppm
Purge Volume	rump type:	Depth to	steer oubmersible	- Pump DVQx E7 = 0		Temp	Cond.	Turbidity	DO	ORP
(mĹ)	Time	Water (ft)	Color	Milolodor	pH	(°C)	(mS/cm)	(NTUs)	(mg/L)	(mV)
1200 2400	1624	NA	Light brown	like	5.24 5.89	18.90	1.007	703.3	16.34	-85.4
3600	1636	 		odol	6.18	18.63	0.992	- 435.2	11.02	-92.3
4800	1648				6.01	8.34	0.487	299.0	23.25	-91.2
0003	1700	<u> </u>	Cleany	4	6.06	18.35	0981	236.0	10.59	-94.5
		_				 				
								_		
							 		 	
10.1	- 0						1			
W) alu	quality	paramille	v 1/0.	T STABLE.	Well	samples	alter	1 Duise	Loughbe	
Start Time:	1600	1	Fla	psed Time (min):	1 he	1	Water O	uality Meter ID: YSI 682		
Otali Time				paed rime (mm)			_			·
Stop Time:	1700		Ave	erage Purge Rate (mL/	(min): 100	mi min	Date Ca	librated: 7 [3	0 09	
SAMPLING DAT Sample Date: Sample Method: VOA Vials, No Head	Monsoon / Low Flow	a Walterg		mple Time: mple Flow Rate (mL/n	1700	100 m U m	Lab Ana	National Nat		
comments:	when oder.	No undual	im)	Product	deny wal	li level	measure		rge Volume:6	neo mL

PROJECT NAME:	Dissolved Phase G	W Investigation	PR	OJECT NUMBE	R: <u>21562175</u>	FIELD PER	RSONNEL: _	N. Salam		
DATE: 4/29	101	WEATHER	:2	85 F	Overcast					
MONITORING WE	LLID: GWP	-6-50)	-	SAMPLE ID:	GWP-6-	<u>5</u> D			
Depth to LNAPL/DN	1.5 in ft ft ft ft ft ft ft f	If Depth to Top Place Pump at: If Depth to Top Place Pump at: If Screen Lengtl	Total Well Depth – 0. of Screen is < Depth Total Well Depth – (0	to Water AND Sc 5 (Screen Length to Water AND W 0.5 X Water Colum in height is < 4 ft,	reen Length is (4 feet, + DNAPL Column Height) ater Column Height and So nn Height + DNAPL Column Place Pump at: Total Well	creen Length are (4ft, n Height) =	ft btocft btocft btocft btoc	Volume of Flow Through Minimum Purge Volume = Ambient PID/FID Reading Wellbere PID/FID Reading	(3 x Flow Cell Volu	mL ime): <u>3,450</u> mL ppm ppm
Purge Volume		Depth to		*		Temp	Cond.	Turbidity	DO	ORP
(mL)	1400	Water (ft)	Color	Odor	pH 5.4L	(°C) 24·17	(mS/cm)	(NTUs)	(mg/L) 2)·81	-98.J
0500 1700	1412	<u> </u>	Dank began	Petroleum	5.74	24.07	1.349		24 - 63	-100.8
ÀNO O	1424		Word Well		6.29	27.92	.32	8 1286	12.75	-114.0
A(OU)	1436		hatt brown		6.42	28.80	1.330		15.79	-118.0
5300 PARO M	1509460 W		Light brown	1	6.91	22.13	1.31	'587 398	36-63 40-86	-119.0
2100 0000 W	1301-1-00 01		Lyw ben		9.71	2(11)	1.50	7 278	70.00	121.4
Start Time:	355		Elap	osed Time (min):_	1:05 M		Water	Quality Meter ID: YSI 6820)	
Stop Time:	500		Ave	rage Purge Rate	(mL/min):	u in	Date C	alibrated: 3 29/	01	ć
	TA 7 29 09		San	nple Time:	1500		Lab Ar	nalysis: VOC, SVOC		
Sample Method:	Monsoon / Low Flow	- Watter	Q San	nple Flow Rate (r	mL/min): 100 ml	1,00	. QA/QC	Samples: Field	Duplic	ate /
VOA Vials, No Hea	dspace 🗹 Initials:	A se	e field wites	time ain	bubbles along 9 lbAS)	•	***	\ qwp	-6-50	-D
Purge W	etu had distu	ut petiole	w jek ode	No :	sheen observ	red on pr	uge wal	to bali leve	1 measure	mut del_
MOT M	heat price	nce ig y	moduet					Tatal D	ma Valuera: Au	2001
		<u></u>	·					lotal Pur	ge Volume: 65	00 mL

PROJECT NAME:	Dissolved Phase	GW Investigation	PRO	JECT NUMBER:	21562175	FIELD PER	RSONNEL: _	N·Salam		
DATE: 7 29	9	WEATHER	. <u>N</u> 85	F, Su	nny					
MONITORING WEL	LL ID: GWP	-6-58			SAMPLE ID:	GWP-6-	58			
Depth to LNAPL/DNA Depth to Top of Screen Length):	c): 45 · 32 ft APL (btoc): ft een (btoc): ft ft ft ft	If Depth to Top Place Pump at: If Depth to Top Place Pump at: Place Pump at: If Screen Length	h and/or water columr	o Water AND Screen (Screen Length + Di to Water AND Water 5 X Water Column He n height is < 4 ft, Plac	Length is (4 feet, NAPL Column Height) Column Height and So eight + DNAPL Columi	creen Length are (4ft, n Height) = 58 M	ft btoc ft btoc ft btoc	Volume of Flow Through (Minlmum Purge Volume = Ambient PiD/FID Reading: Wellbere PID/FID Reading Purge Bucket	(3 x Flow Cell Volum	mL e): <u>3,450</u> mL ppm ppm
PURGE DATA Purge Volume	Pump Type:	Depth to	ss Steel Submersible P	ump		Temp	Cond.	Turbidity	DO	ORP
(mL)	Time	Water (ft)	Color	Odor	pH	(°C)	(mS/cm)	(NTUs)	(mg/L)	(mV)
1300 15	SX 1955	Np	Dark boom	Petalun	6.3	20.55	1.194	1558-9	4329434	-96.6
2000	19 19 10 10 31 3 3 7 30 14 56		BADULA		5.31	20.42	-181	1042.4	9.76	- 97.7
A100 1	3 3 3		BADYIN Lynt Room		5.96	20-89	1.179	1022.0	22-76	-113.6
5300 i	43 14126				6.00	20.04	1.81	1179.0	11.21	-115.6
7800	50 1 4 50				6-10	20-23		1817	1	
	-									
		+								
Start Time:	504R1550)		Flane	sed Time (min):	:05 hu	1	Water	Quality Meter ID: YSI 6820		
10				· · · · · · · · · · · · · · · · · · ·				710		
Stop Time: 17	f5 1655		Aver	age Purge Rate (mL/	min): 00 n	L/m	Date C	alibrated: + 2	419	
SAMPLING DAT	TA 7 29 9		Sam	ple Time:	1700		Lab Ar	nalysis: VOC, SVOC	· .	
Sample Method:	Monsoon / Low Flow	Wattery	Sam	ple Flow Rate (mL/m	nin): Loowl.	Inin	QA/QC	Samples:	-	
VOA Vials, No Head	Ispace 🚺 Initials:		_			1	<u></u>	-		
		AT .			•					
COMMENTS:	M Hanna and	1011100 1110	Neldl-	. at. b	An Park	· Ac nead	- la. a	45.324t. No Pau	Manto 1	Sulari A
Att Such h	to course. N	Ju Pelague	an minder	bembiene c	WENT - 1/00 DA.	()	TULL (C.	T3: 224 . 140 M	DOUGH TOLL DI	v 2017 zechrag
TAME EN VIEW	Jase.		7	<u> </u>				Total Purg	je Volume: 65	OO mL

PROJECT NAME	: <u>Dissolved Phas</u>	e GW Investigation	PROJ	ECT NUMBER:	21562175	FIELD PERS	SONNEL: _	N. Satery		
DATE: 1-3	0-0	WEATHER:	N 80°F	partly	Sunny	•				
MONITORING W	ELL ID:	GWP-7 -			SAMPLE ID:	F-9WP	-50			
Depth to Water (bt Depth to LNAPL/D Depth to Top of S Screen Length):	(btoc): 52.0 loc): 43.57 NAPL (btoc): - ccreen (btoc): 48	t If Depth to Top of ft Place Pump at: To ft If Depth to Top of ft Place Pump at: To If Screen Length	f Screen is < Depth to otal Well Depth – (0.5) and/or water column h	Vater AND Scree Screen Length + I Water AND Wate (Water Column I eight is < 4 ft, Pla	n Length is (4 feet, DNAPL Column Height) <u>=</u> r Column Height and Scr Height + DNAPL Column ace Pump at: Total Well D	een Length are 〈 4ft, Height) =	ft btoc	Volume of Flow Through Minimum Purge Volume = Ambient PID/FID Reading Wellhors PID/FID Reading Purge Walls	(3 x Flow Cell Volu	mL me): <u>3,450</u> mL ppm ppm
PURGE DATA Purge Volume	Pump Type:	Depth to	s Steel Submersi ble Pun			Temp	Cond.	Turbidity	DO	ORP
(mĽ)	7ime	Water (ft)	Color	Odor	Hq -53.2	2)·30	(mS/cm)	135	(mg/L)	(mV) -58:8
500	1003		halat broun	oe) roleum	6.57	21.10	1.006	1094	21.37	-126.3
2400 4100	1031		clearing	We odol	6.09	19.38	0.98 I	594 234	17.25	- 113.1
5300	1043		1 1		5.84	18.90	0974	. 208	23.12	109.3
6500	1055	Y	4	\	5.34	18:24	0.976	158.1	13.21	-103.4
										_
		 								_
								-		
				·						
Start Time: O	V 1	Parametra	Elapse	Time (min):	1:05 h	mpled after	Water C	Duge Covality Meter ID: YSI 6820	plete 71301	!4
SAMPLING DA			Sample	e Time:			Lab An		`	
Sample Method:	Monsoon / Low Flo	" Watter	Sample	Flow Rate (mL/	min):\00 w	Cl 444 *	QA/QC	Samples: \ NS an	a Med (a)	letud [
COMMENTS:	eadspace Initials:	_ W	r jualu.					qwp-	1 HSD (6) 7-50-45 7-50-45	D
			<u></u>					Total Pur	ge Volume: 🔨 6	SOD mL

PROJECT NAME:	Dissolved Phase	GW Investigation	PRO	DJECT NUMBER:	21562175	FIELD PE	RSONNEL: _	V. Satam		
DATE:	49	WEATHER:	N 85 F	partly or	ercast					
MONITORING WE	ELLID: GWP	-7 <i>-</i> 58		. ,	SAMPLE ID:	GWP-7-5	88			
Screen Length):	Oc): 45-18 NAPL (btoc): 45-18 rreen (btoc): 45-18	ft If Depth to Top of Place Pump at: If Depth to Top of Place Pump at: If Screen Length	Fotal Well Depth 0.5 of Screen is < Depth Fotal Well Depth (0. or and/or water column	to Water AND Screen L 5 (Screen Length + DN to Water AND Water C 5 X Water Column Hei n height is < 4 ft, Place	APL Column Height) column Height and Sc ight + DNAPL Column	= 58 creen Length are (4ft, h Height) =	ft btoc	Volume of Flow Through Minimum Purge Volume : Ambient PID/FID Reading Wellbore PID/FID Reading Purge backfor	= (3 x Flow Cell Volume 1. 0.3	mL ume): <u>3,450</u> mL ppm ppm
PURGE DATA	Pump Type:		s Steel Submersible P	Pump					· ·	
Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
(m2)	1200	NATE (II)	Light brown	petroleur like	5.80	20:45	1 . 888	758.0	30.97	- 85.5
1300	1212	1	- M WORK	- Y UNIVERSAL MARIE	5.75	20.33	1.870	840.0	33.77	-90.2
290D	12.24				5.75	20.04	1.780	509.0	32.4.8	-92.2
4100	12.36				6-10	19.08	1.137	314.3	21.44	-92.9
5300 6300	1248		clearing		5.83	19.22	1.176	2.74.0		- 96.1
6500	12.00		*/ ,		5.90	19.74	1.135	105.0	25.88 24.29	- 45.8
	.7-	•		-4			·			
									1	
`										
	<u> </u>							•		
		-								
		1-						-		
Walie	Quality. D	gramitis	did Not	STABLIZE	· well s	ambled	ales	thour ours	e course	a tr
	Ser -		GIV - V		•	MVO-PICA_	uffer	Thurs Jens) c winge	
Start Time:	1250 M 1150)	Elaps	sed Time (min):	65 mins	,	¥ Water €	Quality Meter ID: YSI 6820	S	
					1.4	1	-			
Stop Time:	(300		Aver	age Purge Rate (mL/m	nin): 100 V	uc lun	Date Ca	alibrated: 7 30	7	
SAMPLING DA	TA 7/29/9 #	7/30/9	Sam	ple Time:	1300		Lab An	alysis: VOC, SVOC		·
Sample Method:	Monsoon / Low Flow	Watter	Sam	nle Flow Rate (ml /mi	n): 101	1	04/00	Samples:		
				ple Flow Rate (mL/mi	···· (bow	1:m		oumpies,		
VOA Vials, No Hea	dspace 🖸 Initials:	Je.								
COMMENTS:	•		stight Place	n ou pu	or malt	Walte Leave	ol 000000	t di	d not we	dicala
Brisenie	of produ	· ·	,,,,,	7.00) was	· · · · · · · · · · · · · · · · · · ·	W WWW	Maraner AV	<u> </u>	
1.000000	1)	MA						Total Dur	as Volume: 11	(and) m!
								iotal Pur	ge Volume: 🕓	6000 mL

PROJECT NAME:	Dissolved Phase	GW Investigation	PR	OJECT NUMBER:	21562175	FIELD PI	ERSONNEL:	W. Fenning A	ion	
DATE:	-31 - 09	WEATHER:	705 3	eunny par	+ cloudy		<u> </u>			
•	LLID: GWI					GWP-8				
Depth to LNAPL/DN	1.5 in toc): 52 ft c): 45.37 ft APL (btoc): ft reen (btoc): 48 ft Pump Type:	if Depth to Top of Place Pump at: To If Depth to Top of Place Pump at: To If Screen Length a	Screen is > Depth tal Well Depth – 0. Screen is < Depth tal Well Depth – (0	e LNAPL or DNAPL):to Water AND Screen L 5 (Screen Length + DN/ to Water AND Water Co .5 X Water Column Heig n height is < 4 ft, Place	ength is (4 feet, APL Column Height) olumn Height and So ght + DNAPL Columi	= 50 creen Length are (4ft n Height) =	ft btoc ft btoc ft btoc ft btoc	Volume of Flow Through Minimum Purge Volume : Ambient PID/FID Reading Wellbore PID/FID Reading Purge bucket	= (3 x Flow Cell Vo p: <i>O・</i> /	mL lume): <u>3,450</u> mL ppm _ppm
Purge Volume		Depth to	<u> </u>			Temp	Cond.	Turbidity	DO	ORP
(mL)	Time	Water (ft)	Color	Odor	pH	(°C)	(mS/cm)	(NTUs)	(mg/L)	(mV)
1650	1033	NIA	brown	51. petrlike	5.67	23.41	1.069	884.5	5.57	-95.9
2850	1041			 	5,57	22.47	1.145	698.6	3.13	~103.8 -98.7
<u>4050</u> _ 525 0	1049				5.68 5.92	22.07	1.152	576.9 273.9	5.44 5.65	-98.9
6450	1105		- 	 . 	5.78 5.78	20.51	1.154	364,5	5.78	-96.4
7650	1113				6.03	21.12	1,205	367.8	5.94	-106.9
8850	1121		<u> </u>	1	10.31	20.93	1.160	366.0	5.10	-112.4
								·		
Start Time:	wmf+0+5	1022	Elan	sed Time (min):	60		Matar	Quality Meter ID: YSI 6820	1	
Start Time				seu rime (min)			_ water	-		 ,
Stop Time:	112	2	Ave	rage Purge Rate (mL/mi	in):	50	_ Date C	alibrated: 7-3	1-09	
SAMPLING DATS Sample Date: Sample Method: VOA Vials, No Head	<u> </u>		Sam	nple Time: nple Flow Rate (mL/min	//22 i):	150		nalysis: VOC, SVOC Samples: Moci	<u>^</u>	
					·			Total Pur	ge Volume:	000 mL

PROJECT NAME:	Dissolved Phase	GW Investigation		DJECT NUMBER:		FIELD PE	RSONNEL:	V. Salam		
DATE: 73	1109	WEATHER	: <u>~ 28 3</u>	F, Sum	ــــــــــــــــــــــــــــــــــــــ		<u> </u>			
MONITORING WE	LLID: GWP	- 8 - 58			SAMPLE ID:	GWP-8.	- 58		_	
INITIAL DATA Well Diameter): Total Well Depth (b Depth to Water (bto) Depth to LNAPL/DN Depth to Top of Sci Screen Length): PURGE DATA	c): 42.5 ft APL (btoc): ft reen (btoc): ft	If Depth to Top of Place Pump at: If Depth to Top of Place Pump at: If Screen Length	of Screen is > Depth to Fotal Well Depth – 0.5 of Screen is < Depth to Total Well Depth – (0.5 of and/or water column	to Water AND Water C 5 X Water Column Hei 1 height is < 4 ft, Place	Length is (4 feet, IAPL Column Height) <u>=</u> Column Height and Scr ight + DNAPL Column e Pump at: Total Well D	een Length are < 4ft, Height) =	Minift btoc Amb	ime of Flow Through mum Purge Volume pient PID/FID Reading bore PID/FID Reading	= (3 x Flow Cell Volume):	mL me): <u>3,450</u> mL ppm ppm
Purge Volume	Pump Type:	Depth to	ss Steel Submersible-P	ump puaties		Temp	Cond.	Turbidity	DO	ORP
(mL)	Time	Water (ft)	Color	Odor	pH	(°C)	(mS/cm)	(NTUs)	(mg/L)	(mV)
1200	1312	nr.	Biene	Very mild	6.93	27.16	1.081	2070	10-34	-30.5
2400	1324		Light ber	pitaleum	5.63	20.07	1.030	1584 300	5.48	-89.2
3600 4900	1336		Cleaning	odes	5.75	20.43	1.030 1-3 0.92		2.22	-16.7
6000	1200	*	1	*	5.461	20 -20	0.400	50.3	3.01	- 20.3
Start Time:	300		Clane	sed Time (min):	1:00 W		Mater Quelit	y Meter ID: YSI 6820	<u> </u>	
	1400			age Purge Rate (mL/m		<u> Um</u>	Date Calibra	- 10.0		
SAMPLING DAT Sample Date: Sample Method: VOA Vials, No Head	7/3/17 Mensoon/Low Flow	Watten		ple Time: 【	400 n): (00 ml	-(w	Lab Analysis QA/QCSamp		B after	decon
								Total Pur	ge Volume:	OOD mL

PROJECT NAME	: Dissolved Phas	e GW Investigation		OJECT NUMBER:		FIELD P	ERSONNEL: _	N. Satern		
DATE:8	1319	WEATHER	N 85	F, postly Sur	nnj		. , , .			
MONITORING WE	ELL IĎ:G	wp-9-50			SAMPLE ID:	GWP-9	1-50/		_	
INITIAL DATA Well Diameter): Total Well Depth (I Depth to Water (bto Depth to LNAPL/DI Depth to Top of So Screen Length): PURGE DATA	oc): 44-98	_ft if Depth to Top of the Place Pump at: _ft if Depth to Top of the Place Pump at: _ft if Screen Length	Total Well Depth – 0.4 of Screen is < Depth Total Well Depth – (0	to Water AND Screen 5 (Screen Length + DN to Water AND Water 0 .5 X Water Column He n height is < 4 ft, Plac	NAPL Column Height) Column Height and Sc eight + DNAPL Column e Pump at: Total Well	reen Length are 〈 4ft n Height) =	ft btoc	Volume of Flow Through Minimum Purge Volume = Ambient PID/FID Reading Wellbore PID/FID Reading Puge Well	(3 x Flow Cell Volu	mL ime): <u>3,450</u> mE ppm ppm
Purge Volume (mĹ)	Time	Depth to Water (ft)	Color	Very Odormid	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
1000 2200 3 400	0936	NA	brown Brown Cleaning	hydroraubon	6·47 6·20	231.14 22.80 20.34	1132 <u>0-022</u> 1-157 -1-13_3	1872.0 1334.5	7·20 2·27 5·49	-64·4 -82·6 -68·0
4 600 5800 7000	1012	NA	1	4	6.09	20.46 20.38 20.03	1:117	558 632 337	4·16 4·83 5·53	-64.4 -65.5 -65.5
			,					· · · · · · · · · · · · · · · · · · ·		
Start Time: 10 3		Paramelis	did NOT	STABLIZE sed Time (min):	· Location	Sampled	Water Q	uality Meter ID: YSI 6820		pleto .
	036			rage Purge Rate (mL/r	nin): 100 M	4 min	Date Cal	0101		
SAMPLING DA Sample Date: Sample Method: VOA Vials, No Hea	M onsoun / Low Fle adspace ☑ Initials:	- Watterg		ople Time: 1	036 in): 100 m	Um	Lab Ana QA/QCS	•	-	,
	Draw down	observed.	pump turn	ud up to con	whom pung	e				
								Total Purg	ge Volume:	7000 m L

PROJECT NAME:	Dissolved Phase G	W Investigation	PRO	JECT NUMBER:	21562175	FIELD PER	RSONNEL:	N. Salam		
DATE: <u>8</u>	1319	WEATHER:	<u>~ 85</u>	F Ou	ercast					
MONITORING WE	LL ID: GU	UP-9-5	8		SAMPLE ID:	GWF	2-9-58	3		
Depth to Water (btoo	in (ioc): 60 0 ft (ic): 45 80 ft (APL (btoc): 56 0 ft (btoc):	If Depth to Top of Place Pump at: To If Depth to Top of Place Pump at: To If Screen Length a	Screen is < Depth to	Water AND Screen (Screen Length + Di o Water AND Water 5 X Water Column He height is < 4 ft, Place	Length is (4 feet, NAPL Column Height) = Column Height and Sci eight + DNAPL Column te Pump at: Total Well I	een Length are (4ft, Height) =	ft btoc Am	iume of Flow Through C nimum Purge Volume = sbient PID/FID Reading: Ilbore P ID/FID Reading: Pwge walu	(3 x Flow Cell Volu	mL ume): <u>3,450</u> mL ppm ppm
Purge Volume		Depth to		Odor	-11	Temp	Cond.	Turbidity	DO (ma/l)	ORP
(mL)	Time	Water (ft)	Color Brown Light		pH 6 11	(°C) 22·21	(mS/cm) 1.629	(NTUs) 643	(mg/L) 8 · 4 4	(mV) - 76· J
2200 3400	1124		Brown		6.03 6.08	22.08	1.627	501·1 280·4	9.38 12. 67	- 78·3 - 83·9
4600	1148		Cleaning		6.09	20.92	1.620	204.0	8.43	-84.2
5100	1200	*	4	—-₩——	6.11	20.54	1.622	204·0 167·0	8.82	-84.5
				<u> </u>						
						-				
Start Time: 110	D		Elaps	ed Time (min):	1:05	д	Water Qual	ity Meter ID: YSI 6820		
Stop Time: 12	00	•	Avera	ge Purge Rate (mL/ı	min): 100 mil	Wi	Date Calibr	ated: 8 3 0	9	
SAMPLING DAT Sample Date: Sample Method: VOA Vials, No Head	813109 Monsoon/Low Flow	Watterg Ns	·	ole Time: ole Flow Rate (mL/m	1200 iin): <u>100 m</u> (- I num	Lab Analys QA/QCSam	- ·		
				•				Total Purge	e Volume:	Soo mL_

PROJECT NAME:	: Dissolved Phase 0	GW Investigation		PROJECT NUMBER: 21562175			SONNEL:	N. Satem	/	
DATE: 8	1319	WEATHER:	N 90	F. Sunn	u					
MONITORING WE	ELL ID: GWF	- 10 - 5			SAMPLE ID:	GWP-to	- 50			
Depth to Top of So Screen Length):	oc): 43.94 ft	If Depth to Top o Place Pump at: T If Depth to Top o Place Pump at: T If Screen Length	of Screen is > Der Total Well Depth of Screen is < De Total Well Depth and/or water col	lumn height is < 4 ft, Plac	Length is (4 feet, NAPL Column Height Column Height and S eight + DNAPL Colum ce Pump at: Total Wei	creen Length are < 4ft,	ft btoc ft btoc ft btoc ft btoc	Volume of Flow Through C Minimum Purge Volume = Ambient PID/FID Reading: Wellbore PID/FID Reading	(3 x Flow Cell Vol	mL ume): <u>3,450</u> mL ppm ppm
PURGE DATA	Pump Type:	Monsoon Stainles	s Cteel Submersit	nie Pump Wattru	<u>a</u>				<u>.</u>	
Purge Volume	Time	Depth to	Color	Odor	nu nu	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
(mL)	Time 1500	Water (ft)	Light Bac		5.90	21.34	1.375		C.79	- 74·3
2400	1512	NA	halit Bro	my None	6.34	24 96	1.388		7.06	-101.3
3600	1524		Light Bro	WM None	5.92	22.54	1.382	2 32.3	5.30	-78.0
4800	1536		Light Brow		6.22	24.63	i · 384	- 694·0	5.54	-940
6000	1548	4	Leght Brown	m None	6.39	26.50	1.387	6 25.0	7.27	- 96·D
			1 .							
								<u> </u>		
						+		 		
								+ +		
191.15	A . 1.1-	A	M: 4 1105	1876-11-05					. 1 1 ==	
Walu	quelity pa	ancelus	CUO NOI	STABLIZE.	Sample (ollected a	ter In	r bruge (on	upleli .	
Start Time:	448			lapsed Time (min):	1:02	•	Water (Quality Meter ID: YSI 6820	•	
,	€50				1.00	1		·	· ·	
Stop Time:	<u> </u>		A	verage Purge Rate (mL/i	min):		Date Ca	alibrated: 8 \ 3 \ 9		
SAMPLING DA	TA 8/3/9		•	Sample Time:	550		Lab An	alysis: VOC, SVOC		
Sample Method:	Monsoon / Low Flow	Watters		Sample Flow Rate (mL/m	nin):	. 1	 OA/OC	Samples:		
·		100 11 00Q	`		/DO M	ul m.				
VOA Vials, No Hea	dspace 🗹 Initials:	<u> </u>	•							
COMMENTS:					• • • • • • • • • • • • • • • • • • • •					
				·	•	,		Total Purg	e Volume: 6	007 mL

PROJEC1	PROJECT NAME:Dissolved Phase GW Investigation		PRO	DJECT NUMBER	FIELD PERS	ONNEL: _	N. Satano				
DATE:	813	1	_ WEATHER	: <u> </u>	90°F ,	Sunny		·			
MONITOR	RING WEL	LL ID: G	WP-10-	58		SAMPLE ID:	GWP-	10 - 5	8		
Depth to V Depth to L	eter):	in 60 oc): 44-11 ft och 61 och 62 och 64 och 65 och	If Depth to Top Place Pump at: If Depth to Top Place Pump at: If Screen Lengt	of Screen is < Depth : Total Well Depth – (0.:	o Water AND Scro i (Screen Length to Water AND Wa 5 X Water Column height is < 4 ft, F	-r. een Length is ⟨4 feet, + DNAPL Column Height) ter Column Height and Sc n Height + DNAPL Columr Place Pump at: Total Well	reen Length are 〈 4ft, n Height) =	ft btoc ft btoc ft btoc ft btoc	Volume of Flow Through C Minimum Purge Volume = Ambient PID/FID Reading: Wellbore PID/FID Reading:	(3 x Flow Cell Volu	mag
Purge V		Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
1200	Ó	624	NA P	Gray-Brown	Mild .	6.38	23.42	1-652	1575.1	7.04	-101-3
240 360	0	1648	-	7 7	hydrogub	6.13	22.83	1.638	1076.0	6.69	- 976
ARO	10	i300			WC 0.001	6.20	21.40	1.628	4410	8.71	-113.2
6'00	0	j712	<u> </u>	Cleaking	<u>+</u>	6.05	21.33	1.608	227.0	7.42	-1v C·3
				· · ·							
						<u> </u>					
				•							
								•			
-											
								-			
Start Time	_{e:16}	12		Elaps	sed Time (min):	1:02		Water (Quality Meter ID: YSI 6820		
Stop Time	. <i>1</i>	715		Δver	age Purge Rate (r	ml/min): 100 m	Um	Date Ca	alibrated: (3)	, 9	
Stop Time					age i aige itate (i	110111111111111111111111111111111111111		Date of	10		
Sample D Sample M	fethod:	Monsoon Low Flow	Mallela		ple Time: ple Flow Rate (m	1715 iL/min): 100 w	ul)mu	Lab An QA/QC	alysis: VOC, SVOC Samples:	-	
COMME	ENTS:	ing for pur	ge water	bullin the	. Smins	pour the te	uin puzuij	omu	uemed 32	٠6	
						<u> </u>	· •		Total Purg	e Volume:	6200 mL

PROJECT NAME:	Dissolved Phase G	W Investigation	PRC	JECT NUMBER:	21562175	FIELD PER	RSONNEL:	N. Salamo		
DATE: 08	06/09	WEATHER	1 28 N	, Sunny						
MONITORING WE	ELL ID: GWP	- II -50			SAMPLE ID:	GWP-	11-50			_
Depth to LNAPL/DN	toc): 52 ft c): 44.97 ft IAPL (btoc): ft reen (btoc): 58.0 ft	If Depth to Top Place Pump at: If Depth to Top Place Pump at: If Screen Lengt	Height (do not include of Screen is > Depth to Total Well Depth 0.5 of Screen is < Depth to Total Well Depth (0.4 th and/or water column	o Water AND Screen (Screen Length + DN to Water AND Water 0 5 X Water Column He height is < 4 ft, Plac	Length is (4 feet, NAPL Column Height) Column Height and Sc ight + DNAPL Columr e Pump at: Total Well	reen Length are 〈 4ft, Height) =	ft btoc A	olume of Flow Through C linimum Purge Volume = mbient PID/FID Reading: /ellbore PID/FID Reading:	(3 x Flow Cell Volu	mL me): <u>3,450</u> mL ppm ppm
PURGE DATA	Pump Type:	Monsoon Stainle	ess Steel Submersible P	umo hlattero	3					
Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	(± 0·1)	Temp (+ 0-22)	Cond. 士& (mS/cm)	/ Turbidity	DO (±10%) (mg/L)	ORP (± 20) (mV)
/500	1024	NA	Donk brown	None	6.41	24.49	8.976	1225.0	4.17	- 68.5
2460	1036	1	light gray	1	6.34	24.50	0.979	912.0	3.72	-95.8
3600 4800	1048		clearing	-	6.42	24·38 24·05 24·60	0.949	490.0	3.71	-110.6
6000	1112	1	Cleaning	<u> </u>	6.58	24.60	0.967	283.0	3.86	-110.0
			*				3 (0)			
				_						
									_	
Start Time: 10	12		Elaps	ed Time (min):	1:03	L	Water Qua	ality Meter ID: YSI 6820		
111								الممامه		
Stop Time:	<u> </u>	_	Avera	ige Purge Rate (mL/n	nin): 100 m U	min	Date Calib	orated: USTUBIL	<u> </u>	
SAMPLING DA	08/06/09	,		ole Time:	1115		Lab Analy	vsis: VOC, SVOC	Dampled	for Voa oule
Sample Method:	Monsoon / Low Flow		Samp	ole Flow Rate (mL/m)	in): 100 ml	mm	QA/QCSa	mples:	·	,
VOA Vials, No Head	dspace Initials:/\	جل				1				
COMMENTS.			v column.	Draw down	n observed.	Set tubiv	y wake	pout @ 5		, ,
								Total Purge	Volume:	6300 mL

PROJECT NAME: Dissolved Phase GW Investigation		PROJECT NUMBER:21562175			FIELD PERSONNEL: N. Sataro					
DATE: 08	06)09	WEATHER	: <u>~ ~85</u>	F, Sun	щ		·			
MONITORING W	ELL ID:	WP-11-58			SAMPLE ID:	GWP-11-	58			
Depth to Top of So Screen Length):	oc): 47.86 NAPL (btoc): - creen (btoc): 54.8 A:0 ft \$6	ft If Depth to Top of Place Pump at: ft If Depth to Top of Place Pump at: If Screen Length	leight (do not include of Screen is > Depth to Total Well Depth – 0.5 of Screen is < Depth to Total Well Depth – (0.9 on and/or water column	o Water AND Screen (Screen Length + Di to Water AND Water 5 X Water Column He height is < 4 ft, Plac	Length is (4 feet, NAPL Column Height) Column Height and So eight + DNAPL Colum se Pump at: Total Well	creen Length are (4ft, n Height) =	Mi ft btoc An	lume of Flow Through (nimum Purge Volume = nbient PID/FID Reading. silbore PID/FID Reading	: (3 x Flow Cell Volum つろ	mL ne): <u>3,450</u> mL ppm ppm
PURGE DATA Purge Volume	Pump Type:	Mon soon Stainled Depth to			Ī	Temp	Cond.	Turbidity	DO	ORP
(mL) 1200	Time	Water (ft) N A	Color Tan-Gray	Nove	pH 6-32	21·43	(mS/cm)	(NTUs)	(mg/L) 2 - 7 +	- 82-2 (m _A)
2400 3800	1200	1	light gray	1	6.32	20.68	1.358	\$29	3.63	-84.6
21800	1212				6.46	20.57	1.354	519	4.78	-93.0
6000 7200	1236	~	destury	<u> </u>	6.39	20.08	1.349	246	4-75	-91.0
			7 5							
			_							
								·		
							- · · · · · · · · · · · · · · · · · · ·			
Start Time:	130	_	Elaps	ed Time (min):	1:10		Water Qual	ity Meter ID: YSI 6820		
Stop Time:	1240		Avera	age Purge Rate (mL/r	nin):	nchin _	Date Calibi	ated: 0 8 0 7 (09	
SAMPLING DA Sample Date:	NTA 08 06 09 Monsoon/Low Flov	v klattera		ole Time: \(\sqrt{\alpha}\)	40 in): 100 md	mi	Lab Analys	voc, syoc	Sampled of	a vossoul
VOA Vials, No Hea	adspace Initials:	16				11000				·
COMMENTS:	Intake	Doint - 58"								
			_					Total Purg	je Volume: <u>3.2</u>	<u>ව</u> වට mL

PROJECT NAME:	Dissolved Phas	e GW Investigation	PRO	OJECT NUMBER:	21562175	FIELD PER	RSONNEL:	N. Salam	_	
DATE: 84	09	WEATHER	. N 85	F, over	<u>ملا , المن</u>	<u>in</u>				
MONITORING WE	LL ID:G	JP-12-51	0		SAMPLE ID:	GWP-	12-50			
Depth to Water (bto Depth to LNAPL/DN	toc): 52.0 c): 44.03 APL (btoc): — reen (btoc): 48.0	ft Place Pump at: ft If Depth to Top ft If Depth to Top ft Place Pump at: If Screen Length	of Screen is < Depth Total Well Depth – (0.	to Water AND Screen 5 (Screen Length + DN to Water AND Water (5 X Water Column He n height is < 4 ft, Plac	Length is (4 feet, NAPL Column Height) <u>=</u> Column Height and Scre eight + DNAPL Column I e Pump at: Total Well D	een Length are < 4ft, leight) =	ft btoc	Volume of Flow Through Cel Minimum Purge Volume = (3 Ambient PID/FID Reading:_ Vellbore PID/FID Reading:_	3 x Flow Cell Volume)	mL :: <u>3.450</u> mL ppm ppm
Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	pH ±01	Temp ± 3 %	Cond. (mS/cm)	Turbidity + 1./	DO 10/. (mg/L)	ORP ±10 (mV)
(IIIL)	Tille	vvater (It)	COIOI	0001	pn ·	(10)	(mo/cm)	(14105)	(mg/L)	(1114)
	-									
						-		_		
<u> </u>			Make	to say	upla					
Start Time:	241			sed Time (min):	my v		Motor Ou	olite Motor ID: VCI 6920		
	~				- <u> </u>			ality Meter ID: YSI 6820		
Stop Time:		<u> </u>	Aver	age Purge Rate (mL/n	nin):		Date Cali	brated:8 4 0°	<u> </u>	
SAMPLING DA' Sample Date:	•			ple Time:			Lab Anal	·		
Sample Method:	Menseen / Lew-Flow	" Wattera	Sam	ple Flow Rate (mL/mi	in):	_	QA/QCSa	imples:		
VOA Vials, No Head	dspace 🔲 Initials:									
	pure sate	300 ml/n	ui · Purge	water very		ment for pr		to clear and	then conne	d to
	1	Unable -	to Samp	lle @ 50	o Issue	s with	tabiny	Total Purge	Volume:	mL
٠		Unable 1	5 Lame	16 the box	eation. G	eoprobe	advance	00 to 60'	•	
	•	Grounding	ulu San	pled @	58'. Ayli	i sampl	ny @	58' Screen	pulled	up (see

PROJECT NAME:	Dissolved Phase G	W Investigation	PROJ	ECT NUMBER:	21562175	FIELD PER	RSONNEL:	N. Sala	w)	
DATE: 8	4/09	_ WEATHER:	overcast	N 85 F	<u> </u>					
MONITORING WEI	LL ID: GWF	?-12-50	-		SAMPLE ID:	GWP-1	2-56			
Total Well Depth (bt Depth to Water (btoo Depth to LNAPL/DN	c): 43.93 ft APL (btoc): - ft reen (btoc): 541 ft	If Depth to Top of Place Pump at: 1 If Depth to Top of Place Pump at: 1 If Screen Length	eight (do not include Li f Screen is > Depth to I otal Well Depth – 0.5 (f Screen is < Depth to otal Well Depth – (0.5) and/or water column f	Nater AND Screen I Screen Length + DN Water AND Water C K Water Column He eight is < 4 ft, Place	IAPL Column Height) : Column Height and Sc ight + DNAPL Column e Pump at: Total Well	reen Length are (4ft, Height) =	ft btoc	/olume of Flow Through /inimum Purge Volume : Ambient PID/FID Reading NetIbore PID/FID Reading	= (3 x Flow Cell Volu	mL ume): <u>3,450</u> mL ppm ppm
Purge Volume		Depth to				Temp	Cond.	Turbidity	DO	ORP
(mL) 600	Time 1536	Water (ft)	Color	Odor missed	pH	(°C)	(mS/cm)	(NTUs)	(mg/L)	(mV)
1800	1548	15.	gray	mild	6.32	22.57	1.221	415	6.53	-70.
3000 A200	1600	w .	gray	hydro carkor	6.34	22.03	1.290	405	6.72	- 85.0° -69.0
5400	1624		diad	1 0 GOV	6.32	22.42	1.225	329	6.28	-70.5
6600	164236		(leaving		6.28 6.33 6.35	22.62	1.227	233	6.33	-73.0
7800 4000NS	1648 1200 ND		1		6.35	22.62	1.229	235	6.34	-75·a
						_		, sic.		
				-						
Start Time: \(\subseteq \)	30 1700			d Time (min): e Purge Rate (mL/n	1:10 nin): 100ml)m	Water Qu	rality Meter ID: YSI 6820 brated: 8 A		
SAMPLING DAT Sample Date: Sample Method:	A 814109 Monsoon/Low Flow =	· Wattero	Sample	e Time: LA	164£017 in): 100	100 me/m	Lab Anal			
VOA Vials, No Head	ispace 🗗 Initials: 🕡	1 7				1		-	<i>,</i>	·
comments: Location pulled		eampled a dipth	ja 58'	Colleger v School	ntewal) 1	Hu San 21-43).	phy @	- collected	@ 501	ods were

PROJECT NAME	Dissolved Phase (SW Investigation	PRO	OJECT NUMBER:	21562175	FIELD PE	ERSONNEL:	N. Salam		
	4/09	WEATHER	: N 851	Foverca		<u> </u>				
MONITORING WE		JP-12-			SAMPLE ID:	GWP-	12-58			
INITIAL DATA Well Diameter): Total Well Depth (I Depth to Water (bto Depth to LNAPL/DI Depth to Top of So Screen Length): PURGE DATA	oc): 47.97 ft	if Depth to Top Place Pump at: If Depth to Top Place Pump at: If Screen Lengti	of Screen is > Depth t Total Well Depth - 0.5 of Screen is < Depth Total Well Depth - (0.	n height is < 4 ft, Place	Length is (4 feet, IAPL Column Height) Column Height and Sc ight + DNAPL Column	= W6 54 creen Length are (4ft,	10ft btoc An	olume of Flow Through (nimum Purge Volume = nblent PID/FID Reading: ellbore PID/FID Reading wye water	(3 x Flow Cell Yo	mL lume): <u>3,450</u> mL ppm ppm
Purge Volume		Depth to				Temp	Cond.	Turbidity	DO	ORP
(mL)	Time	Water (ft)	Color	Odor	pH	(°C)	(mS/cm)	(NTUs)	(mg/L)	(mV)
1500	14 24	NA	Gray_	Mild hydro	6.16	21.26	1.114	1657	<u>5.54</u>	-90.6
3600	1428	NA	مرسولي	(albay u	6.20	20.85	1.110	1356	6.63	-112
4800	1436		Charty	ike often	6.24	20.38	1.106		3.58	-113-6
6000	14 442		Clearxy		6.27	9.64	1.097	886	8.02	-117.0
7200	14 (8		1	 	6.37	19.74	1.102	693.	2:41	-121.0
3400	15+406		3.		6.59	18.75	1.107	6 22.1	7-72	-124.0
9,600	1512-		Clearing	Came	6.42	19.59	1. 103	563.3	8.93	-123.0
	12.1			3000			1 103	303.0	13_	-1.030
						,				
	 		<u> </u>	<u> </u>						
<u> </u>	 						<u> </u>	1 1		
			<u> </u>					 		
	 						 	 		
Start Time:12	118		Elaps	sed Time (min):	1:03	<u> </u>	Water Qual	lity Meter ID: YSI 6820		·
04 T l	1515				160	.il		dala	•	
Stop Time:	13 13		Aver	age Purge Rate (mL/m	nin):1 <u>50_v</u>	ul mi	Date Calibi	rated: 840		
SAMPLING DA	TA 8/4/09		Sam	ple Time: \51			Lab Analys	sis: VOC, SVOC		
Sample Method:	Menecen / Lew Flow	1.0 11		-		1				
		Walter	Sam	ple Flow Rate (mL/mi	n): 150	mic m	QA/QCSan	nples: - None		
VOA Viais, No Hea	dspace 🗹 Initials:	N>				1				
•										
COMMENTS:										
3 T			•							
	<u> </u>	- 1 12-1						Total Purg	o Volume:	7600 mL
								rotal Purg	e volume.	TV V ML

PROJECT NAME:	Dissolved Phase C	SW Investigation	PRO	JECT NUMBER:	21562175	FIELD PE	RSONNEL:	N. Satom		
DATE: 85	09	WEATHER	: <u> </u>	F, Sur	my					
MONITORING WEL	LID: G	WP-13.	-50	<u> </u>	SAMPLE ID:	GWP-	- 13 - 51	<u> </u>		
INITIAL DATA Well Diameter): Total Well Depth (bto Depth to Water (btoc Depth to LNAPL/DNA Depth to Top of Screen Screen Length): PURGE DATA	t): 41-79 ft APL (btoc): ft een (btoc): 48-0 ft	If Depth to Top of Place Pump at: If Depth to Top of Place Pump at: If Screen Length	leight (do not include left Screen is > Depth to Total Well Depth — 0.5 of Screen is < Depth to Total Well Depth — (0.5 n and/or water column	Water AND Screen Le (Screen Length + DNA b Water AND Water Co X Water Column Heigh height is < 4 ft, Place I	.PL Column Height) Jumn Height and So ht + DNAPL Column Pump at: Total Well	reen Length are (4ft, Height) =	ft btoc ft btoc ft btoc ft btoc	Volume of Flow Through C Minimum Purge Volume = Ambient PID/FID Reading: Wellbore PID/FID Reading:	(3 x Flow Cell Volume	
Purge Volume		Depth to				Temp	Cond.	Turbidity	DO (mm/l)	ORP
(mL)	7ime 0948	Water (ft)	Color	Odor	pH ———	No reads	(mS/cm)	Hected geronder	(mg/L)	(mV)
2400	1000	1	Light Gray	hydrocarbon	6.16	20-54	0 1-03	6 573	17.0	-85.1
3600	1012		77	1	6.16	19.62	1.03	Č 350	10.34	-114·J
6000	1036		4	-	6.46	19.09	1.03	0 240	9.91	-246.3
7200	1048	NA	Clearing	-	6.43	19.04	1.03	3 190	9.31	M_227-134:
Start Time: 0	936		Flans	ed Time (min):	1:10.		Water	Quality Meter ID: YSI 6820		
	050			ge Purge Rate (mL/mli	. ^ ^	Unic		alibrated: 8 S	109	
SAMPLING DAT Sample Date: Sample Method: VOA Vials, No Head	MonscenttowFlow		_ ·	ole Time: 10	50 	Ulmin		nalysis: VOC, SVOC	_	
COMMENTS:	Jaki Pozul	gilty. T	ubnig conv	ected to play	low thus	wh cell a	lter pu Hu Sdee	Total Purg	e Volume:	Hy 7200 mL

PROJECT NAME: Dissolved Phase	GW Investigation	PROJECT NUMBER: _	21562175	FIELD PER	SONNEL: _	N. Salam		
DATE: 8/05/01	WEATHER:	N 85 F. Sun	ny					
MONITORING WELL ID: GWP-	13-58		SAMPLE ID:	G117P-13-	58			
Well Diameter): in Total Well Depth (btoc): 60 ft Depth to Water (btoc): 44.03 ft Depth to LNAPL/DNAPL (btoc): ft Depth to Top of Screen (btoc): 56 ft Screen Length): ft	If Depth to Top of Screen Place Pump at: Total Well If Depth to Top of Screen Place Pump at: Total Well	not include LNAPL or DNAPL):_ is > Depth to Water AND Screen L Depth - 0.5 (Screen Length + DN/ is < Depth to Water AND Water Co Depth - (0.5 X Water Column Heig ater column height is < 4 ft, Place	APL Column Height) : olumn Height and Sci ght + DNAPL Column Pump at: Total Well I	een Length are (4ft, Height) =	ft btoc ft btoc ft btoc	Volume of Flow Through C Minimum Purge Volume ≈ Ambient PID/FID Reading: Wellbore PID/FID Reading:	(3 x Flow Cell Volu	
PURGE DATA Pump Type:	Monsoon Stainless Steel Su Depth to			Temp	Cond.	Turbidity	DO	ORP
(mL) Time 1200 1124 2400 1136	Water (ft) Co	red hydrocarhett	6.00 6.18	1-18 5 13-30 1-180 38-39	(mS/cm) 1-18 G	(NTUs) 309 166-2	(mg/L) - ++- - - - 2	- 91 · 1 - 107 · 0
3600 1148 4800 1200 6000 1212	•	10dex	6.85 6.82 6.84	18.22	1.177	6 130	1.39	-111·0 -113·0
			·					
Start Time: 1112	ulity Paramel	Elapsed Time (min):	1:02		19/24-11	Quality Meter ID: YSI 6820		
Stop Time: 1215		Average Purge Rate (mL/m		min		alibrated: 8/5/09		
SAMPLING DATA Sample Date: \$\ 0 \leq \ 0 \leq \ 0		Sample Time:	1215		Lab Ar	nalysis: VOC, SVOC		
Sample Method: Monseen / Low Flew VOA Vials, No Headspace Initials:	Nattera nb	Sample Flow Rate (mL/mir	1): 100 w	y nin	QA/QC	CSamples:		
COMMENTS:	<u> </u>							
<u> </u>		· · · · · · · · · · · · · · · · · · ·				Total Purg		6200 mL

ı	OW EL	OW.	GROH	NDWATER	SAMDI	ING	DATA	SHEE
ı	LIVV FI		GRUU	NIJANAILL	SAIVIEL	1101.7	DAIA	SOFE

PROJECT NAME	: Dissolved Phase	GW Investigation	PRO	OJECT NUMBER:	21562175	FIELD PI	ERSONNEL:	<u>N·Salā</u>	ო	
DATE:	25/09	WEATHER	: N 90	o'f, su	,m)					
MONITORING W		P-14-50			SAMPLE ID:	GWP-1	4-50		 	
Depth to LNAPL/D	(btoc): 52 ft (coc): 43-58 ft (NAPL (btoc): 6 ft (creen (btoc): 48 /ft	If Depth to Top Place Pump at: If Depth to Top Place Pump at: If Screen Length	of Screen is > Depth t Total Well Depth - 0.5 of Screen is < Depth Total Well Depth - (0.	to Water AND Water C .5 X Water Column He n height is < 4 ft, Place		= 50 reen Length are (4ft Height) =	ft btoc	Volume of Flow Through Minimum Purge Volume Ambient PID/FID Reading Wellbore PID/FID Reading	(3 x Flow Cell Volume: 0.3	mL me): <u>3,450</u> mL ppm ppm
Purge Volume	rump Type.	Depth to	da eteci edilileiaibie i	uning v- v- v		Temp	Cond.	Turbidity	DO	ORP
(mĽ)	Time	Water (ft)	Color	Odor	pH	(°C)	(mS/cm)	(NTUs)	(mg/L)	(mV)
1200	1336	NA	Brown - 4 ray	Mild hydro	6.98	19.18	2.087	1768	19.17	-75.2
24.00 3600	1348		Cleakings	Oder Oder	5.08	20.06	2.084	437	7.72	-69.4
4800	1412		Clean U	ì	5.59	19.42	2.042	93.6	7.32	-69.4
6000	1424	<u> </u>	Clean	4	5.58	19.57	2.035	61.0	7.93	-70.0
	<u> </u>									
						·				
						-				
<u> </u>	<u> </u>				•					
						 -		<u> </u>		
						-		•		
					-					
-				•						
<u> </u>	1				<u> </u>				1	
Start Time:	1324		Elap	sed Time (min):	1:01		_ Water Q	uality Meter ID: YSI 6820)	
Stop Time:	1425		Avor	rage Purge Rate (mL/m	مدا موا	, mulm	Data Cal	ibrated: 68 051	09	
Stop Time			Avei	age Furge Rate (IIIL/II	100 Pi		Date Cal	ibrated. VS (U.S.)		
SAMPLING DA	08/05			•	125	· · · · · · · · · · · · · · · · · · ·	Lab Ana	•		* · · · · · · · · · · · · · · · · · · ·
Sample Method:	M onsoon / Low Flo w		Sam	ple Flow Rate (mL/mi	in): 100 m	Umn	QA/QCS	amples:		
VOA Vials, No Hea	adspace 🗹 Initials:	NA								
•	-4				•					
COMMENTS:	utake peint	at 150'.	Intake pour	d-not sel-al	the mide	out of the	e wali a	luur berausi	draw don	un ù
<u>walu</u> _	fally was of	secure a	1 locature (GWP 7 (~	look & gan	2-14)				
				•	' ''	-		Total Pur	ge Volume: 6	100 mL

LOW FLOW GROUNDWATER SA	MPLING DATA	SHEET
EON TEON ON ON ON PARENCE	iiii Eiiio Baia	J.,

PROJECT NAME: Dissolved Phase GW Investigation	PROJECT NUMBER:	21562175 FIEL	D PERSONNEL: N. Salam	
DATE: 08/05/09 WEATH		wwy		
MONITORING WELL ID: GWP-13-6	GWP-14-58 ND	SAMPLE ID: GW	P-14-58M GWP-14-	58
Total Well Depth (btoc): 60 ft Depth to Water (btoc): 45-90 ft Place Pump and the Depth to LNAPL/DNAPL (btoc): ft Depth to Top of Screen (btoc): 56-0 ft Screen Length): 6 ft Screen Length	n Height (do not include LNAPL or DNAPL): pp of Screen is > Depth to Water AND Screen at: Total Well Depth – 0.5 (Screen Length + E pp of Screen is < Depth to Water AND Water at: Total Well Depth – (0.5 X Water Column H	n Length is (4 feet, DNAPL Column Height) = 58 r Column Height and Screen Length are leight + DNAPL Column Height) =	ft btoc Volume of Flow Through Cell): 150 Minimum Purge Volume = (3 x Flow Ambient PID/FID Reading: 0.3 (4ft, ft btoc ft btoc	ppm
Purge Volume Depth to		Temp	Cond. Turbidity DC	
(mL) Time Water (ft)	GAOU - BAOUMA GAON	pH (°C) 6.40 19.83	(mS/cm) (NTUs) (mg/ h:212 210.0 7-6	3 -80-6
2400 512 3600 524	Hart gray Mild highors	5.86 9.18 5.49 8.58	1.112 298.0 5.3	
4800 1536	Tan V	6.14 18.71	1.10.3 224.0 4.	78 - 78.4
6000 1548	+ +	6.10 18.91	1.096 345.2 5.	33 - 79.7
	,			
Start Time: 1448	Elapsed Time (min):	1:02	Water Quality Meter ID: YSI 6820	
Stop Time:	Average Purge Rate (mL	/min): 100 ml) min	Date Callbrated: 98/0 5/09	
SAMPLING DATA Sample Date: 08/05/09	Sample Time:	1550		upled for vocs
Sample Method: Monsoen / Low Flow Wattera	Sample Flow Rate (mL/i	min): woul)m	QA/QCSamples:	- \
VOA Vials, No Headspace 🗹 Initials: 🅦				
COMMENTS:				₹
			Total Purge Volum	e: 6200 mL

PROJECT NAME	: Dissolved Phase	GW Investigation	PRO	JECT NUMBER:	21562175	FIELD PER	RSONNEL:	N. Satan	η	
DATE: <u>08</u>	106/09	WEATHER:	N 85	E, Sunn	.y					
MONITORING WE	ELL ID: (GWP-15-5			SAMPLE ID:	GWP-	15-50)		
Depth to Top of So Screen Length):	oc): 44.82 ft NAPL (btoc): - ft creen (btoc): 48.0 ft	If Depth to Top o Place Pump at: 1 If Depth to Top o Place Pump at: 1 If Screen Length	Total Well Depth – (0.5 n and/or water column	water AND Screen L (Screen Length + DN o Water AND Water C o X Water Column Hei height is < 4 ft, Place	Length is ⟨4 feet, APL Column Height) Column Height and So ight + DNAPL Columi	= 50.0 creen Length are < 4ft, h Height) =	ft btoc ft btoc ft btoc ft btoc	Volume of Flow Through C Minimum Purge Volume = Ambient PID/FID Reading: Wellbore PID/FID Reading:	(3 x Flow Cell Volu	_mL ime): <u>3,450</u> _ mL ppm ppm
PURGE DATA	Pump Type:		se Stoel Submersible Pu	mp Watter		T	. 01	T		000
Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	рН	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
1200	1424	NA	hight Gray	None	5.82	25.06	1.957	1435.1	6-33	-68.2
2400 3600	14 36	7411	Leaut Grain	Nove	5.92	23.05	1.955	1114.0	6.19	-64.6
3600 4800	1448	NA NA	halit gray	Now	5.90	21.80 20.38	1.955	632.0 423.0	6.02	-65.38 -68.5
6000	1512	NA	Cleaning	Nou	5.91	. 20.0	1929	360.0	6.17	-68.1
			J.							
					_					
							_			
Start Time:	1412		Elaps	ed Time (min):	1:02		Water (Quality Meter ID: YSI 6820		
Stop Time:	1515		Avera	ge Purge Rate (mL/m	nin): 100 mel	NA.	Date C	alibrated: 08 06 0	9	
SAMPLING DA Sample Date: Sample Method: VOA Vials, No Hea	Monscen/LowFlow adspace Initials:	Natterg N	·	ole Time:5 ole Flow Rate (mL/min		lm	Lab An	<u> </u>	-50EB what	I blank of 1315
COMMENTS: Two	V/4C 1+ + + V+	t 50'. Ju	Jake pout	gk not sel	1-al-mudy	paul of ma	lin leol	unna du	to draw	down_
\ <i>W</i> (L)				_		· V		Total Purg	e Volume: 6	200 mL

PROJECT NAME:	Dissolved Phase G	W Investigation	PRO	JECT NUMBER:	21562175	FIELD PE	RSONNEL:	N- Salatro		_
DATE:0	3/06/09	WEATHER:	N 85	F, Sun	my_	_				
MONITORING WE	LL ID: GW	P-15-58			SAMPLE ID:	GWP-15-6	58.		-	
Depth to Water (btoo Depth to LNAPL/DN. Depth to Top of Scr Screen Length):	toc):60 4 1 20 ft c): 4 1 20 ft APL (btoc): - ft reen (btoc): 56.0 ft	If Depth to Top of Place Pump at: 1 If Depth to Top of Place Pump at: 1 If Screen Length	of Screen is < Depth to Fotal Well Depth - (0.4) and/or water column	o Water AND Screen (Screen Length + Di to Water AND Water 5 X Water Column He height is < 4 ft, Place	Length is (4 feet, NAPL Column Height) : Column Height and Sc eight + DNAPL Column te Pump at: Total Well	= 58 0 reen Length are (4ft, Height) =	ft btoc ft btoc ft btoc ft btoc	Volume of Flow Through (Minimum Purge Volume = Ambient PID/FID Reading Wellbore PID/FID Reading	(3 x Flow Cell Volu : රු 3	nnm
PURGE DATA	Pump Type:		s Steel Submersible P	ump Watter		Temp	Cond.	Turbidity	DO .	ORP
Purge Volume ((mL)	Time	Depth to Water (ft)	Çolor	Odor	pН	(°C)	(mS/cm)	(NTUs)	(mg/L)	(mV)
1200	1536 1548	NA	hight Gray	None	6.31	20.26	1.682	813.0 Aso.4	7·15 7·83	-75·2 -70·2
3600	1600		2/5		6-17	20.04	1-681	301-0	7-80 6-88	-75.4
A800	1612		Cleany		6.28	19.84	1.6 78	75).0	6.88	-38.2
6000	1624	*	/		6.28	191 - 4-8	6670	1800	<i></i> ⊘· > ⊃	-026
_										
							'			
										1
										•
Start Time: 153	50		Elaps	sed Time (min):	1:05		Water	Quality Meter ID: YSI 6820		
Stop Time:			Avera	age Purge Rate (mL/i	min): 100 ml	Inin			7109	
SAMPLING DATES Ample Date: Sample Method: VOA Vials, No Head	08 07 09 Monsoon/Low Flow	Watterg		ple Time:	WS 40 1630 nin): 100W	u / viur		nalysis: VOC, SVOC		
								Total Pure	ge Volume:	6000 mL
								i Otali i ali	o rolulito [6	1116

PROJECT NAME: Dissolved Phase GW Investigation				JECT NUMBER:	21562175	FIELD PE	RSONNEL: _	N. Salaro			
DATE:08	107 FO	WEATHER	: _ N 85'f	Sunny							
MONITORING WE	ELL ID: Gu	JP-16-50			SAMPLE ID:	GWP-16	,-50				
Total Well Depth (b Depth to Water (bto Depth to LNAPL/DN Depth to Top of Sc Screen Length):	c): 45.29 APL (btoc): 7 reen (btoc): 48.0 4.0 ft	ft If Depth to Top of the Place Pump at: ft If Depth to Top of the Place Pump at: If Screen Length	of Screen is < Depth t Total Well Depth – (0.5 n and/or water column	Water AND Screen (Screen Length + DI o Water AND Water of X Water Column He height is < 4 ft, Place		reen Length are 〈 4ft, Height) =	ft btoc ft btoc ft btoc ft btoc	Volume of Flow Through O Minimum Purge Volume = Ambient PID/FID Reading: Wellbore PID/FID Reading Funge water gan kee	(3 x Flow Cell Vo	mL ume): <u>3,450</u> mL ppm ppm	
PURGE DATA Purge Volume	Pump Type:	Monsoon Stainles Depth to	es Steel Submersible Pu	HAD WALLEYAL		Temp	Cond.	Turbidity	DO	ORP	
(mL)	Time	Water (ft)	Color	Odor	pH	(°C)	(mS/cm)	(NTUs)	(mg/L)	(mV)	
2400	0936	NA NA	Tan-Gray	None	5.98 6.07	19.29	1.350	351·0 618·9	<u>8.53</u> 9.80	-34.8	
3600	1000		Light gray		6.10	19.89	1.359	<u> </u>	9.52	- 44.5	
4800	1012		Haw gray	Ψ	6-16	19.59	1.358	625.0	9.73	-54.0	
			C		,	1,0	(· , , , , , , , , , , , , , , , , , ,				
							_				
					-						
							·				
Walti	Quality	Parametris	DIDNOT	STABUZE							
Start Time:	930		Elaps	ed Time (min):	1:00		Water 0	Quality Meter ID: YSI 6820			
Stop Time:	30		Avera	ge Purge Rate (mL/r	min):100 W	Umm		alibrated: 08 03	7109		
Sample Date: Sample Method: VOA Vials, No Head	SAMPLING DATA										
COMMENTS:	uge rate ~ 2	some/min to	Clear Silly	walt pour	the tubing.	Puge rati	lomerred	to roome nu	i after	6 mins	
	<u> </u>			<u>'</u>				Total Puro	∪ je Volume:	600 OmL	
								1 2 257 1 41 2		<u> </u>	

PROJECT NAME:	Dissolved Phase G	W Investigation	PRO	JECT NUMBER:	21562175	FIELD P	ERSONNEL:	N. So	tam	
DATE: 08	107/09	WEATHER	N 85°F	Sunny						
MONITORING WE						GWP-1	6-58			
INITIAL DATA Well Diameter): 0 Total Well Depth (b Depth to Water (bto Depth to LNAPL/DN Depth to Top of Screen Length): 1 PURGE DATA	toc): 60 ft c): 46.03 ft APL (btoc): - ft reen (btoc): 56 ft	If Depth to Top of Place Pump at: If Depth to Top of Place Pump at: If Screen Length	of Screen is > Depth to Total Well Depth – 0.5 of Screen is < Depth t Total Well Depth – (0.9	o Water AND Screen (Screen Length + Di to Water AND Water 5 X Water Column He to height is < 4 ft, Place	Length is (4 feet, NAPL Column Height) Column Height and So eight + DNAPL Colum ce Pump at: Total Well	= 58 creen Length are (4f n Height) =	ft btoc	Volume of Flow Through Minimum Purge Volume Ambient PID/FID Reading Wellbere PID/FID Reading Wead space jac	= (3 x Flow Cell Vo	<u>) </u>
Purge Volume		Depth to				Temp	Cond.	Turbidity	DO	ORP
(mL)	Time	Water (ft)	Color	Odor	pH	2)·26	(mS/cm)	(NTUs)	(mg/L)	(mV) -74-4
\000 2200	1100	NIX	have year	s Gray None	6.27	19.82	1.244	1221.0	6.88	-74.0
3400	1124		rolm droso		6:37	20.44	1.140	411.0	8.60	-86.0
4600	1136				Ev Ab	20.07	1.141	390.9	7.41	-87.0
2800	1148				6.32	20.06	10142	3550	8.43	-87.9
7000	1200	NH	haut gray	No'W	6.2.3	19.84	1.148	365.0	6.87	<u>-87.0</u>
					<u> </u>		-			· ·
		_					+			
	-									_
							-			
Start Time: 105	55		Elaps	ed Time (min):	1:05		Water	Quality Meter ID: YSI 6820)	
Stop Time:	1200		Avera	age Purge Rate (mL/r	min): 100 ml	[m	Date C	alibrated: 08 \07	109	
SAMPLING DAT Sample Date: Sample Method:	08/07/09	hare Hora		ole Time:	1200	.1		nalysis: VOC, \$VOC	Nz	
				ton tate (mE/m	100 M	u w.				
VOA Vials, No Head	dspace 🗹 Initials: 🛛 🕦	<u> </u>								
COMMENTS:										
		_						Total Pur	ge Volume: 📿	600 mL

PROJECT NAME:	Dissolved Phase C	SW Investigation	PRC	DJECT NUMBER:	21562175	FIELD PER	SONNEL: _	14. Satam		
DATE:	110/09	WEATHER:	N 89	F, Su	uny		-	_		
MONITORING WE	ELLID: Gh	1P-17-\$50	_		SAMPLE ID:	GWP-1	7 -50			·
Depth to Top of Sc Screen Length):	toc): 52 ft bc): 44.58 ft IAPL (btoc): 6 ft reen (btoc): 48.0 ft	If Depth to Top of So Place Pump at: Total	reen is > Depth to I Well Depth – 0.5 reen is < Depth t I Well Depth – (0.5 d/or water column	o Water AND Screen (Screen Length + DN to Water AND Water (5 X Water Column He height is < 4 ft, Plac	Length is (4 feet, NAPL Column Height) Column Height and So eight + DNAPL Columr e Pump at: Total Well	creen Length are (4ft,	ft btoc ft btoc ft btoc ft btoc	Volume of Flow Through Comminmum Purge Volume = Ambient PID/FID Reading: Wellbore PID/FID Reading: Tan wad speed for your Wall	(3 x Flow Cell Volui	mL me): <u>3,450</u> mL ppm ppm
PURGE DATA Purge Volume	Pump Type:	Monsoon Stainless St	eel Submersible M	ump Pario	T T	Temp	Cond.	Turbidity	DO .	ORP
(mL)	Time	Water (ft)	Color	Odor	pН	(°C)	(mS/cm)	(NTUs)	(mg/L)	(mV)
1200	1412an	NA Ju	W Gray-	.1	-6.05	20-3+	4-189	-2180	·- 3	-37:6
1200	1548	NA Q	lay - Brods	None	7:17	93:20	1.294		24.25	-70.0
2400 3600	1600	- \ 	rey-Brown		6.19	22-79	1-296		26.92	- 18.0 - 103.6
Δ \$00	1624		Tearing		6.22	20.88	1.27		38.15	-111-D
4800 6000	1638		7	4	627	21-11	1-26	8 488	32.99	-117.6
			·				·			
					· ·					
								-		
•										
Start Time:	45 1535			sed Time (min):	1:05		Water 0	Quality Meter ID: YSI 6820	_	
Cton Times	1640		4	one Downe Date (m) (m	nin):100 wLn		Data Ca	allibrated: 08)10)	09	
Stop Time:	[0.10		Avera	age Purge Rate (mL/n	nin): <u>(00 mac n</u>	<u>~</u>	Date Ca	ulbrated: OST (
SAMPLING DA Sample Date: Sample Method:	TA 08 10 09 Monsoon/LowFlow	Watterg		ole Time: ole Flow Rate (mL/mi	1640 in): 100nui	. /w	Lab An	alysis: VOC, S VOC Samples:	N	^.
	dspace 🗹 Initials: 🕠									
	<u> </u>			•				·		
COMMENTS:	2 1-1	1. 0. 1	f.A	1-A 1 -	·	←	Λfl	17	. A +-	11
	initial purge	rati 200ml	Imm. Wa	while for sing	us 101 wa	lu to Clear	up. Hd	judet puge	rale la 1	sovel/us
	man Dolx	eading pr	Ohe Clean	med is and	pour th	veryt dear	ried \	16/ 16/38		.
	J	, ,			*			Total Purge	e Volume: C	600 mL

PROJECT NAME:	Dissolved Phase			MBER: 21562175	FIELD P	ERSONNEL: _	N. Salamo		
DATE: 08)	0109	WEATHER:	N GOM	lo'F, Sun	щ	<u>. </u>			
MONITORING WE	ELL ID:	GWP-17 - 58		SAMPL	0. 10	7-17-58	3		
Depth to Water (bto	D - 1.5 in otoc): 60.0 ft vaPL (btoc): ft reen (btoc): ft Pump Type:	If Depth to Top of Scre Place Pump at: Total W If Depth to Top of Scre Place Pump at: Total W If Screen Length and/o	Vell Depth - (0.5 X Water C	O Screen Length is (4 fo ngth + DNAPL Column D Water Column Heigh olumn Height + DNAPL 4 ft, Place Pump at: To	Height) <u>= SX O</u> t and Screen Length are ⟨ 4f	ft btoc	Volume of Flow Through C Minimum Purge Volume = Ambient PID/FID Reading: Wellbore PID/FID Reading: For head space for pury wall	(3 x Flow Cell Volu	D ppm
Purge Volume		Depth to			Temp	Cond.	Turbidity	DO	ORP
(mL)	Time	Water (ft)	Color Odd		14:33	(mS/cm)	(NTUs) 758	(mg/L) 36 · 54	(mV) -45.6
2400	14 24		why had held to	ne 6.1	18-26	1.174	296.6	37.67	- 93. 6
3600	1436			6.17	1804	1.170	2140	36 86	- 99.0
4800 6000	1448	(10	or t	6.20	9-2	R-1-87-18	148.3	23.00	795.70 -103-D
0.000	1500		7		, , , =	1971	100		
						 			
<u> </u>	-	-							
Start Time: 13	55		Elapsed Time (m	in):1:05	Wi	Water Qu	uality Meter ID: YSI 6820		
Stop Time:	300		_ Average Purge R	ate (ml /min):	pome)mi	Date Cali	ibrated: 08)10	104	
SAMPLING DA Sample Date: Sample Method:	TA OS 10 09 Monsoon / Low Flow	Wattera Ns	Sample Flow Ra	1500	soonel un.	Lab Anal	lysis: VOC, S VOC 		
	18h DO	readuis - Ch	eaned flow the	wigh Cell	and probe	@ 14 40			
	V		1				Total Purg	e Volume:	mL_

PROJECT NAME: Dissolved Phase GW Investigation			P	ROJECT NUMBER:	21562175	FIELD PE	RSONNEL: _	N. Dalam)	
DATE:	08/11/09	WEATHER	: ~ ~ 9	OF, Sunn	щ					
MONITORING WE	ELL ID: GW	P-18-50			SAMPLE ID:	GWP-	18-50			
INITIAL DATA Well Diameter): Total Well Depth (b Depth to Water (bto Depth to LNAPL/DN Depth to Top of Sc Screen Length): PURGE DATA	otoc): 52.0	ft If Depth to Top of the Place Pump at: If Depth to Top of the Place Pump at: If Screen Length	of Screen is > Depti Total Well Depth — of Screen is < Dept Total Well Depth —	de LNAPL or DNAPL):_ h to Water AND Screen 0.5 (Screen Length + DN th to Water AND Water (0.5 X Water Column He mn height is < 4 ft, Plac	Length is (4 feet, NAPL Column Height) Column Height and Sight + DNAPL Colum	creen Length are (4ft, n Height) =	ft btoc	Volume of Flow Through Minimum Purge Volume: Ambient PIDIFID Reading Wellbore PIDIFID Reading Tar headspace for purge wat	= (3 x Flow Cell Volu g: 0 · 0 g: 6 · 3	mL ume): <u>3,450</u> mL ppm ppm
Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	На	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
25000N)	0930	NA NA	anay	None	6.28	21.33	1.300	1063	25.36	-16.5
3700 4906	0942	}	anay	None	6.17	2 22	1.311	1179	37.66	-683
6100	1006		axay.	+ +	6.37	19.57	1.293		39.04	- 97-7
7300	1018	J.	- ¥ -	¥.	6.40	19-76	1.293	1878	26.07	-100.0
8500	1030	NA	Clearing	Novo	6.40	18.24	1-285	1869	27.92	-96.0
								-		
					·					
	_			-				-		1.
						,				
	-									
		Wali O	uality (Parameter	1007	STABLE				
Start Time: 09	120		Ela	(apsed Time (min):	1:20		Water Q	uality Meter ID: YSI 6820	1	
Stop Time: 0	45		Av	erage Purge Rate (mL/n	nin):100 mL)	ww	Date Ca	librated: 08)11\0	9	
SAMPLING DA' Sample Date: Sample Method:	08 11 09 Monsoon/Low Flo	" Watterg		mple Time: mple Flow Rate (mL/mi	1045 in): 100 mc/m	ů.	Lab Ana	alysis: VOC, SVOC		
VOA Vials, No Head	dspace 🗖 Initials:	_\\\>								
comments: Initial	pure rati	selra 250 m in cell lealle	Mui to	Clear out	the silty in	valu from 4	he lucer	Tesus with	flow fluoy	igh (ell
					₩			Total i di	o rolulito. K	

PROJECT NAME:	Dissolved Phase	e GW Investigation	P	ROJECT NUMBER:	21562175	FIELD PE	RSONNEL: _	N.Satur		
DATE: 0	8/11/09	WEATHER	: N 85 1	, overca	st					
MONITORING WE	1200/1-	WP-18-58			SAMPLE ID:	GWP-18	3-58			
iNITIAL DATA Well Diameter): Total Well Depth (to Depth to Water (bto Depth to LNAPL/DM Depth to Top of So Screen Length):	DC): 46.82 IAPL (btoc): 56 Treen (btoc): 56	ft If Depth to Tope ft Place Pump at: ft If Depth to Tope ft Place Pump at: If Screen Lengt	of Screen Is > Dept Total Well Depth — of Screen Is < Dep Total Well Depth — n and/or water colu	ide LNAPL or DNAPL);_ th to Water AND Screen 0.5 (Screen Length + Di th to Water AND Water (0.5 X Water Column He mn height is < 4 ft, Place	NAPL Column Height) Column Height and Sc eight + DNAPL Column	reen Length are < 4ft, Height) =	ft btoc	Volume of Flow Through of Minimum Purge Volume = Ambient PID/FID Reading: Wellbore PID/FID Reading San heads for	(3 x Flow Cell Volume	mL ne): <u>3.450</u> mL ppm ppm
PURGE DATA Purge Volume	Pump Type:	Monsoon Stainle Depth to	ss Steel Submersibl	e Pump	<u>-</u>	Temp	Cond.	Turbidity	DO	ORP
(mL)	Time	Water (ft)	Color	Odor	pΗ	(°C)	(mS/cm)	(NTUs)	(mg/L)	(mV)
6250	1124	NA	Clearure	None	6-35	19-96	1402		20.37	-41-2
7450	1136		,		6-24	20.86	1.41		26.92	-61-8
8650	1148		\ <u> </u>		6.28'	20.70	1.40		24 44	-64.4
9850	1200	<u> </u>	aear	None	6.25	20.45	1.41		26.02	-69.5
11000	1212	NA	year	NOTU	6-25	20.38	1.41	1280	28.42	-804
-								-	-	-
								_		
							p.	· ·		
						1			-	
	1.	_			-	-		_		
	WATER	QUALITY	NOT	STABLE						
Start Time: \\ 0	^				101215	1:15 hr				
			EI	apsed Time (min):		וואס אינו	Water Q	uality Meter ID: YSI 6820		
Stop Time:	215		A	verage Purge Rate (m∐r	min): 100 ml	lmi	Date Ca	librated:8 09	•	
							Date Ou	moratou		
SAMPLING DA	8/11/09		Sa	ample Time:	215	_	Lab Ana	alysis: VOC, SVOC		
Sample Method:	Monsoon / Low Flow	" Wattera	Si	ample Flow Rate (mL/m	in): Loo	elm	QA/QCS	Samples: Field	N. W. Santo	
		- CUITELL				-Cyw			Duplicate 18-58D	
VUA VIAIS, NO Hea	dspace 🔟 Initials:	NS						GWP	18-58D	
COMMENTS				~						
COMMENTS:	V	بالد	. Mi	At D. A	mali at	And hours	10 to 10	200-30-11	, to clea	
	Juge waty			or to ruyed	mily at 1	yell at 1000	Tell 2	250-300mlu	u to clea	
Sergen,	Jammeula	walter que	euty me	assumed i	126 mus.	later. 1 fea	piella V	flow /late at	10 ouel n	
	_	V				<i></i>	(Total Purg	e volume:	1050 mL

PROJECT NAME	: <u>Dissolved Phase</u>	GW Investigation	PR	OJECT NUMBER:	21562175	FIELD PE	RSONNEL: _	N. Sa	tun	
DATE: 08	12409	WEATHER	R:	s'F. Su	nny	,	<u> </u>			
MONITORING W	ELL ID:	GWP- 19-	-50		SAMPLE ID:	Gwp-	19-50			
Depth to LNAPL/D	(btoc): 52 (oc): 43·77 f	ft If Depth to Top ft Place Pump at: ft If Depth to Top ft Place Pump at: If Screen Lengt	of Screen is > Depth Total Well Depth – 0. of Screen is < Depth Total Well Depth – (0 h and/or water colum	e LNAPL or DNAPL):_ to Water AND Screen L 5 (Screen Length + DN to Water AND Water C 5 X Water Column Hei n height is < 4 ft, Place	APL Column Height) = Column Height and Scr ight + DNAPL Column e Pump at: Total Well [een Length are < 4ft, Height) =	ft btoc	Volume of Flow Through C Minimum Purge Volume = Ambient PID/FID Reading: Wellbore PID/FID Reading: Purge Water - Sa	(3 x Flow Cell Volu	maa
PURGE DATA	Pump Type:		ss Steel Submersible I	Pump Wattera						
Purge Volume (mL)	Time	Depth to Water (ft)	Color	Odor	рH	Temp (°C)	Cond. (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)
3000	6096	NP	Gray	None	6-30	19-28	1.068	, ,		-16.5
\$200	0912		10		6.34	19.30	1.064	1096.0	31.0	- 24.5
5400	0924				6.55	20.33	1.066	911.0	29.14	-47.6 - 45.8
7800	0936	1.	Cleanno		6.65	18.49	1.053	487.0	31·40 24·78	- 758 -403
7800	140	₩	C. Carrie	+	8 0 3	70 (0	1030	7,10	- 1 18	
						·				
	mater a	uality.	Non	STMBLE					-	
Start Time:	0850	Torrow	Elan	sed Time (min):	1:00		Mater C	Quality Meter ID: YSI 6820		
Start Time						1 -		<u>[]</u>	- A	
Stop Time:	0950		Avei	age Purge Rate (mL/m	nin): loom C	IMM	Date Ca	librated: 08 12	07	
SAMPLING DA Sample Date: Sample Method: VOA Vials, No He	Mensoon / Low Flow adspace (7) Initials:	r Waltera 18		ple Time:)950 n): looml	m	Lab Ana QA/QCs	alysis: VOC, 8VOC	Ď	
COMMENTS:	Initial flo Year high!	ow reduced	300 ml/ni 5. Issue 1 hr pug	to Clear with gand f	a Out silt	mside fly	snen.	fodued from CN CN COL	low ruli (anod floc e Volume: 1286	to tooulfue through

PROJECT NAME:	Dissolved Phase	GW Investigation	PROJ	ECT NUMBER:	21562175	FIELD PER	RSONNEL: _	N. Satam		
DATE:02	3/12/09	WEATHER:	N 85'F	, sunny						
MONITORING WE		WP-19-58			SAMPLE ID:	GWP-	19-58			
Total Well Depth (b Depth to Water (bto Depth to LNAPL/DN	1APL (btoc): 540 reen (btoc): 540 ft 56	ft If Depth to Top o it Place Pump at: T ft:—cif Depth to Top o ft Place Pump at: T If Screen Length	eight (do not include Li f Screen is > Depth to \ Total Well Depth - 0.5 (\$ f Screen is < Depth to Total Well Depth - (0.5) and/or water column h	Nater AND Screen Screen Length + DI Water AND Water (Water Column He eight is < 4 ft, Plac	Length is (4 feet, NAPL Column Height); Column Height and Sc eight + DNAPL Column te Pump at: Total Well	= 58:0 reen Length are < 4ft, Height) =	ft btocft btocft btocft btoc	Volume of Flow Through (Minimum Purge Volume = Ambient PID/FID Reading: Wellbore PID/FID Reading	(3 x Flow Cell Volu	
Purge Volume	Pump Type:	Depth to	a Steel Suprilersiale Puri		, . 	Temp	Cond.	Turbidity	DO	ORP
(mL)	Time	Water (ft)	Color	Odor	pH	(°C)	(mS/cm)	(NTUs)	(mg/L)	(mV)
2700	1024	NA	Gray-Braun	None	6.85	20.74	1.155	969.0	29.48	-6350GRM
3900 5100	1035	1 1	yhtq vay	- \	6.81	21.30	1.170	1122.0	30.16	-1180
6300	1100		\	- 	6.98	22.78	1.182		30.21	-128.0
7500	1112	*	Gerune	n 7	6.90	22.90	1.183		30.48	-127-0
Walti-Start Time: 10	Qualit	No		d Time (min):	1:00 hz		Water (Quality Meter ID: YSI 6820		
,						1			~	
Stop Time:	115		Averag	e Purge Rate (mL/ı	min):	im	Date Ca	alibrated: 08 12 10	<u></u>	
SAMPLING DA Sample Date: Sample Method: VOA Vials, No Hea	Monsoon / Lew Flow	V Walters		e Time: e Flow Rate (mL/m	11[5 nin): 100 w	Um	Lab An QA/QC	alysis: VOC, SVOC	N	
COMMENTS:	purse rate	N 300 ml/m	n to clean	of some	Punge water	very Silty	Redu	ed purge salt		000
		V .	<u> </u>					iotal Purg	e volume: T	PE OO mL

PROJECT NAME:	Dissolved Phase C	SW Investigation	PRO	JECT NUMBER:	21562175	FIELD PE	RSONNEL: _	N. Salam	<u> </u>	
DATE: 08	11209	WEATHER:		85 F, Sur	my					
MONITORING WE	LL ID: GW	P-20-50		· · ·	SAMPLE ID:	GWP-	20 - 530			
Total Well Depth (b Depth to Water (bto Depth to LNAPL/DN Depth to Top of Screen Length):	c): <u>#2.93</u> ft APL (btoc): <u>ft</u> reen (btoc): <u>78.0</u> ft	If Depth to Top o Place Pump at: T If Depth to Top o Place Pump at: T If Screen Length	f Screen is < Depth t otal Well Depth - (0.5	Water AND Screen (Screen Length + Di o Water AND Water 5 X Water Column He height is < 4 ft, Place	Length is (4 feet, NAPL Column Height) = Column Height and Scri eight + DNAPL Column ce Pump at: Total Well D	een Length are 〈 4ft, Helght) =	ft btoc	Volume of Flow Through C Minimum Purge Volume = Ambient PID/FID Reading: Wellbore PID/FID Reading:	(3 x Flow Cell Volum	mL ne): <u>3,450</u> mL ppm ppm
PURGE DATA Purge Volume	Pump Type:	Depth to	s Steel Submersible H	HAR YOUNGE		Temp	Cond.	Turbidity	DO	ORP
(mL)	Time	Water (ft)	Color	Odor	pH	(°C)	(mS/cm)	(NTUs)	(mg/L)	(mV) -22.0
3600 4800	1236	NA	Gray-Brown	None	6.36	23.46	1.419	9360	28.04	-46.2
6000	1248			1	6.51	25.99	1.450	1116.0	32.78	- (9·D
7200	1312		4		6.36	21.98	1.438	8)0-0	33·78 29·02	-66.0
8400	1324	-	cleaning		6.30	19.84	1.406	416.2	28.45	-55.0
	, i									
	when	quality	Alot	SARLE						
	W HICK	quality	1401	311800						
Start Time:	224		Elaps	sed Time (min):	1:00		_ Water Q	Quality Meter ID: YSI 6820		
Stop Time:\	325 <u> </u>		Avera	age Purge Rate (mL/	(min): 100ml)	<u> </u>	Date Ca	ilibrated: 08 1	2/09	
SAMPLING DA' Sample Date: Sample Method:	TA 08/12/09 Monecon / Low Flow)	Watterg		ple Time: ple Flow Rate (mL/n	\325	l) my	Lab An	alysis: VOC, SVOC Samples: Now	· lb	
•	dspace Initials:	Marine		\\\		(1000)		1,000		
VUA VIAIS, NO HEA	mahana 🖂 iliitiais: —	Ns								
COMMENTS:	ilial muy 20	et Noone	Prince to hell	schar Lan	d/sill-how the	Sum -	Tubig v	of connected	to flow to	luegh (ell.
Pm	r ralt reduc	ud to 100.	when alter	10 miles -	Tiland Maria	celed to Ma	ow thungs	r Coll. Unis	helly high	Do and
	willy reade	ys after	30 nuis d	Duyp.	Tub Welu v	i tubus	appeas		e Volume:	
Clia	ve. Cleaned	W silt sa	id deposit	d while	The Jour J	nough 10	cey!		•	

DATE 0.8 1.9 0	PROJECT NAME	: Dissolved Phas	e GW Investigation	PRC	JECT NUMBER:	21562175	FIELD PE	RSONNEL: _	N-Salam		
MONITORING WELL ID: GWP - 20 - 58 SAMPLE ID: GWP - 20 - 58	DATE: 08	12/09	WEATHER	: N 85	F, Sur	wy ·					
Well Dameleric D - 1 In Total Will Depth 1000 60 Co.	MONITORING WI	ELL ID: G			•	•	a.wp -	20-58			
Purge Volume	Well Diameter): Total Well Depth (I Depth to Water (bto Depth to LNAPL/D! Depth to Top of So Screen Length):	otoc): 60 oc): 43.28 NAPL (btoc): - creen (btoc): 56.0	it Depth to Top of Place Pump at: if Depth to Top of Place Pump at: If Screen Length	of Screen is > Depth to Total Well Depth – 0.5 of Screen is < Depth t Total Well Depth – (0.5 n and/or water column	(Screen Length + DN o Water AND Water C 5 X Water Column He height is < 4 ft, Place	Length is (4 feet, NAPL Column Height) Column Height and Si ight + DNAPL Colum	= 58 creen Length are < 4ft, n Height) = —	ft btoc	Minimum Purge Volume = Ambient PID/FID Reading:	(3 x Flow Cell Volum	ne): <u>3,450</u> mL ppm
Color Colo		Pump Type:		ss Steel Submersible P	imp Walling	·	. Tauan [Oand	Tout late		000
300 190 180		Time		Color	Odor	рН					
A200											
\$400 124 1621 16				Light hay					 		-72.0
Start Time: 1350 Elapsed Time (min): 1210 Date Calibrated: 08 12 09	5400			hight gray	,	6.58					
Start Time: 1350 Start Time: 1350 Start Time: 1500 SAMPLING DATA Sample Date: 08 1209 Sample Method: Manescent Low Flow - Walter Sample Flow Rate (mL/min): 100 mL/m VOA Vials, No Headspace I initials: 175 COMMENTS: Ruted pruy rate, 300 mL/m: Pruy water very subty flowed to pruy for 100 min for Severate Clear of Reduced flow rate to 100 mL/m; Survey cally flow through cell, subt deposit		1436		Clearity		W	21.24	1.639			
Start Time: 1350 Elapsed Time (min): 1:10 Water Quality Meter ID: YSI 6820 Stop Time: 1500 Average Purge Rate (mL/min): 100 mL/m Date Calibrated: 08/12/09 SAMPLING DATA Sample Date: 08/12/09 Sample Time: 1500 Sample Method: Monsoon Llow Flow- [Nattora Sample Flow Rate (mL/min): 100 mL/my QA/QCSamples: Now VOA Vials, No Headspace I Initials: 745 COMMENTS: Turtid pury rath 500 mL/m Pury (water very Sulty Albourd to pury for 10 min for Sevents Clear Af Radyurd How bottom of flow shouph (all)		1500 (3)(12-	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\					1.638			<u> </u>
Start Time: 1350 Stop Time: 1500 Average Purge Rate (mL/min): 100 mL/m Date Calibrated: 03 12 09 SAMPLING DATA Sample Date: 08 12 09 Sample Time: 1500 Lab Analysis: VOC, SVOC N.S Sample Method: Monsoon/Low Flow- Waltera VOA Vials, No Headspace I initials: MS COMMENTS: Tulid pure rate 300 ml/m. Pure water very silty flowed to pure for Severate Clear Reduced from Job ml/m. Flow Do after 30 min pure. Clear flow through (ell, sut deposit	40000	1300	NA			6 12+	21.42	1.6.59	123.5	26.40	- 87.0
Start Time: 1350 Stop Time: 1500 Average Purge Rate (mL/min): 100 mL/m Date Calibrated: 03 12 09 SAMPLING DATA Sample Date: 08 12 09 Sample Time: 1500 Lab Analysis: VOC, SVOC N.S Sample Method: Monsoon/Low Flow- Waltura Sample Flow Rate (mL/min): 100 mL/mm QA/QCSamples: Now VOA Vials, No Headspace I initials: MS COMMENTS: Trutal pure rate 300 ml/mi. Pure water very sulty flowed to pure for some for severate clear Reduced from bottom of the strength collines. Some flow shrough coll.		1.100		Nots	TARIE						
SAMPLING DATA Sample Date: 08 2009 Sample Time: 1500 Sample Method: Monsoon/Low Flow - Waltera Sample Flow Rate (mL/min): 100 mL/mm QA/QCSamples: No use VOA Vials, No Headspace Initials: NS COMMENTS: United program act 300 ml/mm. Program water very silly fllowed to program for lo min for severate Clear Redund flow 100 ml/mm. High Do after 30 mins program (ell, sult deposit			of many	133, 3							
SAMPLING DATA Sample Date: 08/12/09 Sample Time: 1500 Lab Analysis: VOC, SVOC N.S. Sample Method: Monsoon/Low Flow - Waltera Sample Flow Rate (mL/min): 100ml/nm QA/QCSamples: Now VOA Vials, No Headspace I initials: ys 5 COMMENTS: Cultal pure rate 300 ul/nu. Pure water very Silty. Allowed to pure for loning for Sevento Clear Reduced flow left to 100 ul/nu. High Do after 30 news pure. Cleared flow through Cell, Bull deposit	Start Time:	1350		Elaps	ed Time (min):	1:10		Water C	Quality Meter ID: YSI 6820		
Sample Date: 08/12/09 Sample Time: 1500 Sample Method: Monsoon/Low Flow Wattera VOA Vials, No Headspace I initials: W5 COMMENTS: Trulial progratuate 300 will me. Progratuate very Silty of thought to prograte to min for screents clear Reduced flow left to 100 mil from the Surents clear flow flow through cell, sult deposit	Stop Time:	1500		Avera	ge Purge Rate (mL/m	nin): 100 m	6/m	Date Ca	llibrated: 08 12 0	9	
Clave flow shough all 10 1447 Total Purge Volume: 9,000 mL	Sample Date: 08/12/09 Sample Time: 1500 Sample Method: Monsoon/Low Flow Waltera Sample Flow Rate (mL/min): 100 ml/mm VOA Vials, No Headspace I initials: W5 COMMENTS: Tulial pure rate 300 ul/mi. Pure water very Silby flow Reduced from 100 ml/mi. High Do after 30 mins pure processing of the bottom of the spream (all).										to Clear But deposit
	Cleans	from the	up all vo	1447					Total Purg	e Volume:	000 mL

PROJECT NAME:	Dissolved Phase C	SW Investigation		PROJECT NUMBER:	21562175	FIELD P	ERSONNEL: _	Mike Corbe	tt, Kelly	Hurst
DATE: 9/	3/09	WEATHER	: <u>Sun</u>	ny, 70s		х.				
MONITORING WE	LL ID: G	WP-21-3			SAMPLE ID:	GWP-2	1-34			
INITIAL DATA Well Diameter): Total Well Depth (bt Depth to Water (btot Depth to LNAPL/DN Depth to Top of Screen Length): PURGE DATA	c): 31.50 ft APL (btoc): ft reen (btoc): 32.00 ft	if Depth to Top Place Pump at: if Depth to Top Place Pump at: if Screen Lengt	of Screen is > Dep Total Well Depth - of Screen is < De Total Well Depth -	iude LNAPL or DNAPL);_ oth to Water AND Screen - 0.5 (Screen Length + Di pth to Water AND Water - (0.5 X Water Column He dumn height is < 4 ft, Place	Length is (4 feet, NAPL Column Height Column Height and S eight + DNAPL Colum	creen Length are < 4ft	ft btoc ft btoc t, ft btoc ft btoc	Volume of Flow Through Minimum Purge Volume Ambient PID/FID Readin Wellbore PID/FID Readin	a = (3 x Flow Cell V ng:	mL /olume): <u>3,450</u> ml ppr ppr
Purge Volume	Pump Type:	Depth to	sa oleal oddinaiair	NO POMP	·	Temp	Cond.	Turbidity	DO	ORP
(mL)	Time	Water (ft)	Color	Odor	pH	(°C)	(mS/cm)	(NTUs)	(mg/L)	(mV)
6.000 *	1000	N/A	light brown	slight hydrocarb		18.82	1.484	174.1	1.75	-106.7
7, 200	1004	7,	1	7	6.28	18.82	1.485	/38.8	1.14	-109.3
8,400	1008				6.27	18.83	1.485	106.1	1.15	-110.0
9,600	1012			hene	6.27	18.80	1.484	76.5	1.39	-//2.6
10,800	1016				6.27	18.81	1.485	76.2	1.37	-//3.4
12,000	1020				6. 27	18.85	1.487	76.7	1.45	-114-3
13.200	1024				6.26	18.78	1.487	69.8	1.53	-115.1
14,400	1028				6.26	18.72	1.487	70.6	1,53	-115.5
15,600	1032		V		6.26	18.75	1.487	67.7	1.49	-115.8
16,800	1036		Colorless		6.26	18.80	1.488	60.5	1.52	-116.0
000.8	1040		1		6.26	18.98	1.488	54.0	1.60	-116.3
19.200	1.044				6.26	19.03	1.489	53.5	1,63	-116.3
20,400	1048				6.26	19.20	1.490	52.4	1.50	-116.5
21,600	1052				6.26	19.33	1.491	53.9	1.62	-116.6
22,800	1056				6.26	19.51	1.493	55.5	1.51	-116.8
24. 00 0	1100	V	1		6.26	19.61	1.496	57.6	1.41	-117.0
Start Time:	1000			lapsed Time (min):	60 mi	n		Quality Meter ID: YSI 682	10	
Stop Time:	1100		_	verage Purge Rate (mL/r	- 4 0			ulibrated: 9/3/0		
SAMPLING DAT										
Sample Date:	9/3/	09		Sample Time:	1103	<u> </u>	Lab An	alysis: VOC, SVOC		
Sample Method:	Monsoon / Low Flow			Sample Flow Rate (mL/m	nin): 300		QA/QC	Samples: EB bef	fore this so	mple -
VOA Vials, No Head	dapace 🖾 Initials:	_mc						6	fore this so WP-21-34	-, 1ЕВ
COMMENTS:	aking reading	s aftn p	wrg. wate	er became so	divent-free.					
	<u> </u>	<u></u>						7-6-15-	V-b	
				· ·		.		Total Pul	rge Volume:	24,000 mL

PROJECT NAME:	Dissolved Phase G	W Investigation	PR	OJECT NUMBER:	21562175	FIELD PE	ERSONNEL:	Mike Corbett	, Kelly Hu	vst_
DATE:9	/3/09	WEATHER	: Swany.	80°						
MONITORING WE	LL ID: GW	P-21-42			SAMPLE ID:	GWP-2	1-42			
		If Depth to Top Place Pump at: If Depth to Top Place Pump at:	of Screen is > Depth Total Well Depth – 6, of Screen is < Depth Total Well Depth – (0	e LNAPL or DNAPL):_ to Water AND Screen 5 (Screen Length + DN to Water AND Water (.5 X Water Column He n height is < 4 ft, Plac	Length is (4 feet, VAPL Column Height Column Height and & Light + DNAPL Colum	Screen Length are < 4ft nn Height) =	M ft bloc A	olume of Flow Through Inimum Purge Volume mblent PID/FID Readin ellbore PID/FID Readin	= (3 x Flow Cell V	mL olume): <u>3,450</u> mi ppn pp
PURGE DATA	Pump Type:	Monsoon Stainle	ss Steel Submersible (Pump				<u> </u>		
Purge Volume		Depth to				Temp	Cond.	Turbidity	DO	ORP
(mL)	Time	Water (ft)	Color	Odor	pH	(°C)	(mS/cm)	(NTUs)	(mg/L)	(mV)
4,500*	1157	N/A	light brown	hydrocarbon	6.52	20.00	1.546	377.4	0.35	-1/2./
6.900	1156	- 		 	6.53	30.07	1.543	401.3	0.7/	-115.4 66 -122.1
8:100	1200	_ +	 -	 	6.51	20.15	1.537	296.0 280.1		-122.4
9,300	1204	 -	 	 	6.51	20.10	1.532	276.2	1.76	-/22.6
10 000	1212	- 	 	 	6,51	19.96	1.53/	286.4	(.8)	-/23. 2
10,500	1216			 	6.51	19.90	1.529	278.5	1.88	-123.7
12,900					6,51	19.81	1.527	260.4	2.00	-124.4
14.100	1930				6.57	19.83	1.525	239.4	2.20	-124.6
(5,300	1328		! - !	 	6.50	14.80	1.524	2/8.3	2.13	-/24.9
16,500	1232			1 — 1	6.50	19.77	1.523	202.6	2.09	-125.0
17,700	1236			†	6.50	19.80	1.523	197.7	2.34	-125.1
18,900	1240				6.50	19.81	1.523	183.1	2.66	-125.0
20,100	1244				6.50	19.87	1,523	179.4	2.53	-125.0
21.300	1248	1/	1/	1	6.49	19.92	1.525	159.6	1.90	-125.1
22,500	(252-	<u> </u>		V	6.49	19.88	1.524	164.9	2.38	-125.0
Start Time:	1152		Elap	sed Time (min):	60			ality Meter ID: YSI 682	0	
Stop Time:	1252		Ave	rage Purge Rate (mL/n	nin):300)	Date Callb	4/54		
SAMPLING DA'Sample Date: Sample Method: VOA Vials, No Hea	TA 9/3/09 Monsoon / Low Flow	MC	Sam Sam	nple Time: nple Flow Rate (mL/m)	/3∞ in):	300	Lab Analy QA/QCSar	sis: VOC, SVOC		P-21-42D
								Total Pur	rge Volume: 2	2,500 mL
								iolairui	de voluille.	-tage

Monitoring Well

Development Sheets

GROUNDWATER DEVELOPMENT/GAMPLING DATA SHEET

PROJECT NAME:_	Dissolved Phase (GW Investigation		·	PROJ	ECT NUMBER: 21	562175			
DATE:10_0	6109					. ·				
WEATHER:	V60'F	tain /s!	roueus							
FIELD PERSONNE		Salán	and A.	Browky		,				
MONITORING WEL										
INITIAL DATA			•		The article	1				
Well Diameter: 5 2	in.		€ ··· Gai	ilons/Lin.Ft ¹ : 0-163			Ambient PII	D/FID Reading:	٥٠)	ppm
Total Depth of Well:	N→1	.7≥ # Boltina	10. 1		1.20				778	ppm
Depth to Water:			Vi Mir	Durge Volume: 5 (1)	July - E	ogallor 35	lumas) I NADI / DA	IADI -		ppiii
Height of Water Colu			. IMI	i. Of Water Column: ol 9 water weed we con. Purge Volume: 5 (1- 24)	0 + 8.53	= 268.53	gal	AFL		
10.163 gallons/ft for 2	inch well, 0.653 gallo	ns/ft for 4-inch well	De	parto rop or screen	43		"			
PURGE DATA	Purge Method: _	Hurrican						. !		
Purge Volume		Depth to		<u> </u>		Temp	Cond.	Turbidity	DO	ORP
(gals) 26	Time	Water (ft) 4 2 · 33	Color	Odor hydrocarbet	pH 7:19	18.69	(μmhos/cm)	(NTUs)	(mg/l) 11: 12	(mv) - 41.9
28 30	14:37		1	Jike	6.89	18.22	1.281		8.69	- 30.5
32	1439		1		6.86	18.12	1.280		8·67 1·46	-21.5
34	114 43	7			6.85	18.09	1.280		7.42	-18.8
34	1445	<u> </u>	<u> </u>	* · · · · · · · · · · · · · · · · · · ·	6.851	18.08	1.275	-	7.40	_16.3
,										
										-
Start Time:	227	Pu	rge Ston Time		Flane	ed Time:		Total Volume P	Juraod:	gallons
									10/06/09	
Average Purge Rate	(gallons/min):	garrim we	eli volumes Purgea:		water	Quality Meter ID:		Calibrated on:	1010010	
SAMPLING DATA	4		_							\ /
Sampling Method:			_		_					•
Sample Date:			Sa	mple Time:			Analysis:			
COMMENTS:						A 1-				
<u>walin</u>	Volume	ralin add	ud dum	y duthiy.	<u>250 gailo</u>	us of mali	mill be	purge me	k addul	in b
					-					
						· · · · · · · · · · · · · · · · · · ·				

GROUNDWATER DEVELOPMENT/SAMPLING DATA SHEET

PROJECT NAME: Dissolved Phase GW	Investigation			PROJEC	T NUMBER: 2156	2175		·	
DATE: 10/12/04					· · ·				
WEATHER: Cloudy/	rainy	50°F						<u></u> -	
	- 01	and	Nathan						
MONITORING WELL ID: MW-	7 (cor	tin vatio	on of	10/6/89	De velu	opment)			
INITIAL DATA				<u>`</u>					
Well Diameter: 🔍 In.		Gallon	s/Lin.Ft1: <u>0 .163</u>)		Ambient PID/F	FID Reading:		ppm
Total Depth of Well: ~ 52.78	ft	Vol. Of	Water Column:	1.70	ga	lons Wellbore PID/	FID Reading:		ppm
Depth to Water: ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	ft	Min. P	urge Volume: (See	sheet 1	galions (3 volu	mes) LNAPL/DNA	PL		ft
Height of Water Column: 10.47 1 0.163 gallons/ft for 2 inch well, 0.653 gallons	, ft /ft for 4-inch well	Depth	to Top of Screen:	<u>ч</u> 3		<u> f</u> t			
PURGE DATA Purge Method:		· 						-	
Purge Volume 4 1 C (gals) Time	Depth to Water (ft)	Color	Odor yes	На	Temp (°C)	Cond. (µmhos/cm)	Turbidity (NTUs)	DO (mg/l)	ORP * (mv)
6. 915		cloudy	Any discourse	6.79	15.71	1.734		1184	-107.5
30 935		cleat	<u> </u>	6.89	17.01	0.664		711	138.7
42 445		-	- y'es	6,60	17.55	1.289		2,51	-143.4
5'4 965				6.61	17.71	1, 285	_	3.01	-150,0
78 1015				6171	17.11	(, 305		3.34	-169.0
90 1028				6,70	17.45	1.284		2.27	-1469
102 1035				6.71	17,47	1,289		2.86	-187.0
114 1045				6,69	17.31	1,304		3.19	-140.6
Start Time: 910	Purg	e Stop Time:	1225	Elapsed	Time:		Total Volume P	urged:	gallons
Average Purge Rate (gallons/min):	Well	Volumes Purged:		Water Qu	uality Meter ID:		Calibrated on:_		
SAMPLING DATA Sampling Method:							,		
Sample Date:		Samp	ele Time:			Analysis:			
comments:	itional a	222 gal	Twise.	ach S	well vo	lunes p	er wate	r add	ed
				·					
									

Pg 1 0/2

GROUNDWATER DEVELOPMENT/SAMPLING-DATA SHEET

FIELD PERSONNE MONITORING WE INITIAL DATA		Braille		them He N						
Well Diameter: Total Depth of Well: Depth to Water: Height of Water Coll 1 0.163 gallons/ft for	<u> </u>	ft ft	Min.	ons/Lin.Ft¹: 0 ·1. Of Water Column: Purge Volume: h to Top of Screen:	_		Illons Wellbore P	ID/FID Reading: ID/FID Reading: NAPL		ppm ppm ft
PURGE DATA Purge Method: Purge Volume (gals)	Time	Depth to Water (ft)	Color	Odor	pH	Temp (°C)	Cond.	DoTurbidity wy/L	DO (mg/l)	ORP (mv)
126	1055	NH	Clear	Yes	6.66	13.3(.	1-294	2.70	2-	-1304
138	1105)		7 -7	6.72	17.06.63	1-301	3.00		DB +24-7 -291.
150	1305				6.60	17-80	1-293	2.79		-173.4
162	1 125		 		6.64	17.88	1-302	1.66		- 227.0
174	1135		1 1		6.57	18.14	1.302	3-55		~223.4
198	1145		 		6.59	18.17	1.310	2.73		-248.7
148	1155			 	6.46	18-11	1-307	2.54	_	- 234-0
310	1205	 	 	 	6.46	18·Q),	1.301	2.39 2.30		- 235.6
232 234	1213	-		4	6.56	13.96	1-307	1.74		- 245.0
<u> </u>	1225	<u> </u>			647	11-77	1-31)	1 (37		-243.0
Start Time: Average Purge Rate	gallons/min):	Pu	urge Stop Time: ell Volumes Purged:_	_	Elapsed 1 Water Qu	Fime:ality Meter ID:		Total Volume Pu		
SAMPLING DAT Sampling Method:	·A									
Sample Date:			Sam	ple Time:			Analysis:_			
COMMENTS:										

Pg 2g 2

GROUNDWATER DEVELOPMENT/SAMPLING DATA SHEET

PROJECT NAME:	Dissolved Phase C	W Investigation		<u> </u>	PROJE	CT NUMBER: 2156	2175			
DATE:	0 06 109	,		<u> </u>						·
WEATHER:	N 60'F	Rain							<u> </u>	
FIELD PERSONNE	EL:N	Salam	and	D. Browke						
MONITORING WE	LL ID:	M M -8		<u>.</u>						
INITIAL DATA										
Well Diameter:	in.			Gallons/Lin.Ft1:0	163		Ambient PID/	/FID Reading:	0.2	ppm
Total Depth of Well:	43.59	ft (Bottom	Haved	Vol. Of Water Column:	1.69	ga	llons Wellbore PID	/FID Reading:	975	ppm
Depth to Water:	33 20	ft		Min. Purge Volume:	8.4	gallons &volu	mes) LNAPL/DNA	APL	<u>-</u>	ft
Height of Water Col	umn: 10.39 2 inch well, 0.653 gallo	ft ns/ft for 4-inch well		Depth to Top of Screen:_	3305 X	t bac	ft			
PURGE DATA	Purge Method: _	Hilro	ciane	Pump						
Purge Volume	,	Depth to Water (h)				Temp	Cond.	Turbidity	DO	ORP
(gals)	Time Loi4	water 183		gdor	1.25	(°C)	(μmhos/cm) 2-892	(NTUs)	(mg/l) 3•46	(mv) 157:0
10	106	33.33	Property	A MACADOLPO	7 -	17-60	2.905		2.91	117-0
12	1018 Hussed	3333 rladius	Clear	attempting to	o surgen	17.65	2.930	1	2,93	76.7
	17013360	Jeanney		attempting of	o sugen	=1)	<u> </u>		+	
422	1028	33.33		170.	6.30	17.65	2,463		4,75	7,9
38	1034	33 33			6.32	7.88	2,973		3,45	-2,6
30	1036	33.37			6,30	17.83	3,001		2.54	-23.9
		5.7 5				11100	3 (00		+	
Start Time:	1006	Pui	ge Stop Time	1036	Elapsed	d Time: 0.5	tre 30 m	LUG Total Volume	e Purged:	gallons
Average Purge Rate	e (gallons/min):	1galmin we	li Volumes Pu	urged:15	Water (Quality Meter ID:		Calibrated or	n: 10106109	
SAMPLING DAT Sampling Method:	TA.	:					V 15.4		2	
Sample Date:				Sample Time:		<u> </u>	Analysis:			
COMMENTS:	ge Walin	1 1		ear & very &	eulty at 4	m trui of	starting	puye		
	Total W	ere duphi -	43.6	0						
	healin				1.15	\ 0.	<u> </u>		15.5	
	stopped p	rumping o	n 10/6/0	9 (will remo	ve addition	nal 55gal	that were	added dusid	ig drilling le	nter'

10/9/09 MW-8
PURGE DATA CONTINUED:

Purge Volume		Depth to				Temp	Cond.	Turbidity	DO	ORP	
(mL)	Time_	Water (ft)	Color	Odor	· Ha	(°C)	(mS/cm)	(NTUs)	(mg/L)	(mV)	
(mL)	Time \\\ \S\B		Clear	none	7.39	(°C) 16.28	(mS/cm)		(mg/L) 3.7.2	- 380,0	
में	1361		_	V70-1	6.91	17,19	2 737		3.37	-372,9	
13 6	1307		_	-	6.46	6.70	2603	-	3.01	-369.5	
18,3	1310			_	8.54	17,35	3.785		3 2H	-369.2	
32.5	1313		_	_	4.52	17.30	2 705	-	2.89	-366,2	
27,0	1216		-		6.47	17.54	2.796	*	3.00	- 365,2	
31,5	1319		-		6.41	16.55	2.809	,_	1,67	- 365,2 - 3860 - 357,2	
26	1333		_	~	6.45	1742	3.758	~~	2.68	· 7(7)	
310.5	1325	-			6 46	17.04	2734		3.32	~ \$W2.7	
45	1328		-		6142	17.54	2.739	_	2.58	7343.0	
49,5	1331			-	6,43	17, 75	2 733	_	2.72	218.7	37.4
54.	1334			-	6.48	17,46	2.72H		3,48	7214.7	
58.5	1337	_	a-	_	6.40	17.38	2,72H 2,735		2,27	-258.2	
7013					6.10	11.5	~		1 2 7	138,57	
					-				_		
									 		
										 	
· ·							-	_	_		
			 								
			 								
	_			_						 i	
										 	
			 	 						 	
					 						
			 						+	 	
											
											
+										-	
H			 							 	
-										ļ	
					-				+		
					<u> </u>						
				ļ							

Sheet - for extra amount taken out due to drillers water added

Monitoring Well Sampling Sheets

PROJECT NAME:	Dissolved Phase	GW Investigation	PRO	OJECT NUMBER:	21562175	FIELD PER	SONNEL:	N Salaro)	
DATE:	10/23/09	WEATHER:	~ 5C	OF, Slig	jur Rain		·			
MONITORING WE	LL ID:	NW-87	and we conserve the process of the same,	an Greek and Argenter State of the Control of the C	SAMPLE ID:	MW-	-7-102309	in the second of the second se		there are a realized to the first of the teachers where the
Depth to Water (bto Depth to LNAPL/DN Depth to Top of Sc Screen Length):	APL (btoc): ————————————————————————————————————	if Depth to Top of Place Pump at: To if Depth to Top of Place Pump at: To if Screen Length a	Screen is > Depth (ptal Well Depth – 0.4 Screen is < Depth ptal Well Depth – (0 and/or water colum	to Water AND Screen L 5 (Screen Length + DN to Water AND Water C 5 X Water Column Hel n helght is < 4 ft, Place	.ength is (4 feet, APL Column Height) : olumn Height and Sc ght + DNAPL Column	reen Length are < 4ft, Height) =	MI ft bloc Ar W	ilume of Flow Through (nimum Purge Volume = nbient PiD/FiD Reading: elibore PiD/FiD Reading	(3 x Flow Cell Vol.	
PURGE DATA Purge Volume	Pump Type:	Depth to	Steel Submersible F	ump		Temp	Cond.	Turbidity	DO	ORP
(mL)	Time	Water (ft)	Color	Odor	рH	(°C)	(mS/cm)	(NTUS)	(mg/L)	(mV)
5500	0945	42.67	Clean	hudrocaubon	6.53	16.78	1.093	45.0	5.44	1-49.6
6500	0950	NET		4	6.57	16-93	1.087	59.0	6.21	-61.5
7500	0955	neasured			6.59	16.99	1.090	50.0	6.63	-65.9
8500	0000			 	661	17-31	1.095	38.0	7.09	-72-2
9500	1005			1	6.62	17.22	1.099	34.0	7.18	- 75.6
11000	1015	- - 		 	662	17.12	1098	31.0	7-22	-76.2
12000	1020				6.62	16.91	1.095	29.0	.7.17	- 76·F
13000	1030	4		1	6.62	16.93	1.093	25.8	7.14	- 77.0
Start Time:	715		Flan	sed Time (min):	60 m	ωνα	Water Our	lity Meter ID: YSI 6820		
					Thirial		Atatel of		1	
Stop Time:	1030	· · · · · · · · · · · · · · · · · · ·	Ave	rage Purge Rate (mL/m	11n): 2725 9	milus	Date Callb	rated:	5109	
SAMPLING DA	TA , ,	P				y rate zoone	N 4			perconductive and the second set your
Sample Date:	10 23 09		San	ıple Time:	1030		Lab Analy	sis: VOC, SVOC		
Sample Method:	Monsoon / Low Flow	<u>. </u>	San	nple Flow Rate (mL/ml	n): 200	whir	QA/QCSas	mples:		
VOA Vials, No Hea	depace 🖾 Initials:	No								
	stopped - turn tu at	when di penul proper he soft	sconnected (materile) back to	@ 0928 vel metri) m penul	Restar mable to probe was	gauge ma	al- 0935 lin. Pri	pe galiny	ate 200 falle to	

PROJECT NAME:	Dissolved Phas	se GW Investigation	PR	ROJECT NUMBER:	21562175	FIELD PE	RSONNEL:	14 Corbett	N. Sale	w .
DATE: 1012	2/09	WEATHER	~	or, Rai	ŵ					
MONITORING WE	LL ID:	MW-8	ere ere i desta este ere ere ere processe e des	7	SAMPLE ID:	MW-8	8-102209		antidistrigen, elektrisch state et wert gest zeit geben eine de	Market Company of the Control of the
	c): 10·20 APL (btoc): reen (btoc): 33·5	_ft If Depth to Top of the Place Pump at: _ft If Depth to Top of the Place Pump at: _ft Place Pump at: _ft Screen Length	of Screen is > Depth Fotal Well Depth — 0 of Screen is < Depth Total Well Depth — ()	to Water AND Screen i.5 (Screen Length + DI it to Water AND Water 0.5 X Water Column He nn height is < 4 ft, Plac Iwka	Length is (4 feet, NAPL Column Height) = Column Height and Scr eight + DNAPL Column te Pump at: Total Well I	een Length are < 4ft, Height) =	ft btoc A	olume of Flow Through linimum Purge Volume Imblent PID/FID Reading Velibore PID/FID Readin	□ (3 x Flow Cell Vol 3: ② 3	mL ume): <u>3.450</u> mL ppm ppm
Purge Volume	t ump 13per	Depth to		T SUID		Temp	Cond.	Turbidity	DO	ORP
(mL)	Time	Water (ft)	Color	Odor	∠ pH	(°C)	(mS/cm)	(NTUs)	(mg/L)	(mV)
3000	1430	NH 10-20-	Clear	Hydrocarbon	6.69	17-78	1.736	21.5	3.54	-47.0
40.00	1435	33.0	1		63	17.83	1.7-52	20.0	3.04	-57-0
5000	1440	33.0			6.65	17-87	1-778	13.0	2.89	-60.0
6000	1445	33-0			6.65	17.89	1.804	4.7	3.23	- 63.0
2000 R000	1450	33.0 33.0		 	6.64	17.90 17.98	1.831	40		-67.0
9000	1500	33.0			6-64	18.04	1:838	2.9	3 24	-69.7
9000	1900	2 3 0		 -	6.0T	18	1.030	 		-011
Start Time: \A	20		Ela	psed Time (min):	45 mis		Water Qu	ality Meter ID: YSI 6820)	
Stop Time:	1505	saliyadiyayina şalakdarıb. Dərrəyiyini daratırını		erage Purge Rate (mL/i		myim - Ini	-			ne dan pakainan e a najarah ne anakainan a
	(0 (2 2)0 G Monsoon / Low Flo Idspace 답 Initials:	nt.	Sal	mple Time: 150 mple Flow Rate (mL/m	00 nn): 200	nt I nn	Lab Anal	mples: Fiel Mu	d Dup 1-8-10220	9 D
Initial	pry ali	300ml/m	tes Adjus	ted from	to 200 nr 1 n	e office	epsonony	draw dour		
-				,				Total Pur	ge Volume:	mL.

Monitoring Wells

MW-7

MW-8

Vapor Monitoring Points

VMP-1

VMP-2

VMP-3

VMP-4

VMP-5

VMP-6

VMP-7

VMP-8

VMP-9

VMP-10

VMP-11

VMP-12

VMP-13

VMP-14

VMP-15

VMP-16

Monitoring Well Construction Diagrams

Monitoring Well Installation Details Flush Mount Monitoring Well Construction Diagram



Project:	Roxana Dissolved Phase Investigation	n		Well ID:	MW-7
Project Location:	Roxana, IL	Date Started:	7/9/2009		
Well Location:	Roxana, IL	Date Completed:	7/9/2009	Boring ID:	B-7
Drilling Contractors	Roberts Environmental Drilling, Inc	Time Seal Set:	1215	Northing:	792024.62
Driller:	P. Seymour	Type of Rig:	CME-75	Easting:	2322181.25
Consulting Firm:	URS Corporation	Drilling Method:	Hollow Stem Auger	Elevation Datum:	443.46
Geologist:	M. Corbett / W. Pennington	Completion Zone:	Main Stratum		

Depths (ft bgs) Elevations (ft) Ground Elevation: 443.46 Depth of Riser Below Ground: 0.36 443.10 Elevation of Top of Riser Pipe: 0.36 ID/Type of Surface Casing: 8" Flush Mount Type of Surface Seal: Concrete Bottom of Surface Seal: 1.00 442.46 **Boring Diameter** Groundwater (after completion): 43.01 400.45 6 in Type of Riser Pipe: Schedule 40 PVC Riser Diameter: 2.00 in Type of Backfill: High Solids Bentonite Grout Top of Seal: 38.28 405.18 Type of Seal: Bentonite Chips 402.18 Top of Filter Pack 41.28 Top of Screen 43.28 400.18 Type of Filter Pack: ANSI/NSF Quartz Sand Type of Screen: Schedule 40 PVC Screen Diameter 2.00 in 0.01 in Screen Slot Size: Bottom of Screen: 53.28 390.18 Bottom of Blank Casing: 53.28 390.18 Backfill/Seal Below Well: 53.28 390.18 Type of Backfill/Seal Below Well: Native soil (cave in) grading to ANSI/NSF Quartz Sand Bottom of Boring:

Monitoring Well Installation Details Flush Mount Monitoring Well Construction Diagram

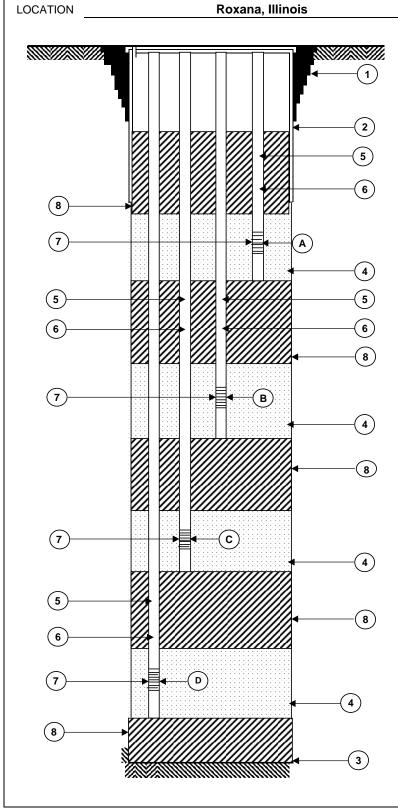


Project:	Roxana Dissolved Phase Investigation	a Dissolved Phase Investigation				
Project Location:	Roxana, IL	Date Started:	7/6/200	9		
Well Location:	Roxana, IL	Date Completed:	7/6/200	9 Boring ID:	B-8	
Drilling Contractor	: Roberts Environmental Drilling, Inc	Time Seal Set:	161:	5 Northing:	797930.86	
Driller:	P. Seymour	Type of Rig:	CME-55	Easting:	2321984.79	
Consulting Firm:	URS Corporation	Drilling Method:	Hollow Stem Auger	Elevation Datum	434.40	
Geologist:	W. Pennington / C. Smith	Completion Zone:	Main Stratum			

Depths (ft bgs) Elevations (ft) Ground Elevation: 434.40 Depth of Riser Below Ground: 0.29 Elevation of Top of Riser Pipe: 0.29 434.11 ID/Type of Surface Casing: 8" Flush Mount Type of Surface Seal: Concrete Bottom of Surface Seal: 1.00 433.40 Boring Diameter Groundwater (after completion): 403.91 6 in 30.49 Type of Riser Pipe: Schedule 40 PVC Riser Diameter: 2.00 in Type of Backfill: High Solids Bentonite Grout Top of Seal: 27.60 406.80 Type of Seal: Bentonite Chips 403.30 Top of Filter Pack 31.10 Top of Screen 33.60 400.80 Type of Filter Pack: ANSI/NSF Quartz Sand Type of Screen: Schedule 40 PVC Screen Diameter 2.00 in 0.01 in Screen Slot Size: Bottom of Screen: 43.60 390.80 Bottom of Blank Casing: 390.80 43.60 Backfill/Seal Below Well: 43.60 390.80 Type of Backfill/Seal Below Well: Native soil (cave in) grading to ANSI/NSF Quartz Sand Bottom of Boring: 390.40

Vapor Monitoring Point Construction Diagrams

GROUND SURFACE ELEV	ATION (FEET)	443.20	JOB NUMBER	21562289	
TOP OF INNER WELL CAS	SING ELEVATION	NA	BORING NUMBER	VMP-1	
DATUM	1988 USGS		INSTALLATION DATE	7/31/2009	



VAPOR MONITORING PORT INSTALLATION DETAILS

SCREEN	DEPTH TO BOTTOM OF SAND (FEET*)	DEPTH TO TOP OF SAND (FEET*)	DEPTH TO BOTTOM OF SCREEN (FEET*)	DEPTH TO TOP OF SCREEN (FEET*)	LENGTH OF SCREEN (FEET)	DIAMETER OF SCREEN (INCHES)	SLOT SIZE (INCHES)
A	6.0	4.5	5.5	5.0	0.5	0.5	0.010
В	9.5	8.0	9.0	8.5	0.5	0.5	0.010
С	24.5	23.0	24.0	23.5	0.5	0.5	0.010
D	39.5	38.0	39.0	38.5	0.5	0.5	0.010

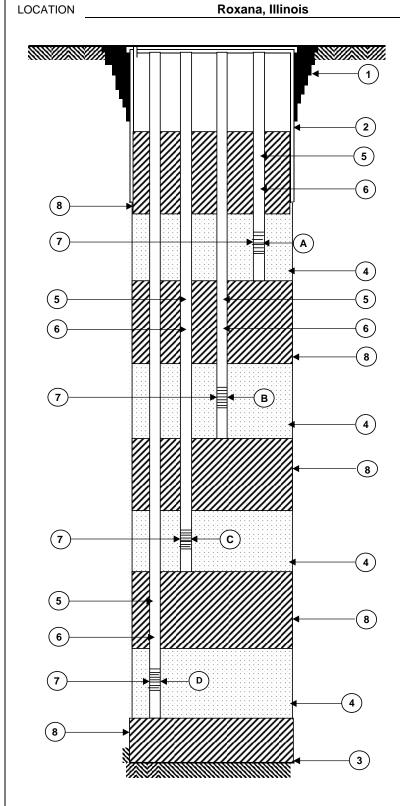
- 1 CONCRETE CAP? YES NO (CIRCLE ONE)
- 2 BOREHOLE DIAMETER 8.75 INCHES
- 3 TOTAL DEPTH OF BOREHOLE 45.0 FEET*

 ANSI/NSF
- 4 TYPE OF PACK AROUND SCREEN Quartz Sand
- 5 RISER MATERIAL Stainless Steel
- 6 RISER DIAMETER 0.125 INCHES
- 7 SCREEN MATERIAL Stainless Steel
- 8 TYPE OF SEAL Bentonite Chips
 - * (DEPTH FROM GROUND SURFACE)

NOTE: DRAWING NOT TO SCALE



GROUND	SURFACE ELEVATION (FEET)	443.56	JOB NUMBER	21562289
TOP OF IN	NER WELL CASING ELEVATION	NA	BORING NUMBER	VMP-2
DATUM _	1988 USGS		INSTALLATION DATE	7/27/2009



VAPOR MONITORING PORT INSTALLATION DETAILS

SCREEN	DEPTH TO BOTTOM OF SAND (FEET*)	DEPTH TO TOP OF SAND (FEET*)	DEPTH TO BOTTOM OF SCREEN (FEET*)	DEPTH TO TOP OF SCREEN (FEET*)	LENGTH OF SCREEN (FEET)	DIAMETER OF SCREEN (INCHES)	SLOT SIZE (INCHES)
Α	6.0	4.5	5.5	5.0	0.5	0.5	0.010
В	9.5	8.0	9.0	8.5	0.5	0.5	0.010
С	23.0	21.5	22.5	22.0	0.5	0.5	0.010
D	43.0	41.5	42.5	42.0	0.5	0.5	0.010

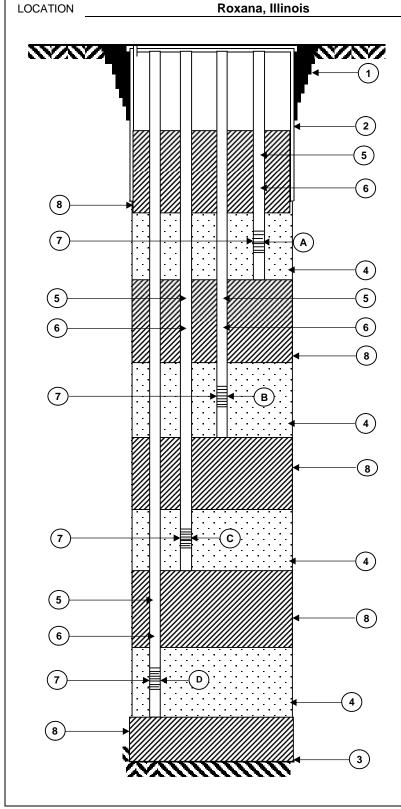
- 1 CONCRETE CAP? YES NO (CIRCLE ONE)
- **2** BOREHOLE DIAMETER 8.75 INCHES
- 3 TOTAL DEPTH OF BOREHOLE 49.0 FEET*

 ANSI/NSF
- 4 TYPE OF PACK AROUND SCREEN Quartz Sand
- 5 RISER MATERIAL Stainless Steel
- 6 RISER DIAMETER 0.125 INCHES
- 7 SCREEN MATERIAL Stainless Steel
- 8 TYPE OF SEAL Bentonite Chips
 - * (DEPTH FROM GROUND SURFACE)

NOTE: DRAWING NOT TO SCALE



GROUND SURFACE ELEVAT	ION (FEET)	442.22	JOB NUMBER	21562289	
TOP OF INNER WELL CASING	G ELEVATION	NA	BORING NUMBER	VMP-3	
DATUM	1988 USGS		INSTALLATION DATE	7/29/2009	



VAPOR MONITORING PORT INSTALLATION DETAILS

SCREEN	DEPTH TO BOTTOM OF SAND (FEET*)	DEPTH TO TOP OF SAND (FEET*)	DEPTH TO BOTTOM OF SCREEN (FEET*)	DEPTH TO TOP OF SCREEN (FEET*)	LENGTH OF SCREEN (FEET)	DIAMETER OF SCREEN (INCHES)	SLOT SIZE (INCHES)
A	6.0	4.5	5.5	5.0	0.5	0.5	0.010
В	23.0	21.5	22.5	22.0	0.5	0.5	0.010
С	32.5	31.0	32.0	31.5	0.5	0.5	0.010
D	40.0	38.5	39.5	39.0	0.5	0.5	0.010

- 1 CONCRETE CAP? YES NO (CIRCLE ONE)
- BOREHOLE DIAMETER 8.75 INCHES
- 3 TOTAL DEPTH OF BOREHOLE 47.0 FEET*

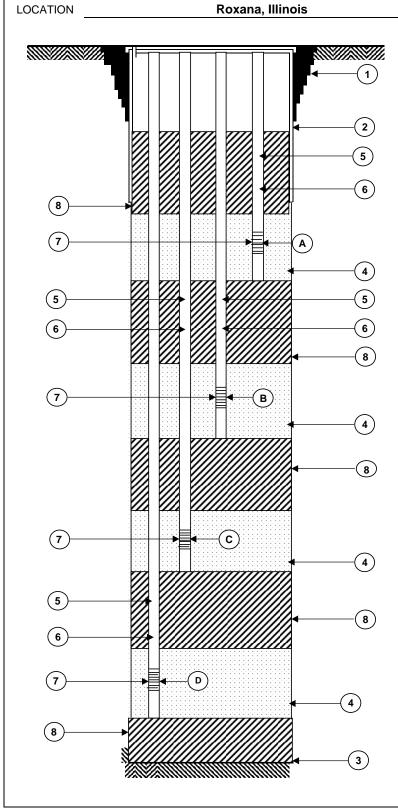
 ANSI/NSF
- 4 TYPE OF PACK AROUND SCREEN Quartz Sand
- 5 RISER MATERIAL Stainless Steel
- 6 RISER DIAMETER 0.125 INCHES
- 7 SCREEN MATERIAL Stainless Steel
- 8 TYPE OF SEAL Bentonite Chips
 - * (DEPTH FROM GROUND SURFACE)

NOTES: 1) DRAWING NOT TO SCALE

2) VMP-3-22 was installed in an adjancent hole due to complications during installation.



GROUND	SURFACE ELEVATION (FEET)	443.09	JOB NUMBER	21562289	
TOP OF IN	INER WELL CASING ELEVATION	NA	BORING NUMBER	VMP-4	
DATUM	1988 USGS		INSTALLATION DATE	8/3/2009	



VAPOR MONITORING PORT INSTALLATION DETAILS

SCREEN	DEPTH TO BOTTOM OF SAND (FEET*)	DEPTH TO TOP OF SAND (FEET*)	DEPTH TO BOTTOM OF SCREEN (FEET*)	DEPTH TO TOP OF SCREEN (FEET*)	LENGTH OF SCREEN (FEET)	DIAMETER OF SCREEN (INCHES)	SLOT SIZE (INCHES)
A	6.0	4.5	5.5	5.0	0.5	0.5	0.010
В	13.0	11.5	12.5	12.0	0.5	0.5	0.010
С	24.5	23.0	24.0	23.5	0.5	0.5	0.010
D	40.0	38.5	39.5	39.0	0.5	0.5	0.010

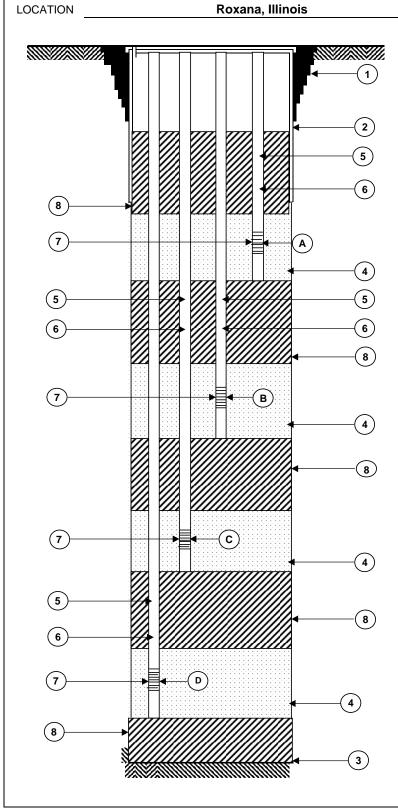
- 1 CONCRETE CAP? YES NO (CIRCLE ONE)
- **2** BOREHOLE DIAMETER 8.75 INCHES
- 3 TOTAL DEPTH OF BOREHOLE 45.0 FEET*

 ANSI/NSF
- 4 TYPE OF PACK AROUND SCREEN Quartz Sand
- 5 RISER MATERIAL Stainless Steel
- 6 RISER DIAMETER 0.125 INCHES
- 7 SCREEN MATERIAL Stainless Steel
- 8 TYPE OF SEAL Bentonite Chips
 - * (DEPTH FROM GROUND SURFACE)

NOTE: DRAWING NOT TO SCALE



GROUND	SURFACE ELEVATION (FEET)	444.59	JOB NUMBER	21562289
TOP OF IN	INER WELL CASING ELEVATION	NA	BORING NUMBER	VMP-5
DATUM	1988 USGS		INSTALLATION DATE	8/4/2009



VAPOR MONITORING PORT INSTALLATION DETAILS

SCREEN	DEPTH TO BOTTOM OF SAND (FEET*)	DEPTH TO TOP OF SAND (FEET*)	DEPTH TO BOTTOM OF SCREEN (FEET*)	DEPTH TO TOP OF SCREEN (FEET*)	LENGTH OF SCREEN (FEET)	DIAMETER OF SCREEN (INCHES)	SLOT SIZE (INCHES)
A	6.0	4.5	5.5	5.0	0.5	0.5	0.010
В	13.5	12.0	13.0	12.5	0.5	0.5	0.010
С	32.0	30.5	31.5	31.0	0.5	0.5	0.010
D	41.0	39.5	40.5	40.0	0.5	0.5	0.010

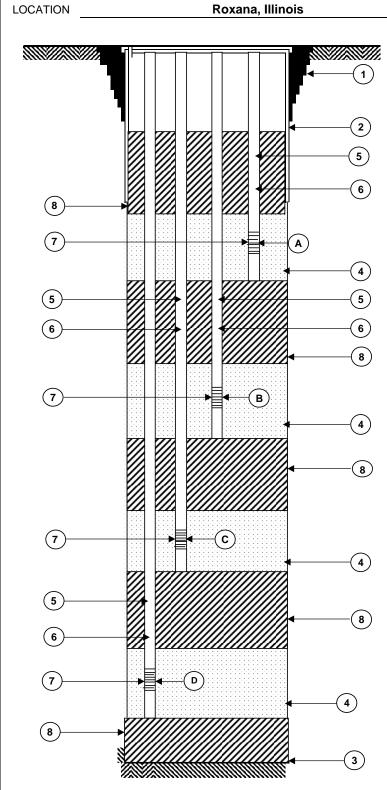
- 1 CONCRETE CAP? YES NO (CIRCLE ONE)
- **2** BOREHOLE DIAMETER 8.75 INCHES
- 3 TOTAL DEPTH OF BOREHOLE 47.0 FEET*

 ANSI/NSF
- 4 TYPE OF PACK AROUND SCREEN Quartz Sand
- 5 RISER MATERIAL Stainless Steel
- 6 RISER DIAMETER 0.125 INCHES
- 7 SCREEN MATERIAL Stainless Steel
- 8 TYPE OF SEAL Bentonite Chips
 - * (DEPTH FROM GROUND SURFACE)

NOTE: DRAWING NOT TO SCALE



GROUND SURFACE ELEVATION (FEET)		444.18	JOB NUMBER	21562289
TOP OF IN	INER WELL CASING ELEVATION	NA	BORING NUMBER	VMP-6
DATUM	1988 USGS		INSTALLATION DATE	8/10/2009



VAPOR MONITORING PORT INSTALLATION DETAILS

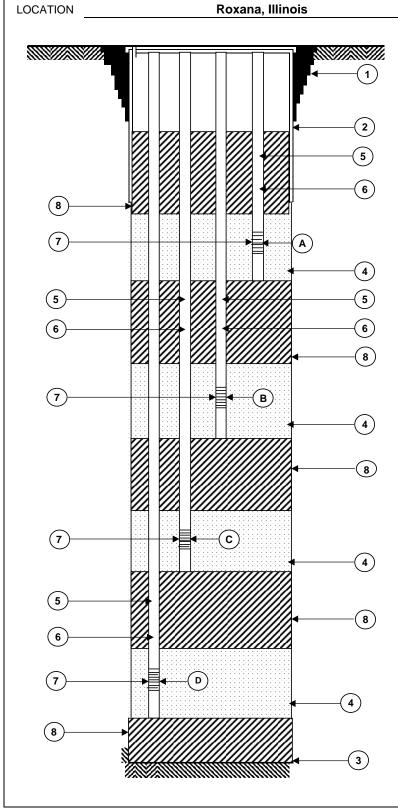
SCREEN	DEPTH TO BOTTOM OF SAND (FEET*)	DEPTH TO TOP OF SAND (FEET*)	DEPTH TO BOTTOM OF SCREEN (FEET*)	DEPTH TO TOP OF SCREEN (FEET*)	LENGTH OF SCREEN (FEET)	DIAMETER OF SCREEN (INCHES)	SLOT SIZE (INCHES)
A	6.0	4.5	5.5	5.0	0.5	0.5	0.010
В	11.0	9.5	10.5	10.0	0.5	0.5	0.010
С	32.5	31.0	32.0	31.5	0.5	0.5	0.010
D	40.0	38.5	39.5	39.0	0.5	0.5	0.010

- 1 CONCRETE CAP? YES NO (CIRCLE ONE)
- **2** BOREHOLE DIAMETER 8.75 INCHES
- 3 TOTAL DEPTH OF BOREHOLE 45.0 FEET*

 ANSI/NSF
- 4 TYPE OF PACK AROUND SCREEN Quartz Sand
- 5 RISER MATERIAL Stainless Steel
- 6 RISER DIAMETER 0.125 INCHES
- 7 SCREEN MATERIAL Stainless Steel
- **8** TYPE OF SEAL Bentonite Chips
 - * (DEPTH FROM GROUND SURFACE)



GROUND SURFACE ELEVATION (FEET)		443.68	JOB NUMBER	21562289
TOP OF IN	INER WELL CASING ELEVATION	NA	BORING NUMBER	VMP-7
DATUM	1988 USGS		INSTALLATION DATE	8/10/2009



VAPOR MONITORING PORT INSTALLATION DETAILS

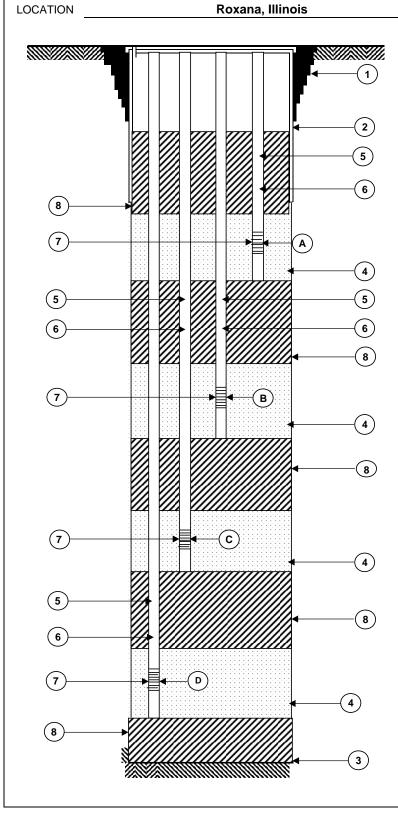
SCREEN	DEPTH TO BOTTOM OF SAND (FEET*)	DEPTH TO TOP OF SAND (FEET*)	DEPTH TO BOTTOM OF SCREEN (FEET*)	DEPTH TO TOP OF SCREEN (FEET*)	LENGTH OF SCREEN (FEET)	DIAMETER OF SCREEN (INCHES)	SLOT SIZE (INCHES)
A	6.0	4.5	5.5	5.0	0.5	0.5	0.010
В	14.5	13.0	14.0	13.5	0.5	0.5	0.010
С	30.5	29.0	30.0	29.5	0.5	0.5	0.010
D	39.0	37.5	38.5	38.0	0.5	0.5	0.010

- 1 CONCRETE CAP? YES NO (CIRCLE ONE)
- 2 BOREHOLE DIAMETER 8.75 INCHES
- 3 TOTAL DEPTH OF BOREHOLE 45.0 FEET*

 ANSI/NSF
- 4 TYPE OF PACK AROUND SCREEN Quartz Sand
- 5 RISER MATERIAL Stainless Steel
- 6 RISER DIAMETER 0.125 INCHES
- 7 SCREEN MATERIAL Stainless Steel
- 8 TYPE OF SEAL Bentonite Chips
 - * (DEPTH FROM GROUND SURFACE)



GROUND SURFACE ELEVATION (FEET)		441.65	JOB NUMBER	21562289
TOP OF IN	INER WELL CASING ELEVATION	NA	BORING NUMBER	VMP-8
DATUM	1988 USGS		INSTALLATION DATE	8/12/2009



VAPOR MONITORING PORT INSTALLATION DETAILS

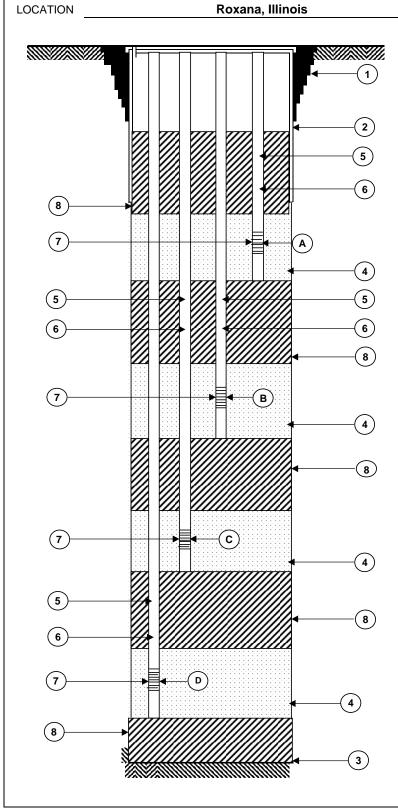
SCREEN	DEPTH TO BOTTOM OF SAND (FEET*)	DEPTH TO TOP OF SAND (FEET*)	DEPTH TO BOTTOM OF SCREEN (FEET*)	DEPTH TO TOP OF SCREEN (FEET*)	LENGTH OF SCREEN (FEET)	DIAMETER OF SCREEN (INCHES)	SLOT SIZE (INCHES)
A	6.0	4.5	5.5	5.0	0.5	0.5	0.010
В	10.5	9.0	10.0	9.5	0.5	0.5	0.010
С	24.5	23.0	24.0	23.5	0.5	0.5	0.010
D	36.5	35.0	36.0	35.5	0.5	0.5	0.010

- 1 CONCRETE CAP? YES NO (CIRCLE ONE)
- **2** BOREHOLE DIAMETER 8.75 INCHES
- 3 TOTAL DEPTH OF BOREHOLE 43.0 FEET*

 ANSI/NSF
- 4 TYPE OF PACK AROUND SCREEN Quartz Sand
- 5 RISER MATERIAL Stainless Steel
- 6 RISER DIAMETER 0.125 INCHES
- 7 SCREEN MATERIAL Stainless Steel
- 8 TYPE OF SEAL Bentonite Chips
 - * (DEPTH FROM GROUND SURFACE)



GROUND SURFACE ELEVATION (FEET)		444.23	JOB NUMBER	21562289	_
TOP OF IN	INER WELL CASING ELEVATION	NA	BORING NUMBER	VMP-9	
DATUM _	1988 USGS		INSTALLATION DATE	8/12/2009	_



VAPOR MONITORING PORT INSTALLATION DETAILS

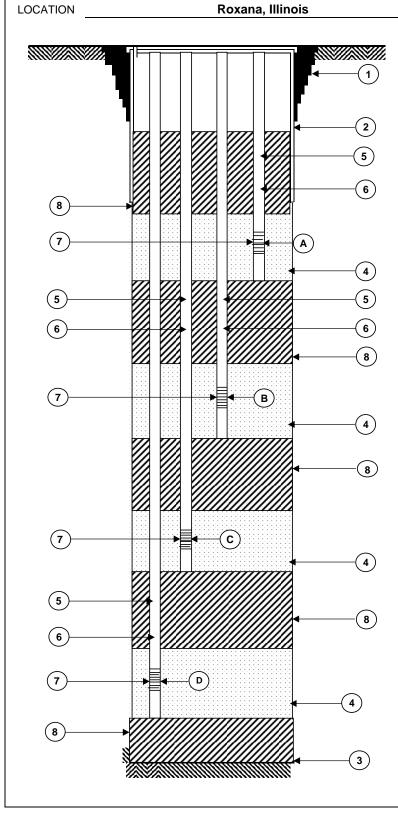
SCREEN	DEPTH TO BOTTOM OF SAND (FEET*)	DEPTH TO TOP OF SAND (FEET*)	DEPTH TO BOTTOM OF SCREEN (FEET*)	DEPTH TO TOP OF SCREEN (FEET*)	LENGTH OF SCREEN (FEET)	DIAMETER OF SCREEN (INCHES)	SLOT SIZE (INCHES)
A	6.0	4.5	5.5	5.0	0.5	0.5	0.010
В	12.5	11.0	12.0	11.5	0.5	0.5	0.010
С	26.5	25.0	26.0	25.5	0.5	0.5	0.010
D	39.5	38.0	39.0	38.5	0.5	0.5	0.010

- 1 CONCRETE CAP? YES NO (CIRCLE ONE)
- 2 BOREHOLE DIAMETER 8.75 INCHES
- 3 TOTAL DEPTH OF BOREHOLE 45.0 FEET*

 ANSI/NSF
- 4 TYPE OF PACK AROUND SCREEN Quartz Sand
- 5 RISER MATERIAL Stainless Steel
- 6 RISER DIAMETER 0.125 INCHES
- 7 SCREEN MATERIAL Stainless Steel
- 8 TYPE OF SEAL Bentonite Chips
 - * (DEPTH FROM GROUND SURFACE)



GROUND SURFACE ELEVATION (FEET)		434.72	JOB NUMBER	21562289	
TOP OF IN	INER WELL CASING ELEVATION	NA	BORING NUMBER	VMP-10	
DATUM	1988 USGS		INSTALLATION DATE	7/13/2009	_



VAPOR MONITORING PORT INSTALLATION DETAILS

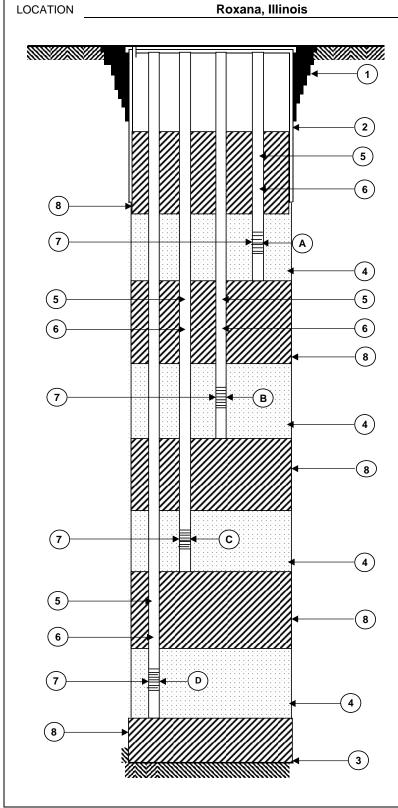
SCREEN	DEPTH TO BOTTOM OF SAND (FEET*)	DEPTH TO TOP OF SAND (FEET*)	DEPTH TO BOTTOM OF SCREEN (FEET*)	DEPTH TO TOP OF SCREEN (FEET*)	LENGTH OF SCREEN (FEET)	DIAMETER OF SCREEN (INCHES)	SLOT SIZE (INCHES)
A	6.0	4.5	5.5	5.0	0.5	0.5	0.010
В	11.0	9.5	10.5	10.0	0.5	0.5	0.010
С	21.0	19.5	20.5	20.0	0.5	0.5	0.010
D	31.0	29.5	30.5	30.0	0.5	0.5	0.010

- 1 CONCRETE CAP? YES NO (CIRCLE ONE)
- **2** BOREHOLE DIAMETER 8.75 INCHES
- 3 TOTAL DEPTH OF BOREHOLE 37.0 FEET*

 ANSI/NSF
- 4 TYPE OF PACK AROUND SCREEN Quartz Sand
- 5 RISER MATERIAL Stainless Steel
- 6 RISER DIAMETER 0.125 INCHES
- 7 SCREEN MATERIAL Stainless Steel
- 8 TYPE OF SEAL Bentonite Chips
 - * (DEPTH FROM GROUND SURFACE)



GROUND SURFACE ELEVATION (FEET)		443.46	JOB NUMBER	21562289	
TOP OF INNER WELL CASING	ELEVATION	NA	BORING NUMBER	VMP-11	
DATUM	1988 USGS		INSTALLATION DATE	7/10/2009	



VAPOR MONITORING PORT INSTALLATION DETAILS

SCREEN	DEPTH TO BOTTOM OF SAND (FEET*)	DEPTH TO TOP OF SAND (FEET*)	DEPTH TO BOTTOM OF SCREEN (FEET*)	DEPTH TO TOP OF SCREEN (FEET*)	LENGTH OF SCREEN (FEET)	DIAMETER OF SCREEN (INCHES)	SLOT SIZE (INCHES)
A	6.0	4.5	5.5	5.0	0.5	0.5	0.010
В	9.0	7.5	8.5	8.0	0.5	0.5	0.010
С	30.0	28.5	29.5	29.0	0.5	0.5	0.010
D	39.0	37.5	38.5	38.0	0.5	0.5	0.010

- CONCRETE CAP? YES NO (CIRCLE ONE)
- **2** BOREHOLE DIAMETER 8.75 INCHES

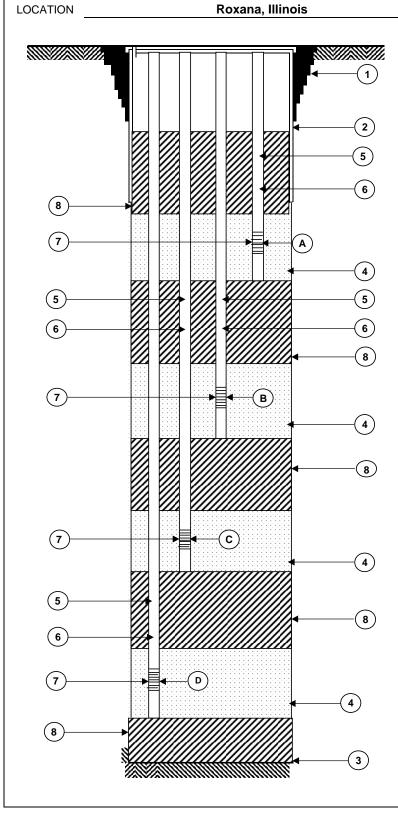
1

- 3 TOTAL DEPTH OF BOREHOLE 45.0 FEET*

 ANSI/NSF
- 4 TYPE OF PACK AROUND SCREEN Quartz Sand
- 5 RISER MATERIAL Stainless Steel
- 6 RISER DIAMETER 0.125 INCHES
- 7 SCREEN MATERIAL Stainless Steel
- 8 TYPE OF SEAL Bentonite Chips
 - * (DEPTH FROM GROUND SURFACE)



GROUND	SURFACE ELEVATION (FEET)	444.46	JOB NUMBER	21562289
TOP OF IN	INER WELL CASING ELEVATION	NA	BORING NUMBER	VMP-12
DATUM	1988 USGS		INSTALLATION DATE	7/23/2009



VAPOR MONITORING PORT INSTALLATION DETAILS

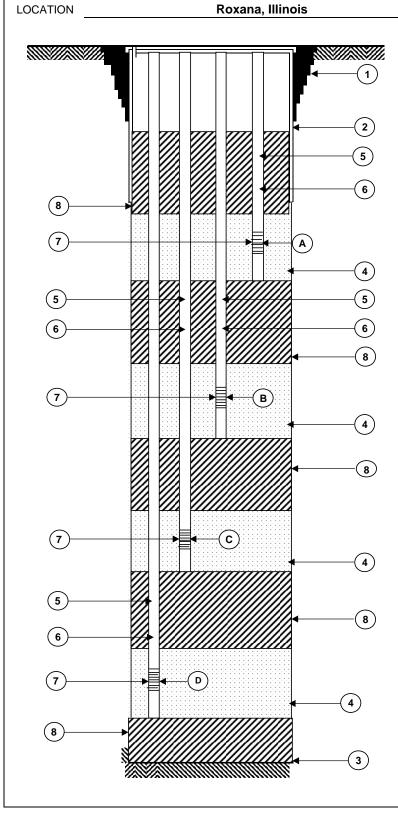
SCREEN	DEPTH TO BOTTOM OF SAND (FEET*)	DEPTH TO TOP OF SAND (FEET*)	DEPTH TO BOTTOM OF SCREEN (FEET*)	DEPTH TO TOP OF SCREEN (FEET*)	LENGTH OF SCREEN (FEET)	DIAMETER OF SCREEN (INCHES)	SLOT SIZE (INCHES)
A	6.0	4.5	5.5	5.0	0.5	0.5	0.010
В	12.5	11.0	12.0	11.5	0.5	0.5	0.010
С	26.0	24.5	25.5	25.0	0.5	0.5	0.010
D	40.0	38.5	39.5	39.0	0.5	0.5	0.010

- 1 CONCRETE CAP? YES NO (CIRCLE ONE)
- 2 BOREHOLE DIAMETER 8.75 INCHES
- 3 TOTAL DEPTH OF BOREHOLE 46.0 FEET*

 ANSI/NSF
- 4 TYPE OF PACK AROUND SCREEN Quartz Sand
- 5 RISER MATERIAL Stainless Steel
- 6 RISER DIAMETER 0.125 INCHES
- 7 SCREEN MATERIAL Stainless Steel
- 8 TYPE OF SEAL Bentonite Chips
 - * (DEPTH FROM GROUND SURFACE)



GROUND	SURFACE ELEVATION (FEET)	435.53	JOB NUMBER	21562289	
TOP OF IN	INER WELL CASING ELEVATION	NA	BORING NUMBER	VMP-13	
DATUM	1988 USGS		INSTALLATION DATE	7/15/2009	



VAPOR MONITORING PORT INSTALLATION DETAILS

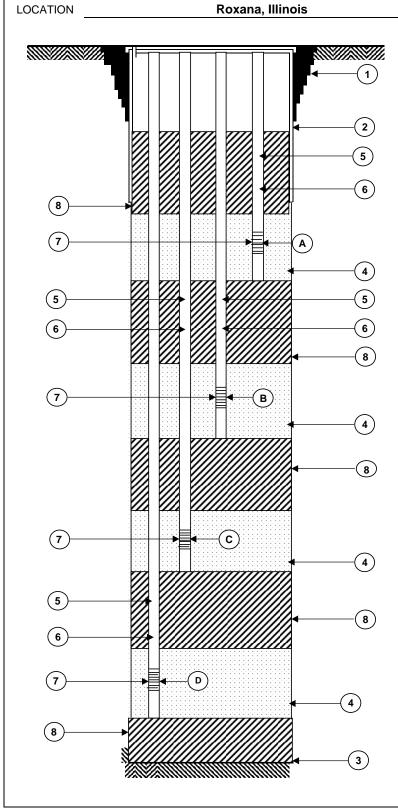
SCREEN	DEPTH TO BOTTOM OF SAND (FEET*)	DEPTH TO TOP OF SAND (FEET*)	DEPTH TO BOTTOM OF SCREEN (FEET*)	DEPTH TO TOP OF SCREEN (FEET*)	LENGTH OF SCREEN (FEET)	DIAMETER OF SCREEN (INCHES)	SLOT SIZE (INCHES)
A	6.0	4.5	5.5	5.0	0.5	0.5	0.010
В	11.5	10.0	11.0	10.5	0.5	0.5	0.010
С	22.5	21.0	22.0	21.5	0.5	0.5	0.010
D	30.5	29.0	30.0	29.5	0.5	0.5	0.010

- 1 CONCRETE CAP? YES NO (CIRCLE ONE)
- **2** BOREHOLE DIAMETER 8.75 INCHES
- 3 TOTAL DEPTH OF BOREHOLE 35.0 FEET*

 ANSI/NSF
- 4 TYPE OF PACK AROUND SCREEN Quartz Sand
- 5 RISER MATERIAL Stainless Steel
- 6 RISER DIAMETER 0.125 INCHES
- 7 SCREEN MATERIAL Stainless Steel
- 8 TYPE OF SEAL Bentonite Chips
 - * (DEPTH FROM GROUND SURFACE)



GROUND	SURFACE ELEVATION (FEET)	434.94	JOB NUMBER	21562289	
TOP OF IN	INER WELL CASING ELEVATION	NA	BORING NUMBER	VMP-14	
DATUM	1988 USGS		INSTALLATION DATE	7/14/2009	



VAPOR MONITORING PORT INSTALLATION DETAILS

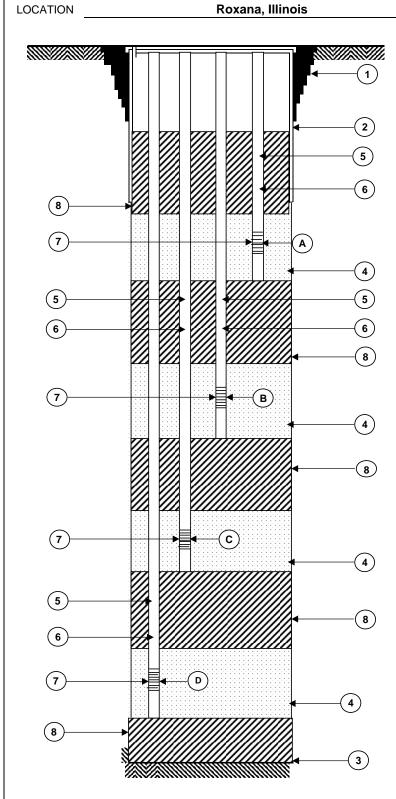
SCREEN	DEPTH TO BOTTOM OF SAND (FEET*)	DEPTH TO TOP OF SAND (FEET*)	DEPTH TO BOTTOM OF SCREEN (FEET*)	DEPTH TO TOP OF SCREEN (FEET*)	LENGTH OF SCREEN (FEET)	DIAMETER OF SCREEN (INCHES)	SLOT SIZE (INCHES)
A	6.0	4.5	5.5	5.0	0.5	0.5	0.010
В	12.5	11.0	12.0	11.5	0.5	0.5	0.010
С	21.0	19.5	20.5	20.0	0.5	0.5	0.010
D	30.0	28.5	29.5	29.0	0.5	0.5	0.010

- 1 CONCRETE CAP? YES NO (CIRCLE ONE)
- 2 BOREHOLE DIAMETER 8.75 INCHES
- 3 TOTAL DEPTH OF BOREHOLE 35.0 FEET*

 ANSI/NSF
- 4 TYPE OF PACK AROUND SCREEN Quartz Sand
- 5 RISER MATERIAL Stainless Steel
- 6 RISER DIAMETER 0.125 INCHES
- 7 SCREEN MATERIAL Stainless Steel
- 8 TYPE OF SEAL Bentonite Chips
 - * (DEPTH FROM GROUND SURFACE)



GROUND SURFACE ELEVAT	ION (FEET)	433.46	JOB NUMBER	21562289	
TOP OF INNER WELL CASIN	G ELEVATION	NA	BORING NUMBER	VMP-15	
DATUM	1988 USGS		INSTALLATION DATE	7/20/2009	



VAPOR MONITORING PORT INSTALLATION DETAILS

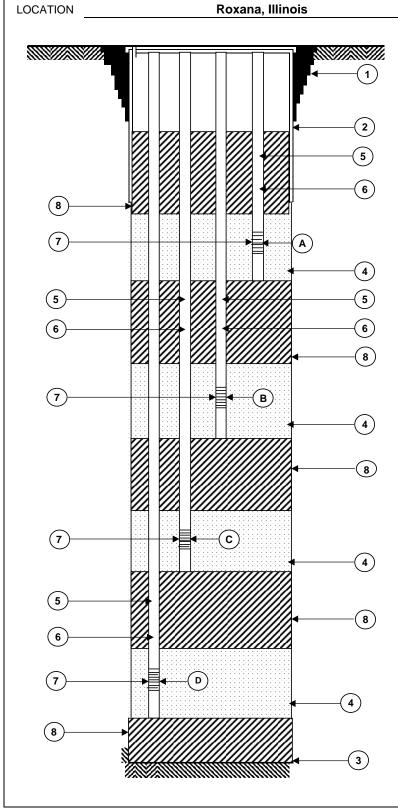
SCREEN	DEPTH TO BOTTOM OF SAND (FEET*)	DEPTH TO TOP OF SAND (FEET*)	DEPTH TO BOTTOM OF SCREEN (FEET*)	DEPTH TO TOP OF SCREEN (FEET*)	LENGTH OF SCREEN (FEET)	DIAMETER OF SCREEN (INCHES)	SLOT SIZE (INCHES)
A	6.0	4.5	5.5	5.0	0.5	0.5	0.010
В	22.5	21.0	22.0	21.5	0.5	0.5	0.010
С	26.5	25.0	26.0	25.5	0.5	0.5	0.010
D	30.0	28.5	29.5	29.0	0.5	0.5	0.010

- 1 CONCRETE CAP? YES NO (CIRCLE ONE)
- **2** BOREHOLE DIAMETER 8.75 INCHES
- 3 TOTAL DEPTH OF BOREHOLE 36.0 FEET*

 ANSI/NSF
- 4 TYPE OF PACK AROUND SCREEN Quartz Sand
- 5 RISER MATERIAL Stainless Steel
- 6 RISER DIAMETER 0.125 INCHES
- 7 SCREEN MATERIAL Stainless Steel
- 8 TYPE OF SEAL Bentonite Chips
 - * (DEPTH FROM GROUND SURFACE)



GROUND SURFACE EL	EVATION (FEET)	436.95	JOB NUMBER	21562289	
TOP OF INNER WELL C	ASING ELEVATION	NA	BORING NUMBER	VMP-16	
DATUM	1988 USGS		INSTALLATION DATE	7/22/2009	



VAPOR MONITORING PORT INSTALLATION DETAILS

SCREEN	DEPTH TO BOTTOM OF SAND (FEET*)	DEPTH TO TOP OF SAND (FEET*)	DEPTH TO BOTTOM OF SCREEN (FEET*)	DEPTH TO TOP OF SCREEN (FEET*)	LENGTH OF SCREEN (FEET)	DIAMETER OF SCREEN (INCHES)	SLOT SIZE (INCHES)
A	6.0	4.5	5.5	5.0	0.5	0.5	0.010
В	14.5	13.0	14.0	13.5	0.5	0.5	0.010
С	20.0	18.5	19.5	19.0	0.5	0.5	0.010
D	32.0	30.5	31.5	31.0	0.5	0.5	0.010

- 1 CONCRETE CAP? YES NO (CIRCLE ONE)
- **2** BOREHOLE DIAMETER 8.75 INCHES
- 3 TOTAL DEPTH OF BOREHOLE 38.0 FEET*

 ANSI/NSF
- 4 TYPE OF PACK AROUND SCREEN Quartz Sand
- 5 RISER MATERIAL Stainless Steel
- 6 RISER DIAMETER 0.125 INCHES
- 7 SCREEN MATERIAL Stainless Steel
- 8 TYPE OF SEAL Bentonite Chips
 - * (DEPTH FROM GROUND SURFACE)



TABLE G-1 SOIL VAPOR DEVELOPMENT & PURGING INFORMATION

LOCATION	ID	ID Color	Bottom of Screen	Tubing Volume	Sand Pack Volume	Sample Train Volume	Target Development Purge Volume	Actual Development Purge Volume	Target Sampling Purge Volume	Actual Sampling Purge Volume
	VMD 1.5	velleur	<i></i>	10.00	10.765	0.65	mI		92.19	00
	VMP-1-5 VMP-1-8.5	yellow blue	5.5 9	18.08 26.51	18,765 18,765	9.65 9.65	56,378.18 56,403.48	60,000	83.18 108.48	90 120
VMP-1	VMP-1-8.5 VMP-1-23.5	green	24	62.66	18,765	9.65	56,511.93	60,000	216.93	225
	VMP-1-38.5	red	39	98.81	18,765	9.65	56,620.38	70,000	325.38	345
	VMP-2-5	yellow	5.5	18.08	18,765	9.65	56,378.18	60,000	83.18	90
VMP-2	VMP-2-8.5	blue	9	26.51	18,765	9.65	56,403.48	60,000	108.48	120
VIVIF-2	VMP-2-22	green	22.5	59.05	18,765	9.65	56,501.09	60,000	206.09	225
	VMP-2-42	red	42.5	107.25	18,765	9.65	56,645.69	62,000	350.69	375
	VMP-3-5	yellow	5.5	18.08	18,765	9.65	56,378.18	64,000	83.18	90
VMP-3	VMP-3-22 VMP-3-31.5	blue green	22.5 32	59.05 81.94	18,765 18,765	9.65 9.65	56,501.09 56,569.77	60,000	206.09 274.77	225 360
	VMP-3-31.3	red	39.5	100.02	18,765	9.65	56,624.00	80,000	329.00	450
	VMP-4-5	yellow	5.5	18.08	18,765	9.65	56,378.18	62,000	83.18	105
VD (D. 4	VMP-4-12	blue	12.5	34.95	18,765	9.65	56,428.79	72,000	133.79	150
VMP-4	VMP-4-23.5	green	24	62.66	18,765	9.65	56,511.93	76,000	216.93	225
	VMP-4-39	red	39.5	100.02	18,765	9.65	56,624.00	82,000	329.00	330
	VMP-5-5	yellow	5.5	18.08	18,765	9.65	56,378.18	80,000	83.18	90
VMP-5	VMP-5-12.5	blue	13	36.15	18,765	9.65	56,432.40	66,000	137.40	165
	VMP-5-31 VMP-5-40	green	31.5 40.5	80.74 102.43	18,765 18,765	9.65 9.65	56,566.16 56,631.23	66,000 68,000	271.16 336.23	300 360
	VMP-5-40 VMP-6-5	red yellow	5.5	18.08	18,765	9.65	56,378.18	76,000	83.18	105
	VMP-6-10	blue	10.5	30.13	18,765	9.65	56,414.33	70,000	119.33	135
VMP-6	VMP-6-31.5	green	32	81.94	18,765	9.65	56,569.77	70,000	274.77	285
	VMP-6-39	red	39.5	100.02	18,765	9.65	56,624.00	74,000	329.00	330
	VMP-7-5	yellow	5.5	18.08	18,765	9.65	56,378.18	66,000	83.18	120
VMP-7	VMP-7-13.5	blue	14	38.56	18,765	9.65	56,439.63	60,000	144.63	165
V IVII - 7	VMP-7-29.5	green	30	77.12	18,765	9.65	56,555.31	62,000	260.31	270
	VMP-7-38	red	38.5	97.61	18,765	9.65	56,616.77	88,000	321.77	330
	VMP-8-5	yellow	5.5	18.08	18,765	9.65	56,378.18	72,000	83.18	105
VMP-8	VMP-8-9.5 VMP-8-23.5	blue green	10 24	28.92 62.66	18,765 18,765	9.65 9.65	56,410.71 56,511.93	60,000	115.71 216.93	120 225
	VMP-8-35.5	red	36	91.58	18,765	9.65	56,598.69	72,000	303.69	315
	VMP-9-5	yellow	5.5	18.08	18,765	9.65	56,378.18	70,000	83.18	90
VMP-9	VMP-9-11.5	blue	12	33.74	18,765	9.65	56,425.17	60,000	130.17	150
VIVIP-9	VMP-9-25.5	green	26	67.48	18,765	9.65	56,526.39	62,000	231.39	255
	VMP-9-38.5	red	39	98.81	18,765	9.65	56,620.38	64,000	325.38	330
	VMP-10-5	yellow	5.5	18.08	18,765	9.65	56,378.18	64,000	83.18	90
VMP-10	VMP-10-10	blue	10.5	30.13	18,765	9.65	56,414.33	60,000	119.33	120
	VMP-10-20 VMP-10-30	green red	20.5 30.5	54.23 78.33	18,765 18,765	9.65 9.65	56,486.63 56,558.93	62,000 60,000	191.63 263.93	210 270
	VMP-11-5	yellow	5.5	18.08	18,765	9.65	56,378.18	60,000	83.18	105
********	VMP-11-8	blue	8.5	25.31	18,765	9.65	56,399.87	62,000	104.87	120
VMP-11	VMP-11-29	green	29.5	75.92	18,765	9.65	56,551.70	60,000	256.70	270
	VMP-11-38	red	38.5	97.61	18,765	9.65	56,616.77	60,000	321.77	345
	VMP-12-5	yellow	5.5	18.08	18,765	9.65	56,378.18	60,000	83.18	105
VMP-12	VMP-12-11.5	blue	12	33.74	18,765	9.65	56,425.17	68,000	130.17	135
	VMP-12-25	green	25.5	66.28	18,765	9.65	56,522.78	70,000	227.78	255
	VMP-12-39 VMP-13-5	red yellow	39.5 5.5	100.02 18.08	18,765 18,765	9.65 9.65	56,624.00 56,378.18	66,000 64,000	329.00 83.18	330 105
	VMP-13-10.5	blue	11	31.33	18,765	9.65	56,417.94	60,000	122.94	135
VMP-13	VMP-13-21.5	green	22	57.84	18,765	9.65	56,497.47	60,000	202.47	210
	VMP-13-29.5	red	30	77.12	18,765	9.65	56,555.31	60,000	260.31	300
	VMP-14-5	yellow	5.5	18.08	18,765	9.65	56,378.18	80,000	83.18	90
VMP-14	VMP-14-11.5	blue	12	33.74	18,765	9.65	56,425.17	70,000	130.17	135
7 1711 - 1 -7	VMP-14-20	green	20.5	54.23	18,765	9.65	56,486.63	70,000	191.63	195
ļ	VMP-14-29	red	29.5	75.92	18,765	9.65	56,551.70	80,000	256.70	285
	VMP-15-5	yellow	5.5	18.08	18,765	9.65	56,378.18	60,000	83.18	105
VMP-15	VMP-15-21.5 VMP-15-25.5	blue green	22 26	57.84 67.48	18,765 18,765	9.65 9.65	56,497.47 56,526.39	66,000 66,000	202.47 231.39	225 255
[VMP-15-23.3 VMP-15-29	red	29.5	75.92	18,765	9.65	56,551.70	64,000	256.70	285
	VMP-16-5	yellow	5.5	18.08	18,765	9.65	56,378.18	72,000	83.18	105
VMD 16	VMP-16-13.5	blue	14	38.56	18,765	9.65	56,439.63	66,000	144.63	180
VMP-16	VMP-16-19	green	19.5	51.82	18,765	9.65	56,479.40	60,000	184.40	210
	VMP-16-31	red	31.5	80.74	18,765	9.65	56,566.16	66,000	271.16	300

NOTES:

- 1) The sand pack volume shown on this table is the volume of the entire sand pack, not just the pore space volume within the sand pack.
- 2) The target development purge volume is equal to 3 times the combined volume of the port tubing, sand pack, and sample train.
- 3) The target sampling purge volume is equal to 3 times the combined volume of the port tubing and sample train.

SOP No. 44 Soil Vapor Purging and Sampling

1. Objective

This document defines the standard operating procedure (SOP) and necessary equipment for collection of soil vapor samples from vapor monitoring point sampling ports using Summa canisters.

SOPs providing additional related guidance are listed below:

- SOP No. 3 Calibration and Maintenance of Field Instruments
- SOP No. 4 Decontamination
- SOP No. 8 Field Reporting and Documentation.
- SOP No. 24 Sample Classification, Packaging and Shipping (DOT)
- SOP No. 25 Sample Containers, Preservation, and Holding Times
- SOP No. 26 Sample Control and Custody Procedures.

2. Equipment

Personnel implementing this guideline must ensure that the following are in place:

- Field book
- Disposable nitrile gloves
- Ultra-fine permanent marker
- Paper towels or Kimwipes
- Calculator
- Decontamination equipment
- Soil vapor sampling logs
- Small brush or broom
- Plastic sheeting
- 15 mL hand pump with gauge
- Peristaltic pump
- Rotometer or equivalent
- PID and 4-gas meter (e.g., Mini-RAE, QRAE)
- Summa canisters with flow controllers (supplied by the laboratory)
- Tedlar bags
- Swagelok® T-Connectors (2) 1/4" ID



Page 1 of 7 September 2009

- Swagelok[®] Ball Valves (3) ¹/₄" ID
- Swagelok[®] Barb Connectors (2) ½" ID
- Swagelok[®] Port Connectors (4) ½" ID
- Swagelok® Ferrules 1/4" ID
- Swagelok® Nuts 1/4" ID
- Teflon® tubing (food- or laboratory-grade)
- Tygon[®] tubing (food- or laboratory-grade)
- Tracer gas
- Tracer gas shroud (e.g., plastic tote)
- Tracer gas meter (e.g., Dielectric Technologies MGD-2002)
- Watch or timer
- Standard field tools (e.g., ratchet set, safety cutting tools, pry bar, etc.)
- Shipping supplies (e.g., UN boxes, shipping labels, hazard labels, packing tape)

3. Sampling

- 1. Open vapor point vault to check integrity of individual soil vapor monitoring port(s) (VMP). Each port should be closed with it's cap in place
- 2. Perform Summa Canister Vacuum Check, per the steps listed in **Section 4** of this SOP.
- 3. Remove port cap and set up the sample train configuration as shown in **Figure 1**. Teflon[®] tubing will be connected directly using Swagelok[®] ferrule connections. The flow controller (one for each Summa canister provided by the laboratory) will be connected to the Summa canister inlet. **Do not reuse flow controllers** between locations. Each flow controller is pre-set by the laboratory to collect the sample over a half-hour period. Flow controllers can be set to a different rate if desired by project, depending on size of container to be filled. For a 1-Liter Summa canister, a half-hour is a standard collection time (~33 ml/min).
- 4. Perform Sample Train Leak Check, per the steps listed in **Section 4** of this SOP.
- 5. Calculate Purge volume:
 - Vapor Port tubing (1/8-in diameter): 2.41 mL/foot (single volume)
 - Sample train assembly (1/4-in diameter): 9.65 mL/foot (single volume)
 - Sand Pack: 18,765 mL (4.95 gallons) (single volume)



Page 2 of 7 September 2009

- 6. Open Valve #1 and Valve #2 to purge the appropriate volume from the vapor monitoring port.
 - If the port has been newly installed, the port must first be developed by purging 3 volumes of the sampling assembly including 3 volumes of the sand pack using a peristaltic pump (or equivalent) at a calibrated rate of not more than 2 L/min.
 - If the port has previously been developed, purge 3 volumes from VMP using the 15 mL hand pump. If the pump pulls back and purge cannot be completed, the VMP screen may be saturated with water and will not yield a representative sample. If this happens, do not sample the VMP. Similarly, if water is pulled out during the purge, do not sample the VMP.
- 7. Connect peristaltic pump to the purge tubing at Valve #2 to collect a sample in a Tedlar bag. The Tedlar bag should be filled at a rate no faster than 200 ml/min.
- 8. From the soil vapor in the Tedlar bag obtain readings for helium with helium gas detector.
- 9. Close Valve #2.
- 10. Open Summa canister valve completely and record the time.
- 11. After half-hour, or if the vacuum gauge reading drops below 5 inches Hg before a half-hour, close the Summa canister valve completely. Record the time. Vacuum gauge should not be allowed to drop below 2 inches of Hg.
- 12. Connect peristaltic pump to the purge tubing and open Valve #3 to collect a sample in a Tedlar bag. Tedlar bag should be filled at a rate no faster than 200 ml/min.
- 13. From the soil vapor in the Tedlar bag obtain readings for total volatile organics with a photoionization detector (PID), for H₂S, CO, oxygen (O₂), and lower explosive limit (% CH₄) with a 4-gas meter. Record readings, and for helium with helium gas detector.
- 14. Disassemble the sample train. Replace Swagelok® plug on the vapor monitoring port.
- 15. Perform Summa canister vacuum check, per the steps listed in **Section 4** of this SOP.
- 16. Replace vapor point vault cover or move to next depth.
- 17. Decontaminate any non-designated equipment (e.g., Swagelok® connectors and valves) following procedures listed in **Section 5**.



Page 3 of 7 September 2009

4. Quality Control

Quality control procedures have been developed to verify equipment integrity, sample quality, and sample repeatability.

In addition to the procedures listed below, the following items are also of concern:

- Care should be taken to keep all sampling equipment, especially the Summa canisters, safe from damage.
- No samples are to be collected in an area where vehicle or other equipment exhaust is being discharged.

Field Duplicates

A field duplicate will be collected for 10% of the samples collected.

Field duplicates are collected by attaching a T-fitting to the end of the tubing prior to the flow controller. A Summa canister with a flow controller is attached to each end of the T-fitting. For sampling, both Summa canister valves are opened and closed simultaneously. Use the procedure described above to collect samples.

Summa Canister Vacuum Check

The Summa canister vacuum check will be performed for 100% of the Summa canisters.

Prior to Sampling

- 1. Attach the pressure gauge provided by the laboratory to the Summa canister inlet.
- 2. Open valve completely.
- 3. Record reading. The canister should show a vacuum of approximately 28 inches of mercury (Hg). If the canister does not show a vacuum or shows a vacuum of less than 25 inches of Hg, discard the canister.
- 4. Close valve completely.
- 5. Remove the pressure gauge.

After Sampling

- 1. Attach the pressure gauge provided by the laboratory to the Summa canister inlet.
- 2. Open valve completely.



Page 4 of 7 September 2009

- 3. Record reading. There should still be a slight vacuum in the Summa canister. If the canister does not show a significant net loss in vacuum after sampling, evaluate and document the problem. If necessary, contact the project manager immediately to determine the value of using another Summa canister to recollect the sample.
- 4. Close valve completely.
- 5. Remove the pressure gauge.

Sample Train Vacuum Leak Check

The sample train leak check will be performed for 100% of the samples collected.

- 1. Assemble the sampling apparatus as shown in **Figure 1** from Valve 1 forward.
- 2. Keep the Summa canister, Valve #1 and Valve #3 in the "off" or "closed" position. Valve #2 should be in the "open" position.
- 3. Attach the 15 mL hand pump to sample train where indicated.
- 4. Withdraw air from the sampling apparatus until a vacuum of at least 10 inches Hg is achieved. Observe the induced vacuum for at least five minutes.
- 5. If the change in vacuum over five minutes is equal to or less than 0.5 inch Hg, the system leak rate is acceptable.
- 6. If the change in vacuum over five minutes is greater than 0.5 inch Hg, check, tighten or replace the fittings and connections and repeat the leak check.

Helium Leak Check

Ten percent of the samples will be collected using a tracer compound.

- 1. A helium tracer gas should be introduced near the VMP to test the integrity of the probe seal and the above ground connections.
- 2. Place a clear plastic enclosure of ≥40L volume over the VMP and assembled sample train as shown in Figure 1. The enclosure should have at least two small openings: one for introduction of tracer gas and one open to the atmosphere for pressure relief and access of a tracer gas monitoring device. The base of the enclosure will sit in a bed of hydrated bentonite.
- 3. Introduce helium gas into the enclosure at a known rate until the atmosphere within the enclosure has a concentration at least 10% more than an order of magnitude greater than the detection limit of the instrument used to monitor the tracer gas concentration.



Page 5 of 7 September 2009

- 4. Connect peristaltic pump to the purge tubing and open either Valve #2 (prior to Summa collection) or Valve #3 (after Summa collection) to collect a sample in a Tedlar bag. Tedlar bag should be filled at a rate no faster than 200 ml/min.
- 5. Check the concentration of helium from a Tedlar bag using a portable, field analyzer (e.g., Dielectric Technologies MGD-2002).
 - a. If the concentration of the tracer gas in the sample is $\leq 10\%$ of the concentration of the tracer gas in the enclosure, the sample is acceptable.
 - b. If the concentration of the tracer gas in the sample is >10% of the concentration of the tracer gas in the enclosure, collect a second Tedlar bag without the enclosure. If the concentration is still high, the results may be biased high by methane.
- 6. Collect the soil vapor sample per procedures 7 through 11 in **Section 3**. Helium will be added to the ASTM D-1946 analytical list.
- 7. Check the concentration of helium from a Tedlar bag using a portable, field analyzer (e.g., Dielectric Technologies MGD-2002 or equivalent).
 - a. If the concentration of the tracer gas in the sample is $\leq 10\%$ of the concentration of the tracer gas in the enclosure, the sample is acceptable.
 - b. If the concentration of the tracer gas in the sample is >10% of the concentration of the tracer gas in the enclosure, collect an additional Tedlar bag without the enclosure after sampling is completed. If the concentration is still high, the results may be biased high by methane.

5. Decontamination

- Non-designated stainless steel Swagelok® connectors will be thoroughly decontaminated using an Alconox® wash followed by a distilled water rinse. The connectors will then be purged with air a minimum of 15 pumps to draw any remaining moisture off the parts.
- Multiple sets of stainless steel Swagelok connectors will be available to sample crews to allow for equipment to be cleaned and dried sufficiently before being reused.

6. Shipping

• Samples information shall be recorded on a chain of custody for the laboratory following procedures outlined in SOP No. 26.

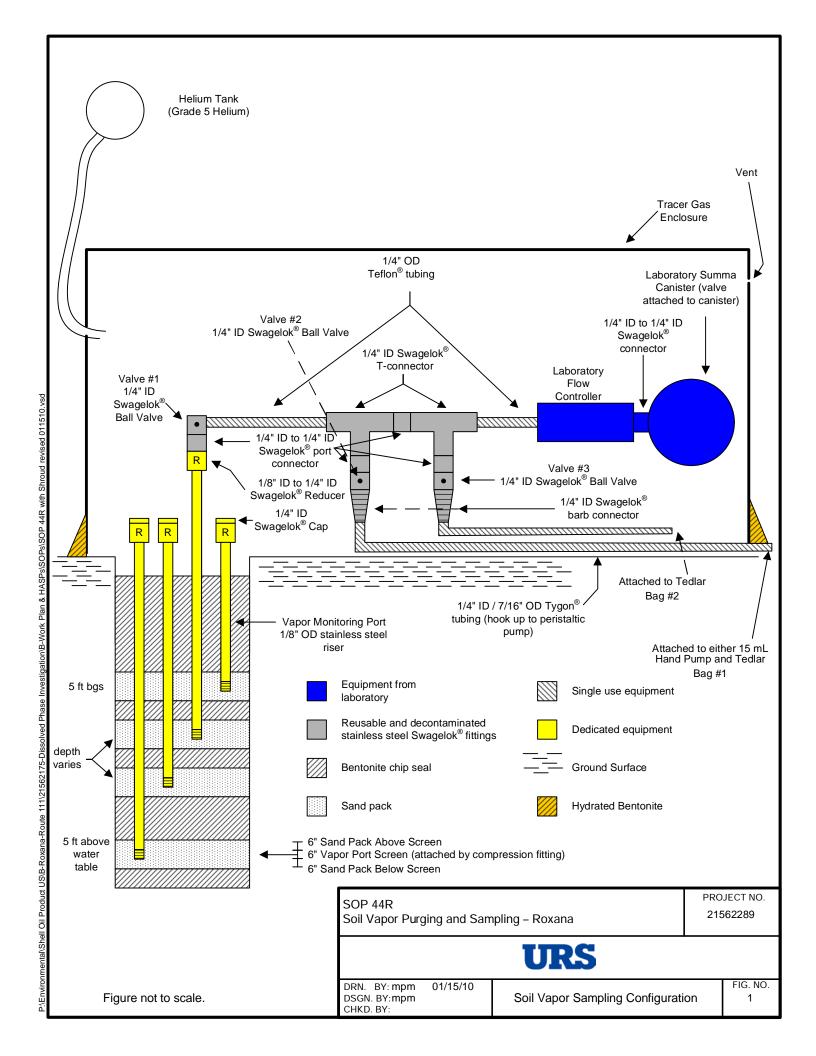


Page 6 of 7 September 2009

Samples will be shipped to the laboratory following DOT regulations. If there is the
possibility that samples may be classified as hazardous, samples must be shipped as
such. For procedures see SOP No. 24 and check with one of the office hazardous
shipping personnel.



Page 7 of 7 September 2009



Soil Vapor Sampling Field Sheets

SOIL VAPOR SAMPLING - CANISTER SAMPLING DATA

Date	Port IĎ	Required Purge (mL)	15 mL Hand Pumps	Number of Hand Pumps Achieved	Canister ID	Flow Contrtoller ID	Value Leak Check OK (Y/N)	Helium Leak Check OK (Y/N)	Initial Vacuum	Time Start	Final Vacuum	Time Finish	
209	VMP-1-5	83.18	6	6	००० ००० ०२३५	FC 80 325	٦-	Yes	-30	6942	15	(00th	у
12109	VMP-1-8.5	108.48	8	. 8	000000 27a4	4068C	Yes	Yes	-30	1040	-3	tito	Đ
nog	VMP-1-23.5	216.93	15	15	1960	40830	Yes	y es	-30	1145	-5	רוגו	g
2)09	VMP-1-38.5	325.38	22	23	000 00 2153	FC 00 323	Yes	Yes	- 30	1304	-3	1330	٦
2109	VMP-2-5	83.18	6	C	000 00 9194	FC 00 434	yes	Yes	-30	1459	-4	1521	у
03/6"	VMP-2-8.5	108.48	8	8	000 002	F (00 587	Yes	Yes	-30	J84 (24103	0910	b
53/09	VMP-2-22	206.09	14	15	800000 2388	FC 009	405	Yes	-30	0957	-4	1021	g
03109	VMP-2-42	350.69	24	25	2698	FC00941	Yes	Yes	-30	1101	-5	1123	٢
13/09	VMP-3-5	83.18	6	G	327	FC 00 646	Yes	700	-30	1308	-8	1338	у
03109	VMP-3-22	206.09	14	15	60000148	FC0074	Yes	Yes	- 30	1004	~ 5	1024	Ь
04/09	VMP-3-31.5	274.77	19	24	2214	FC00926	485	yes	- 29	1110	-6	1140	9
409	VMP-3-39	329.00	22	30	000000 5834	FCOOLOG	yes	V 25	-30	1230	-6	1253	ſ
erleg	VMP-4-5	83.18	6	1	000 000 2710	000 000	Yeo	yes	-30	0900	-8.5	0935	у
leileg	VMP-4-12 .	133.79	9	[0	000 000 58λ5	FC00 142	y 2 S	Yes	-30	1028	-7	1058	ь
loslon	VMP-4-23.5	216.93	15	15	1999	6843	yes	yes	-30	1142	-4	1208	9
105/09	VMP-4-39	329.00	22	82	5173	FC60782	425	Yes	.30	1246	-6	/303	<u> </u> '
1/3/09/	VMP-2-8-5-D	10848	8	8	174	389	Yes	Yes	-33	8841	1-4	10910	

Page 1 of 10

SOIL VAPOR SAMPLING - CANISTER SAMPLING DATA

Date	Port ID	Required Purge (mL)	15 mL Hand Pumps	Number of Hand Pumps Achieved	Çanister ID	Flow Contrtoller ID	Leak Check OK (Y/N)	Helium Leak Check OK (Y/N)	initial Vacuum	Time Start	Final Vacuum	Time Finish	
11/5/09	VMP-5-5	83.18	6,	4	1937	FC.00	OK	*K	339 NS	1449	-5	1511	у
1118/09	VMP-5-12.5	137.40	10	11	100 000 5821	00000 6488	٥K	Yes	- 30	0926	-8.5-	0956	b
11/6/09	VMP-5-31	271.16	19	20	2017	40697	204	Yes	- 30	1034	1105	1104	g
116/01	VMP-5-40	336.23	23	24	000 00 0 3276	7280 479	Yes	Yes	-30	1139	-11	1209	,
11/06/01	VMP-6-5	83,18	6	7	000 00 0 3246	6839	Yes	40	-30	1311	1345	. 134	у
11/6/01	VMP-6-10	119.33	8	9	1525	-310	Yes	Yes	-30	1415	-6	1445	Ь
11/9/09	VMP-8-31.5	274.77	19	19	1089	FC00 375	yes	Yes	- 30	0941	-4	1010	g
1109/09	VMP-6-39	329.00	22	22	300000 0643	229	yes	Yes	-30	1045	- 4	1162	,
11/09/09	VMP-7-5	83.18	6	රි	6232	FCOORI	yes	Yes	-30	1145	~5	1215	у
11(9/09	VMP-7-13.5	144.63	10	1)	1439	000 00 0 6749	yeo	yes	-30	1252	-3	1310	ь.
14(9109	VMP-7-29,5	280.31	18	18	000000	FC00355	yes	Yes	-30	1355	-4	1413	9
11/co/log	VMP-7-38	321.77	22	22	00000 ((39	800000 067(Nes	yes	-30	1511	-5	154	r
pajoilit	VMP-8-5	83.18	6	1	000 006 3720	FC 00 247	yes	Yes	-30	0905	-5	0918	у
Motor	VMP-8-9.5	115.71	8	\$ ∤	00000 2489	FC 0034	yes	yes	-30	0450	-45	1011	ь
11/10/09	VMP-8-23.5	216.93	15	15	\$420 \$420	FC00383	yes	Yes	-30	1051	-5	1311	g
11 10 9	VMP-8-35.5	303,69	21	21 .	NA	NA	NA	MA	MA	NA	NA	NA	ſ

reid Log

SOIL VAPOR SAMPLING – CANISTER SAMPLING DATA

Date :	Port ID	Required Purge (mL)	15 mL Hand Pumps	Number of Hand Pumps Achieved	Canister ID	Flow Conirtoller ID	Leak Check OK (Y/N)	Hellum Leak Check OK (Y/N)	Initial Vacuum	Time Start	Final Vacuum	Time Finish	
Illuloq.	VMP-9-5	83.18	6	U	39.15	E COOHI3	yes	Yes	- 30	0949	-4	1000	у
Hillon	VMP-9-11.5	130.17	. 9	10	5869	40831	yes	yes	-30	0843	-9	916	Ь
11)10/09	VMP-9-25.5	231.39	16	17	900000 3709	ලමනයෙන (පරිථ)	405	yes	-30	1439	-3	1455	9
11/10/09	VMP-9-38.5	325.38	22	2 2	0835	FC00795	425	yes	.30	1333	- 3	1354	١
11/1/09	VMP-10-5	83.18	8	(g)	3516	FC0653U	4 45	yes	-30	1207	- a	1225	у
11/11/09	VMP-10-10 °,	119.33	8	8,	000 000 2085	\$000000 6468	y eS	yes	-3ن	1312	-5	1336	ь
11/09	VMP-10-20	191,63	13	įΥ	000000 2723	FC 00217	Υ	4	- 30	1413	~3:5	1431	9
1113/09	VMP-10-30	- 263.93	18	18	2215	FCOUNTY	yes	Y	<u>−3</u> ∪	1456	-5.5	1514	r
11/17/19	VMP-11-5	83.18	8	7	3702	FC00	У		-30	1413	A	1443	у
11112/09	VMP-11-8	104.87	.7	18	00 <i>00</i> 00 5850	000000 0836	ÿ	1	-30	1509	1-7	1539	b
WARD9	VMP-11-29	256,70	18	18	5624	FC00577	Υ	Y	-30	0840	_5	0910	9
11(18)09	VMP-11-38	321,77	22	23	0000000 404	40826	7	7	-30	0941	-11	1017	ſ
11/13/09	VMP-12-5	83.18	6	7	2916	\$600	Xes	Yes	-30	10t9	-6	1030	, y
11 [13]09	VMP-12-11.5	130.17	9	9	00000 3257	FCOO'BI	yes	Yes .	- 30	1106	-2.5	1130	ь
11/13/09	VMP-12-25	227.78	16	· 1 →	3834	FC 00900	yes	yes	~30	1203	-3,5	1317	8
11/13/09	VMP-12-39	329.00	22	22	+1540 e 0 0 00	FC 802	yes	yes	-30	1257	-4.5	1317	٢

2102

	-				. "	,··			٠;٠		,	
Date -	Port ID	Required Purge (mL)	15 mL Hand Pumps	Number of Hand Pumps' Achleved	Canister ID	Flow Contrtoller ID	Leak Check OK (Y/N)	Helium Leak Check OK (Y/N)	Initial Vacuum	Time Start	Final Vacuum	Time Finish
11/16/9	VMP-13-6	83.18	6	7	#BB	1662	Y	7	-30	<u>.</u> 55	-5	1544
11/17/09	VMP-13-10.5	122,94	8	J	9532	690000	¥	7	-35	0844	-5.5	0912
11/13/191	VMP-13-21.5	202.47	14	14	000000 345 }	345	7.	j.	430	1000	-2.5	1036
1117109	VMP-13-29,5	280,31	18	20	0000/06 5817	00 563	γ	7	-30	îio	-6.5	1140
11/16/09	VMP-14-5	83.18	6	6	3803	fc060551	γ.	N	-36	837	- φ	0967
11/16/09	VMP-14-11.5	130.17	9	٩	90000 9131	0512	у	Y and	د 3م	0949	~	M19 H
11/6/09	VMP-14-20	191.63	·13	. 13	3958 3958	Feboalp	Y	Y	-30	1123	- 5	1153
11/6/09	VMP-14-29	256.70	18	19	2205	FC00 754	Y	ÿ	-3 O	314	-5	1444
1801	VMP-15-5	83.18	6	7	000 000	6529	N	¥	-30	1305	-7.5	1335
11/18/09	VMP-15-21.5	202.47	14	15	2504	PC00 807	Ý	4	-30	1401 0	-5	1433
1/18/09	VMP-15-25.5	231.39	16	17	000 <i>000</i> 0570	48779	Y	y	-30	1505	-6	1535
allala	VMP-15-29	256.70	· · · 18	19	5803	F 000735	У	7	7.38	0819	-6-5	0839
11196	VMP-16-5	83.18	8	7	2174	388 Er 00	Υ		-30	104	-7	1055
1/19/09	VMP-16-13.5	144.63	- 10	12-	5627	¢C00255	7	y	-35	1142	-55 MAS	1218
11/19/80	VMP-16-19	184,40	13	14	3380	FC00396	Ý	Ÿ	- 30	1253	-7	1823
11/19/09	VMP-16-31	271,16	19	Do	2133	00556	Ŋ	7	-30	1347	742	1422
11/20/09	VHP-16-5	83-18	6	7	12208	FC 266	У		-30	0851	-8	0922
1	Resample	ed vmp	- 16-5	and		455				,		
 *	VMP-14-		0 6	17	1470		. 7	1.	-30	1 1117	-1-8	1147
	1 1 17-					Page 4 of 10	-			{	Sampler I	nitials: NS

米

SOIL VAPOR SAMPLING - CANISTER SAMPLING DATA

Date	Port ID	Required Purge (mL)	15 mL Hand Pumps	Number of Hand Pumps Achieved	Canister ID	Flow Contrtoller ID	Leak Check OK (Y/N)	Helium Leak Check OK (Y/N)	Initial Vacuum	Time Start	Final Vacuum	Time Finish	
13/04	VMP-2-8,5-10	108.48	8	8	217·1	FC00	γ	٢	-30	0841	-4	0910	
6/09	VHP-5-12.5-D	137-40	10	i)	000 0G 1487	40794	À	X	- 30	0926	-5	0946	
10/09	vmp-9-25.51)	231.39	ي) إ	ור	000 bee	FCOULZZ	Y	Y	-30	1439	- y	1509	
111/09	VMP-10-20D	141.63	13	14	374	FC@548	Y	Y	-30	1413	-6	1444	
13/09	JMP-12-39D	329.00	99			\$606893			· 30	<u> </u>			CANGEST READ B
13/09	906-01-4MD	263.93	18		5920	40670	ASS		-30		TAU		Some
14/49-	VMP-KI-20-D	191.03	13	73	1912	FC 004 79	4		-30	H 23	-5	1153	Sono m
117/09	vmP - 13-10,50	122,94	9	9	6724	FC60895	У	у,	-30	0844	-8.5	0909	et con
18/07	1		\$	7	2213	BCC0 245	Y	У	-30	1305	-7	1335	differen
109	VHP-16-31-D	241.16	18	Ìь	3843	FC 00 604	7	1	-30	1347	_4	1420	

SOIL VAPOR SAMPLING - TEDLAR SAMPLING DATA

		ļ			Tally	<u></u>				ک	hora		,
Date	Port ID	PID (PPM)	CO (ppm)	CO2 (ppm)	H2S (ppm)	LEL (%)	02 (%)	Helium Before	Hellium After	Helium in Shroud 1	Helium in Shroud 2	Direct Port Medum un Shroud 3	હિન્દ
112109	VMP-1-5	98,2	4	OVR	0	35	11.1	9500	よみる	63%	62%		у
11/2/09	VMP-1-8.5	875	4	OVR	0	25	1.2%	c ppm	8300 pp	08%	44%	-	ь
11/2/09	VMP-1-29.5	83. a	5	OVR	0	too	8.2%	o ppm)	9500 ppm	i4%	56%		9
1112/09	VMP-1-38.5	630	\$ n,	OVR	0	31	1.3%	8575ppm	8900110	58%.	48%	_	ſ
11/12/09	VMP-2-5	770		: 0V\$	0	100 0%	100	Oppm	3.2%	67%	58%	···· ·	у
1/03/09	VMP-2-8.5	12.0	0	2.43%	N CS KH	Ne 9(6)	16.1%	75ppm	2.9%	69%	Ac/.	_	ь
103/09	VMP-2-22	118	0	ovk	0	21%	3.4%	Oppm	2425ppn	60%	49%	_	9
11/03/07	VMP-2-42	ৰ e8	193	ovk	O	78%	0.8%	2.1%	Q5.50 ppm	8°/.	58%	_	ı
1/3/69	VMP-3-5	7.6	3	0 V R	. 0	5%	6.0%	Oppm	2700ppm	68%	49.8/		у
1102009	VMP-3-22	101	142	OVR	Ð	looover	0.9%	3800 pp	4.2%	58%.	51%		ь
1/4/09	VMP-3-31.5	631	-3	ولا ير 320	0	over	0.9%	10/6/	10%	6a%	44 %	11%	
11104/09	VMP-3-39	i 1 4	195	4.72	0	. 0	0,9	11%	11%	59%	40%	10%	r
1105/09	VMP-4-5	34	0	1600 ppm	Ø	0 .	60 X	17225 ppm	30%	59%	39%	32/6	у
11105709	VMP-4-12	150	120	AVO	b	14	1.4	1250PPM	22000 ppm	60%	41%	-	ь
15/09	VMP-4-23,5	340	134	2.2./.	6	86	6	9%	10%	62%	39%	10.6%	g
115/09	VMP-4-39	327	1154	4.45%	J	74	0.9.	, ,,,,	4300 pm	59%	34%	10%	ı
1/03/04	1MP-2-8 ED	12	C	2-43%	0	Neg(0)	1,40	7 75 pm	2.9%	69%	40%		75

SOIL VAPOR SAMPLING - TEDLAR SAMPLING DATA

Date	Port ID	PID (PPM)	CO (ppm)	CO2 (ppm)	H2S (ppm)	LEL (%)	O2 (%)	Helium Before	Hellum After	Helium in Shroud 1	Hellum in Shroud 2	Helium In Shroud 3	
iloslo#	VMP-5-5	197	5	4.50/	0	35	0	OppM	45000	37°/	28%		,
106/09	VMP-5-12.5	41.5	153	OVR	G	loo over	20%	1425	3050	45%	39%.	_	ŀ
11/08/01	VMP-5-31	315	947	OUR	j †	0 400/	1.8%	1.9%	2.1%	46%	35/0	٠	١
116109	VMP-5-40	રાઇ.6	913	OUR	0	Over 1	0.4	4.1%	2-7-	51%	38.7%		T
4/06/04	VMP-6-5	161	27.0	OVF	3	85 /.	0.9	دسماط ق	9825	55%	39%	,	
11/06/09	VMP-8-10	183	यं	OVR	3	0 vel ./	0.4	2325	775/	54%	29.60		ļ
11/9/09	VMP-6-31.5	445	86.0	ovR	3	over.	0.3	Oppm	0.0	58%	47%	-	,
11/9/09	VMP-6-39	55	8	ovk	5	Over 100	0,2	16050 ppm	15475	60%	48%		
11/9/09	VMP-7-5	0.18	4	OVR	0	NEG	12.3	3.4%	2.5%	649/0	50%	-	,
11/9/9	VMP-7-13.5	5.3	Ф	OVR	Ø	0	5.2	(media g	Asoppa	60%	46%	_	
11/9/29	VMP-7-29.5	89	132	ovr	7	× 13	4.5	5375ppm	36501PM	620/6	49%		1
11/09	VMP-7-38	#563	4	OVR	3	75%	1.8	Оррм	5975	52%	45%	_	
11 10/09	VMP-8-5	00	1	DVR	0	0	15-5	1500 ppm	0-ppm	63%	45%		
11/18/09	VMP-8-9.5	0.0	0	OVR	U	0	11.2	Orppm	Oppm	63%	45%	_	1
111009	VMP-8-23.5	٥.٥	N2"	OUR	O	O	11.2	@ ppm	Oppm	40%	46%	٠.	
11(10)09	VMP-8-35.5	NΔ	NA	MΑ	NA	NA	MA	NΑ	NA	53%	NA	_	I

f see field

log

SOIL VAPOR SAMPLING - TEDLAR SAMPLING DATA

Diroct Connect Reading

Date	Port ID	PID (PPM)	CO (ppm)	CO2 (ppm)	H2S (ppm)	LEL (%)	O2 (%)	Helium Before	Helium After	Helium in Shroud 1	Helium in Stroud 2	Helium in	
11/11/09	VMP-9-5	0.0	Ş	3.45%	٥	U	15.0	10.4%	4.6°h	55%	49%	4.5%	у
11/11/09	VMP-9-11.5	0	0	OUR	6	0	5.2	18975919	B 500	61%	39%		b
11/10/09	VMP-9-25.5	145	" "	OVR	0	60	2.)	3375 APM	Soppm	54%	410/0	-	g
11/10/9	:3 VMP-9-38,5	139	1.(ovR	0	33	1.6	0.0 ppm	2125ppm	60%	47%		'
11/11/09	VMP-10-5	8.0	0	OVR	0	٥	13.5	O. Oppm	0.0 ppm	65º/6	56%	1,	у
धामित	VMP-10-10	D · D	0	OVR	0	0	11.7	Diopen	0.0ppm	58%	44%	1	b
11/4/09	VMP-10-20	0	2	470	O	o	20.9	Oppm	2475	Colo	38%		9
11/13/09	VMP-10-30	0	0	OYA	Q	0	6.7	Oppm	0	600/0	500%	فسعر	٢
11/17/00	VMP-11-5	5	0	oyk	0	24	7	10 ppm	@ ppm	50%.	31/.	-	у
11/17/09	VMP-11-8	4.0	0	045	0	A	7:3	Oppm	० ५१४)	50%	37%		ь
11/18/00	VMP-11-29	2000 Mar.	3	orh	O	16	4.5	oppm	745 Opp	753/3	45%	, ·	g
11/18/09	VMP-11-38	2000	2	OUR	0	28.	4.6	Oppm	O ppm	50%	40%	مسر	r
11/13/09	VMP-12-5	857	lào	oun	, 2,	100%	1-8	6%	5.8%	56/6	42°/2	7.0%	у
11/13/09	VMP-12-11.5	97	68	OVR	2.	0	4.2	Oppm	5.5%	55%	45%	Oppm	Ь
11/13/09	VMP-12-25	332	142	2.33	2	. 92	2.9	6.5%	6.4%	47%	36/2	6-9%	9
11(13/09	VMP-12-39	1805	93	2700		7	A+ 3	le.5°16	7.8%	56%0	44%	72%	

: <u>P</u>	er ()													her.
	Date	Port ID	PID (PPM)	CO (ppm)	CO2 (ppm)	H2S (ppm)	, LEL (%)	O2 (%)	Helium Before	Helium After	Hellum in Shroud 1	Helium in Shroud 2	Purci Por Heliumin Shrout 3	→
	11/6/09	VMP-13-5	957	4	OVR	Ö	26	1.6 62M	MAGC	0	39/.	22%	,	y
	11179	VMP-13-10.5	12:0	2	1030	0	0	20.9	0	400	40%	29%		b
Į	11/7/09	VMP-13-21.5	3375	27	OVR	O	38	42	acho	32%	43%	Oppr		9
	11/17/0/	VMP-13-29.6	14 1200	8	OVR	0	47	4.8	السماع	מפן ש	40%	32%		r
	11111/09	VMP-14-6	43.9 kH	3 €K#	OVR KH	+231	-17-104	-6-1-	nbbw	-	54%	42%		y interior Bag
	Millog	VMP-14-11.5	43.9	25	OVR	ુપ	17	4.1	2.5%	2.3%	<i>55</i> %	27%	16500ppm	b
	11/16/09	VMP-14-20	104	100 f	OVR	0	ا ٥	4.2	2.4%	19475011	32%	27%	HLOWPAN	g
	11/16/09	VMP-14-29	286 -	37	0187	0	100 / ·	3-7	16000	1972 ·	36%	20%		r
	11/18/00	VMP-15-5	25.6	<i>O</i> .	OVR	*0	3	7.5	0	12-5pp	A6%	32°1.		У
~	11/18/04	VMP-15-21.5	47	5.	OUR	6	100%.	34	4%	4.2%	66%	60%	4.7%	b
	11/18/09	VMP-15-25.5	49.9	6	OVE		100 /s	5.6	5.1%	\$4.87	60%	51%	5.7%	9
ara .	maka	VMP-15-29	186	26	OVR	3.2	over,	0.1	424.27	5.2%	56%	45%	5.9%	r
	11/19/09	VMP-16-5	°5'6		350	0	D	15-2	330/6	23%	52%	34%	5%	y &
	17/14/80	VMP-16-13.5	74	(a)	1.39%	O	48	14.6	17%	16%	60%	56%	16%	ь
	11/19/04	VMP-16-19	36	17	L33%.	0	100%	11.6	18%	91/2	5.4%	53%	# 13%	9
J	rilialy	VMP-16-31	38	18	OVR	Ó.	100%	14.5	10%	6%	55%	41/0	9.5%	٢
1	11/20/09	VMP-16-5	8:6	5	·· 880	0	NEG	7.0	16%	46/1	67%	58%	*40%	X + *
ş .		Resouple	A A	MP-16-	-5 and	VMP-	14-5		·	-			1	<u></u>
~	11/20/09	V MP- 19-5	1.4) 0	1.89	0	0	10.5	oppm	poppa	62%	58/		
_	11/2/19		-T-	ı			Page 9 of 10.		<u> </u>	*		Sampler I	nitials: 🖊	ı

A Section

SOIL VAPOR SAMPLING – TEDLAR SAMPLING DATA

Date	Port iD	PID (PPM)	CO (ppm)	CO2 (ppm)	H2S (ppm)	LEL (%)	O2 (%)	Helium Before	Helium After	Hetium In Stroud 1	Helium in Shroud 2	Direct Po	RT
11/03/09	NW6-7-82-D	lΣ	0	2.43%	ಲ	Nia (o)	16.1	75	2.1%	69%	40%		
11/06/09	VMP-5-12-5-D	4115	153	OVR	O	1000VR	2.0	1425	3050	45/6	31%	1	
11/10/09	VMP-9-25.5D	145	1	OVR	٥	ဝပ	2.1	2375PPM	50 ррм	56%	1.0%		
ii/n/o9	VMP-10-20-D	0	n	470	0	9	20.9	Oppm	2475	60%	38%.		
		732	-142	2.33	2	92	29						MS
11/3/09	VMP-12-3910			м				65%		54°10			CANOSMER TENOUGELL 210 the fice
11/13/09-	VMP-10-30				77.					4000		-	sabore
116109	1M6-11-30	104	100t	-ovr			4.5	2.49	19475AM	32%	27%	19600pm	Dup, west
ilisted	VMP- 13-10-5	12.0	2	1030	0	0	20.9	0	400	40/6	21%		of commists
1.01.a	VMP-15-36	1 1	5.6	DOVE	0100	3	7.6	0	125 ppm	A6/2	32%		
1/18/09	VMP-16-3		18	OVE	hour (100%	14.5	10%	6%	55%	41%	9.5%	<u> </u>

Sampler Initials: K

Soil IDW Characterization Results

337484 (Air Knife Cuttings in Village)

338903 (Air Knife & Soil Cuttings Inside Refinery)

340203 (Soil Cuttings in Village)

Analytical Report 337484

for

URS Corporation-St. Louis

Project Manager: Wendy Pennington

900 S Central Avenue Route 111 & Rand Ave Vicinity/21561979

16-JUL-09





4143 Greenbriar Dr., Stafford, TX 77477 Ph:(281) 240-4200 Fax:(281) 240-4280

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-08-TX), Arizona (AZ0738), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002) Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054) New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610) Rhode Island (LAO00308), USDA (S-44102)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87428), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85) Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)

Xenco-Miramar (EPA Lab code: FL01246): Florida (E86349)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-08-TX)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-08-TX)

Xenco-Corpus Christi (EPA Lab code: TX02613): Texas (T104704370-08-TX)

Houston - Dallas - San Antonio - Tampa - Miami - Midland - Corpus Christi - Atlanta - Latin America





16-JUL-09

Project Manager: Wendy Pennington

URS Corporation-St. Louis

1001 Highlands Plaza Drive West, Suite 300

St. Louis, MO 63110

Reference: XENCO Report No: 337484

900 S Central Avenue

Project Address: Roxana, IL 62084

Wendy Pennington:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 337484. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 337484 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Carlos Castro

Managing Director, Texas

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.

Certified and approved by numerous States and Agencies.

A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Atlanta - Corpus Christi - Latin America



Sample Cross Reference 337484



URS Corporation-St. Louis, St. Louis, MO

900 S Central Avenue

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
20521 Soil	S	Jul-08-09 15:45		337484-001

CASE NARRATIVE



Client Name: URS Corporation-St. Louis

Project Name: 900 S Central Avenue

Project ID: Route 111 & Rand Ave Vic Report Date: 16-JUL-09 Work Order Number: 337484 Date Received: 07/09/2009

Sample receipt non conformances and Comments:

None

Sample receipt Non Conformances and Comments per Sample:

None

Analytical Non Conformances and Comments:

Batch: LBA-764959 Soil pH by SW-846 9045C

None

Batch: LBA-765136 Cyanide by EPA 9010

None

Batch: LBA-765143 Sulfides by SW-846 9030

None

Batch: LBA-765419 Metals per ICP-MS by SW 6020A Selenium recovered below QC limits in the Matrix Spike.

Samples affected are: 337484-001.

The Laboratory Control Sample for Selenium is within laboratory Control Limits

Batch: LBA-765473 Chlorinated Herbicides By GC U by SW-846 8151

None

Batch: LBA-765475 Organochlorine Pesticides by SW-846 8081A Chlordane, Toxaphene recovered below QC limits in the Matrix Spike.

Samples affected are: 337484-001.

The Laboratory Control Sample for Chlordane, Toxaphene is within laboratory Control Limits

Batch: LBA-765481 Flash Point (CC) SW-846 1010

None

Batch: LBA-765558 VOAs by SW-846 8260B

Vinyl Chloride recovered above QC limits in the Matrix Spike. Vinyl Chloride RPD was outside

QC limits in the Matrix Spike/Matrix Spike Duplicate.

Samples affected are: 337484-001.

The Laboratory Control Sample for Vinyl Chloride is within laboratory Control Limits

CASE NARRATIVE



Client Name: URS Corporation-St. Louis

Project Name: 900 S Central Avenue

Project ID: Route 111 & Rand Ave Vic Report Date: 16-JUL-09 Work Order Number: 337484 Date Received: 07/09/2009

Batch: LBA-765629 SVOCs by SW-846 8270C

Pyridine RPD on BS/BSD was outside laboratory control limits. However, recoveries are within

control limits and there were no hits on sample 337484-001.



URS Corporation-St. Louis, St. Louis, MO



Project Id: Route 111 & Rand Ave Vicinity/2156197

Project Name: 900 S Central Avenue

Contact: Wendy Pennington

Project Location: Roxana, IL 62084

Report Date: 16-JUL-09

Project Manager: Debbie Simmons

Date Received in Lab: Thu Jul-09-09 08:30 am

				Project Manager:	Debble Sillillons	
	Lab Id:	337484-001				
Analysis Paguastad	Field Id:	20521 Soil				
Analysis Requested	Depth:					
	Matrix:	SOIL				
	Sampled:	Jul-08-09 15:45				
TCLP SVOCs	Extracted:	Jul-11-09 09:52				
1021 5,005	Analyzed:	Jul-15-09 15:38				
	Units/RL:	mg/L RL				
1,4-Dichlorobenzene		U 0.050				
2,4-Dinitrotoluene		U 0.050				
Hexachlorobenzene		U 0.050				
Hexachlorobutadiene		U 0.050				
Hexachloroethane		U 0.050				
2-methylphenol		U 0.050				
3&4-Methylphenol		U 0.050				
Nitrobenzene		U 0.050				
Pentachlorophenol		U 0.050				
Pyridine		U 0.050				
2,4,5-Trichlorophenol		U 0.050				
2,4,6-Trichlorophenol		U 0.050				
TCLP Herbicides by SW8151	Extracted:	Jul-11-09 10:15				
	Analyzed:	Jul-13-09 19:56				
	Units/RL:	ug/L RL				
2,4,5-Tp		U 2.50				
2,4-D		U 2.50				
			•		•	

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

Carlos Castro Managing Director, Texas



URS Corporation-St. Louis, St. Louis, MO



Project Id: Route 111 & Rand Ave Vicinity/2156197

Project Name: 900 S Central Avenue

Contact: Wendy Pennington

Project Location: Roxana, IL 62084

Report Date: 16-JUL-09

Project Manager: Debbie Simmons

Date Received in Lab: Thu Jul-09-09 08:30 am

				Project Manager:	Debbie Simmons	
	Lab Id:	337484-001				
Analysis Paguastad	Field Id:	20521 Soil				
Analysis Requested	Depth:					
	Matrix:	SOIL				
	Sampled:	Jul-08-09 15:45				
TCLP Metals per ICP/MS by EPA	Extracted:	Jul-14-09 09:50				
6020	Analyzed:	Jul-14-09 18:24				
	Units/RL:	mg/L RL				
Arsenic		U 0.002				
Barium		0.909 0.005				
Cadmium		0.002 0.001				
Chromium		0.012 0.003				
Lead		0.002 J 0.002				
Mercury *		U 0.0004				
Selenium		U 0.003				
Silver		U 0.002				
TCLP Pesticides by SW8081A	Extracted:	Jul-11-09 09:57				
	Analyzed:	Jul-14-09 00:40				
	Units/RL:	ug/L RL				
Heptachlor Epoxide		U 0.250				
Chlordane		U 2.50				
Endrin		U 0.250				
Gamma-BHC (Lindane)		0.090 J 0.250				
Heptachlor		0.080 J 0.250				
Methoxychlor		U 0.250				
Toxaphene		U 2.50				

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi



URS Corporation-St. Louis, St. Louis, MO



Project Id: Route 111 & Rand Ave Vicinity/2156197

Project Name: 900 S Central Avenue

Contact: Wendy Pennington

Project Location: Roxana, IL 62084

Date Received in Lab: Thu Jul-09-09 08:30 am

Report Date: 16-JUL-09

Project Manager: Debbie Simmons

				Project Manager:	Debbie Similions	
	Lab Id:	337484-001				
Amaluaia Daguastad	Field Id:	20521 Soil				
Analysis Requested	Depth:					
	Matrix:	SOIL				
	Sampled:	Jul-08-09 15:45				
VOA TCLP List	Extracted:	Jul-15-09 10:24				
VOIL LOUI LIST	Analyzed:	Jul-15-09 14:04				
	Units/RL:	mg/L RL				
Benzene		U 0.005				
Methyl ethyl ketone		U 0.050				
Carbon Tetrachloride		U 0.005				
Chlorobenzene		U 0.005				
Chloroform		U 0.005				
1,2-Dichloroethane		U 0.005				
1,1-Dichloroethene		U 0.005				
Tetrachloroethylene		U 0.005				
Trichloroethylene		U 0.005				
Vinyl Chloride		U 0.002				

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

Carlos Castro Managing Director, Texas



URS Corporation-St. Louis, St. Louis, MO



Project Id: Route 111 & Rand Ave Vicinity/2156197

Contact: Wendy Pennington

Project Location: Roxana, IL 62084

icinity/2156197 Project Name: 900 S Central Avenue

Date Received in Lab: Thu Jul-09-09 08:30 am

Report Date: 16-JUL-09

Project Manager: Debbie Simmons

				Project Manager:	Debbie Sillillions	
	Lab Id:	337484-001				
Analysis Requested	Field Id:	20521 Soil				
Anatysis Requestea	Depth:					
	Matrix:	SOIL				
	Sampled:	Jul-08-09 15:45				
Flash Point (Closed Cup Tester)	Extracted:					
(= 1.1.1 = 1.1 f	Analyzed:	Jul-15-09 08:30				
	Units/RL:	Deg F RL				
Flash Point		> 150 75.0				
Reactive Cyanide (Colorimetric,	Extracted:					
Manual)	Analyzed:	Jul-10-09 16:10				
	Units/RL:	mg/kg RL				
Cyanide		U 0.200				
Reactive Sulfide	Extracted:					
	Analyzed:	Jul-10-09 17:06				
	Units/RL:	mg/kg RL				
Sulfide		U 50.0				
Soil pH	Extracted:					
r	Analyzed:	Jul-09-09 14:02				
	Units/RL:	SU RL				
рН		7.47				

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

Carlos Castro Managing Director, Texas



Analytical Method : Flash Point (Closed Cup Tester) Client : URS Corporation-St. Louis

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Extracte	_	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
20521 Soil	Jul. 8, 2009	Jul. 9, 2009				Jul.15, 2009	30	7	P



Analytical Method : TCLP Metals per ICP/MS by EPA 6020 Client : URS Corporation-St. Louis

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Time Held Extracte d (Days)		Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
20521 Soil	Jul. 8, 2009	Jul. 9, 2009	Jul. 14, 2009	180	6	Jul.14, 2009	180	0	P



Analytical Method : TCLP Pesticides by SW8081A Client : URS Corporation-St. Louis

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Time Held Extracte d (Days)	J	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
20521 Soil	Jul. 8, 2009	Jul. 9, 2009	Jul. 11, 2009	7	3	Jul.14, 2009	40	3	P



Analytical Method : TCLP Herbicides by SW8151 Client : URS Corporation-St. Louis

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Time Held Extracte d (Days)	J	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
20521 Soil	Jul. 8, 2009	Jul. 9, 2009	Jul. 11, 2009	7	3	Jul.13, 2009	7	2	P



Analytical Method : VOA TCLP List	Client :	URS Corporation-St. Louis
Work Order #: 337484	Project ID:	Route 111 & Rand Ave Vicini

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Time Held Extracte d (Days)	_	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q	
20521 Soil	Jul. 8, 2009	Jul. 9, 2009				Jul.15, 2009	14	7	P	



Analytical Method:	TCLP SVOCs	Client:	URS Corporation-St. Louis
		·	*

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Extracte	,	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
20521 Soil	Jul. 8, 2009	Jul. 9, 2009	Jul. 11, 2009	7	3	Jul.15, 2009	40	4	P



Analytical Method : Reactive Cyanide (Colorimetric, Manual Client : URS Corporation-St. Louis

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Extracte		Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
20521 Soil	Jul. 8, 2009	Jul. 9, 2009				Jul.10, 2009	14	2	P



Analytical Method : Reactive Sulfide	Client:	URS Corporation-St. Louis
Work Order #: 337484	Project ID:	Route 111 & Rand Ave Vicini

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Extracte	Date Analyzed	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
20521 Soil	Jul. 8, 2009	Jul. 9, 2009				Jul.10, 2009	14	2	P



Analytical Method : Soil pH	Client:	URS Corporation-St. Louis
Work Order #: <u>337484</u>	Project ID:	Route 111 & Rand Ave Vicini

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Extracte	Date Analyzed	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
20521 Soil	Jul. 8, 2009	Jul. 9, 2009				Jul.9, 2009	28	1	P

F = These samples were analyzed outside the recommended holding time.

P = Samples analyzed within the recommended holding time.



Flagging Criteria



- X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
- **B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- **D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F RPD exceeded lab control limits.
- **J** The target analyte was positively identified below the MQL and above the SQL.
- U Analyte was not detected.
- L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- **H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- **K** Sample analyzed outside of recommended hold time.
- **JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.
- **BRL** Below Reporting Limit.
- **RL** Reporting Limit
- * Outside XENCO's scope of NELAC Accreditation.

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.

Certified and approved by numerous States and Agencies.

A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - San Antonio - Corpus Christi - Midland/Odessa - Tampa - Miami - Latin America

	Phone	Fax
4143 Greenbriar Dr, Stafford, Tx 77477	(281) 240-4200	(281) 240-4280
9701 Harry Hines Blvd , Dallas, TX 75220	(214) 902 0300	(214) 351-9139
5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
2505 North Falkenburg Rd, Tampa, FL 33619	(813) 620-2000	(813) 620-2033
5757 NW 158th St, Miami Lakes, FL 33014	(305) 823-8500	(305) 823-8555
12600 West I-20 East, Odessa, TX 79765	(432) 563-1800	(432) 563-1713
842 Cantwell Lane, Corpus Christi, TX 78408	(361) 884-0371	(361) 884-9116



Project Name: 900 S Central Avenue

Work Orders: 337484, Project ID: Route 111 & Rand Ave Vicinity/21561979

Lab Batch #: 765473 Sample: 533448-1-BLK / BLK Batch: 1 Matrix: Water

Units: ug/L Date Analyzed: 07/13/09 17:26	SU	RROGATE RI	ECOVERY S	STUDY	
TCLP Herbicides by SW8151	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
2,4-Dichlorophenylacetic Acid	1.68	2.00	84	44-131	

Lab Batch #: 765473 Sample: 533448-1-BKS / BKS Batch: 1 Matrix: Water

Units: ug/L	Date Analyzed: 07/13/09 18:16	SURROGATE RECOVERY STUDY				
TCLP He	rbicides by SW8151	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes			[D]		
2,4-Dichlorophenylacetic Acid	1	1.44	2.00	72	44-131	

Units: ug/L	Date Analyzed: 07/13/09 19:06	SURROGATE RECOVERY STUDY				
TCLP H	erbicides by SW8151	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
	Analytes			[D]		
2,4-Dichlorophenylacetic A	eid	1.55	2.00	78	44-131	

Lab Batch #: 765473 **Sample:** 337484-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: ug/L Date Analyzed: 07/13/09 19:56	SURROGATE RECOVERY STUDY				
TCLP Herbicides by SW8151	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
2,4-Dichlorophenylacetic Acid	7.90	10.0	79	44-131	

Lab Batch #: 765473 **Sample:** 337484-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: ug/L Date Analyzed: 07/13/09 20:46	SU	RROGATE RE	ECOVERY	STUDY	
TCLP Herbicides by SW8151	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
2,4-Dichlorophenylacetic Acid	7.23	10.0	72	44-131	

Surrogate Recovery [D] = 100 * A / B

^{*} Surrogate outside of Laboratory QC limits

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: 900 S Central Avenue

Work Orders: 337484, Project ID: Route 111 & Rand Ave Vicinity/21561979

Lab Batch #: 765475 Sample: 533447-1-BLK / BLK Batch: 1 Matrix: Water

Units: ug/L Date Analyzed: 07/13/09 22:51	SURROGATE RECOVERY STUDY				
TCLP Pesticides by SW8081A	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes	[]	[-]	[D]	,,,	
Decachlorobiphenyl	0.990	1.00	99	53-119	
Tetrachloro-m-xylene	1.05	1.00	105	72-114	

Lab Batch #: 765475 Sample: 533447-1-BKS / BKS Batch: 1 Matrix: Water

SURROGATE RECOVERY STUDY Units: ug/L Date Analyzed: 07/13/09 23:45 Amount True Control TCLP Pesticides by SW8081A Found Amount Recovery Limits **Flags** [B] [A] %R %R [D] **Analytes** Decachlorobiphenyl 0.900 1.00 90 53-119 Tetrachloro-m-xylene 0.940 1.00 94 72-114

Lab Batch #: 765475 Sample: 533447-1-BSD / BSD Batch: 1 Matrix: Water

Units: ug/L Date Analyzed: 07/14/09 00:13	SU	SURROGATE RECOVERY STUDY					
TCLP Pesticides by SW8081A	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
Analytes	[]	[-]	[D]	,,,			
Decachlorobiphenyl	0.920	1.00	92	53-119			
Tetrachloro-m-xylene	0.930	1.00	93	72-114			

Units: ug/L Date Analyzed: 07/14/09 00:40	SURROGATE RECOVERY STUDY					
TCLP Pesticides by SW8081A	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
Analytes	[]	[-]	[D]	,,,,,		
Decachlorobiphenyl	2.95	5.00	59	53-119		
Tetrachloro-m-xylene	4.65	5.00	93	72-114		

Lab Batch #: 765475 **Sample:** 337484-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: ug/L Date Analyzed: 07/14/09 01:07	SURROGATE RECOVERY STUDY				
TCLP Pesticides by SW8081A	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
Decachlorobiphenyl	2.90	5.00	58	53-119	
Tetrachloro-m-xylene	4.50	5.00	90	72-114	

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: 900 S Central Avenue

Work Orders: 337484, Project ID: Route 111 & Rand Ave Vicinity/21561979

Lab Batch #: 765629 Sample: 533449-1-BLK / BLK Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 07/15/09 13:00	SURROGATE RECOVERY STUDY				
	P SVOCs	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
2-Fluorobiphenyl		0.044	0.050	88	43-116	
2-Fluorophenol		0.028	0.050	56	21-100	
Nitrobenzene-d5		0.038	0.050	76	35-114	
Phenol-d6		0.014	0.050	28	10-94	
Terphenyl-D14		0.047	0.050	94	33-141	
2,4,6-Tribromophenol		0.029	0.050	58	10-123	

Lab Batch #: 765629 Sample: 533449-1-BKS / BKS Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 07/15/09 13:39	SURROGATE RECOVERY STUDY				
,	ΓCLP SVOCs Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
2-Fluorobiphenyl		0.043	0.050	86	43-116	
2-Fluorophenol		0.031	0.050	62	21-100	
Nitrobenzene-d5		0.041	0.050	82	35-114	
Phenol-d6		0.025	0.050	50	10-94	
Terphenyl-D14		0.048	0.050	96	33-141	
2,4,6-Tribromophenol		0.037	0.050	74	10-123	

Units: mg/L Date Analyze	ed: 07/15/09 14:19	SURROGATE RECOVERY STUDY				
TCLP SVOCs Analytes		Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
2-Fluorobiphenyl		0.044	0.050	88	43-116	
2-Fluorophenol		0.029	0.050	58	21-100	
Nitrobenzene-d5		0.042	0.050	84	35-114	
Phenol-d6		0.021	0.050	42	10-94	
Terphenyl-D14		0.048	0.050	96	33-141	
2,4,6-Tribromophenol		0.038	0.050	76	10-123	

Surrogate Recovery [D] = 100 * A / B

^{*} Surrogate outside of Laboratory QC limits

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: 900 S Central Avenue

Work Orders: 337484, Project ID: Route 111 & Rand Ave Vicinity/21561979

Units: mg/L Date Analyzed: 07/15/09 15:38	SURROGATE RECOVERY STUDY				
TCLP SVOCs Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
2-Fluorobiphenyl	0.198	0.250	79	43-116	
2-Fluorophenol	0.160	0.250	64	21-100	
Nitrobenzene-d5	0.180	0.250	72	35-114	
Phenol-d6	0.109	0.250	44	10-94	
Terphenyl-D14	0.223	0.250	89	33-141	
2,4,6-Tribromophenol	0.148	0.250	59	10-123	

Lab Batch #: 765629 **Sample:** 337484-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/L Date Analyzed: 07/15/09 16:18	SURROGATE RECOVERY STUDY				
TCLP SVOCs Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
	0.404	0.270	5 0	10.115	
2-Fluorobiphenyl	0.194	0.250	78	43-116	
2-Fluorophenol	0.169	0.250	68	21-100	
Nitrobenzene-d5	0.188	0.250	75	35-114	
Phenol-d6	0.157	0.250	63	10-94	
Terphenyl-D14	0.231	0.250	92	33-141	
2,4,6-Tribromophenol	0.181	0.250	72	10-123	

Lab Batch #: 765558 **Sample:** 533707-1-BKS / BKS **Batch:** 1 **Matrix:** Water

Units: mg/L	Date Analyzed: 07/15/09 11:52	SURROGATE RECOVERY STUDY					
VC	OA TCLP List	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
	Analytes			[D]			
4-Bromofluorobenzene		0.0490	0.0500	98	86-115		
Dibromofluoromethane		0.0509	0.0500	102	86-118		
1,2-Dichloroethane-D4		0.0453	0.0500	91	80-120		
Toluene-D8		0.0507	0.0500	101	88-110		

Surrogate Recovery [D] = 100 * A / B

^{*} Surrogate outside of Laboratory QC limits

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: 900 S Central Avenue

Work Orders: 337484, Project ID: Route 111 & Rand Ave Vicinity/21561979

Lab Batch #: 765558 Sample: 533707-1-BLK / BLK Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 07/15/09 13:39	SU	SURROGATE RECOVERY STUDY				
VOA TCLP List	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
Analytes			[D]			
4-Bromofluorobenzene	0.0460	0.0500	92	86-115		
Dibromofluoromethane	0.0516	0.0500	103	86-118		
1,2-Dichloroethane-D4	0.0477	0.0500	95	80-120		
Toluene-D8	0.0503	0.0500	101	88-110		

Units: mg/L Date Analyzed: 07/15/09	0 14:04	SURROGATE RECOVERY STUDY					
VOA TCLP List Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags		
4-Bromofluorobenzene	0.0487	0.0500	97	86-115			
Dibromofluoromethane	0.0516	0.0500	103	86-118			
1,2-Dichloroethane-D4	0.0500	0.0500	100	80-120			
Toluene-D8	0.0509	0.0500	102	88-110			

Lab Batch #: 765558 **Sample:** 337484-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/L	Date Analyzed: 07/15/09 14:55	SURROGATE RECOVERY STUDY									
VO	OA TCLP List	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags					
	Analytes			[D]							
4-Bromofluorobenzene		0.0507	0.0500	101	86-115						
Dibromofluoromethane		0.0513	0.0500	103	86-118						
1,2-Dichloroethane-D4		0.0496	0.0500	99	80-120						
Toluene-D8		0.0519	0.0500	104	88-110						

Units: mg/L Date Analyzed: 07/15/09 15:20	SURROGATE RECOVERY STUDY									
VOA TCLP List	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags					
Analytes			[D]							
4-Bromofluorobenzene	0.0479	0.0500	96	86-115						
Dibromofluoromethane	0.0492	0.0500	98	86-118						
1,2-Dichloroethane-D4	0.0463	0.0500	93	80-120						
Toluene-D8	0.0508	0.0500	102	88-110						

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: 900 S Central Avenue

Work Orders: 337484, Project ID: Route 111 & Rand Ave Vicinity/21561979

Lab Batch #: 765246 Sample: ICB-BLK / ICB Batch: 1 Matrix: Water

SURROGATE RECOVERY STUDY Units: mg/L **Date Analyzed:** 07/09/09 15:46 True Amount Control VOAs by SW-846 8260B **Found** Amount Recovery Limits Flags [B] %R %R [A] [D] **Analytes** 4-Bromofluorobenzene 0.0487 0.0500 97 86-115 Dibromofluoromethane 0.0503 0.0500 101 86-118 1,2-Dichloroethane-D4 0.0485 0.0500 97 80-120 Toluene-D8 0.0507 101 88-110 0.0500

Surrogate Recovery [D] = 100 * A / B

^{*} Surrogate outside of Laboratory QC limits

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Blank Spike Recovery



Project Name: 900 S Central Avenue

Work Order #: 337484 Project ID: Route 111 & Rand Ave Vicinity/21561979

 Lab Batch #:
 765136
 Sample:
 765136-1-BKS
 Matrix:
 Solid

 Date Analyzed:
 07/10/2009
 Date Prepared:
 07/10/2009
 Analyst:
 MOR

Reporting Units: mg/kg BLANK/BLANK SPIKE RECOVERY STUDY Batch #: Blank Spike Blank Blank Control Reactive Cyanide (Colorimetric, Manual) Spike Result Added Spike Limits Flags [A] [B] Result %R %R **Analytes** [D] [C] < 0.018 0.200 0.227 114 80-120 Cyanide

 Lab Batch #: 765143
 Sample: 765143-1-BKS
 Matrix: Solid

 Date Analyzed: 07/10/2009
 Date Prepared: 07/10/2009
 Analyst: MOR

Reporting Units: mg/kg Batch #: BLANK /BLANK SPIKE RECOVERY STUDY Blank Spike **Blank** Blank Control **Reactive Sulfide** Added Spike Spike Limits Result Flags [B] Result %R %R [A] **Analytes** [C] [D] < 5.00 1000 90 Sulfide 896 60-120

 Lab Batch #: 765419
 Sample: 533563-1-BKS
 Matrix: Water

 Date Analyzed: 07/14/2009
 Date Prepared: 07/14/2009
 Analyst: HAT

Reporting Units: mg/L	Batch #: 1	BLANK /BLANK SPIKE RECOVERY STUI							
TCLP Metals per ICP/MS by EPA 6020	Blank Result [A]	Spike Added [B]	Blank Spike Result	Blank Spike %R	Control Limits %R	Flags			
Analytes	[12]	[2]	[C]	[D]	7010				
Arsenic	< 0.002	0.050	0.049	98	75-125				
Barium	< 0.001	0.050	0.051	102	75-125				
Cadmium	< 0.001	0.020	0.019	95	75-125				
Chromium	0.001	0.050	0.047	94	75-125				
Lead	< 0.001	0.050	0.048	96	75-125				
Mercury	< 0.0001	0.0010	0.0008	80	75-125				
Selenium	< 0.001	0.050	0.047	94	75-125				
Silver	< 0.001	0.020	0.017	85	75-125				

Blank Spike Recovery [D] = 100*[C]/[B]All results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit



Blank Spike Recovery



Project Name: 900 S Central Avenue

Work Order #: 337484 Project ID: Route 111 & Rand Ave Vicinity/21561979

 Lab Batch #: 765558
 Sample: 533707-1-BKS
 Matrix: Water

 Date Analyzed: 07/15/2009
 Date Prepared: 07/15/2009
 Analyst: ZHO

Reporting Units: mg/L BLANK/BLANK SPIKE RECOVERY STUDY Batch #: Blank Spike Blank Blank Control **VOA TCLP List** Result Added Spike Spike Limits **Flags** [A] [B] Result %R %R [D] **Analytes** [C] < 0.001 0.050 0.049 98 66-142 Benzene < 0.010 0.500 0.306 61 60-140 Methyl ethyl ketone Carbon Tetrachloride < 0.001 0.050 0.051 102 62-125 0.045 < 0.001 0.050 90 60-133 Chlorobenzene Chloroform < 0.001 0.050 0.050 100 74-125 0.050 0.052 < 0.001 104 68-127 1,2-Dichloroethane < 0.001 0.050 0.052 104 59-172 1,1-Dichloroethene Tetrachloroethylene < 0.001 0.050 0.047 94 71-125 Trichloroethylene < 0.001 0.050 0.047 94 62-137 Vinyl Chloride < 0.001 0.050 0.056 112 75-125



BS / BSD Recoveries



Project Name: 900 S Central Avenue

Work Order #: 337484

Project ID: Route 111 & Rand Ave Vicinity/21561979

Analyst: JLA

Date Prepared: 07/11/2009 **Batch #:** 1

Date Analyzed: 07/13/2009

Lab Batch ID: 765473

Sample: 533448-1-BKS

Matrix: Water

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TCLP Herbicides by SW8151 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
7 Arialy tes											
2,4,5-Tp	<0.093	1.00	0.831	83	1	0.918	92	10	32-140	25	
2,4-D	< 0.052	1.00	0.832	83	1	0.927	93	11	10-189	25	

Analyst: JLA Date Prepared: 07/11/2009 Date Analyzed: 07/13/2009

Lab Batch ID: 765475 Sample: 533447-1-BKS Batch #: 1 Matrix: Water

Units: ug/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY Blank Spike Blank Blank Spike Blank Blk. Spk Control Control

TCLP Pesticides by SW8081A	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		[B]	[C]	[D]	[E]	Result [F]	[G]				
Heptachlor Epoxide	< 0.009	1.00	1.00	100	1	1.01	101	1	40-130	20	
Endrin	< 0.006	1.00	1.17	117	1	1.17	117	0	43-134	20	
Gamma-BHC (Lindane)	< 0.005	1.00	1.08	108	1	1.08	108	0	73-125	20	
Heptachlor	< 0.005	1.00	0.990	99	1	1.01	101	2	45-128	20	
Methoxychlor	< 0.006	1.00	1.05	105	1	1.07	107	2	73-142	20	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes



BS / BSD Recoveries



Project Name: 900 S Central Avenue

Work Order #: 337484

Date Prepared: 07/11/2009

Project ID: Route 111 & Rand Ave Vicinity/21561979

Date Analyzed: 07/15/2009

Analyst: CLR **Lab Batch ID:** 765629

Sample: 533449-1-BKS

Matrix: Water **Batch #:** 1

Units: mg/L	BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY										
TCLP SVOCs Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
1,4-Dichlorobenzene	< 0.001	0.050	0.042	84	0.05	0.041	82	2	19-121	28	
2,4-Dinitrotoluene	< 0.001	0.050	0.047	94	0.05	0.048	96	2	22-135	38	
Hexachlorobenzene	< 0.001	0.050	0.045	90	0.05	0.047	94	4	46-133	25	
Hexachlorobutadiene	< 0.001	0.050	0.041	82	0.05	0.042	84	2	44-125	25	
Hexachloroethane	< 0.001	0.050	0.043	86	0.05	0.042	84	2	25-153	25	
2-methylphenol	< 0.001	0.050	0.040	80	0.05	0.040	80	0	14-176	25	
3&4-Methylphenol	< 0.002	0.100	0.081	81	0.1	0.079	79	3	14-176	25	
Nitrobenzene	< 0.001	0.050	0.042	84	0.05	0.044	88	5	65-135	25	
Pentachlorophenol	< 0.001	0.050	0.029	58	0.05	0.022	44	27	17-117	50	
Pyridine	< 0.004	0.050	0.032	64	0.05	0.020	40	46	16-86	28	F
2,4,5-Trichlorophenol	< 0.001	0.050	0.041	82	0.05	0.042	84	2	65-135	25	
2,4,6-Trichlorophenol	< 0.001	0.050	0.044	88	0.05	0.045	90	2	65-135	25	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|Blank Spike Recovery [D] = 100*(C)/[B]Blank Spike Duplicate Recovery [G] = 100*(F)/[E]All results are based on MDL and Validated for QC Purposes



Form 3 - MS Recoveries

Project Name: 900 S Central Avenue



Work Order #: 337484 **Lab Batch #:** 765473

Proiect ID: Route 111 & Rand Ave Vicinity/215619

 Date Analyzed:
 07/13/2009
 Date Prepared:
 07/11/2009
 Analyst:
 JLA

 QC- Sample ID:
 337484-001 S
 Batch #:
 1
 Matrix:
 Soil

MATRIX / MATRIX SPIKE RECOVERY STUDY Reporting Units: ug/L **Parent** Spiked Sample Control **TCLP Herbicides by SW8151** Sample Spike %R Result Limits Flag Result Added [C] [D] %R [A] [B] **Analytes** 2,4,5-Tp < 2.50 5.00 4.13 83 32-140 2,4-D < 2.50 5.00 4.55 91 10-189

Lab Batch #: 765475

 Date Analyzed:
 07/14/2009
 Date Prepared:
 07/11/2009
 Analyst:
 JLA

 QC- Sample ID:
 337484-001 S
 Batch #:
 1
 Matrix:
 Soil

Reporting Units: ug/L MATRIX / MATRIX SPIKE RECOVERY STUDY **Parent TCLP Pesticides by SW8081A** Spiked Sample Control Sample %R Spike Result Flag Limits Result Added [D] %R [C] [A] [B] **Analytes** Heptachlor Epoxide < 0.250 5.00 4.60 92 40-130 Endrin < 0.250 5.00 5.45 109 43-134 Gamma-BHC (Lindane) 0.090 5.00 4.95 97 73-125 Heptachlor 0.080 5.00 5.35 105 45-128 Methoxychlor < 0.250 5.00 4.95 99 73-142

Matrix Spike Percent Recovery [D] = 100*(C-A)/BRelative Percent Difference [E] = 200*(C-A)/(C+B)All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit



Form 3 - MS Recoveries

Project Name: 900 S Central Avenue



Work Order #: 337484

Lab Batch #: 765629 Project ID: Route 111 & Rand Ave Vicinity/21561

 Date Analyzed:
 07/15/2009
 Date Prepared:
 07/11/2009
 Analyst:
 CLR

 QC- Sample ID:
 337484-001 S
 Batch #:
 1
 Matrix:
 Soil

Reporting Units: mg/L MATRIX SPIKE RECOVERY STUDY

Reporting Units: mg/L	MATRIA / MATRIA SPIKE RECOVERY STUDY										
TCLP SVOCs by SW-846 8270C Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag					
1,4-Dichlorobenzene	< 0.050	0.250	0.182	73	19-121						
2,4-Dinitrotoluene	< 0.050	0.250	0.231	92	22-135						
Hexachlorobenzene	< 0.050	0.250	0.212	85	46-133						
Hexachlorobutadiene	< 0.050	0.250	0.183	73	44-125						
Hexachloroethane	< 0.050	0.250	0.180	72	25-153						
2-methylphenol	< 0.050	0.250	0.185	74	14-176						
3&4-Methylphenol	< 0.050	0.500	0.376	75	14-176						
Nitrobenzene	< 0.050	0.250	0.196	78	65-135						
Pentachlorophenol	< 0.050	0.250	0.175	70	17-117						
Pyridine	< 0.050	0.250	0.154	62	16-86						
2,4,5-Trichlorophenol	< 0.050	0.250	0.191	76	65-135						
2,4,6-Trichlorophenol	< 0.050	0.250	0.204	82	65-135						

Matrix Spike Percent Recovery [D] = 100*(C-A)/BRelative Percent Difference [E] = 200*(C-A)/(C+B)All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit



Form 3 - MS / MSD Recoveries



Project Name: 900 S Central Avenue

Work Order #: 337484 Project ID: Route 111 & Rand Ave Vicinity/21561979

Lab Batch ID: 765419 QC-Sample ID: 337564-001 S Batch #: 1 Matrix: Sludge

Date Analyzed: 07/14/2009 Date Prepared: 07/14/2009 Analyst: HAT

Reporting Units: mg/L		MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY									
TCLP Metals per ICP/MS by EPA 6020	Parent Sample Result	Spike Added	Spiked Sample Result [C]	Sample %R	Added	Duplicate Spiked Sample Result [F]	%R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes	[A]	[B]		[D]	[E]		[G]				
Arsenic	0.022	0.250	0.232	84	0.250	0.260	95	11	75-125	25	
Barium	0.270	0.250	0.499	92	0.250	0.572	121	14	75-125	25	
Cadmium	< 0.005	0.100	0.081	81	0.100	0.092	92	13	75-125	25	
Chromium	0.018	0.250	0.233	86	0.250	0.261	97	11	75-125	25	
Lead	< 0.010	0.250	0.229	92	0.250	0.261	104	13	75-125	25	
Mercury	< 0.0020	0.0050	0.0045	90	0.0050	0.0050	100	11	75-125	25	
Selenium	< 0.015	0.250	0.182	73	0.250	0.191	76	5	75-125	25	X
Silver	< 0.010	0.100	0.084	84	0.100	0.095	95	12	75-125	25	



Form 3 - MS / MSD Recoveries



Project Name: 900 S Central Avenue

Work Order #: 337484 Project ID: Route 111 & Rand Ave Vicinity/21561979

Lab Batch ID: 765558 **QC- Sample ID:** 337484-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 07/15/2009 Date Prepared: 07/15/2009 Analyst: ZHO

Reporting Units: mg/L		MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY									
VOA TCLP List Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	< 0.005	0.050	0.049	98	0.050	0.050	100	2	66-142	21	
Methyl ethyl ketone	< 0.050	0.500	0.422	84	0.500	0.404	81	4	60-140	20	
Carbon Tetrachloride	< 0.005	0.050	0.049	98	0.050	0.051	102	4	62-125	20	
Chlorobenzene	< 0.005	0.050	0.046	92	0.050	0.048	96	4	60-133	21	
Chloroform	< 0.005	0.050	0.053	106	0.050	0.053	106	0	74-125	20	
1,2-Dichloroethane	< 0.005	0.050	0.057	114	0.050	0.059	118	3	68-127	20	
1,1-Dichloroethene	< 0.005	0.050	0.056	112	0.050	0.055	110	2	59-172	22	
Tetrachloroethylene	< 0.005	0.050	0.050	100	0.050	0.053	106	6	71-125	20	
Trichloroethylene	< 0.005	0.050	0.051	102	0.050	0.053	106	4	62-137	24	
Vinyl Chloride	< 0.002	0.050	0.074	148	0.050	0.060	120	21	75-125	20	XF



Sample Duplicate Recovery



Project Name: 900 S Central Avenue

Work Order #: 337484

Lab Batch #: 765481 Project ID: Route 111 & Rand Ave Vicinity/21561979

 Date Analyzed: 07/15/2009
 Date Prepared: 07/15/2009
 O7/15/2009
 Analyst: MOR

 QC- Sample ID: 337484-001 D
 Batch #: 1
 Matrix: Soil

Reporting Units: Deg F	SAMPLE / SAMPLE DUPLICATE RECOVERY							
Flash Point (Closed Cup Tester) Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag			
Flash Point	> 150	> 150	0	25				

Lab Batch #: 765136

 Date Analyzed:
 07/10/2009
 Date Prepared:
 07/10/2009
 Analyst:
 MOR

 QC- Sample ID:
 337484-001 D
 Batch #:
 1
 Matrix:
 Soil

Reporting Units: mg/kg SAMPLE / SAMPLE DUPLICATE RECOVERY

Reactive Cyanide (Colorimetric, Manual) Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Cyanide	< 0.200	< 0.200	NC	20	

Lab Batch #: 765143

 Date Analyzed:
 07/10/2009
 Date Prepared:
 07/10/2009
 Analyst:
 MOR

 QC- Sample ID:
 337484-001 D
 Batch #:
 1
 Matrix:
 Soil

Reporting Units: mg/kg	SAMPLE A	/SAMPLE DUPLICATE RECOVERY								
Reactive Sulfide	Parent Sample Result [A]	Sample Duplicate Result	RPD	Control Limits %RPD	Flag					
Analyte		[B]								
Sulfide	<50.0	<50.0	NC	20						

Lab Batch #: 764959

рΗ

 Date Analyzed: 07/09/2009
 Date Prepared: 07/09/2009
 07/09/2009
 Analyst: MOR

 QC- Sample ID: 337484-001 D
 Batch #: 1
 Matrix: Soil

SAMPLE / SAMPLE DUPLICATE RECOVERY Reporting Units: SU Parent Sample Sample Control Soil pH RPD **Duplicate** Limits Result Flag Result %RPD [A] [B] Analyte

7.47

7.45

20

Spike Relative Difference RPD 200 * | (B-A)/(B+A) | All Results are based on MDL and validated for QC purposes. BRL - Below Reporting Limit



Sample Duplicate Recovery



Project Name: 900 S Central Avenue

Work Order #: 337484

Lab Batch #: 765419 Project ID: Route 111 & Rand Ave Vicinity/21561979

Date Analyzed: 07/14/2009 Date Prepared: 07/14/2009 Analyst: HAT

QC- Sample ID: 337564-001 D

Batch #: 1 Matrix: Sludge

SAMPLE / SAMPLE DUPLICATE DECOVERY

Reporting Units: mg/L	SAMPLE	/SAMPLE DUPLICATE RECOVERY						
TCLP Metals per ICP/MS by EPA 6020 Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag			
Arsenic	0.022	0.022	0	25				
Barium	0.270	0.273	1	25				
Cadmium	< 0.005	< 0.005	NC	25				
Chromium	0.018	0.019	5	25				
Lead	< 0.010	< 0.010	NC	25				
Mercury	< 0.0020	< 0.0020	NC	25				
Selenium	< 0.015	< 0.015	NC	25				
Silver	< 0.010	< 0.010	NC	25				

	SERVICES). [□ CHECK IF NO INCIDENT # APPLIES			TAGE:		CONSULTANT PROJECT NAME / NO.:	Route 111 & Rand Ave Vicinity / 21561979	337484-4						DID aboratory Mytee	$\frac{1}{2}$							Time: 1720	Time.	7 0830	05/2/06 Revision
Shell Oil Products Chain Of Custody Record	Print Bill To Contact Name: INCIDENT # (ENV SERVICES)	KEVIN DYER 9 7 2 1 6	SAP	3 4 0 0		900 S. CENTRAL AVENUE, ROXANA, ILLINOIS 62084 CONSULTANT PROJECT CONTACT (Report to):	WENDY PENNINGTON Route 1 Route 1	W. Pennington	REQUESTED ANALYSIS		> P.		201	OC/PA).L	X						FED EX 7/8/01	Date:	7/9/0.	
Shell Oil Pr	ease Check Appropriate Box:	☑ ENV. SERVICES ☐ MOTIVA RETAIL ☐ SHELL RETAIL	☐ MOTIVA SD&CM ☐ CONSULTANT ☐ LUBES	☐ SHELL PIPELINE	URS CORPORATION - FIELD OFFICE		62048	E-walt: wendy_pennington@u	☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ☐ 29 N WEEKEND	Trever		L/ SHELL CONTRACT RATE APPLIES		SAMPLING PRESERVATIVE NO. OF 8260	HCL HNO3 H2SO4 NONE OTHER	8/ X 1:05 9/15/ bolsh		M/ /	Reton !				Received by: (Signature)	Rocelvod by: (Sefrature)	
LAB (LOCATION)	☑ XENCO (CALSCIENCE ()	Spt. (Потнек (CONSULTANT COMPANY: JRS CORPORATION	ADDRESS: 001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300	env: 5T. LOUIS, MISSOURI 63110	TELEPHONE: OFF: 314-743-4166 OFF: 314-743-4166 OFE: 314-743-4166 OFE: 314-743-4166	A DAYS 3 DAYS	DELIVERABLES: LEVEL 1 (LIEVEL 2) LEVEL 3 -	OR NOTES:	Please include "J" values on Level 2 Reports	Please provide sample receipt upon login.	Field Sample Identification		105213011						(elinquished by: (Signature) Why Party	Kelinquished by: (Signan)	Relinquished by, (Signature)	



Client:

Prelogin / Nonconformance Report - Sample Log-In

Date/Time: 07/09/09	*		•			
Lab ID#: ' 337484						
Initials:						
Sample Receipt Check	list		-			
1. Samples on ice?	Blue	Water	No			
2. Shipping container in good condition?	(Yes)	No	None			
3. Custody seals intact on shipping container (cooler) and bottles?	(Tes	No	N/A			
4. Chain of Custody present?	(PB	No				
5. Sample instructions complete on chain of custody?	Yes	No				
6. Any missing / extra samples?	Yes	No				
7. Chain of custody signed when relinquished / received?	(FES)	No				
8. Chain of custody agrees with sample label(s)?	Yes	No				
9. Container labels legible and intact?	(Yes)	No				
10. Sample matrix / properties agree with chain of custody?	Yes	No				
11. Samples in proper container / bottle?	Yes	No				
12. Samples properly preserved?	Yes	No	N/A			
13. Sample container intact?	Yes	No				
14. Sufficient sample amount for indicated test(s)?	Yes	No				
15. All samples received within sufficient hold time?	Yes	No				
16. Subcontract of sample(s)?	Yes	.No	N/A			
17. VOC sample have zero head space?	Yes	No	N/A3			
18. Cooler 1 No. Cooler 2 No. Cooler 3 No.	Cooler 4 N	Cooler 4 No. Cooler 5 No.				
Solbs Soc lbs °C lbs °C	lbs	°C	lbs	°C		
Nonconformance Docume	ntation					
Contact: Contacted by:		Date/Time	·	······································		
,						
Regarding:						
	·					
Corrective Action Taken:						
V						
*		ALL CALLED	**************************************			
Check all that apply: □ Client understands and would like to proces □ Cooling process had begun shortly after sa	eed with and ampling eve	alysis ent				

A.M

Analytical Report 338903

for

URS Corporation-St. Louis

Project Manager: Wendy Pennington

900 S. Central Avenue

Rte 111 & Rand Ave Vicinity/21561979

10-AUG-09





4143 Greenbriar Dr., Stafford, TX 77477 Ph:(281) 240-4200 Fax:(281) 240-4280

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-08-TX), Arizona (AZ0738), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002) Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054) New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610) Rhode Island (LAO00308), USDA (S-44102)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87428), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85) Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)

Xenco-Miramar (EPA Lab code: FL01246): Florida (E86349)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-08-TX)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-08-TX)

Xenco-Corpus Christi (EPA Lab code: TX02613): Texas (T104704370-08-TX)

Houston - Dallas - San Antonio - Tampa - Miami - Midland - Corpus Christi - Atlanta - Latin America





10-AUG-09

Project Manager: Wendy Pennington

URS Corporation-St. Louis

1001 Highlands Plaza Drive West, Suite 300

St. Louis, MO 63110

Reference: XENCO Report No: 338903

900 S. Central Avenue

Project Address: Roxana, IL 62084

Wendy Pennington:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 338903. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 338903 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Carlos Castro

Managing Director, Texas

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.

Certified and approved by numerous States and Agencies.

A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Atlanta - Corpus Christi - Latin America



Sample Cross Reference 338903



URS Corporation-St. Louis, St. Louis, MO

900 S. Central Avenue

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
20391 Soil	S	Jul-24-09 12:45		338903-001

CASE NARRATIVE



Client Name: URS Corporation-St. Louis

Project Name: 900 S. Central Avenue

Project ID:Rte 111 & Rand Ave VicinReport Date:10-AUG-09Work Order Number:338903Date Received:07/25/2009

Sample receipt non conformances and Comments:

None

Sample receipt Non Conformances and Comments per Sample:

None

Analytical Non Conformances and Comments:

Batch: LBA-767822 VOAs by SW-846 8260B

None



URS Corporation-St. Louis, St. Louis, MO



Project Id: Rte 111 & Rand Ave Vicinity/21561979

Project Name: 900 S. Central Avenue

Contact: Wendy Pennington

Project Location: Roxana, IL 62084

Date Received in Lab: Sat Jul-25-09 09:00 am **Report Date:** 10-AUG-09

Project Manager: Debbie Simmons

				Project Manager:	Debble Sillillolls	
	Lab Id:	338903-001				
Analysis Paguastad	Field Id:	20391 Soil				
Analysis Requested	Depth:					
	Matrix:	SOIL				
	Sampled:	Jul-24-09 12:45				
VOA TCLP List	Extracted:	Aug-04-09 09:12				
	Analyzed:	Aug-04-09 11:54				
	Units/RL:	mg/L RL				
Benzene		0.006 0.005				·

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

Carlos Castro Managing Director, Texas



Analytical Method : VOA TCLP List	Client:	URS Corporation-St. Louis
Work Order #: <u>338903</u>	Project ID:	Rte 111 & Rand Ave Vicinity/

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Extracte	J	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
20391 Soil	Jul. 24, 2009	Jul. 25, 2009				Aug.4, 2009	14	11	P

F = These samples were analyzed outside the recommended holding time.

P = Samples analyzed within the recommended holding time.



Flagging Criteria



- X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
- **B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- **D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- **E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- **F** RPD exceeded lab control limits.
- **J** The target analyte was positively identified below the MQL and above the SQL.
- U Analyte was not detected.
- L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- **H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- **K** Sample analyzed outside of recommended hold time.
- **JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.
- **BRL** Below Reporting Limit.
- **RL** Reporting Limit
- * Outside XENCO's scope of NELAC Accreditation.

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.

Certified and approved by numerous States and Agencies.

A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - San Antonio - Corpus Christi - Midland/Odessa - Tampa - Miami - Latin America

	Phone	Fax
4143 Greenbriar Dr, Stafford, Tx 77477	(281) 240-4200	(281) 240-4280
9701 Harry Hines Blvd , Dallas, TX 75220	(214) 902 0300	(214) 351-9139
5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
2505 North Falkenburg Rd, Tampa, FL 33619	(813) 620-2000	(813) 620-2033
5757 NW 158th St, Miami Lakes, FL 33014	(305) 823-8500	(305) 823-8555
12600 West I-20 East, Odessa, TX 79765	(432) 563-1800	(432) 563-1713
842 Cantwell Lane, Corpus Christi, TX 78408	(361) 884-0371	(361) 884-9116



Project Name: 900 S. Central Avenue

Work Orders: 338903, Project ID: Rte 111 & Rand Ave Vicinity/21561979

Units: mg/L Date Analyzed: 08/04/09 10:16	SU	SURROGATE RECOVERY STUDY						
VOA TCLP List	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
Analytes			[D]					
4-Bromofluorobenzene	0.0495	0.0500	99	86-115				
Dibromofluoromethane	0.0516	0.0500	103	86-118				
1,2-Dichloroethane-D4	0.0501	0.0500	100	80-120				
Toluene-D8	0.0472	0.0500	94	88-110				

Lab Batch #: 767822 Sample: 534982-1-BLK / BLK Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 08/04/09 11:05	SURROGATE RECOVERY STUDY								
VO	OA TCLP List	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags				
	Analytes			[D]						
4-Bromofluorobenzene		0.0492	0.0500	98	86-115					
Dibromofluoromethane		0.0518	0.0500	104	86-118					
1,2-Dichloroethane-D4		0.0507	0.0500	101	80-120					
Toluene-D8		0.0465	0.0500	93	88-110					

Lab Batch #: 767822 **Sample:** 338903-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/L	Date Analyzed: 08/04/09 11:54	SURROGATE RECOVERY STUDY							
VO	OA TCLP List	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
	Analytes			[D]					
4-Bromofluorobenzene		0.0495	0.0500	99	86-115				
Dibromofluoromethane		0.0549	0.0500	110	86-118				
1,2-Dichloroethane-D4		0.0551	0.0500	110	80-120				
Toluene-D8		0.0469	0.0500	94	88-110				

Lab Batch #: 767822 **Sample:** 338903-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/L Date Analyzed: 08/04/09 12:43	SU	SURROGATE RECOVERY STUDY							
VOA TCLP List	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags				
Analytes			[D]						
4-Bromofluorobenzene	0.0510	0.0500	102	86-115					
Dibromofluoromethane	0.0539	0.0500	108	86-118					
1,2-Dichloroethane-D4	0.0594	0.0500	119	80-120					
Toluene-D8	0.0458	0.0500	92	88-110					

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: 900 S. Central Avenue

Work Orders: 338903, Project ID: Rte 111 & Rand Ave Vicinity/21561979

Lab Batch #: 767822 **Sample:** 338903-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/L Date Analyzed: 08/04/09	13:07 Si	SURROGATE RECOVERY STUDY							
VOA TCLP List Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags				
4-Bromofluorobenzene	0.0499	0.0500	100	86-115					
Dibromofluoromethane	0.0515	0.0500	103	86-118					
1,2-Dichloroethane-D4	0.0548	0.0500	110	80-120					
Toluene-D8	0.0471	0.0500	94	88-110					

Surrogate Recovery [D] = 100 * A / B

^{*} Surrogate outside of Laboratory QC limits

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Blank Spike Recovery



Project Name: 900 S. Central Avenue

Work Order #: 338903 Project ID: Rte 111 & Rand Ave Vicinity/21561979

 Lab Batch #: 767822
 Sample: 534982-1-BKS
 Matrix: Water

 Date Analyzed: 08/04/2009
 Date Prepared: 08/04/2009
 Analyst: KHM

Reporting Units: mg/L Batch #: 1 BLANK /BLANK SPIKE RECOVERY STUDY

	tten // 1	DEMINITURE INCOVERT STODI					
VOA TCLP List	Blank Result	Spike Added	Blank Spike	Blank Spike	Control Limits	Flags	
Analytes	[A]	[B]	Result [C]	%R [D]	%R		
Benzene	< 0.001	0.100	0.104	104	66-142		



Form 3 - MS / MSD Recoveries



Project Name: 900 S. Central Avenue

Work Order #: 338903 **Project ID:** Rte 111 & Rand Ave Vicinity/21561979

Lab Batch ID: 767822 **QC- Sample ID:** 338903-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 08/04/2009 Date Prepared: 08/04/2009 Analyst: KHM

Reporting Units: mg/L	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY										
VOA TCLP List	Parent Sample	Spike	Spiked Sample Result	Spiked Sample	Spike	Duplicate Spiked Sample	Spiked Dup.	RPD	Control Limits	Control Limits	Flag
Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Benzene	0.006	0.100	0.114	108	0.100	0.110	104	4	66-142	21	

f Custody Record	INCIDENT # (ENV SERVICES). ☐ CHECK IF NO INCIDENT # APPLIES	9 7 2 1 6 6 4 0 DATE: 7/24/09		3 4 0 0 6 1 of O	2		, ILLINOIS 62084 CONSULTANT PROJECT NAME/NO;	Route 111 & Rand Ave Vicinity / 21561979	338408-H	QUESTED ANALYSIS							PID Laboratory Notes (ppm)							True. 7/24/09 1630	Time:	7-25-09 Time (7.00)
Shell Oil Products Chain Of Custody Record	Print Bill To Contact Name:	KEVIN DYER	# Od		SOPUS SITE ADDRESS (Street, City and State):		900 S. CENTRAL AVENUE; ROXANA, ILLINOIS 62084 consultant PRoject contact (Report to):	WENDY PENNINGTON SAMPLER NAME(S) (Print):	W. Pennington			>	1921		728 H	PAI Ire	LS 7 woistus SVOC/	*						FED EX		
Shell Oi	e Box:	11	☐ CONSULTANT ☐ LUBES	П отнек		URS CORPORATION - FIELD OFFICE		LLINOIS 62048	E-MAIL: Wendy pennington@urscorp.com	RESULTS NEEDED 24 HOURS ON WEEKEND	☑ ОТНЕR (SPECIFY) EDD	Cooler #3	[2] SHELL CONTRACT RATE APPLIES		-	PRESERVATIVE	MATRIX NO. OF CONT. HOL HN03 H2804 NONE OTHER	×			A TOP A			Received by; (Signature)	Received by: (Signature)	Received by: (Signature)
	Please (✓ ENV. SERVICES	☐ MOTIVA SD&CM	SHELL PIPELINE		URS CORPOR	170 E. RAND AVENUE	HARTFORD	E-MAIL:	_ 2 DAYS	☑ LEVEL 4	Cooler#2				SAMPLING	DATE TIME	724/09 1245 S						ž.		Rec
LAB (LOCATION) 4143 Greenbriar Dr.; Stafford, TX 77477	[J] XENCO (TEST AMERICA (SPL (□ отнек ()	CONSULTANT COMPANY:	URS CORPORATION	ADPRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300	GIT: ST. LOUIS, MISSOURI 63110	TELEPHONE: PAX: OFF: 314-743-4166 OFF: 314-743-4166 CELL: 314-452-8929	TÜRNAROUND TIME (CALENDAR DAYS): ☐ STANDARD (10 DAY) ☐ S DAYS ☐ 3 DAYS	DELIVERABLES: CEVEL 1 C LEVEL 2 C LEVEL 3	TEMPERATURE ON RECEIPT $^\circ$ Cooler#1 $^\circ$	SPECIAL INSTRUCTIONS OR NOTES: /	Please include "J" values on Level 2 Reports	Please provide sample receipt upon login.		Ligh Field Sample Identification	2039/ 50:1						Relinquished by: (Signature) Want Park	Relinquished by, (Signatur	Relinquished by: (Signature)



Prelogin / Nonconformance Report - Sample Log-In

Client: URS	•			
Date/Time: 07/25/09				
Lab ID#: 388903				
Initials:				
Sample Receipt Check	dist			
1. Samples on ice?	Blue	Water	No	
2. Shipping container in good condition?	Yes	No	None	
3. Custody seals intact on shipping container (cooler) and bottles?	Yes	No	N/A	
4. Chain of Custody present?	Yes	No		
5. Sample instructions complete on chain of custody?	(Page)	No		
6. Any missing / extra samples?	Yes	(No)		
7. Chain of custody signed when relinquished / received?	Yes	No		
8. Chain of custody agrees with sample label(s)?	(Yes)	No		
9. Container labels legible and intact?	(Yes)	No		
10. Sample matrix / properties agree with chain of custody?	Yes	No		
11. Samples in proper container / bottle?	Yes	No		
12. Samples properly preserved?	(Ves)	No	N/A	
13. Sample container intact?	Yes	No		
14. Sufficient sample amount for indicated test(s)?	Yes	No		
15. All samples received within sufficient hold time?	Yes	No		
16. Subcontract of sample(s)?	Yes	、No	N/A	
17. VOC sample have zero head space?	Yes	No	(N/A)	
18. Cooler 1 No. Cooler 2 No. Cooler 3 No.	Cooler 4 N	lo.	Cooler 5 No.	
12 lbs 3.4°c lbs °c lbs °c	lbs	°c	lbs	°c
Nonconformance Docume	entation			
Contact:Contacted by:		Date/Time		
Regarding:				
Corrective Action Taken:				
Check all that apply: ☐ Client understands and would like to proce☐ Cooling process had begun shortly after s				

Analytical Report 340203

for

URS Corporation-St. Louis

Project Manager: Wendy Pennington

900 S. Central Ave.

Route 111 & Rand Ave Vicinity/21561979

14-AUG-09





4143 Greenbriar Dr., Stafford, TX 77477 Ph:(281) 240-4200 Fax:(281) 240-4280

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-08-TX), Arizona (AZ0738), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002) Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054) New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610) Rhode Island (LAO00308), USDA (S-44102)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87428), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85) Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)

Xenco-Miramar (EPA Lab code: FL01246): Florida (E86349)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-08-TX)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-08-TX)

Xenco-Corpus Christi (EPA Lab code: TX02613): Texas (T104704370-08-TX)

Houston - Dallas - San Antonio - Tampa - Miami - Midland - Corpus Christi - Atlanta - Latin America





14-AUG-09

Project Manager: Wendy Pennington

URS Corporation-St. Louis

1001 Highlands Plaza Drive West, Suite 300

St. Louis, MO 63110

Reference: XENCO Report No: 340203

900 S. Central Ave.

Project Address: Roxana, Illinois

Wendy Pennington:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 340203. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 340203 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Carlos Castro

Managing Director, Texas

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.

Certified and approved by numerous States and Agencies.

A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Atlanta - Corpus Christi - Latin America



Sample Cross Reference 340203



URS Corporation-St. Louis, St. Louis, MO

900 S. Central Ave.

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
20436 Soil	S	Aug-06-09 15:15		340203-001

CASE NARRATIVE



Client Name: URS Corporation-St. Louis

Project Name: 900 S. Central Ave.

Project ID: Route 111 & Rand Ave Vic Report Date: 14-AUG-09 Work Order Number: 340203 Date Received: 08/07/2009

Sample receipt non conformances and Comments:

None

Sample receipt Non Conformances and Comments per Sample:

None

Analytical Non Conformances and Comments:

Batch: LBA-768105 Soil pH by SW-846 9045C

None

Batch: LBA-768117 Cyanide by EPA 9010

None

Batch: LBA-768120 Sulfides by SW 9030B

None

Batch: LBA-768319 SVOCs by SW-846 8270C

None

Batch: LBA-768407 Chlorinated Herbicides By GC U by SW-846 8151

None

Batch: LBA-768420 Organochlorine Pesticides by SW-846 8081A

None

Batch: LBA-768429 Flash Point (CC) SW-846 1010

None

Batch: LBA-768505 VOAs by SW-846 8260B

None

Batch: LBA-768542 Metals per ICP-MS by SW 6020A

Selenium recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Mercury

recovered below QC limits in the Matrix Spike Duplicate.

Samples affected are: 340203-001.

The Laboratory Control Sample for Selenium, Mercury is within laboratory Control Limits



URS Corporation-St. Louis, St. Louis, MO



Project Id: Route 111 & Rand Ave Vicinity/2156197

Project Name: 900 S. Central Ave.

Contact: Wendy Pennington

Project Location: Roxana, Illinois

Date Received in Lab: Fri Aug-07-09 09:30 am **Report Date:** 14-AUG-09

Project Manager: Debbie Simmons

				Project Manager:	Debbie Simmons	
	Lab Id:	340203-001				
Analysis Pagyastad	Field Id:	20436 Soil				
Analysis Requested	Depth:					
	Matrix:	SOIL				
	Sampled:	Aug-06-09 15:15				
TCLP SVOCs	Extracted:	Aug-11-09 09:42				
	Analyzed:	Aug-11-09 18:44				
	Units/RL:	mg/L RL				
1,4-Dichlorobenzene		U 0.050				
2,4-Dinitrotoluene		U 0.050				
Hexachlorobenzene		U 0.050				
Hexachlorobutadiene		U 0.050				
Hexachloroethane		U 0.050				
2-methylphenol		U 0.050				
3&4-Methylphenol		U 0.050				
Nitrobenzene		U 0.050				
Pentachlorophenol		U 0.050				
Pyridine		U 0.050				
2,4,5-Trichlorophenol		U 0.050				
2,4,6-Trichlorophenol		U 0.050				
TCLP Herbicides by SW8151	Extracted:	Aug-11-09 12:39				
	Analyzed:	Aug-11-09 21:13				
	Units/RL:	ug/L RL				
2,4,5-Tp		U 2.50				
2,4-D		U 2.50				

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

Carlos Castro
Managing Director, Texas



URS Corporation-St. Louis, St. Louis, MO



Project Id: Route 111 & Rand Ave Vicinity/2156197

Project Name: 900 S. Central Ave.

Project Location: Roxana, Illinois

Contact: Wendy Pennington

Date Received in Lab: Fri Aug-07-09 09:30 am

Report Date: 14-AUG-09

Project Manager: Debbie Simmons

					Debble Sillillolls	
Lab Id:	340203-001					
Field Id:	20436 Soil					
Depth:						
Matrix:	SOIL					
Sampled:	Aug-06-09 15:15					
Extracted:	Aug-12-09 13:25					
Analyzed:	Aug-14-09 11:16					
Units/RL:	mg/L RL					
	U 0.002					
	0.522 0.005					
	0.002 0.001					
	0.011 0.003					
	0.004 0.002					
	0.0001 J 0.0004					
	U 0.003					
	U 0.002					
Extracted:	Aug-11-09 09:48					
Analyzed:	Aug-13-09 13:38					
Units/RL:	ug/L RL					
	U 0.250					
	U 2.50					
	U 0.250					
	U 0.250					
	U 0.250					
	U 0.250					
	U 2.50					
	Field Id: Depth: Matrix: Sampled: Extracted: Analyzed: Units/RL: Extracted: Analyzed:	Field Id: 20436 Soil Depth: Matrix: Sampled: Aug-06-09 15:15 Extracted: Aug-12-09 13:25 Analyzed: Aug-14-09 11:16 Units/RL: mg/L RL U 0.002 0.005 0.002 0.001 0.001 0.001 0.004 0.002 U 0.003 U 0.003 Extracted: Aug-11-09 09:48 Analyzed: Aug-13-09 13:38 Units/RL: ug/L RL U 0.250 U 0.250	Field Id: Depth: Matrix: SOIL Sampled: Aug-06-09 15:15 Extracted: Aug-12-09 13:25 Analyzed: Mg-14-09 11:16 Units/RL: mg/L RL U 0.002 0.522 0.005 0.002 0.001 0.011 0.003 0.004 0.002 0.0001 J 0.0004 U 0.003 U 0.002 Extracted: Aug-11-09 09:48 Analyzed: Aug-13-09 13:38 Units/RL: ug/L RL U 0.250 U 0.250 U 0.250 U 0.250 U 0.250 U 0.250	Field Id: 20436 Soil Depth: Matrix: SOIL Sampled: Aug-06-09 15:15 Extracted: Aug-12-09 13:25 Analyzed: Aug-14-09 11:16 Units/RL: mg/L RL U 0.002 0.522 0.005 0.002 0.001 0.011 0.003 0.004 0.002 0.0001 J 0.0004 U 0.003 U 0.002 Extracted: Aug-11-09 09:48 Analyzed: Aug-13-09 13:38 Units/RL: ug/L RL U 0.250 U 0.250	Field Id:	Field Id: 20436 Soil

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

Carlos Castro
Managing Director, Texas



URS Corporation-St. Louis, St. Louis, MO



Project Id: Route 111 & Rand Ave Vicinity/2156197

Project Name: 900 S. Central Ave.

Project Location: Roxana, Illinois

Contact: Wendy Pennington

Date Received in Lab: Fri Aug-07-09 09:30 am **Report Date:** 14-AUG-09

Project Manager: Debbie Simmons

				Project Manager:	Debbie Simmons	
	Lab Id:	340203-001				
Analysis Requested	Field Id:	20436 Soil				
Analysis Requesieu	Depth:					
	Matrix:	SOIL				
	Sampled:	Aug-06-09 15:15				
VOA TCLP List	Extracted:	Aug-13-09 17:06				
	Analyzed:	Aug-13-09 20:35				
	Units/RL:	mg/L RL				
Benzene		U 0.005				
Methyl ethyl ketone		U 0.050				
Carbon Tetrachloride		U 0.005				
Chlorobenzene		U 0.005				
Chloroform		U 0.005				
1,2-Dichloroethane		U 0.005				
1,1-Dichloroethene		U 0.005				
Tetrachloroethylene		U 0.005				
Trichloroethylene		U 0.005				
Vinyl Chloride		U 0.002				



URS Corporation-St. Louis, St. Louis, MO



Project Id: Route 111 & Rand Ave Vicinity/2156197

Project Name: 900 S. Central Ave.

Contact: Wendy Pennington

Project Location: Roxana, Illinois

Date Received in Lab: Fri Aug-07-09 09:30 am **Report Date:** 14-AUG-09

Project Manager: Debbie Simmons

				Froject Manager:	Debble Sillinons	
	Lab Id:	340203-001				
Analysis Requested	Field Id:	20436 Soil				
Analysis Requested	Depth:					
	Matrix:	SOIL				
	Sampled:	Aug-06-09 15:15				
Flash Point (CC) SW-846 1010	Extracted:					
	Analyzed:	Aug-13-09 12:30				
	Units/RL:	Deg F RL				
Flash Point		> 150 75.0				
Reactive Cyanide (Colorimetric,	Extracted:					
Manual)	Analyzed:	Aug-10-09 14:30				
	Units/RL:	mg/kg RL				
Cyanide		U 0.200				
Reactive Sulfide	Extracted:					
	Analyzed:	Aug-10-09 15:22				
	Units/RL:	mg/kg RL				
Sulfide		U 50.0				
Soil pH	Extracted:					
	Analyzed:	Aug-10-09 13:06				
	Units/RL:	SU RL				
pH		8.51				
		·		· ·		

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

Carlos Castro
Managing Director, Texas



Analytical Method : Flash Point (CC) SW-846 1010 Client : URS Corporation-St. Louis

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Extracte		Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
20436 Soil	Aug. 6, 2009	Aug. 7, 2009				Aug.13, 2009	30	7	P



Analytical Method : TCLP Metals per ICP/MS by EPA 6020 Client : URS Corporation-St. Louis

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Extracte		Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
20436 Soil	Aug. 6, 2009	Aug. 7, 2009	Aug. 12, 2009	180	6	Aug.14, 2009	180	2	P



Analytical Method : TCLP Pesticides by SW8081A Client : URS Corporation-St. Louis

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Time Held Extracte d (Days)	Analyzed	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
20436 Soil	Aug. 6, 2009	Aug. 7, 2009	Aug. 11, 2009	7	5	Aug.13, 2009	40	2	P



Analytical Method : TCLP Herbicides by SW8151 Client : URS Corporation-St. Louis

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Time Held Extracte d (Days)	Analyzed	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
20436 Soil	Aug. 6, 2009	Aug. 7, 2009	Aug. 11, 2009	7	5	Aug.11, 2009	7	0	P



Analytical Method : VOA TCLP List	Client:	URS Corporation-St. Louis
Work Order #: 340203	Project ID:	Route 111 & Rand Ave Vicini

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Extracte	Analyzed	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q	
20436 Soil	Aug. 6, 2009	Aug. 7, 2009				Aug.13, 2009	14	7	P	



Analytical Method : TCLP SVOCs	Client :	URS Corporation-St. Louis
Work Order #: 340203	Project ID:	Route 111 & Rand Ave Vicini

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Extracte	Analyzed	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
20436 Soil	Aug. 6, 2009	Aug. 7, 2009	Aug. 11, 2009	7	5	Aug.11, 2009	40	0	P



Analytical Method : Reactive Cyanide (Colorimetric, Manual Client : URS Corporation-St. Louis

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Extracte		Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
20436 Soil	Aug. 6, 2009	Aug. 7, 2009				Aug.10, 2009	14	4	P



Analytical Method : Reactive Sulfide	Client:	URS Corporation-St. Louis
Work Order #: 340203	Project ID:	Route 111 & Rand Ave Vicini

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Extracte		Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
20436 Soil	Aug. 6, 2009	Aug. 7, 2009				Aug.10, 2009	14	4	P



Analytical Method : Soil pH	Client:	URS Corporation-St. Louis
Work Order #: <u>340203</u>	Project ID:	Route 111 & Rand Ave Vicini

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Extracte		Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
20436 Soil	Aug. 6, 2009	Aug. 7, 2009				Aug.10, 2009	28	4	P

 $F = These \ samples \ were \ analyzed \ outside \ the \ recommended \ holding \ time.$ $P = Samples \ analyzed \ within \ the \ recommended \ holding \ time.$



Flagging Criteria



- X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
- **B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- **D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- **E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F RPD exceeded lab control limits.
- **J** The target analyte was positively identified below the MQL and above the SQL.
- U Analyte was not detected.
- L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- **H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- **K** Sample analyzed outside of recommended hold time.
- **JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.
- **BRL** Below Reporting Limit.
- **RL** Reporting Limit
- * Outside XENCO's scope of NELAC Accreditation.

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.

Certified and approved by numerous States and Agencies.

A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - San Antonio - Corpus Christi - Midland/Odessa - Tampa - Miami - Latin America

	Phone	Fax
4143 Greenbriar Dr, Stafford, Tx 77477	(281) 240-4200	(281) 240-4280
9701 Harry Hines Blvd , Dallas, TX 75220	(214) 902 0300	(214) 351-9139
5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
2505 North Falkenburg Rd, Tampa, FL 33619	(813) 620-2000	(813) 620-2033
5757 NW 158th St, Miami Lakes, FL 33014	(305) 823-8500	(305) 823-8555
12600 West I-20 East, Odessa, TX 79765	(432) 563-1800	(432) 563-1713
842 Cantwell Lane, Corpus Christi, TX 78408	(361) 884-0371	(361) 884-9116



Project Name: 900 S. Central Ave.

Work Orders: 340203, Project ID: Route 111 & Rand Ave Vicinity/21561979

Lab Batch #: 768407 Sample: 535186-1-BLK / BLK Batch: 1 Matrix: Water

Units: ug/L Date Analyzed: 08/11/09 18:44	SU	RROGATE RI	ECOVERY S	STUDY	
TCLP Herbicides by SW8151	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
2,4-Dichlorophenylacetic Acid	8.41	10.0	84	44-131	

Lab Batch #: 768407 **Sample:** 535186-1-BKS / BKS **Batch:** 1 **Matrix:** Water

Units: ug/L	Date Analyzed: 08/11/09 19:34	SURROGATE RECOVERY STUDY						
TCLP Herb	icides by SW8151	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
A	nalytes			[D]				
2,4-Dichlorophenylacetic Acid		9.08	10.0	91	44-131			

Lab Batch #: 768407 Sample: 535186-1-BSD / BSD Batch: 1 Matrix: Water

Units: ug/L Date Analyzed: 08/11/09 20:24	SU	RROGATE RI	ECOVERYS	STUDY	
TCLP Herbicides by SW8151	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
2,4-Dichlorophenylacetic Acid	7.44	10.0	74	44-131	

Lab Batch #: 768407 **Sample:** 340203-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: ug/L Date Analyzed: 08/11/09 21:13 SURROGATE RECOVERY STUDY					
TCLP Herbicides by SW8151	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
2,4-Dichlorophenylacetic Acid	6.92	10.0	69	44-131	

Lab Batch #: 768407 **Sample:** 340203-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: ug/L Date Analyzed: 08/11/09 22:02	SURROGATE RECOVERY STUDY				
TCLP Herbicides by SW8151	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
2,4-Dichlorophenylacetic Acid	5.69	10.0	57	44-131	

Surrogate Recovery [D] = 100 * A / B

^{*} Surrogate outside of Laboratory QC limits

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: 900 S. Central Ave.

Work Orders: 340203, Project ID: Route 111 & Rand Ave Vicinity/21561979

Lab Batch #: 768420 Sample: 535176-1-BLK / BLK Batch: 1 Matrix: Water

Units: ug/L Date Analyzed: 08/13/09 11:49	SURROGATE RECOVERY STUDY				
TCLP Pesticides by SW8081A	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes	[]	[-]	[D]	,,,	
Decachlorobiphenyl	1.13	1.00	113	53-119	
Tetrachloro-m-xylene	1.10	1.00	110	72-114	

Lab Batch #: 768420 Sample: 535176-1-BKS / BKS Batch: 1 Matrix: Water

SURROGATE RECOVERY STUDY Units: ug/L Date Analyzed: 08/13/09 12:43 Amount True Control TCLP Pesticides by SW8081A Found Amount Recovery Limits **Flags** [A] [B] %R %R [D] **Analytes** Decachlorobiphenyl 0.940 1.00 94 53-119 Tetrachloro-m-xylene 0.960 1.00 96 72-114

Lab Batch #: 768420 Sample: 535176-1-BSD / BSD Batch: 1 Matrix: Water

Units: ug/L	Date Analyzed: 08/13/09 13:10	SURROGATE RECOVERY STUDY					
TCLP Po	esticides by SW8081A	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
	Analytes			[D]			
Decachlorobiphenyl		0.910	1.00	91	53-119		
Tetrachloro-m-xylene		0.950	1.00	95	72-114		

Lab Batch #: 768420 **Sample:** 340203-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: ug/L Date Analyzed: 08/13/09 13:38 SURROGATE RECOVERY STUDY					
TCLP Pesticides by SW8081A	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes	[]	[-]	[D]	,,,,,	
Decachlorobiphenyl	4.20	5.00	84	53-119	
Tetrachloro-m-xylene	4.30	5.00	86	72-114	

Units: ug/L Date Analyzed: 08/13/09 14:05	SURROGATE RECOVERY STUDY				
TCLP Pesticides by SW8081A	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
Decachlorobiphenyl	4.55	5.00	91	53-119	
Tetrachloro-m-xylene	4.60	5.00	92	72-114	

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: 900 S. Central Ave.

Work Orders: 340203, Project ID: Route 111 & Rand Ave Vicinity/21561979

Lab Batch #: 768319 Sample: 535180-1-BLK / BLK Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 08/11/09 16:5	55 St	SURROGATE RECOVERY STUDY				
TCLP SVOCs Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
2-Fluorobiphenyl	0.035	0.050	70	43-116		
2-Fluorophenol	0.024	0.050	48	21-100		
Nitrobenzene-d5	0.034	0.050	68	35-114		
Phenol-d6	0.016	0.050	32	10-94		
Terphenyl-D14	0.040	0.050	80	33-141		
2,4,6-Tribromophenol	0.026	0.050	52	10-123		

Lab Batch #: 768319 Sample: 535180-1-BKS / BKS Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 08/11/09 1	7:32 SU	SURROGATE RECOVERY STUDY				
TCLP SVOCs Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
2-Fluorobiphenyl	0.036	0.050	72	43-116		
2-Fluorophenol	0.020	0.050	40	21-100		
Nitrobenzene-d5	0.036	0.050	72	35-114		
Phenol-d6	0.017	0.050	34	10-94		
Terphenyl-D14	0.037	0.050	74	33-141		
2,4,6-Tribromophenol	0.030	0.050	60	10-123		

Units: mg/L Date Analyzed: 08/11/09 18:08	St	SURROGATE RECOVERY STUDY				
TCLP SVOCs Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
2-Fluorobiphenyl	0.035	0.050	70	43-116		
2-Fluorophenol	0.022	0.050	44	21-100		
Nitrobenzene-d5	0.035	0.050	70	35-114		
Phenol-d6	0.016	0.050	32	10-94		
Terphenyl-D14	0.037	0.050	74	33-141		
2,4,6-Tribromophenol	0.030	0.050	60	10-123		

Surrogate Recovery [D] = 100 * A / B

^{*} Surrogate outside of Laboratory QC limits

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: 900 S. Central Ave.

Work Orders: 340203, Project ID: Route 111 & Rand Ave Vicinity/21561979

Units: mg/L Date Analyzed: 08/11/09 18	:44 S	SURROGATE RECOVERY STUDY			
TCLP SVOCs Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
2-Fluorobiphenyl	0.165	0.250	66	43-116	
2-Fluorophenol	0.142	0.250	57	21-100	
Nitrobenzene-d5	0.162	0.250	65	35-114	
Phenol-d6	0.122	0.250	49	10-94	
Terphenyl-D14	0.191	0.250	76	33-141	
2,4,6-Tribromophenol	0.144	0.250	58	10-123	

Units: mg/L Date Analyzed: 08/11/09 19	:21 SU	SURROGATE RECOVERY STUDY				
TCLP SVOCs Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
2-Fluorobiphenyl	0.177	0.250	71	43-116		
2-Fluorophenol	0.125	0.250	50	21-100		
Nitrobenzene-d5	0.174	0.250	70	35-114		
Phenol-d6	0.117	0.250	47	10-94		
Terphenyl-D14	0.184	0.250	74	33-141		
2,4,6-Tribromophenol	0.157	0.250	63	10-123		

Lab Batch #: 768505 Sample: 535373-1-BKS / BKS Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 08/13/09 19:04	SURROGATE RECOVERY STUDY					
VO	OA TCLP List	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
	Analytes			[D]			
4-Bromofluorobenzene		0.0506	0.0500	101	74-124		
Dibromofluoromethane		0.0547	0.0500	109	75-131		
1,2-Dichloroethane-D4		0.0561	0.0500	112	63-144		
Toluene-D8		0.0508	0.0500	102	80-117		

Surrogate Recovery [D] = 100 * A / B

^{*} Surrogate outside of Laboratory QC limits

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: 900 S. Central Ave.

Work Orders: 340203, Project ID: Route 111 & Rand Ave Vicinity/21561979

Lab Batch #: 768505 Sample: 535373-1-BLK / BLK Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 08/13/09 20:13	SURROGATE RECOVERY STUDY					
VOA TCLP List	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
Analytes			[D]			
4-Bromofluorobenzene	0.0505	0.0500	101	74-124		
Dibromofluoromethane	0.0535	0.0500	107	75-131		
1,2-Dichloroethane-D4	0.0568	0.0500	114	63-144		
Toluene-D8	0.0479	0.0500	96	80-117		

Lab Batch #: 768505 **Sample:** 340203-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/L	Date Analyzed: 08/13/09 20:35	SURROGATE RECOVERY STUDY					
VOA TCLP List		Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
An	alytes			[D]			
4-Bromofluorobenzene		0.0502	0.0500	100	74-124		
Dibromofluoromethane		0.0534	0.0500	107	75-131		
1,2-Dichloroethane-D4		0.0489	0.0500	98	63-144		
Toluene-D8		0.0478	0.0500	96	80-117		

Lab Batch #: 768505 **Sample:** 340203-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/L Date Analyzed: 08/13/09 21:44 SURROGATE RECOVERY STUDY					
VOA TCLP List	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes			[D]		
4-Bromofluorobenzene	0.0523	0.0500	105	74-124	
Dibromofluoromethane	0.0526	0.0500	105	75-131	
1,2-Dichloroethane-D4	0.0496	0.0500	99	63-144	
Toluene-D8	0.0490	0.0500	98	80-117	

Lab Batch #: 768505 **Sample:** 340203-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/L Date Analyzed: 08/13/09 22:07	SURROGATE RECOVERY STUDY					
VOA TCLP List	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
Analytes			[D]			
4-Bromofluorobenzene	0.0508	0.0500	102	74-124		
Dibromofluoromethane	0.0540	0.0500	108	75-131		
1,2-Dichloroethane-D4	0.0508	0.0500	102	63-144		
Toluene-D8	0.0497	0.0500	99	80-117		

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

 $[\]ensuremath{^{**}}$ Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: 900 S. Central Ave.

Work Orders: 340203, Project ID: Route 111 & Rand Ave Vicinity/21561979

Lab Batch #: 768501 Sample: ICB-01 / ICB Batch: 1 Matrix: Water

SURROGATE RECOVERY STUDY Units: mg/L **Date Analyzed:** 08/13/09 18:42 True Amount Control VOAs by SW-846 8260B **Found** Amount Recovery Limits Flags [B] %R %R [A] [D] **Analytes** 4-Bromofluorobenzene 0.0522 0.0500 104 74-124 Dibromofluoromethane 0.0441 0.0500 88 75-131 1,2-Dichloroethane-D4 0.0492 0.0500 98 63-144 Toluene-D8 0.0528 106 80-117 0.0500

Surrogate Recovery [D] = 100 * A / B

^{*} Surrogate outside of Laboratory QC limits

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Blank Spike Recovery



Project Name: 900 S. Central Ave.

Work Order #: 340203 Project ID: Route 111 & Rand Ave Vicinity/21561979

 Lab Batch #: 768117
 Sample: 768117-1-BKS
 Matrix: Solid

 Date Analyzed: 08/10/2009
 Date Prepared: 08/10/2009
 Analyst: AMB

Reporting Units: mg/kg BLANK/BLANK SPIKE RECOVERY STUDY Batch #: Blank Spike Blank Blank Control Reactive Cyanide (Colorimetric, Manual) Result Added Spike Limits Spike Flags [A] [B] Result %R %R **Analytes** [D] [C] < 0.018 0.200 0.228 114 80-120 Cyanide

 Lab Batch #: 768120
 Sample: 768120-1-BKS
 Matrix: Solid

 Date Analyzed: 08/10/2009
 Date Prepared: 08/10/2009
 Analyst: AMB

Reporting Units: mg/kg BLANK /BLANK SPIKE RECOVERY STUDY Batch #: Spike Blank Blank Blank Control **Reactive Sulfide** Added Result Spike Spike Limits Flags [B] Result %R %R [A] **Analytes** [C] [D] < 5.00 Sulfide 1000 876 88 60-120

Lab Batch #: 768542Sample: 535247-1-BKSMatrix: WaterDate Analyzed: 08/14/2009Date Prepared: 08/12/2009Analyst: HAT

Reporting Units: mg/L BLANK/BLANK SPIKE RECOVERY STUDY Batch #: Blank Spike Blank Blank Control TCLP Metals per ICP/MS by EPA 6020 Result Added Spike Spike Limits Flags [A] [B] Result %R %R **Analytes** [C] [D] 75-125 Arsenic < 0.002 0.050 0.049 98 < 0.001 0.050 0.048 96 75-125 Barium < 0.001 0.020 0.019 95 75-125 Cadmium Chromium < 0.001 0.050 0.045 90 75-125 0.050 92 < 0.001 0.046 75-125 Lead Mercury < 0.0001 0.00100.0009 90 75-125 < 0.001 0.050 0.044 75-125 88 Selenium < 0.001 0.020 0.020 100 75-125 Silver

Blank Spike Recovery [D] = 100*[C]/[B]All results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit



Blank Spike Recovery



Project Name: 900 S. Central Ave.

Work Order #: 340203 Project ID: Route 111 & Rand Ave Vicinity/21561979

 Lab Batch #: 768505
 Sample: 535373-1-BKS
 Matrix: Water

 Date Analyzed: 08/13/2009
 Date Prepared: 08/13/2009
 Analyst: PBU

Reporting Units: mg/L Batch #: 1 BLANK /BLANK SPIKE RECOVERY STUDY

Reporting Cines: hig/L	$\mathbf{Datch} \pi$.	ICH#. 1 DEANK/DEANKSTIKE KEV						
VOA TCLP List Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags		
Benzene	< 0.001	0.050	0.055	110	66-142			
Methyl ethyl ketone	< 0.010	0.500	0.367	73	60-140			
Carbon Tetrachloride	< 0.001	0.050	0.043	86	62-125			
Chlorobenzene	< 0.001	0.050	0.052	104	60-133			
Chloroform	< 0.001	0.050	0.057	114	74-125			
1,2-Dichloroethane	< 0.001	0.050	0.050	100	68-127			
1,1-Dichloroethene	< 0.001	0.050	0.060	120	59-172			
Tetrachloroethylene	< 0.001	0.050	0.048	96	71-125			
Trichloroethylene	< 0.001	0.050	0.051	102	62-137			
Vinyl Chloride	< 0.001	0.050	0.051	102	75-125			



BS / BSD Recoveries



Project Name: 900 S. Central Ave.

Work Order #: 340203

Project ID: Route 111 & Rand Ave Vicinity/21561979

Analyst: JLA

Date Prepared: 08/11/2009 **Batch #:** 1

Date Analyzed: 08/11/2009

Lab Batch ID: 768407

Sample: 535186-1-BKS

Matrix: Water

Units: ug/L

BLAN	LANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUD		Y					

TCLP Herbicides by SW8151	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
2,4,5-Tp	< 0.465	5.00	5.02	100	5	4.42	88	13	32-140	25	
2,4-D	< 0.260	5.00	4.80	96	5	4.44	89	8	10-189	25	

Analyst: JLA Date Prepared: 08/11/2009 Date Analyzed: 08/13/2009

Lab Batch ID: 768420 Sample: 535176-1-BKS Batch #: 1 Matrix: Water

Units: ug/L BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Blank Spike Blank Blank Blank Blk. Spk Control Control **TCLP Pesticides by SW8081A** Spike Sample Result Added Spike Spike Spike Dup. **RPD** Limits Limits Flag Added Duplicate Result %R %R % %R %RPD [A] [B] Result [F] [C] [D] [E][G] **Analytes** Heptachlor Epoxide < 0.009 1.00 0.900 90 0.890 89 40-130 20 Endrin 43-134 < 0.006 1.00 1.01 101 101 0 20 1.01 Gamma-BHC (Lindane) 1.00 1.02 101 73-125 < 0.005 102 1 1.01 1 20 Heptachlor 1.00 1.07 107 1 1.02 102 5 45-128 20 < 0.005 Methoxychlor < 0.006 1.00 0.990 99 1 1.00 100 1 73-142 20

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|Blank Spike Recovery [D] = 100*(C)/[B]Blank Spike Duplicate Recovery [G] = 100*(F)/[E]All results are based on MDL and Validated for QC Purposes



BS / BSD Recoveries



Project Name: 900 S. Central Ave.

Work Order #: 340203

Project ID: Route 111 & Rand Ave Vicinity/21561979

Analyst: KAN

Date Analyzed: 08/11/2009

Date Prepared: 08/11/2009

Matrix: Water

Lab Batch ID: 768319

Sample: 535180-1-BKS

Batch #: 1

Units: mg/L	BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TCLP SVOCs	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		[B]	[C]	[D]	[E]	Result [F]	[G]				
1,4-Dichlorobenzene	< 0.001	0.050	0.036	72	0.05	0.036	72	0	19-121	28	
2,4-Dinitrotoluene	< 0.001	0.050	0.035	70	0.05	0.034	68	3	22-135	38	
Hexachlorobenzene	< 0.001	0.050	0.037	74	0.05	0.037	74	0	46-133	25	
Hexachlorobutadiene	< 0.001	0.050	0.039	78	0.05	0.039	78	0	44-125	25	
Hexachloroethane	< 0.001	0.050	0.038	76	0.05	0.037	74	3	25-153	25	
2-methylphenol	< 0.001	0.050	0.046	92	0.05	0.048	96	4	14-176	25	
3&4-Methylphenol	< 0.002	0.100	0.076	76	0.1	0.081	81	6	14-176	25	
Nitrobenzene	< 0.001	0.050	0.037	74	0.05	0.037	74	0	65-135	25	
Pentachlorophenol	< 0.001	0.050	0.037	74	0.05	0.034	68	8	17-117	50	
Pyridine	< 0.004	0.050	0.020	40	0.05	0.022	44	10	16-86	28	
2,4,5-Trichlorophenol	< 0.001	0.050	0.034	68	0.05	0.034	68	0	65-135	25	
2,4,6-Trichlorophenol	< 0.001	0.050	0.033	66	0.05	0.034	68	3	65-135	25	



Form 3 - MS Recoveries

Project Name: 900 S. Central Ave.



Work Order #: 340203

Lab Batch #: 768407 Project ID: Route 111 & Rand Ave Vicinity/21561

 Date Analyzed:
 08/11/2009
 Analyst:
 JLA

 QC- Sample ID:
 340203-001 S
 Batch #:
 1
 Matrix:
 Soil

MATRIX / MATRIX SPIKE RECOVERY STUDY Reporting Units: ug/L **Parent** Spiked Sample Control **TCLP Herbicides by SW8151** Sample Spike Result %R Limits Flag Result Added %R [C] [D] [A] [B] **Analytes** 2,4,5-Tp < 2.50 5.00 4.37 32-140 2,4-D < 2.50 5.00 4.41 88 10-189

Lab Batch #: 768420

 Date Analyzed:
 08/13/2009
 Date Prepared:
 08/11/2009
 Analyst:
 JLA

 QC- Sample ID:
 340203-001 S
 Batch #:
 1
 Matrix:
 Soil

Reporting Units: ug/L	MATRIX / MATRIX SPIKE RECOVERY STUDY						
TCLP Pesticides by SW8081A	Sample Spike Result Result Added [C]					Flag	
Analytes	[/1]	[D]					
Heptachlor Epoxide	< 0.250	5.00	4.45	89	40-130		
Endrin	< 0.250	5.00	5.10	102	43-134		
Gamma-BHC (Lindane)	< 0.250	5.00	5.05	101	73-125		
Heptachlor	< 0.250	5.00	5.55	111	45-128		
Methoxychlor	< 0.250	5.00	4.90	98	73-142		

Matrix Spike Percent Recovery [D] = 100*(C-A)/BRelative Percent Difference [E] = 200*(C-A)/(C+B)All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit



Form 3 - MS Recoveries

Project Name: 900 S. Central Ave.



Work Order #: 340203

Lab Batch #: 768319 Project ID: Route 111 & Rand Ave Vicinity/21561

Date Analyzed:08/11/2009Date Prepared:08/11/2009Analyst:KAN

QC- Sample ID: 340203-001 S

Batch #: 1 Matrix: Soil

MATRIX / MATRIX SPIKE RECOVERY STUDY

Reporting Units: mg/L	MATI	MATRIX / MATRIX SPIKE RECOVERY STUDY									
TCLP SVOCs by SW-846 8270C Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag					
1,4-Dichlorobenzene	< 0.050	0.250	0.182	73	19-121						
2,4-Dinitrotoluene	< 0.050	0.250	0.169	68	22-135						
Hexachlorobenzene	< 0.050	0.250	0.183	73	46-133						
Hexachlorobutadiene	< 0.050	0.250	0.195	78	44-125						
Hexachloroethane	< 0.050	0.250	0.187	75	25-153						
2-methylphenol	< 0.050	0.250	0.152	61	14-176						
3&4-Methylphenol	< 0.050	0.500	0.324	65	14-176						
Nitrobenzene	< 0.050	0.250	0.182	73	65-135						
Pentachlorophenol	< 0.050	0.250	0.218	87	17-117						
Pyridine	< 0.050	0.250	0.092	37	16-86						
2,4,5-Trichlorophenol	< 0.050	0.250	0.179	72	65-135						
2,4,6-Trichlorophenol	< 0.050	0.250	0.173	69	65-135						

Matrix Spike Percent Recovery [D] = 100*(C-A)/BRelative Percent Difference [E] = 200*(C-A)/(C+B)All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit



Form 3 - MS / MSD Recoveries



Project Name: 900 S. Central Ave.

Work Order #: 340203 Project ID: Route 111 & Rand Ave Vicinity/21561979

Lab Batch ID: 768542 **QC- Sample ID:** 339086-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 08/14/2009 Date Prepared: 08/12/2009 Analyst: HAT

Reporting Units: mg/L	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY										
TCLP Metals per ICP/MS by EPA 6020 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Arsenic	0.040	0.250	0.258	87	0.250	0.244	82	6	75-125	25	
Barium	<0.500	0.250	0.287	115	0.250	0.274	110	5	75-125	25	
Cadmium	< 0.100	0.100	0.095	95	0.100	0.094	94	1	75-125	25	
Chromium	< 0.300	0.250	0.256	102	0.250	0.247	99	4	75-125	25	
Lead	0.020	0.250	0.265	98	0.250	0.256	94	3	75-125	25	
Mercury	0.1900	0.0050	0.1950	100	0.0050	0.1855	0	5	75-125	25	X
Selenium	0.050	0.250	0.187	55	0.250	0.174	50	7	75-125	25	X
Silver	< 0.200	0.100	0.098	98	0.100	0.093	93	5	75-125	25	



Form 3 - MS / MSD Recoveries



Project Name: 900 S. Central Ave.

Work Order #: 340203 **Project ID:** Route 111 & Rand Ave Vicinity/21561979

Lab Batch ID: 768505 **QC- Sample ID:** 340203-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 08/13/2009 Date Prepared: 08/13/2009 Analyst: PBU

Reporting Units: mg/L	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY										
VOA TCLP List Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	< 0.005	0.050	0.051	102	0.050	0.046	92	10	66-142	21	
Methyl ethyl ketone	< 0.050	0.500	0.361	72	0.500	0.363	73	1	60-140	20	
Carbon Tetrachloride	< 0.005	0.050	0.046	92	0.050	0.041	82	11	62-125	20	
Chlorobenzene	< 0.005	0.050	0.052	104	0.050	0.050	100	4	60-133	21	
Chloroform	< 0.005	0.050	0.059	118	0.050	0.056	112	5	74-125	20	
1,2-Dichloroethane	< 0.005	0.050	0.057	114	0.050	0.054	108	5	68-127	20	
1,1-Dichloroethene	< 0.005	0.050	0.058	116	0.050	0.053	106	9	59-172	22	
Tetrachloroethylene	< 0.005	0.050	0.049	98	0.050	0.047	94	4	71-125	20	
Trichloroethylene	< 0.005	0.050	0.053	106	0.050	0.047	94	12	62-137	24	
Vinyl Chloride	< 0.002	0.050	0.052	104	0.050	0.051	102	2	75-125	20	



Sample Duplicate Recovery



Project Name: 900 S. Central Ave.

Work Order #: 340203

Lab Batch #: 768429 Project ID: Route 111 & Rand Ave Vicinity/21561979

 Date Analyzed:
 08/13/2009
 Date Prepared:
 08/13/2009
 Analyst:
 CRU

 QC- Sample ID:
 340203-001 D
 Batch #:
 1
 Matrix:
 Soil

Reporting Units: Deg F SAMPLE / SAMPLE DUPLICATE RECOV							
Flash Point (CC) SW-846 1010 Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag		
Flash Point	> 150	> 150	0	25			

Lab Batch #: 768117

 Date Analyzed:
 08/10/2009
 Date Prepared:
 08/10/2009
 Analyst:
 AMB

 QC- Sample ID:
 339885-001 D
 Batch #:
 1
 Matrix:
 Soil

SAMPLE / SAMPLE DUPLICATE RECOVERY Reporting Units: mg/kg Parent Sample Sample Control **Reactive Cyanide (Colorimetric, Manual)** RPD **Duplicate** Limits Result Flag Result %RPD [A] [B] Analyte Cyanide < 0.200 < 0.200 NC 20

Lab Batch #: 768120

 Date Analyzed:
 08/10/2009
 Date Prepared:
 08/10/2009
 Analyst:
 AMB

 QC- Sample ID:
 339885-001 D
 Batch #:
 1
 Matrix:
 Soil

Reporting Units: mg/kg	SAMPLE A	SAMPLE	DUPLIC	ATE REC	OVERY
Reactive Sulfide Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
·					
Sulfide	<50.0	< 50.0	NC	20	

Lab Batch #: 768105

 Date Analyzed:
 08/10/2009
 Date Prepared:
 08/10/2009
 Analyst:
 MOR

 QC- Sample ID:
 339885-001 D
 Batch #:
 1
 Matrix:
 Soil

SAMPLE / SAMPLE DUPLICATE RECOVERY Reporting Units: SU Sample Control Soil pH Parent Sample RPD **Duplicate** Limits Result Flag Result %RPD [A] [B] Analyte рΗ 8.28 8.20 20

Spike Relative Difference RPD 200 * | (B-A)/(B+A) | All Results are based on MDL and validated for QC purposes. BRL - Below Reporting Limit



Sample Duplicate Recovery



Project Name: 900 S. Central Ave.

Work Order #: 340203

Lab Batch #: 768105 Project ID: Route 111 & Rand Ave Vicinity/21561979

SAMPLE / SAMPLE DUPLICATE RECOVERY

13

NC

NC

25

25

25

 Date Analyzed: 08/10/2009
 Date Prepared: 08/10/2009
 08/10/2009
 Analyst: MOR

 QC- Sample ID: 340238-012 D
 Batch #: 1
 Matrix: Soil

Reporting Units: SU	SAMPLE / SAMPLE DUPLICATE RECOVERY								
Soil pH Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag				
pH	8.34	8.25	1	20					

Lab Batch #: 768542

Reporting Units: mg/L

Mercury

Selenium

Silver

 Date Analyzed:
 08/14/2009
 Date Prepared:
 08/12/2009
 Analyst:
 HAT

 QC- Sample ID:
 339086-001 D
 Batch #:
 1
 Matrix:
 Soil

TCLP Metals per ICP/MS by EPA 6020 Sample Control Parent Sample RPD **Duplicate** Limits Result Flag Result %RPD [A] [B] Analyte 0.040 < 0.010 NC 25 Arsenic Barium < 0.500 < 0.025 NC 25 Cadmium < 0.100 < 0.005 NC 25 NC Chromium < 0.300 < 0.015 25 Lead 0.020 < 0.010 NC 25

0.1900

0.050

< 0.200

0.1675

< 0.015

< 0.010

Water IDW Characterization Results

345279

(Groundwater Profiling Purge Water)

348290

(Development & Purge Water from Monitoring Wells)

355933

(Groundwater Profiling Purge Water)

Analytical Report 345279

for

URS Corporation-St. Louis

Project Manager: Wendy Pennington

900 S. Central Avenue Route 111& Rand Ave Vicinity/21561979

28-SEP-09





4143 Greenbriar Dr., Stafford, TX 77477 Ph:(281) 240-4200 Fax:(281) 240-4280

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-08-TX), Arizona (AZ0738), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002) Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054) New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610) Rhode Island (LAO00308), USDA (S-44102)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87428), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85) Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)
Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-08-TX)
Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-08-TX)
Xenco-Corpus Christi (EPA Lab code: TX02613): Texas (T104704370-08-TX)
Xenco-Boca Raton (EPA Lab Code: FL00449): Florida(E86240),
South Carolina(96031001), Louisiana(04154), Georgia(917)





28-SEP-09

Project Manager: Wendy Pennington

URS Corporation-St. Louis

1001 Highlands Plaza Drive West, Suite 300

St. Louis, MO 63110

Reference: XENCO Report No: 345279

900 S. Central Avenue

Project Address: Roxana, Illinois 62084

Wendy Pennington:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 345279. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 345279 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Carlos Castro

Managing Director, Texas

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.

Certified and approved by numerous States and Agencies.

A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Atlanta - Corpus Christi - Latin America



Sample Cross Reference 345279



URS Corporation-St. Louis, St. Louis, MO

900 S. Central Avenue

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
P4375 Water	W	Sep-17-09 13:30		345279-001
TB091709	W	Sep-17-09 00:00		345279-002

CASE NARRATIVE



Client Name: URS Corporation-St. Louis

Project Name: 900 S. Central Avenue

Project ID: Route 111& Rand Ave Vic. Report Date: 28-SEP-09 Work Order Number: 345279 Date Received: 09/19/2009

Sample receipt non conformances and Comments:

None

Sample receipt Non Conformances and Comments per Sample:

None

Analytical Non Conformances and Comments:

Batch: LBA-773209 Inorganic Anions by EPA 300

None

Batch: LBA-773250 pH, Electrometric by EPA 150.2

None

Batch: LBA-773671 Chemical Oxygen Demand by HACH 8000

None

Batch: LBA-773697 TSS by SM2540D

None

Batch: LBA-773766 n-Hexane Extractable Material by EPA 1664A

None

Batch: LBA-773884 CBOD by SM5210B

None

Batch: LBA-773983 TPH DRO by EPA 8015 M

None

Batch: LBA-774204 TPH GRO by EPA 8015 Modified

TPH-GRO (Gasoline Range Organics) recovered below QC limits in the Matrix Spike and Matrix

Spike Duplicate.

Samples affected are: 345279-001.

The Laboratory Control Sample for TPH-GRO (Gasoline Range Organics) is within laboratory

Control Limits

Batch: LBA-774257 VOAs by SW-846 8260B

None

CASE NARRATIVE



Client Name: URS Corporation-St. Louis

Project Name: 900 S. Central Avenue

Project ID:Route 111& Rand Ave Vic.Report Date:28-SEP-09Work Order Number:345279Date Received:09/19/2009

Batch: LBA-774361 Metals per ICP-MS by SW 6020A

None

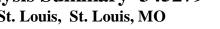
Batch: LBA-774432 BTEX by SW 8260B

None



Certificate of Analysis Summary 345279

URS Corporation-St. Louis, St. Louis, MO





Project Id: Route 111& Rand Ave Vicinity/21561979

Project Name: 900 S. Central Avenue

Contact: Wendy Pennington Project Location: Roxana, Illinois 62084 Date Received in Lab: Sat Sep-19-09 09:00 am

Report Date: 28-SEP-09

Project Manager: Debbie Simmons

					Project Manager:	Debbie Similions	
	Lab Id:	345279-001	345279-002				
Analysis Requested	Field Id:	P4375 Water	TB091709				
Anaiysis Kequesiea	Depth:						
	Matrix:	WATER	WATER				
	Sampled:	Sep-17-09 13:30	Sep-17-09 00:00				
BTEX-MTBE by SW 8260B	Extracted:	Sep-25-09 10:32	Sep-24-09 11:10				
	Analyzed:	Sep-25-09 11:52	Sep-24-09 13:12				
	Units/RL:	mg/L RL	mg/L RL				
MTBE		U 0.0050	U 0.0050				
Benzene		U 0.0010	U 0.0010				
Toluene		U 0.0010	U 0.0010				
Ethylbenzene		U 0.0010	U 0.0010				
m,p-Xylene		U 0.0020	U 0.0020				
o-Xylene		U 0.0010	U 0.0010				
Total Xylenes		U 0.001	U 0.001				
Total BTEX		U 0.001	U 0.001				
Biochemical Oxygen Demand, BOD	Extracted:						
	Analyzed:	Sep-19-09 10:34					
	Units/RL:	mg/L RL					
Biochemical Oxygen Demand, 5 day		20.0 2.00	_	_			
Chemical Oxygen Demand by HACH	Extracted:						
8000	Analyzed:	Sep-22-09 15:17					
	Units/RL:	mg/L RL					
COD - Chemical Oxygen Demand		73.0 20.0	_	_			
Oil and Grease by EPA 1664A	Extracted:						
	Analyzed:	Sep-23-09 08:44					
	Units/RL:	mg/L RL					
Oil & Grease, Total Recovered		3.52 J 5.00					
						•	

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

Managing Director, Texas



Certificate of Analysis Summary 345279

URS Corporation-St. Louis, St. Louis, MO



Project Id: Route 111& Rand Ave Vicinity/21561979

Project Name: 900 S. Central Avenue

Contact: Wendy Pennington

Project Location: Roxana, Illinois 62084

Report Date: 28-SEP-09

Project Manager: Debbie Simmons

Date Received in Lab: Sat Sep-19-09 09:00 am

						1 Toject Munager.		
	Lab Id:	345279-003	1	345279-002				
Analysis Paguested	Field Id:	P4375 Water	er	TB091709				
Analysis Requested	Depth:							
	Matrix:	WATER		WATER				
	Sampled:	Sep-17-09 13	:30	Sep-17-09 00:00				
TPH Diesel Range Organics per EPA	Extracted:	Sep-20-09 14	:28					
8015 Modified	Analyzed:	Sep-24-09 11	:00					
	Units/RL:	mg/L	RL					
TPH-DRO (Diesel Range Organics)		12.0	0.500					
TPH Gasoline Range Organics by SW	Extracted:	Sep-24-09 08	:28					
8015	Analyzed:	Sep-24-09 14	:47					
	Units/RL:	mg/L	RL					
TPH-GRO (Gasoline Range Organics)		0.629	0.050					
TSS by SM2540D	Extracted:							
	Analyzed:	Sep-22-09 17	:05					
	Units/RL:	mg/L	RL					
TSS		12100	4.00					
Total Metals by SW6020	Extracted:	Sep-22-09 14	:30					
	Analyzed:	Sep-25-09 12	:02					
	Units/RL:	mg/L	RL					
Lead		0.002	0.002		·			
		•		•	•		•	

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

Carlos Castro Managing Director, Texas



Certificate of Analysis Summary 345279

URS Corporation-St. Louis, St. Louis, MO



Project Id: Route 111& Rand Ave Vicinity/21561979

Project Name: 900 S. Central Avenue

Contact: Wendy Pennington

Project Location: Roxana, Illinois 62084

Date Received in Lab: Sat Sep-19-09 09:00 am

Report Date: 28-SEP-09

Project Manager: Debbie Simmons

				i roject manager.	Decore Simmons	
	Lab Id:	345279-001	345279-002			
Analysis Requested	Field Id:	P4375 Water	TB091709			
Anuiysis Requesieu	Depth:					
	Matrix:	WATER	WATER			
	Sampled:	Sep-17-09 13:30	Sep-17-09 00:00			
Inorganic Anions by EPA 300	Extracted:					
	Analyzed:	Sep-19-09 12:21				
	Units/RL:	mg/L RL				
Nitrate as N		U 0.113				
pH, Electrometric by EPA 150.2	Extracted:					
	Analyzed:	Sep-19-09 10:40				
	Units/RL:	SU RL				
pH		7.97				
-	•				•	

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi



Analytical Method : pH, Electrometric by EPA 150.2 Client : URS Corporation-St. Louis

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Extracte		Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
P4375 Water	Sep. 17, 2009	Sep. 19, 2009				Sep.19, 2009	1	2	F



Analytical Method : Oil and Grease by EPA 1664A Client : URS Corporation-St. Louis

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Extracte		Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
P4375 Water	Sep. 17, 2009	Sep. 19, 2009				Sep.23, 2009	28	6	P



Analytical Method : Inorganic Anions by EPA 300 Client : URS Corporation-St. Louis

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Extracte	Date Analyzed	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
P4375 Water	Sep. 17, 2009	Sep. 19, 2009				Sep.19, 2009	28	2	P



Analytical Method : Chemical Oxygen Demand by HACH 80 Client : URS Corporation-St. Louis

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Time Held Extracte d (Days)		Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
P4375 Water	Sep. 17, 2009	Sep. 19, 2009				Sep.22, 2009	28	5	P



Analytical Method : TSS by SM2540D	Client: U	JRS Corporation-St. Louis
------------------------------------	-----------	---------------------------

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Extracte	_	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
P4375 Water	Sep. 17, 2009	Sep. 19, 2009				Sep.22, 2009	7	5	P



Analytical Method : Biochemical Oxygen Demand, BOD Client : URS Corporation-St. Louis

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Extracte	_	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
P4375 Water	Sep. 17, 2009	Sep. 19, 2009				Sep.19, 2009	2	2	P



Analytical Method : Total Metals by SW6020 Client : URS Corporation-St. Louis

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Time Held Extracte d (Days)		Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
P4375 Water	Sep. 17, 2009	Sep. 19, 2009	Sep. 22, 2009	180	5	Sep.25, 2009	180	3	P



Analytical Method : TPH Diesel Range Organics per EPA 80 Client : URS Corporation-St. Louis

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Time Held Extracte d (Days)	Date Analyzed	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
P4375 Water	Sep. 17, 2009	Sep. 19, 2009	Sep. 20, 2009	7	3	Sep.24, 2009	40	4	P



Analytical Method : TPH Gasoline Range Organics by SW 80 Client : URS Corporation-St. Louis

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Time Held Extracte d (Days)	_	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
P4375 Water	Sep. 17, 2009	Sep. 19, 2009				Sep.24, 2009	14	7	P



Analytical Method : BTEX-MTBE by SW 8260B Client : URS Corporation-St. Louis

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Extracte	Analyzed	Max Holding Time Analyzed (Days)	Analyzed (Days)	Q
P4375 Water	Sep. 17, 2009	Sep. 19, 2009				Sep.25, 2009	14	8	P
TB091709	Sep. 17, 2009	Sep. 19, 2009				Sep.24, 2009	14	7	P

F = These samples were analyzed outside the recommended holding time.

P = Samples analyzed within the recommended holding time.



Flagging Criteria



- X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
- **B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- **D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- **E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F RPD exceeded lab control limits.
- **J** The target analyte was positively identified below the MQL and above the SQL.
- U Analyte was not detected.
- L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- **H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- **K** Sample analyzed outside of recommended hold time.
- **JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.
- **BRL** Below Reporting Limit.
- **RL** Reporting Limit
- * Outside XENCO's scope of NELAC Accreditation.

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.

Certified and approved by numerous States and Agencies.

A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - San Antonio - Corpus Christi - Midland/Odessa - Tampa - Miami - Latin America

	Phone	Fax
4143 Greenbriar Dr, Stafford, Tx 77477	(281) 240-4200	(281) 240-4280
9701 Harry Hines Blvd , Dallas, TX 75220	(214) 902 0300	(214) 351-9139
5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
2505 North Falkenburg Rd, Tampa, FL 33619	(813) 620-2000	(813) 620-2033
5757 NW 158th St, Miami Lakes, FL 33014	(305) 823-8500	(305) 823-8555
12600 West I-20 East, Odessa, TX 79765	(432) 563-1800	(432) 563-1713
842 Cantwell Lane, Corpus Christi, TX 78408	(361) 884-0371	(361) 884-9116



Project Name: 900 S. Central Avenue

Work Orders: 345279, Project ID: Route 111& Rand Ave Vicinity/21561979

Lab Batch #: 774257 Sample: 538856-1-BKS / BKS Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 09/24/09 11:59	SU	RROGATE RE	ECOVERY S	STUDY	
BTEX-MTBE by SW 8260B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes			[D]		
4-Bromofluorobenzene	0.0523	0.0500	105	74-124	
Dibromofluoromethane	0.0479	0.0500	96	75-131	
1,2-Dichloroethane-D4	0.0478	0.0500	96	63-144	
Toluene-D8	0.0538	0.0500	108	80-117	

Lab Batch #: 774257 Sample: 538856-1-BLK / BLK Batch: 1 Matrix: Water

Units: mg/L	Oate Analyzed: 09/24/09 12:49	SU	RROGATE RI	ECOVERY S	STUDY	
BTEX-MTBI	E by SW 8260B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Ana	lytes			[D]		
4-Bromofluorobenzene		0.0504	0.0500	101	74-124	
Dibromofluoromethane		0.0482	0.0500	96	75-131	
1,2-Dichloroethane-D4		0.0485	0.0500	97	63-144	
Toluene-D8		0.0527	0.0500	105	80-117	

Lab Batch #: 774257 **Sample:** 345279-002 / SMP **Batch:** 1 **Matrix:** Water

Units: mg/L Date Analyzed: 09/24/09 13:12	SU	RROGATE RI	ECOVERY	STUDY	
BTEX-MTBE by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0517	0.0500	103	74-124	
Dibromofluoromethane	0.0496	0.0500	99	75-131	
1,2-Dichloroethane-D4	0.0468	0.0500	94	63-144	
Toluene-D8	0.0530	0.0500	106	80-117	

Lab Batch #: 774257 **Sample:** 344606-002 S / MS **Batch:** 1 **Matrix:** Water

Units: mg/L Date Analyzed: 09/24/09 15:33	SU	RROGATE RE	ECOVERY S	STUDY	
BTEX-MTBE by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
, and the second					
4-Bromofluorobenzene	0.0503	0.0500	101	74-124	
Dibromofluoromethane	0.0500	0.0500	100	75-131	
1,2-Dichloroethane-D4	0.0451	0.0500	90	63-144	·
Toluene-D8	0.0508	0.0500	102	80-117	

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: 900 S. Central Avenue

Work Orders: 345279, Project ID: Route 111& Rand Ave Vicinity/21561979

Lab Batch #: 774257 **Sample:** 344606-002 SD / MSD **Batch:** 1 **Matrix:** Water

Units: mg/L Date Analyzed: 09/24/09 15:56	SU	RROGATE RE	ECOVERY S	STUDY	
BTEX-MTBE by SW 8260B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
4-Bromofluorobenzene	0.0501	0.0500	100	74-124	
Dibromofluoromethane	0.0527	0.0500	105	75-131	
1,2-Dichloroethane-D4	0.0544	0.0500	109	63-144	
Toluene-D8	0.0507	0.0500	101	80-117	

Lab Batch #: 774432 Sample: 538945-1-BKS / BKS Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 09/25/09 09:35	SU	JRROGATE RI	ECOVERY S	STUDY	
BTEX-MTBE by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0502	0.0500	100	74-124	
Dibromofluoromethane	0.0443	0.0500	89	75-131	
1,2-Dichloroethane-D4	0.0411	0.0500	82	63-144	
Toluene-D8	0.0513	0.0500	103	80-117	

Lab Batch #: 774432 Sample: 538945-1-BLK / BLK Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 09/25/09 10:37					
BTEX-MTBE by SW 8260B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes			[15]		
4-Bromofluorobenzene	0.0507	0.0500	101	74-124	
Dibromofluoromethane	0.0480	0.0500	96	75-131	
1,2-Dichloroethane-D4	0.0480	0.0500	96	63-144	
Toluene-D8	0.0523	0.0500	105	80-117	

Lab Batch #: 774432 **Sample:** 345279-001 / SMP **Batch:** 1 **Matrix:** Water

Units: mg/L Date Analyzed: 09/25/09 11:52	SU	RROGATE RE	ECOVERY S	STUDY	
BTEX-MTBE by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene	0.0504	0.0500	101	74-124	
Dibromofluoromethane	0.0464	0.0500	93	75-131	
1,2-Dichloroethane-D4	0.0463	0.0500	93	63-144	
Toluene-D8	0.0487	0.0500	97	80-117	

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: 900 S. Central Avenue

Work Orders: 345279, Project ID: Route 111& Rand Ave Vicinity/21561979

Lab Batch #: 774432 **Sample:** 345483-001 S / MS **Batch:** 1 **Matrix:** Water

Units: mg/L Date Analyzed: 09/25/09 13:25	SURROGATE RECOVERY STUDY				
BTEX-MTBE by SW 8260B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
4-Bromofluorobenzene	0.0520	0.0500	104	74-124	
Dibromofluoromethane	0.0469	0.0500	94	75-131	
1,2-Dichloroethane-D4	0.0454	0.0500	91	63-144	
Toluene-D8	0.0499	0.0500	100	80-117	

Lab Batch #: 774432 **Sample:** 345483-001 SD / MSD **Batch:** 1 **Matrix:** Water

Units: mg/L	Date Analyzed: 09/25/09 13:48	SU	RROGATE RI	ECOVERY	STUDY	
BTEX-	MTBE by SW 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
4-Bromofluorobenzene		0.0511	0.0500	102	74-124	
Dibromofluoromethane		0.0487	0.0500	97	75-131	
1,2-Dichloroethane-D4		0.0442	0.0500	88	63-144	
Toluene-D8		0.0488	0.0500	98	80-117	

Lab Batch #: 773983 Sample: 538696-1-BLK / BLK Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 09/23/09 12:58	SU	SURROGATE RECOVERY STUDY				
TPH Diesel Ra	nge Organics per EPA 8015 Modified Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
Pentacosane		0.043	0.050	86	60-120		

Lab Batch #: 773983 Sample: 538696-1-BKS / BKS Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 09/23/09 13:24	SURROGATE RECOVERY STUDY				
TPH Diesel Range Organics per EPA 8015 Modified Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Pentacosane	0.041	0.050	82	60-120	

Surrogate Recovery [D] = 100 * A / B

^{*} Surrogate outside of Laboratory QC limits

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: 900 S. Central Avenue

Work Orders: 345279, Project ID: Route 111& Rand Ave Vicinity/21561979

Lab Batch #: 773983 Sample: 538696-1-BSD / BSD Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 09/23/09 13:50	SURROGATE RECOVERY STUDY				
TPH Diesel Range Organics per EPA 8015 Modified Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Pentacosane	0.042	0.050	84	60-120	

Lab Batch #: 773983 **Sample:** 345279-001 / SMP **Batch:** 1 **Matrix:** Water

Units: mg/L Date Ana	lyzed: 09/24/09 11:00	SURROGATE RECOVERY STUDY				
TPH Diesel Range Organics Modified Analytes	s per EPA 8015	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Pentacosane		0.046	0.050	92	60-120	

Lab Batch #: 771180 Sample: ICB-01 / ICB Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 09/04/09 14:28	SU	RROGATE RE	ECOVERY S	STUDY	
TPH GRO by EPA 8015 Mod.	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
4-Bromofluorobenzene	0.0327	0.0300	109	80-120	
1,4-Difluorobenzene	0.0314	0.0300	105	80-120	

Lab Batch #: 774204 Sample: 538828-1-BKS / BKS Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 09/24/09 09:55	SURROGATE RECOVERY STUDY				
TPH Gasoline Range Organics by SW 8015	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes	[-1]	[2]	[D]	, , ,	
4-Bromofluorobenzene	0.0297	0.0300	99	80-120	
1,4-Difluorobenzene	0.0282	0.0300	94	80-120	

Lab Batch #: 774204 Sample: 538828-1-BSD / BSD Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 09/24/09 10:19	s: mg/L Date Analyzed: 09/24/09 10:19 SURROGATE RECOVERY STUDY				
TPH Gasoline Range Organics by SW 8015	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
4-Bromofluorobenzene	0.0326	0.0300	109	80-120	
1,4-Difluorobenzene	0.0294	0.0300	98	80-120	

Surrogate Recovery [D] = 100 * A / B

^{*} Surrogate outside of Laboratory QC limits

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Project Name: 900 S. Central Avenue

Work Orders: 345279, Project ID: Route 111& Rand Ave Vicinity/21561979

Lab Batch #: 774204 Sample: 538828-1-BLK / BLK Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 09/24/09 11:07 SURROGATE RECOVERY STUDY					
TPH Gasoline Range Organics by SW 8015	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
4-Bromofluorobenzene	0.0319	0.0300	106	80-120	
1,4-Difluorobenzene	0.0301	0.0300	100	80-120	

Lab Batch #: 774204 **Sample:** 345279-001 / SMP **Batch:** 1 **Matrix:** Water

SURROGATE RECOVERY STUDY Units: mg/L Date Analyzed: 09/24/09 14:47 Amount True Control **TPH Gasoline Range Organics by SW 8015** Found Amount Recovery Limits **Flags** [A] [B] %R %R [D] **Analytes** 4-Bromofluorobenzene 0.0339 0.0300 113 80-120 1,4-Difluorobenzene 0.0278 0.0300 93 80-120

Lab Batch #: 774204 **Sample:** 345497-002 S / MS **Batch:** 1 **Matrix:** Water

Units: mg/L Date	e Analyzed: 09/24/09 16:22	SURROGATE RECOVERY STUDY				
TPH Gasoline Range O	rganics by SW 8015	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analy	tes	[]	[-]	[D]	,,,	
4-Bromofluorobenzene		0.0317	0.0300	106	80-120	
1,4-Difluorobenzene		0.0291	0.0300	97	80-120	

Lab Batch #: 774204 **Sample:** 345497-002 SD / MSD **Batch:** 1 **Matrix:** Water

Units: mg/L Date Analyzed: 09/24/09 16:46	SURROGATE RECOVERY STUDY					
TPH Gasoline Range Organics by SW 8015	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
Analytes			[D]			
4-Bromofluorobenzene	0.0321	0.0300	107	80-120		
1,4-Difluorobenzene	0.0288	0.0300	96	80-120		

Surrogate Recovery [D] = 100 * A / B

^{*} Surrogate outside of Laboratory QC limits

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Blank Spike Recovery



Project Name: 900 S. Central Avenue

Work Order #: 345279 Project ID: Route 111& Rand Ave Vicinity/21561979

 Lab Batch #: 774257
 Sample: 538856-1-BKS
 Matrix: Water

 Date Analyzed: 09/24/2009
 Date Prepared: 09/24/2009
 Analyst: CAA

Reporting Units: mg/L BLANK/BLANK SPIKE RECOVERY STUDY Batch #: Blank Spike Blank Blank Control BTEX-MTBE by SW 8260B Added Spike Limits Result Spike Flags [A] [B] Result %R %R **Analytes** [D] [C] MTBE < 0.0025 0.5000 0.4830 97 65-135 < 0.0005 0.1050 105 Benzene 0.1000 66-142 Toluene < 0.0005 0.1000 0.1110 111 59-139 < 0.0005 0.1000 0.1060 75-125 Ethylbenzene 106 m,p-Xylene < 0.0010 0.2000 0.2190 110 75-125 < 0.0005 0.1000 0.1090 109 75-125 o-Xylene

 Lab Batch #: 774432
 Sample: 538945-1-BKS
 Matrix: Water

 Date Analyzed: 09/25/2009
 Date Prepared: 09/25/2009
 Analyst: CAA

Reporting Units: mg/L BLANK /BLANK SPIKE RECOVERY STUDY Batch #: Blank Spike Blank Blank Control BTEX-MTBE by SW 8260B Result Added Spike Spike Limits Flags [B] Result %R %R [A] **Analytes** [C] [D] MTBE < 0.0025 0.5000 0.4082 65-135 < 0.0005 Benzene 0.1000 0.0886 89 66-142 Toluene < 0.0005 0.1000 0.0988 99 59-139 < 0.0005 0.1000 0.0968 97 75-125 Ethylbenzene < 0.0010 0.2000 0.1995 100 75-125 m,p-Xylene o-Xylene < 0.0005 0.1000 0.1037 104 75-125

 Lab Batch #: 773209
 Sample: 773209-1-BKS
 Matrix: Water

 Date Analyzed: 09/19/2009
 Date Prepared: 09/19/2009
 Analyst: MAB

Reporting Units: mg/L BLANK /BLANK SPIKE RECOVERY STUDY Batch #: Blank Spike Blank Blank Control **Inorganic Anions by EPA 300** Added Result Spike Spike Limits Flags [B] Result %R %R [A] **Analytes** [C] [D] 99 < 0.002 1.13 1.12 80-120 Nitrate as N

Blank Spike Recovery [D] = 100*[C]/[B]All results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit



Blank Spike Recovery



Project Name: 900 S. Central Avenue

Work Order #: 345279 Project ID: Route 111& Rand Ave Vicinity/21561979

Lab Batch #: 774361Sample: 538569-1-BKSMatrix: WaterDate Analyzed: 09/25/2009Date Prepared: 09/22/2009Analyst: HAT

Reporting Units: mg/L Batch #: BLANK /BLANK SPIKE RECOVERY STUDY Blank Spike Blank Blank Control **Total Metals by SW6020** Result Added Spike Spike Limits **Flags** [A] [B] Result %R %R **Analytes** [D] [C] < 0.001 0.050 0.049 75-125 98 Lead



BS / BSD Recoveries



Project Name: 900 S. Central Avenue

Work Order #: 345279

Project ID: Route 111& Rand Ave Vicinity/21561979

Analyst: MOR

Date Prepared: 09/19/2009 **Batch #:** 1

Date Analyzed: 09/19/2009

Lab Batch ID: 773884

Sample: 773884-1-BKS

Matrix: Water

DI ANK /DI ANK CDIKE / DI ANK CDIKE DUDI ICATE DECOVEDY CTUDY

Units: mg/L		BLANK/BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY									
Biochemical Oxygen Demand, BOD	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		[B]	[C]	[D]	[E]	Result [F]	[G]				
Biochemical Oxygen Demand, 5 day	<1.50	200	214	107	200	211	106	1	70-120	20	

Analyst: ALA Date Prepared: 09/22/2009 Date Analyzed: 09/22/2009

Lab Batch ID: 773671 Sample: 773671-1-BKS Batch #: 1 Matrix: Water

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY Units: mg/L Chemical Oxygen Demand by HACH 8000 Blank Spike Blank Blank Blank Blk. Spk Control Control Spike Sample Result Added **RPD** Spike Spike Spike Dup. Limits Limits Flag Added [A] Result %R **Duplicate** %R % %R %RPD [B] [C] [D] [E] Result [F] [G] **Analytes** COD - Chemical Oxygen Demand 99 < 5.04 100 98.0 100 99.0 90-110

Analyst: JAH Date Prepared: 09/20/2009 Date Analyzed: 09/23/2009

Lab Batch ID: 773983 Sample: 538696-1-BKS Batch #: 1 Matrix: Water

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY Units: mg/L **TPH Diesel Range Organics per EPA 8015** Blank Spike Blank Blank Blank Blk. Spk Control Control Spike Flag Sample Result Added Spike Spike Added Spike Dup. RPD Limits Limits Modified Result [A] %R Duplicate %R % %R %RPD [B] [C] [D] [E] Result [F] [G] **Analytes** TPH-DRO (Diesel Range Organics) < 0.013 1.00 0.978 98 0.902 8 70-130 35

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|Blank Spike Recovery [D] = 100*(C)/[B]Blank Spike Duplicate Recovery [G] = 100*(F)/[E]All results are based on MDL and Validated for QC Purposes



BS / BSD Recoveries



Project Name: 900 S. Central Avenue

Work Order #: 345279

Project ID: Route 111& Rand Ave Vicinity/21561979

Analyst: RMU

Date Prepared: 09/24/2009

Batch #: 1

Batch #: 1

Date Analyzed: 09/24/2009

Lab Batch ID: 774204

Sample: 538828-1-BKS

Matrix: Water

Units: mg/L	BLANK/BLANK SPIKE/ BLANK SPIKE DUPLICATE RECOVERY STUDY										
TPH Gasoline Range Organics by SW 8015	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		[B]	[C]	[D]	[E]	Result [F]	[G]				
TPH-GRO (Gasoline Range Organics)	< 0.025	0.500	0.408	82	0.5	0.446	89	9	75-125	35	

Analyst: ALA Date Prepared: 09/22/2009

Date Analyzed: 09/22/2009

Lab Batch ID: 773697

Sample: 773697-1-BKS

Matri

Matrix: Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

DI ANK /DI ANK CDIKE / DI ANK CDIKE DUDI ICATE DECOVEDY CTUDY

TSS by SM2540D Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
TSS	<3.50	100	99.0	99	100	97.0	97	2	80-120	20	

Analyst: MOR Date Prepared: 09/23/2009 Date Analyzed: 09/23/2009

Lab Batch ID: 773766 Sample: 773766-1-BKS Batch #: 1 Matrix: Water

BLANK/BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY Units: mg/L Oil and Grease by EPA 1664A Blank Spike Blank Blank Blank Blk. Spk Control Control Spike Sample Result Added Spike Spike Added Spike Dup. **RPD** Limits Limits Flag Result %R **Duplicate** %R % %R %RPD [A] [B] [C] [D] [E] Result [F] [G] **Analytes** Oil & Grease, Total Recovered 40.0 40 39.4 99 <1.16 101 2 78-114 18

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|Blank Spike Recovery [D] = 100*(C)/[B]Blank Spike Duplicate Recovery [G] = 100*(F)/[E]All results are based on MDL and Validated for QC Purposes





Project Name: 900 S. Central Avenue

Work Order #: 345279 Project ID: Route 111& Rand Ave Vicinity/21561979

Lab Batch ID: 774257 **QC- Sample ID:** 344606-002 S **Batch #:** 1 **Matrix:** Water

Reporting Units: mg/L		M	IATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
BTEX-MTBE by SW 8260B	Parent Sample Result	Spike	Spiked Sample Result	Sample	-	Duplicate Spiked Sample	-	RPD	Control Limits	Control Limits	Flag
Analytes	[A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
MTBE	0.0134	0.5000	0.5145	100	0.5000	0.5328	104	3	65-135	20	
Benzene	< 0.0050	0.1000	0.0996	100	0.1000	0.1026	103	3	66-142	20	
Toluene	< 0.0050	0.1000	0.1033	103	0.1000	0.1090	109	5	59-139	20	
Ethylbenzene	< 0.0050	0.1000	0.1018	102	0.1000	0.1042	104	2	75-125	20	
m,p-Xylene	< 0.0100	0.2000	0.2131	107	0.2000	0.2182	109	2	75-125	20	
o-Xylene	< 0.0050	0.1000	0.1084	108	0.1000	0.1137	114	5	75-125	20	

Lab Batch ID: 774432 **QC- Sample ID:** 345483-001 S **Batch #:** 1 **Matrix:** Water

Date Analyzed: 09/25/2009 Date Prepared: 09/25/2009 Analyst: CAA

Reporting Units: mg/L	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY										
BTEX-MTBE by SW 8260B	Parent Sample	Spike	Spiked Sample Result	Sample		Duplicate Spiked Sample	Spiked Dup.	RPD	Control Limits	Control Limits	Flag
Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
MTBE	0.1003	0.5000	0.5155	83	0.5000	0.5353	87	4	65-135	20	
Benzene	0.1436	0.1000	0.2245	81	0.1000	0.2189	75	3	66-142	20	
Toluene	0.0044	0.1000	0.1028	98	0.1000	0.1021	98	1	59-139	20	
Ethylbenzene	0.0384	0.1000	0.1325	94	0.1000	0.1304	92	2	75-125	20	
m,p-Xylene	0.0286	0.2000	0.2308	101	0.2000	0.2233	97	3	75-125	20	
o-Xylene	0.0076	0.1000	0.1117	104	0.1000	0.1093	102	2	75-125	20	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B Relative Percent Difference RPD = 200*|(C-F)/(C+F)| Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E





Project Name: 900 S. Central Avenue

Work Order #: 345279 Project ID: Route 111& Rand Ave Vicinity/21561979

Lab Batch ID: 773671 **QC- Sample ID:** 344707-001 S **Batch #:** 1 **Matrix:** Water

Reporting Units: mg/L	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY										
Chemical Oxygen Demand by HACH 8000	Parent Sample	Spike	Spiked Sample Result	Sample		Duplicate Spiked Sample		RPD	Control Limits	Control Limits	Flag
Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
COD - Chemical Oxygen Demand	11.0	100	110	99	100	109	98	1	90-110	20	

Lab Batch ID: 773209 **QC- Sample ID:** 345279-001 S **Batch #:** 1 **Matrix:** Water

Date Analyzed: 09/19/2009 Date Prepared: 09/19/2009 Analyst: MAB

Reporting Units: mg/L MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY **Parent** Spiked Sample Spiked **Duplicate** Spiked Control Control **Inorganic Anions by EPA 300** Sample Spike Result Spiked Sample **RPD** Limits Limits Sample Spike Dup. Flag Result Added [C] %R Added Result [F] %R % %R %RPD **Analytes** [A] [B] [D] [E][G] < 0.113 1.07 95 1.07 95 Nitrate as N 1.13 1.13 80-120 20

Lab Batch ID: 774204 **QC- Sample ID:** 345497-002 S **Batch #:** 1 **Matrix:** Water

Date Analyzed: 09/24/2009 Date Prepared: 09/24/2009 Analyst: RMU

Reporting Units: mg/L MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY **Parent** Spiked Sample **Duplicate** Spiked Spiked Control Control **TPH Gasoline Range Organics by SW 8015** Sample Spike Result Sample Spike Spiked Sample Dup. **RPD** Limits Limits Flag Result Added Added [C] %R Result [F] %R % %R %RPD **Analytes** [A] [B] [D] [E] [G] TPH-GRO (Gasoline Range Organics) 0.972 0.500 1.17 40 0.500 1.14 34 3 75-125 35 X

Matrix Spike Percent Recovery [D] = 100*(C-A)/B Relative Percent Difference RPD = 200*|(C-F)/(C+F)| Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E





Project Name: 900 S. Central Avenue

Work Order #: 345279 Project ID: Route 111& Rand Ave Vicinity/21561979

Lab Batch ID: 774361 **QC- Sample ID:** 345279-001 S **Batch #:** 1 **Matrix:** Water

Reporting Units: mg/L	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY										
Total Metals by SW6020	Parent Sample	Spike	Spiked Sample Result	Sample		Duplicate Spiked Sample	. 1	RPD	Control Limits	Control Limits	Flag
Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Lead	0.002	0.050	0.052	100	0.050	0.051	98	2	75-125	25	



Sample Duplicate Recovery



Project Name: 900 S. Central Avenue

Work Order #: 345279

Lab Batch #: 773884 Project ID: Route 111& Rand Ave Vicinity/21561979

 Date Analyzed:
 09/19/2009
 Date Prepared:
 09/19/2009
 Analyst: MOR

 QC- Sample ID:
 345101-001 D
 Batch #:
 1
 Matrix:
 Water

Reporting Units: mg/L	SAMPLE / SAMPLE DUPLICATE RECOVERY								
Biochemical Oxygen Demand, BOD	Parent Sample Result [A]	Duplicate Result	RPD	Control Limits %RPD	Flag				
Analyte		[B]							
Biochemical Oxygen Demand, 5 day	40.5	36.4	11	20					

Lab Batch #: 773671

 Date Analyzed: 09/22/2009
 Date Prepared: 09/22/2009
 Analyst: ALA

 QC- Sample ID: 344707-001 D
 Batch #: 1
 Matrix: Water

SAMPLE / SAMPLE DUPLICATE RECOVERY Reporting Units: mg/L Chemical Oxygen Demand by HACH 8000 Parent Sample Sample Control RPD **Duplicate** Limits Result Flag Result %RPD [A] [B] Analyte COD - Chemical Oxygen Demand NC 20 11.0 11.0

Lab Batch #: 773209

 Date Analyzed:
 09/19/2009
 Date Prepared:
 09/19/2009
 Analyst:
 MAB

 QC- Sample ID:
 345279-001 D
 Batch #:
 1
 Matrix:
 Water

Reporting Units: mg/L SAMPLE / SAMPLE DUPLICATE RECOVERY Sample Control Parent Sample **Inorganic Anions by EPA 300 Duplicate** RPD Limits Result Flag Result %RPD [A] [B] Analyte Nitrate as N NC < 0.113 < 0.113 20

Lab Batch #: 773766

 Date Analyzed:
 09/23/2009
 Date Prepared:
 09/23/2009
 Analyst: MOR

 QC- Sample ID:
 345037-001 D
 Batch #:
 1
 Matrix: Water

SAMPLE / SAMPLE DUPLICATE RECOVERY Reporting Units: mg/L Oil and Grease by EPA 1664A Sample Control Parent Sample RPD **Duplicate** Limits Result Flag Result %RPD [A] [B] Analyte 14.8 15.5 Oil & Grease, Total Recovered 18

Spike Relative Difference RPD 200 * | (B-A)/(B+A) | All Results are based on MDL and validated for QC purposes. BRL - Below Reporting Limit



Sample Duplicate Recovery



Project Name: 900 S. Central Avenue

Work Order #: 345279

Lab Batch #: 773697 Project ID: Route 111& Rand Ave Vicinity/21561979

 Date Analyzed: 09/22/2009
 Date Prepared: 09/22/2009
 Analyst: ALA

 QC- Sample ID: 345344-001 D
 Batch #: 1
 Matrix: Water

Reporting Units: mg/L SAMPLE / SAMPLE DUPLICATE RECO						
TSS by SM2540D Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag	
Allalyte		. ,				
TSS	<4.00	<4.00	NC	20		

Lab Batch #: 774361

 Date Analyzed: 09/25/2009
 Date Prepared: 09/22/2009
 Analyst: HAT

 QC- Sample ID: 345279-001 D
 Batch #: 1
 Matrix: Water

Reporting Units: mg/L SAMPLE / SAMPLE DUPLICATE RECOVERY **Total Metals by SW6020** Sample Control Parent Sample RPD **Duplicate** Limits Result Flag Result %RPD [A] [B] Analyte 0.002 0.002 25 Lead

Lab Batch #: 773250

 Date Analyzed:
 09/19/2009
 Date Prepared:
 09/19/2009
 Analyst: MOR

 QC- Sample ID:
 345279-001 D
 Batch #:
 1
 Matrix:
 Water

Reporting Units: SU	SAMPLE / SAMPLE DUPLICATE RECOVERY					
pH, Electrometric by EPA 150.2 Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag	
рН	7.97	7.93	1	20		

Spike Relative Difference RPD 200 * | (B-A)/(B+A) | All Results are based on MDL and validated for QC purposes. BRL - Below Reporting Limit

DATE: 4-17-09 INCIDENT: # (ENV. SERVICES): | CHECK IF NO INCIDENT # APPLIES Laboratory Notes ᢐ Route 111 & Rand Ave Vicinity / 21561979 1500 PAGE: DIA (mdd) 4 60-21-6 60/6 9 7 2 1 6 REQUESTED ANALYSIS 9 0 0 Shell Oil Products Chain Of Custody Record 4 <u>___</u> က メメメメメメメメ 900 S. CENTRAL AVENUE; ROXANA, ILLINOIS 62084 CONSULTANT PROJECT CONTACT (Report to): DRO BOD COD 104&1 L M:Trate W. Pennington Sc. | Print BIII To Contact Name: | SHEL RETAIL | Wendy Penning ton SOPUS SITE ADDRESS (Street, City and State BTEX/MTBE GRO Oil 4 Grea PO # G12056 WENDY PENNINGTON SAMPLER NAME(S) (Print): X **FED EX** SVOC/PAH 8270B **NOC 8500B** NO. OF CONT. <u>**</u> た d SHELL CONTRACT RATE APPLIES RESULTS NEEDED **JWW** wendy pennington@urscorp.com Please Check Appropriate Box: 3 URS CORPORATION - FIELD OFFICE N ☐ MOTIVA RETAIL OTHER CONSULTANT Cooler #3 HARTFORD, ILLINOIS 62048 weter 6 Received by: (Signature) 24 HOURS 170 E. RAND AVENUE MATRIX 9/17/09 1330 CEVEL 3 - CALEME 4 WMP TIME ☐ MOTIVA SD&CM SHELL PIPELINE S ENV. SERVICES 2 DAYS SAMPLING DATE Cooler #2 OFF: 314-743-4166 CELL: 314-452-8929 D 3 DAYS 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300 Cooler #1 2-9-1 Field Sample Identification Please include "J" values on Level 2 Reports LAB (LOCATION)
4143 Greenbriar Or.; Stafford, TX 77477

XENCO (____BH; 281,2240,4200; EAX: 281,240,4290 Please provide sample receipt upon login. ECIAL INSTRUCTIONS OR NOTES: B091707 ST. LOUIS, MISSOURI 63110 EMPERATURE ON RECEIPT C* ☐ LEVEL 1 CELL: 314-452-8929

WURNAROUND TIME (CALENI

STANDARD (10 DAY) P4375 URS CORPORATION Relinquished by: (Signatur TEST AMERICA (_ CONSULTANT COMPANY DELIVERABLES: OTHER (\$ 2.5 \$ 2.5 Page 34 of 35



Prelogin / Nonconformance Report - Sample Log-In

Client: IRS CONT.	\$				
Date/Time: 9/19/1009					-
Lab ID#: 395279		•			
Initials:		and the same			٠
Sample Reco	– eipt Check	list		.*	
	<u> </u>	, , , , , , , , , , , , , , , , , , , 		.	
1. Samples on ice?		Blue	Water	No	
2. Shipping container in good condition?		Yes	No	None	
3. Custody seals intact on shipping container (cooler) and bottles?			No	N/A	
4. Chain of Custody present?		(Yes)	No .		
5. Sample instructions complete on chain of custody?		Yes	No		
6. Any missing / extra samples?		Yes	(No)	[
7. Chain of custody signed when relinquished / received	?	Yes	No		
8. Chain of custody agrees with sample label(s)?		Yes	No		
9. Container labels legible and intact?		(Yes)	No	;	
10. Sample matrix / properties agree with chain of custoo	iy?	(Yes)	No		
11. Samples in proper container / bottle?	(Yes)	No			
12. Samples properly preserved?		(Yes	No	N/A	
13. Sample container intact?		(Yes)	No		
14. Sufficient sample amount for indicated test(s)?		Yes	No		
15. All samples received within sufficient hold time?		(Yes)	No		
16. Subcontract of sample(s)?		Yes	,No	N/A	
17. VOC sample have zero head space?		(Yes)	No	N/A	
18. Cooler 1 No. 2/57 Cooler 2 No. Cooler 3		Cooler 4 N	0.	Cooler 5 No.	
20 lbs 0.9 °C lbs °C lb	s °C	lbs	°C	lbs	°C
Nonconformano	e Docume	ntation			
Contact:Contacted by:			Date/Time:	:	
Regarding:					
		;			
Corrective Action Taken:					
•					
Check all that apply: Client understands and would					

din.

□ Cooling process had begun shortly after sampling event

Analytical Report 348290

for

URS Corporation-St. Louis

Project Manager: Wendy Pennington

900 S. Central Avenue

Route 111 & Rand Ave Vicinity/ 21561979

21-OCT-09





4143 Greenbriar Dr., Stafford, TX 77477 Ph:(281) 240-4200 Fax:(281) 240-4280

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-08-TX), Arizona (AZ0738), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002) Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054) New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610) Rhode Island (LAO00308), USDA (S-44102)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87428), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85) Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)
Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-08-TX)
Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-08-TX)
Xenco-Corpus Christi (EPA Lab code: TX02613): Texas (T104704370-08-TX)
Xenco-Boca Raton (EPA Lab Code: FL00449): Florida(E86240),
South Carolina(96031001), Louisiana(04154), Georgia(917)





21-OCT-09

Project Manager: Wendy Pennington

URS Corporation-St. Louis

1001 Highlands Plaza Drive West, Suite 300

St. Louis, MO 63110

Reference: XENCO Report No: 348290

900 S. Central Avenue

Project Address: Roxana, Illinois 62084

Wendy Pennington:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 348290. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 348290 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Carlos Castro

Managing Director, Texas

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.

Certified and approved by numerous States and Agencies.

A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Atlanta - Corpus Christi - Latin America



Sample Cross Reference 348290



URS Corporation-St. Louis, St. Louis, MO

900 S. Central Avenue

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
D-01-09 Water	W	Oct-13-09 10:15		348290-001

CASE NARRATIVE



Client Name: URS Corporation-St. Louis

Project Name: 900 S. Central Avenue

Project ID: Route 111 & Rand Ave Vic Report Date: 21-OCT-09 Work Order Number: 348290 Date Received: 10/14/2009

Sample receipt non conformances and Comments:

None

Sample receipt Non Conformances and Comments per Sample:

None

Analytical Non Conformances and Comments:

Batch: LBA-777103 pH, Electrometric by EPA 150.2

None

Batch: LBA-777466 Flash Point (CC) SW-846 1010

None

Batch: LBA-778093 Metals per ICP-MS by SW 6020A

None

Batch: LBA-778211 BTEX by SW 8260B

None



URS Corporation-St. Louis, St. Louis, MO



Project Id: Route 111 & Rand Ave Vicinity/ 2156197

Project Name: 900 S. Central Avenue

Contact: Wendy Pennington

Project Location: Roxana, Illinois 62084

Date Received in Lab: Wed Oct-14-09 08:45 am

Report Date: 21-OCT-09

Project Manager: Debbie Simmons

				Project Manager:	Debbie Simmons	
	Lab Id:	348290-001				
Analysis Requested	Field Id:	D-01-09 Water				
Anaiysis Kequesieu	Depth:					
	Matrix:	WATER				
	Sampled:	Oct-13-09 10:15				
BTEX by SW 8260B	Extracted:	Oct-21-09 13:14				
	Analyzed:	Oct-21-09 16:06				
	Units/RL:	mg/L RL				
Benzene		533.5 D 5.000				
Toluene		U 0.5000				
Ethylbenzene		U 0.5000				
m,p-Xylenes		U 1.000				
o-Xylene		U 0.5000				
Total Xylenes		U 0.5000				
Total BTEX		533.5 0.5000				
Flash Point (Closed Cup Tester)	Extracted:					
	Analyzed:	Oct-16-09 10:30				
	Units/RL:	Deg F RL				
Flash Point		> 150 75.0				
Total Metals by SW6020	Extracted:	Oct-19-09 08:55				
	Analyzed:	Oct-20-09 21:14				
	Units/RL:	mg/L RL				
Lead		0.002 0.002				
pH, Electrometric by EPA 150.2	Extracted:					
	Analyzed:	Oct-14-09 15:32				
	Units/RL:	SU RL				
pH		7.16				

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

Carlos Castro Managing Director, Texas



Analytical Method : pH, Electrometric by EPA 150.2 Client : URS Corporation-St. Louis

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Time Held Extracte d (Days)		Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
D-01-09 Water	Oct. 13, 2009	Oct. 14, 2009				Oct.14, 2009	1	1	P



Analytical Method : Flash Point (Closed Cup Tester) Client : URS Corporation-St. Louis

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Extracte		Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
D-01-09 Water	Oct. 13, 2009	Oct. 14, 2009				Oct.16, 2009	30	3	P



Analytical Method : Total Metals by SW60	20 Client:	URS Corporation-St. Louis
--	------------	---------------------------

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Extracte	_	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
D-01-09 Water	Oct. 13, 2009	Oct. 14, 2009	Oct. 19, 2009	180	6	Oct.20, 2009	180	1	P



Analytical Method:	BTEX by SW 8260B	Client :	URS Corporation-St. Louis

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Extracte	Analyzed	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
D-01-09 Water	Oct. 13, 2009	Oct. 14, 2009				Oct.21, 2009	14	8	P

F = These samples were analyzed outside the recommended holding time.

P = Samples analyzed within the recommended holding time.



Flagging Criteria



- X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
- **B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- **D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- **F** RPD exceeded lab control limits.
- **J** The target analyte was positively identified below the MQL and above the SQL.
- U Analyte was not detected.
- L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- **H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- **K** Sample analyzed outside of recommended hold time.
- **JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.
- **BRL** Below Reporting Limit.
- **RL** Reporting Limit
- * Outside XENCO's scope of NELAC Accreditation.

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.

Certified and approved by numerous States and Agencies.

A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - San Antonio - Corpus Christi - Midland/Odessa - Tampa - Miami - Latin America

	Phone	Fax
4143 Greenbriar Dr, Stafford, Tx 77477	(281) 240-4200	(281) 240-4280
9701 Harry Hines Blvd , Dallas, TX 75220	(214) 902 0300	(214) 351-9139
5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
2505 North Falkenburg Rd, Tampa, FL 33619	(813) 620-2000	(813) 620-2033
5757 NW 158th St, Miami Lakes, FL 33014	(305) 823-8500	(305) 823-8555
12600 West I-20 East, Odessa, TX 79765	(432) 563-1800	(432) 563-1713
842 Cantwell Lane, Corpus Christi, TX 78408	(361) 884-0371	(361) 884-9116



Form 2 - Surrogate Recoveries

Project Name: 900 S. Central Avenue

Work Orders: 348290, Project ID: Route 111 & Rand Ave Vicinity/ 21561979

Lab Batch #: 771176 Sample: ICB-01 / ICB Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 09/04/09 15:08	SURROGATE RECOVERY STUDY					
ВТЕ	X by SW 8260B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
	Analytes			رما			
4-Bromofluorobenzene		0.0486	0.0500	97	74-124		
Dibromofluoromethane		0.0485	0.0500	97	75-131		
1,2-Dichloroethane-D4		0.0519	0.0500	104	63-144		
Toluene-D8		0.0511	0.0500	102	80-117		

Lab Batch #: 778211 Sample: 541153-1-BKS / BKS Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 10/21/09 13:5:	Date Analyzed: 10/21/09 13:55 SURROGATE RECOVERY STUDY						
BTEX by SW 8260B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
Analytes			[D]				
4-Bromofluorobenzene	0.0499	0.0500	100	74-124			
Dibromofluoromethane	0.0542	0.0500	108	75-131			
1,2-Dichloroethane-D4	0.0533	0.0500	107	63-144			
Toluene-D8	0.0471	0.0500	94	80-117			

Lab Batch #: 778211 Sample: 541153-1-BLK / BLK Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 10/21/09 15:01 SURROGATE RECOVERY STUDY						
BTEX by SW 8260B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
Analytes			נעו			
4-Bromofluorobenzene	0.0503	0.0500	101	74-124		
Dibromofluoromethane	0.0540	0.0500	108	75-131		
1,2-Dichloroethane-D4	0.0541	0.0500	108	63-144		
Toluene-D8	0.0468	0.0500	94	80-117		

Lab Batch #: 778211 **Sample:** 348290-001 / SMP **Batch:** 1 **Matrix:** Water

Units: mg/L Date Analyzed: 10/21/09 16:06 SURROGATE RECOVERY STUDY						
BTEX by SW 8260B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags	
Analytes			ردا			
4-Bromofluorobenzene	0.0501	0.0500	100	74-124		
Dibromofluoromethane	0.0527	0.0500	105	75-131		
1,2-Dichloroethane-D4	0.0489	0.0500	98	63-144		
Toluene-D8	0.0475	0.0500	95	80-117		

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Form 2 - Surrogate Recoveries

Project Name: 900 S. Central Avenue

Work Orders: 348290, Project ID: Route 111 & Rand Ave Vicinity/ 21561979

Lab Batch #: 778211 **Sample:** 348290-001 / DL **Batch:** 1 **Matrix:** Water

Units: mg/L	Date Analyzed: 10/21/09 16:35	SURROGATE RECOVERY STUDY								
	oy SW 8260B nalytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags				
4-Bromofluorobenzene		0.0501	0.0500	100	74-124					
Dibromofluoromethane		0.0515	0.0500	103	75-131					
1,2-Dichloroethane-D4		0.0486	0.0500	97	63-144					
Toluene-D8		0.0488	0.0500	98	80-117					

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

^{*} Surrogate outside of Laboratory QC limits

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Blank Spike Recovery



Project Name: 900 S. Central Avenue

Work Order #: 348290 Project ID: Route 111 & Rand Ave Vicinity/ 21561979

 Lab Batch #: 778211
 Sample: 541153-1-BKS
 Matrix: Water

 Date Analyzed: 10/21/2009
 Date Prepared: 10/21/2009
 Analyst: CAA

Reporting Units: mg/L BLANK/BLANK SPIKE RECOVERY STUDY Batch #: Blank Spike Blank Blank Control BTEX by SW 8260B Spike Result Added Spike Limits Flags [A] [B] Result %R %R [D] **Analytes** [C] < 0.0005 0.1000 0.0879 66-142 Benzene 88 < 0.0005 0.1000 0.0893 89 59-139 Toluene Ethylbenzene < 0.0005 0.1000 0.0911 91 75-125 < 0.0010 0.1799 0.2000 90 75-125 m,p-Xylenes o-Xylene < 0.0005 0.1000 0.0958 96 75-125

 Lab Batch #: 778093
 Sample: 540819-1-BKS
 Matrix: Water

 Date Analyzed: 10/20/2009
 Date Prepared: 10/19/2009
 Analyst: HAT

Reporting Units: mg/L BLANK /BLANK SPIKE RECOVERY STUDY Batch #: Blank Spike Blank Blank Control **Total Metals by SW6020** Added Spike Spike Limits Result Flags Result %R [B] %R [A] **Analytes** [C] [D] 0.050 0.045 < 0.001 90 75-125 Lead

Blank Spike Recovery [D] = 100*[C]/[B] All results are based on MDL and validated for QC purposes. BRL - Below Reporting Limit





Project Name: 900 S. Central Avenue

Work Order #: 348290 Project ID: Route 111 & Rand Ave Vicinity/ 21561979

Lab Batch ID: 778093 **QC- Sample ID:** 348290-001 S **Batch #:** 1 **Matrix:** Water

Date Analyzed: 10/20/2009 Date Prepared: 10/19/2009 Analyst: HAT

Reporting Units: mg/L		M	ATRIX SPIK	E / MAT	RIX SPI	KE DUPLICA	TE REC	OVERY	STUDY		
Total Metals by SW6020	Parent Sample	Spike	Spiked Sample Result	Sample		Duplicate Spiked Sample	. 1	RPD	Control Limits	Control Limits	Flag
Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
Lead	0.002	0.050	0.052	100	0.050	0.054	104	4	75-125	25	



Sample Duplicate Recovery



Project Name: 900 S. Central Avenue

Work Order #: 348290

Lab Batch #: 777466 Project ID: Route 111 & Rand Ave Vicinity/ 21561979

 Date Analyzed: 10/16/2009
 Date Prepared: 10/16/2009
 Analyst: MOR

 QC- Sample ID: 348290-001 D
 Batch #: 1
 Matrix: Water

Reporting Units: Deg F	SAMPLE / SAMPLE DUPLICATE RECOVERY						
Flash Point (Closed Cup Tester)	Parent Sample Result [A]	Duplicate Result	RPD	Control Limits %RPD	Flag		
Analyte		[B]					
Flash Point	> 150	> 150	0	25			

Lab Batch #: 778093

 Date Analyzed:
 10/20/2009
 Date Prepared:
 10/19/2009
 Analyst: HAT

 QC- Sample ID:
 348290-001 D
 Batch #:
 1
 Matrix: Water

Reporting Units: mg/L	SAMPLE /	SAMPLE	DUPLIC	ATE REC	OVERY
Total Metals by SW6020	Parent Sample Result [A]	Sample Duplicate Result	RPD	Control Limits %RPD	Flag
Analyte		[B]			
Lead	0.002	< 0.002	NC	25	

Lab Batch #: 777103

 Date Analyzed: 10/14/2009
 Date Prepared: 10/14/2009
 Analyst: MAB

 QC- Sample ID: 348290-001 D
 Batch #: 1
 Matrix: Water

Reporting Units: SU SAMPLE / SAMPLE DUPLICATE RECO					
pH, Electrometric by EPA 150.2 Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
рН	7.16	7.11	1	20	

Spike Relative Difference RPD 200 * | (B-A)/(B+A) | All Results are based on MDL and validated for QC purposes. BRL - Below Reporting Limit

INCIDENT # (ENV SERVICES). | CHECK IF NO INCIDENT # APPLIES DATE: 10-13-09 2487290 Route 111 & Rand Ave Vicinity / 21561979 PAGE: CONSULTANT PROJECT NAME / NO.: 9 4 REQUESTED ANALYSIS Shell Oil Products Chain Of Custody Record 0 7 0 6 900 S. CENTRAL AVENUE; ROXANA, ILLINOIS 62084 CONSULTANT PROJECT CONTACT (Report to): Print Bill To Contact Name: Wend - Land Feb W. Pennington SOPUS SITE ADDRESS (Street, City and State 7500 # Od WENDY PENNINGTON SAMPLER NAME(S) (Print): 0988 SHELL RETAIL SHELL CONTRACT RATE APPLIES RESULTS NEEDED C] LUBES wendy pennington@urscorp.com Please Check Appropriate Box: URS CORPORATION - FIELD OFFICE MOTIVA RETAIL ☑ OTHER (SPECIFY) EDD CONSULTANT Cooler #3 OTHER _ HARTFORD, ILLINOIS 62048 . Tahours 170 E. RAND AVENUE SHELL PIPELINE S ENV. SERVICES ☐ MOTIVA SD&CM 2 DAYS ☐ LEVEL 3 ☑ LEVEL 4 Cooler #2 OFF: 314-743-4166 CELL: 314-452-8929 >□3 DAYS 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300 Cooler #1 2-5 * Please include "J" values on Level 2 Reports Please provide sample receipt upon login. U LEVEL 2 SPECIAL INSTRUCTIONS OR NOTES ST. LOUIS, MISSOURI 63110 TEMPERATURE ON RECEIPT C* DELIVERABLES: | LEVEL 1 LAB (LOCATION) тецерноме: ОFF: 314-743-4166 URS CORPORATION STANDARD (10 DAY) TEST AMERICA (_ CONSULTANT COMPANY CALSCIENCE (_ OTHER (_¥ _∏

₫

Laboratory Notes 1600 PID (mdd) 10/13/09 00 XXX BLEX enutsiom FED EX SVOC/PAH 8270B **AOC 8500B** NO. OF CONT. e HO3 H2SO4 NONE × Received by: (Signature) 10/13/09 1015 Water X MATRIX TIME SAMPLING DATE Field Sample Identification D-01-09 Water Relinquished by: (Signal rw. See Page 16 of 17



Prelogin / Nonconformance Report - Sample Log-In

Client: UR	5					•			
Date/Time:	}	D-14-0	09					•	
Lab ID #:		34	8290						
Initials:			77					, •	
	w. "		Samı	ole Receij	ot Check	list			,A
1. Samples on ice	?					Blue	Water	No	·
2. Shipping contai	ner in	good condit	ion?			Yes	No	None	
3. Custody seals i	ntact o	n shipping (container (cooler) and	bottles?	Yes	No	N/A	
4. Chain of Custoo	ly pres	ent?				Yes	No		
5. Sample instruct	ions c	omplete on o	chain of cu	stody?		Yes	No		
6. Any missing / e	xtra sa	mples?				Yes	CNO	1	
7. Chain of custod	y sign	ed when reli	nquished /	received?		Yes	No		
8. Chain of custod	y agre	es with sam	ple label(s)	?		Yes	No		
9. Container labels	legibl	e and intact	?			Jes	No		
10. Sample matrix	/ prope	erties agree	with chain	of custody	?	Yes	No		
11. Samples in pro	per co	ntainer / bot	ttle?			Yes	No		
12. Samples prope	rly pre	served?				Yes	No	N/A	
13. Sample contair	ner inta	act?		· · · · · · · · · · · · · · · · · · ·		Yes	No		
14. Sufficient sam	ple am	ount for indi	cated test(s)?		Yes	No		
15. All samples rec	eived	within suffic	cient hold t	ime?		Yes	No		
16. Subcontract of	samp	le(s)?				Yes	,No	N/A	
17. VOC sample ha	ave zer	o head spac	ce?			Yes) No	N/A	
18. Cooler 1 No. 4	868	Cooler 2 No	o	Cooler 3 No	o	Cooler 4 N	о.	Cooler 5 No.	
33 lbs 2	<u>څ °c</u>	lbs	°C	lbs	°C	lbs	°C	lbs	°C
			Nonconf	ormance	Docume	ntation			
Contact:			Contacted	hv		•	Date/Time:		
Contact			Contacted	Dy			Dates Time.	· _	
Regarding:	 -		·			•			
Corrective Action	Taken:								
						·· · · · · · · · · · · · · · · · · · ·		· .	
Chack all that app	lv: r	Client unde	erstands a	nd would lik	e to proce	ed with an	alveis		

□Cooling process had begun shortly after sampling event

Analytical Report 355933

for

URS Corporation-St. Louis

Project Manager: Wendy Pennington

900 S. Central Avenue Route 111 & Rand Ave Vicinity/21561975.00011

22-DEC-09





4143 Greenbriar Dr., Stafford, TX 77477 Ph:(281) 240-4200 Fax:(281) 240-4280

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-08-TX), Arizona (AZ0738), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002) Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054) New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610) Rhode Island (LAO00308), USDA (S-44102)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87429), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85) Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)
Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-08-TX)
Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-08-TX)
Xenco-Corpus Christi (EPA Lab code: TX02613): Texas (T104704370-08-TX)
Xenco-Boca Raton (EPA Lab Code: FL00449): Florida(E86240),
South Carolina(96031001), Louisiana(04154), Georgia(917)





22-DEC-09

Project Manager: Wendy Pennington

URS Corporation-St. Louis

1001 Highlands Plaza Drive West, Suite 300

St. Louis, MO 63110

Reference: XENCO Report No: 355933

900 S. Central Avenue

Project Address: Roxana, Illinois 62084

Wendy Pennington:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 355933. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 355933 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Carlos Castro

Managing Director, Texas

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.

Certified and approved by numerous States and Agencies.

A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Atlanta - Corpus Christi - Latin America



Sample Cross Reference 355933



URS Corporation-St. Louis, St. Louis, MO

900 S. Central Avenue

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
P4375 Water 2	W	Dec-16-09 14:45		355933-001

CASE NARRATIVE



Client Name: URS Corporation-St. Louis

Project Name: 900 S. Central Avenue

Project ID: Route 111 & Rand Ave Vic Report Date: 22-DEC-09 Work Order Number: 355933 Date Received: 12/17/2009

Sample receipt non conformances and Comments:

None

Sample receipt Non Conformances and Comments per Sample:

None

Analytical Non Conformances and Comments:

Batch: LBA-786142 Reactive Sulfide by EPA 9030B

None

Batch: LBA-786144 Reactive Cyanide by EPA 9010B

None

Batch: LBA-786249 Paint Filter Liquids Test by EPA 9095A

None

Batch: LBA-786316 TCLP SVOCs by SW-846 8270C Pyridine RPD was outside laboratory control limits.

Samples affected are: 355933-001

Pyridine recovered below QC limits in the Matrix Spike.

Samples affected are: 355933-001.

The Laboratory Control Sample for Pyridine is within laboratory Control Limits

Batch: LBA-786438 Flash Point by EPA 1010

None

Batch: LBA-786466 Phenolics Total by EPA 420.1

355815 reactive sample

Batch: LBA-786515 TCLP VOAs by EPA 8260B

None

Batch: LBA-786589 TOX by EPA 9020B

Total Organic Halides detected in the blank below the MQL but above the SQL;

Samples affected are: 355933-001.

CASE NARRATIVE



Client Name: URS Corporation-St. Louis

Project Name: 900 S. Central Avenue

Project ID: Route 111 & Rand Ave Vic Report Date: 22-DEC-09 Work Order Number: 355933 Date Received: 12/17/2009

Batch: LBA-786645 TCLP Metals by SW 6020A

None



URS Corporation-St. Louis, St. Louis, MO



Project Id: Route 111 & Rand Ave Vicinity/21561975

Project Name: 900 S. Central Avenue

Contact: Wendy Pennington
Project Location: Roxana,Illinois 62084

Date Received in Lab: Thu Dec-17-09 09:15 am

Report Date: 22-DEC-09

Project Manager: Debbie Simmons

				Project Manager:	Debbie Simmons	
	Lab Id:	355933-001				
Analysis Requested	Field Id:	P4375 Water 2				
Anaiysis Kequesieu	Depth:					
	Matrix:	WATER				
	Sampled:	Dec-16-09 14:45				
Flash Point by EPA 1010	Extracted:					
	Analyzed:	Dec-18-09 08:30				
	Units/RL:	Deg F RL				
Flash Point		> 150 75.0				
Paint Filter Liquids Test by EPA 9095A	Extracted:					
	Analyzed:	Dec-18-09 08:00				
	Units/RL:	mg/L RL				
Free Liquids		Fail				
Phenolics Total by EPA 420.1	Extracted:					
	Analyzed:	Dec-21-09 08:20				
	Units/RL:	mg/L RL				
Phenolic		U 0.050				
Reactive Cyanide by EPA 9010B	Extracted:					
	Analyzed:	Dec-17-09 09:38				
	Units/RL:	mg/L RL				
Cyanide		U 0.200				
Reactive Sulfide by EPA 9030B	Extracted:					
	Analyzed:	Dec-17-09 12:04				
	Units/RL:	mg/L RL				
Sulfide		U 50.0				

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

Carlos Castro Managing Director, Texas



URS Corporation-St. Louis, St. Louis, MO



Project Id: Route 111 & Rand Ave Vicinity/21561975

Project Name: 900 S. Central Avenue

Project Location: Roxana, Illinois 62084

Contact: Wendy Pennington

Date Received in Lab: Thu Dec-17-09 09:15 am

Report Date: 22-DEC-09

Project Manager: Debbie Simmons

				1 Toject Manager.	Debble Billinons	
	Lab Id:	355933-001				
4 7 . 5	Field Id:	P4375 Water 2				
Analysis Requested	Depth:					
	Matrix:	WATER				
	Sampled:	Dec-16-09 14:45				
TCLP Metals by EPA 6020	Extracted:	Dec-18-09 09:10				
1 OEF Michael by EFFF 0020	Analyzed:	Dec-21-09 16:53				
Ai-	Units/RL:	mg/L RL 0.008 0.002				
Arsenic						
Barium		2.86 0.005				
Cadmium		0.001 0.001				
Chromium		0.009 0.003				
Lead		0.006 0.002				
Mercury *		U 0.0004				
Selenium		U 0.003				
Silver		U 0.002				
TCLP SVOCs by SW-846 8270C	Extracted:	Dec-17-09 11:49				
	Analyzed:	Dec-18-09 12:14				
	Units/RL:	mg/L RL				
1,4-Dichlorobenzene		U 0.050				
2,4-Dinitrotoluene		U 0.050				
Hexachlorobenzene		U 0.050				
Hexachlorobutadiene		U 0.050				
Hexachloroethane		U 0.050				
2-methylphenol		U 0.050				
3&4-Methylphenol		U 0.050				
Nitrobenzene		U 0.050				
Pentachlorophenol		U 0.050				
Pyridine		U 0.050				
2,4,5-Trichlorophenol		U 0.050				
2,4,6-Trichlorophenol		U 0.050				

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

Carlos Castro
Managing Director, Texas



URS Corporation-St. Louis, St. Louis, MO



Project Id: Route 111 & Rand Ave Vicinity/21561975

Project Name: 900 S. Central Avenue

Contact: Wendy Pennington

Project Location: Roxana, Illinois 62084

Date Received in Lab: Thu Dec-17-09 09:15 am

Report Date: 22-DEC-09

Color Roxana, minors 02004				Project Manager:	Debbie Simmons	
	Lab Id:	355933-001				
Analusia Dogunated	Field Id:	P4375 Water 2				
Analysis Requested	Depth:					
	Matrix:	WATER				
	Sampled:	Dec-16-09 14:45				
TCLP VOAs by EPA 8260B	Extracted:	Dec-17-09 14:10				
	Analyzed:	Dec-17-09 20:20				
	Units/RL:	mg/L RL				
Benzene		U 0.005				
2-Butanone		U 0.050				
Carbon Tetrachloride		U 0.005				
Chlorobenzene		U 0.005				
Chloroform		U 0.005				
1,2-Dichloroethane		U 0.005				
1,1-Dichloroethene		U 0.005				
Tetrachloroethylene		U 0.005				
Trichloroethene		U 0.005				
Vinyl Chloride		U 0.002				
TOX by EPA 9020B	Extracted:					
	Analyzed:	Dec-21-09 14:04				
	Units/RL:	mg/L RL				
Total Organic Halides		0.259 0.040				

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi



Analytical Method : Phenolics Total by EPA 420.1 Client : URS Corporation-St. Louis

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Time Held Extracte d (Days)		Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
P4375 Water 2	Dec. 16, 2009	Dec. 17, 2009				Dec.21, 2009	28	5	P



Analytical Method : Flash Point by EPA 1010 Client : URS Corporation-St. Louis

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Time Held Extracte d (Days)		Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
P4375 Water 2	Dec. 16, 2009	Dec. 17, 2009				Dec.18, 2009	30	2	P



Analytical Method : TCLP Metals by EPA 6020 Client : URS Corporation-St. Louis

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Extracte		Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
P4375 Water 2	Dec. 16, 2009	Dec. 17, 2009	Dec. 18, 2009	180	2	Dec.21, 2009	180	3	P



Analytical Method : TCLP VOAs by EPA 8260B Client : URS Corporation-St. Louis

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Extracte		Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
P4375 Water 2	Dec. 16, 2009	Dec. 17, 2009				Dec.17, 2009	14	1	P



Analytical Method : TCLP SVOCs, Pests & Herbs by EPA 82 Client : URS Corporation-St. Louis

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Time Held Extracte d (Days)		Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
P4375 Water 2	Dec. 16, 2009	Dec. 17, 2009	Dec. 17, 2009	7	1	Dec.18, 2009	40	1	P



Analytical Method : Reactive Cyanide by EPA 9010B Client : URS Corporation-St. Louis

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Extracte		Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
P4375 Water 2	Dec. 16, 2009	Dec. 17, 2009				Dec.17, 2009	14	1	P



Analytical Method:	TOX by EPA 9020B	Client :	URS Corporation-St. Louis
			<u>-</u>

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Extracte	_	Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
P4375 Water 2	Dec. 16, 2009	Dec. 17, 2009				Dec.21, 2009	28	5	P



Analytical Method : Reactive Sulfide by EPA 9030B Client : URS Corporation-St. Louis

Field Sample ID	Date Collected	Date Received	Date Extracted	Max Holding Time Extracted (Days)	Extracte		Max Holding Time Analyzed (Days)	Time Held Analyzed (Days)	Q
P4375 Water 2	Dec. 16, 2009	Dec. 17, 2009				Dec.17, 2009	14	1	P



Flagging Criteria



- X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
- **B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- **D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F RPD exceeded lab control limits.
- **J** The target analyte was positively identified below the MQL and above the SQL.
- U Analyte was not detected.
- L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- **H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- **K** Sample analyzed outside of recommended hold time.
- **JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.
- **BRL** Below Reporting Limit.
- **RL** Reporting Limit
- * Outside XENCO's scope of NELAC Accreditation.

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.

Certified and approved by numerous States and Agencies.

A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - San Antonio - Corpus Christi - Midland/Odessa - Tampa - Miami - Latin America

	Phone	Fax
4143 Greenbriar Dr, Stafford, Tx 77477	(281) 240-4200	(281) 240-4280
9701 Harry Hines Blvd , Dallas, TX 75220	(214) 902 0300	(214) 351-9139
5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
2505 North Falkenburg Rd, Tampa, FL 33619	(813) 620-2000	(813) 620-2033
5757 NW 158th St, Miami Lakes, FL 33014	(305) 823-8500	(305) 823-8555
12600 West I-20 East, Odessa, TX 79765	(432) 563-1800	(432) 563-1713
842 Cantwell Lane, Corpus Christi, TX 78408	(361) 884-0371	(361) 884-9116



Form 2 - Surrogate Recoveries

Project Name: 900 S. Central Avenue

Work Orders: 355933, **Project ID:** Route 111 & Rand Ave Vicinity/21561975.0001

Lab Batch #: 786316 Sample: 545778-1-BLK / BLK Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 12/18/09 10:20	SU	RROGATE RE	ECOVERY S	STUDY	
	Cs by SW-846 8270C	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
	Analytes			[-]		
2-Fluorobiphenyl		0.050	0.050	100	43-116	
2-Fluorophenol		0.041	0.050	82	21-100	
Nitrobenzene-d5		0.051	0.050	102	35-114	
Phenol-d6		0.026	0.050	52	10-94	
Terphenyl-D14		0.057	0.050	114	33-141	
2,4,6-Tribromophenol		0.052	0.050	104	10-123	

Lab Batch #: 786316 Sample: 545778-1-BKS / BKS Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 12/18/09 10	D:58 SU	RROGATE RI	ECOVERY S	STUDY	
TCLP SVOCs by SW-846 8270C	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
2-Fluorobiphenyl	0.044	0.050	88	43-116	
2-Fluorophenol	0.036	0.050	72	21-100	
Nitrobenzene-d5	0.045	0.050	90	35-114	
Phenol-d6	0.026	0.050	52	10-94	
Terphenyl-D14	0.047	0.050	94	33-141	
2,4,6-Tribromophenol	0.046	0.050	92	10-123	

Lab Batch #: 786316 Sample: 545778-1-BSD / BSD Batch: 1 Matrix: Water

Units: mg/L	Date Analyzed: 12/18/09 11:36	SURROGATE RECOVERY STUDY						
TCLP SV	OCs by SW-846 8270C	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags		
	Analytes			[D]				
2-Fluorobiphenyl		0.042	0.050	84	43-116			
2-Fluorophenol		0.034	0.050	68	21-100			
Nitrobenzene-d5		0.043	0.050	86	35-114			
Phenol-d6		0.025	0.050	50	10-94			
Terphenyl-D14		0.044	0.050	88	33-141			
2,4,6-Tribromophenol		0.044	0.050	88	10-123			

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

^{*} Surrogate outside of Laboratory QC limits

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Form 2 - Surrogate Recoveries

Project Name: 900 S. Central Avenue

Work Orders: 355933, **Project ID:** Route 111 & Rand Ave Vicinity/21561975.0001

Units: mg/L Date Analyzed: 12/18/09 12:14 SURROGATE RECOVERY STUDY							
TCLP SV	OCs by SW-846 8270C	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags	
	Analytes			[D]			
2-Fluorobiphenyl		0.243	0.250	97	43-116		
2-Fluorophenol		0.177	0.250	71	21-100		
Nitrobenzene-d5		0.218	0.250	87	35-114		
Phenol-d6		0.077	0.250	31	10-94		
Terphenyl-D14		0.230	0.250	92	33-141		
2,4,6-Tribromophenol		0.221	0.250	88	10-123		

Lab Batch #: 786316 **Sample:** 355933-001 S / MS **Batch:** 1 **Matrix:** Water

Units: mg/L Date Analyzed: 12/18/09 12:53 SURROGATE RECOVERY STUDY									
TCLP SV	OCs by SW-846 8270C	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
	Analytes			[D]					
2-Fluorobiphenyl		0.195	0.250	78	43-116				
2-Fluorophenol		0.147	0.250	59	21-100				
Nitrobenzene-d5		0.192	0.250	77	35-114				
Phenol-d6		0.161	0.250	64	10-94				
Terphenyl-D14		0.204	0.250	82	33-141				
2,4,6-Tribromophenol		0.188	0.250	75	10-123				

Lab Batch #: 786515 Sample: 545958-1-BKS / BKS Batch: 1 Matrix: Water

Units: mg/L Date Analyze	d: 12/17/09 12:44	SURROGATE RECOVERY STUDY							
TCLP VOAs by EPA 82	260B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
Analytes				[D]					
4-Bromofluorobenzene		0.0492	0.0500	98	74-124				
Dibromofluoromethane		0.0545	0.0500	109	75-131				
1,2-Dichloroethane-D4		0.0521	0.0500	104	63-144				
Toluene-D8		0.0503	0.0500	101	80-117				

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

^{*} Surrogate outside of Laboratory QC limits

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Form 2 - Surrogate Recoveries

Project Name: 900 S. Central Avenue

Work Orders: 355933, **Project ID:** Route 111 & Rand Ave Vicinity/21561975.0001

Lab Batch #: 786515 Sample: 545958-1-BLK / BLK Batch: 1 Matrix: Water

Units: mg/L Date Analyzed: 12/17/09 13:52	SURROGATE RECOVERY STUDY							
TCLP VOAs by EPA 8260B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
Analytes			[D]					
4-Bromofluorobenzene	0.0474	0.0500	95	74-124				
Dibromofluoromethane	0.0475	0.0500	95	75-131				
1,2-Dichloroethane-D4	0.0460	0.0500	92	63-144				
Toluene-D8	0.0496	0.0500	99	80-117				

Lab Batch #: 786515 **Sample:** 355933-001 S / MS **Batch:** 1 **Matrix:** Water

Units: mg/L Date Analyzed: 12/17/09 19:11	SURROGATE RECOVERY STUDY							
TCLP VOAs by EPA 8260B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
Analytes			[D]					
4-Bromofluorobenzene	0.0520	0.0500	104	74-124				
Dibromofluoromethane	0.0563	0.0500	113	75-131				
1,2-Dichloroethane-D4	0.0536	0.0500	107	63-144				
Toluene-D8	0.0498	0.0500	100	80-117				

Lab Batch #: 786515 **Sample:** 355933-001 SD / MSD **Batch:** 1 **Matrix:** Water

Units: mg/L Date Analyzed: 12/17/09 19:34	Date Analyzed: 12/17/09 19:34 SURROGATE RECOVERY STUDY							
TCLP VOAs by EPA 8260B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
Analytes			[D]					
4-Bromofluorobenzene	0.0504	0.0500	101	74-124				
Dibromofluoromethane	0.0565	0.0500	113	75-131				
1,2-Dichloroethane-D4	0.0523	0.0500	105	63-144				
Toluene-D8	0.0494	0.0500	99	80-117				

Lab Batch #: 786515 **Sample:** 355933-001 / SMP **Batch:** 1 **Matrix:** Water

Units: mg/L Date Analyzed: 12/17/09 20:20	SURROGATE RECOVERY STUDY							
TCLP VOAs by EPA 8260B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
Analytes			[D]					
4-Bromofluorobenzene	0.0463	0.0500	93	74-124				
Dibromofluoromethane	0.0487	0.0500	97	75-131				
1,2-Dichloroethane-D4	0.0473	0.0500	95	63-144				
Toluene-D8	0.0499	0.0500	100	80-117				

^{*} Surrogate outside of Laboratory QC limits

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

^{**} Surrogates outside limits; data and surrogates confirmed by reanalysis

^{***} Poor recoveries due to dilution



Blank Spike Recovery



Project Name: 900 S. Central Avenue

Work Order #: 355933 Project ID: Route 111 & Rand Ave Vicinity/21561975.00011

 Lab Batch #:
 786466
 Sample:
 786466-1-BKS
 Matrix:
 Water

 Date Analyzed:
 12/21/2009
 Date Prepared:
 12/21/2009
 Analyst:
 MOR

Reporting Units: mg/L BLANK/BLANK SPIKE RECOVERY STUDY Batch #: Blank Spike Blank Blank Control Phenolics Total by EPA 420.1 Result Added Spike Limits Spike Flags [A] [B] Result %R %R Analytes [D] [C] < 0.011 0.500 0.478 80-120 Phenolic

 Lab Batch #: 786144
 Sample: 786144-1-BKS
 Matrix: Water

 Date Analyzed: 12/17/2009
 Date Prepared: 12/17/2009
 Analyst: MOR

Reporting Units: mg/L BLANK /BLANK SPIKE RECOVERY STUDY Batch #: Spike Blank Blank Blank Control Reactive Cyanide by EPA 9010B Added Result Spike Spike Limits Flags [B] Result %R %R [A] **Analytes** [D] [C] < 0.018 0.197 0.200 99 80-120 Cyanide

 Lab Batch #: 786142
 Sample: 786142-1-BKS
 Matrix: Water

 Date Analyzed: 12/17/2009
 Date Prepared: 12/17/2009
 Analyst: MOR

Reporting Units: mg/L BLANK/BLANK SPIKE RECOVERY STUDY Batch #: Blank Spike Blank Blank Control Reactive Sulfide by EPA 9030B Result Added Spike Spike Limits Flags [A] [B] Result %R %R **Analytes** [C] [D] Sulfide < 5.00 978 915 94 60-120

Lab Batch #: 786645Sample: 545942-1-BKSMatrix: WaterDate Analyzed: 12/21/2009Date Prepared: 12/18/2009Analyst: HAT

Reporting Units: mg/L	Batch #: 1	BLANK/BLANK SPIKE RECOVERY STUDY				
TCLP Metals by EPA 6020 Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
<u> </u>	<0.002	0.050	0.050	100	75-125	
Arsenic						
Barium	< 0.001	0.050	0.051	102	75-125	
Cadmium	< 0.001	0.020	0.021	105	75-125	
Chromium	< 0.001	0.050	0.051	102	75-125	
Lead	< 0.001	0.050	0.048	96	75-125	
Mercury	< 0.0001	0.0010	0.0008	80	75-125	
Selenium	< 0.001	0.050	0.052	104	75-125	
Silver	< 0.001	0.020	0.021	105	75-125	

Blank Spike Recovery [D] = 100*[C]/[B]

All results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit



Blank Spike Recovery



Project Name: 900 S. Central Avenue

Work Order #: 355933 **Project ID:** Route 111 & Rand Ave Vicinity/21561975.00011

Lab Batch #: 786515Sample: 545958-1-BKSMatrix: WaterDate Analyzed: 12/17/2009Date Prepared: 12/17/2009Analyst: KHM

Reporting Units: mg/L BLANK/BLANK SPIKE RECOVERY STUDY Batch #: Blank Spike Blank Blank Control TCLP VOAs by EPA 8260B Result Added Spike Spike Limits **Flags** [A] [B] Result %R %R [D] **Analytes** [C] < 0.001 0.050 0.039 78 66-142 Benzene < 0.010 0.500 0.421 84 60-140 2-Butanone Carbon Tetrachloride < 0.001 0.050 0.037 62-125 0.050 < 0.001 0.050 100 60-133 Chlorobenzene Chloroform < 0.001 0.050 0.046 92 74-125 1,2-Dichloroethane 0.050 0.041 82 < 0.001 68-127 < 0.001 0.050 0.047 94 59-172 1,1-Dichloroethene Tetrachloroethylene < 0.001 0.050 0.049 98 71-125 < 0.001 0.050 0.044 88 62-137 Trichloroethene < 0.001 0.050 0.039 78 75-125 Vinyl Chloride



BS / BSD Recoveries



Project Name: 900 S. Central Avenue

Work Order #: 355933

Project ID: Route 111 & Rand Ave Vicinity/21561975.00011

Analyst: KAN

Date Prepared: 12/17/2009 **Batch #:** 1

Date Analyzed: 12/18/2009

Lab Batch ID: 786316

Date Frepared: 12/1//200

Sample: 545778-1-BKS

Matrix: Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Units: mg/L		BEANK STIKE / BEANK STIKE BUT EICATE RECOVERT STUDT									
TCLP SVOCs by SW-846 8270C Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
1,4-Dichlorobenzene	< 0.001	0.050	0.044	88	0.05	0.043	86	2	54-105	28	
2,4-Dinitrotoluene	< 0.001	0.050	0.048	96	0.05	0.047	94	2	60-116	38	
Hexachlorobenzene	< 0.001	0.050	0.046	92	0.05	0.046	92	0	60-109	25	
Hexachlorobutadiene	< 0.001	0.050	0.045	90	0.05	0.045	90	0	52-107	25	
Hexachloroethane	< 0.001	0.050	0.044	88	0.05	0.043	86	2	46-115	25	
2-methylphenol	< 0.001	0.050	0.044	88	0.05	0.042	84	5	52-106	25	
3&4-Methylphenol	< 0.002	0.100	0.084	84	0.1	0.081	81	4	23-140	25	
Nitrobenzene	< 0.001	0.050	0.045	90	0.05	0.044	88	2	56-107	25	
Pentachlorophenol	< 0.001	0.050	0.030	60	0.05	0.029	58	3	36-132	50	
Pyridine	< 0.004	0.050	0.026	52	0.05	0.019	38	31	5-94	28	F
2,4,5-Trichlorophenol	< 0.001	0.050	0.046	92	0.05	0.045	90	2	55-114	25	
2,4,6-Trichlorophenol	< 0.001	0.050	0.047	94	0.05	0.046	92	2	57-113	25	

Analyst: MAB Date Prepared: 12/21/2009 Date Analyzed: 12/21/2009

Lab Batch ID: 786589 Sample: 786589-1-BKS Batch #: 1 Matrix: Water

Units: mg/L BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TOX by EPA 9020B	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		[B]	[C]	[D]	[E]	Result [F]	[G]				
Total Organic Halides	0.011	0.200	0.214	107	0.2	0.229	115	7	75-125	30	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)| Blank Spike Recovery [D] = 100*(C)/[B]

Blank Spike Duplicate Recovery [G] = 100*(F)/[E]

All results are based on MDL and Validated for QC Purposes



Form 3 - MS Recoveries

Project Name: 900 S. Central Avenue



Work Order #: 355933 **Lab Batch #:** 786316

Project ID: Route 111 & Rand Ave Vicinity/215619

QC- Sample ID: 355933-001 S

Batch #: 1

Matrix: Water

MATRIX SPIKE RECOVERY STUDY

Reporting Units: mg/L	MATRIX / MATRIX SPIKE RECOVERY STUDY								
TCLP SVOCs by SW-846 8270C Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag			
1,4-Dichlorobenzene	< 0.050	0.250	0.187	75	54-105				
2,4-Dinitrotoluene	< 0.050	0.250	0.229	92	60-116				
Hexachlorobenzene	< 0.050	0.250	0.203	81	60-109				
Hexachlorobutadiene	< 0.050	0.250	0.198	79	52-107				
Hexachloroethane	< 0.050	0.250	0.172	69	46-115				
2-methylphenol	< 0.050	0.250	0.220	88	52-106				
3&4-Methylphenol	< 0.050	0.500	0.444	89	23-140				
Nitrobenzene	< 0.050	0.250	0.195	78	56-107				
Pentachlorophenol	< 0.050	0.250	0.136	54	36-132				
Pyridine	< 0.050	0.250	< 0.050	0	5-94	X			
2,4,5-Trichlorophenol	< 0.050	0.250	0.201	80	55-114				
2,4,6-Trichlorophenol	< 0.050	0.250	0.196	78	57-113				

Matrix Spike Percent Recovery [D] = 100*(C-A)/BRelative Percent Difference [E] = 200*(C-A)/(C+B)All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit



Form 3 - MS / MSD Recoveries



Project Name: 900 S. Central Avenue

Work Order #: 355933 Project ID: Route 111 & Rand Ave Vicinity/21561975.00011

Lab Batch ID: 786466 **QC- Sample ID:** 355039-001 S **Batch #:** 1 **Matrix:** Water

Date Analyzed: 12/21/2009 Date Prepared: 12/21/2009 Analyst: MOR

Reporting Units: mg/L	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY												
Phenolics Total by EPA 420.1	Parent Sample Result	Spike	Spiked Sample Result	Sample		Duplicate Spiked Sample		RPD	Control Limits	Control Limits	Flag		
Analytes	[A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD			
Phenolic	< 0.050	0.500	0.460	92	0.500	0.460	92	0	80-120	20			

Lab Batch ID: 786645 **QC- Sample ID:** 355842-007 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 12/21/2009 Date Prepared: 12/18/2009 Analyst: HAT

Reporting Units: mg/L MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY **Parent** Spiked Sample Spiked **Duplicate** Spiked Control Control **TCLP Metals by EPA 6020** Sample Spike Result Spiked Sample **RPD** Limits Limits Sample Spike Dup. Flag Result Added [C] %R Added Result [F] %R % %R %RPD **Analytes** [A] [B] [D] [E][G] 0.253 94 97 3 Arsenic 0.019 0.250 0.250 0.262 75-125 25 1.15 1.14 112 75-125 25 Barium 0.860 0.250 116 0.250 0.100 0.093 93 0.100 97 4 75-125 25 Cadmium < 0.005 0.097 99 0.250 0.274 104 5 75-125 25 0.013 0.250 0.260 Chromium Lead < 0.010 0.250 0.237 95 0.250 0.246 98 4 75-125 25 Mercury < 0.0020 0.0050 0.0050 100 0.0050 0.0055 110 10 75-125 25 < 0.015 0.250 0.234 94 0.250 0.245 98 5 75-125 25 Selenium < 0.010 0.100 0.093 93 0.100 0.098 98 5 75-125 25 Silver

Matrix Spike Percent Recovery [D] = 100*(C-A)/B Relative Percent Difference RPD = 200*|(C-F)/(C+F)|



Form 3 - MS / MSD Recoveries



Project Name: 900 S. Central Avenue

Work Order #: 355933 **Project ID:** Route 111 & Rand Ave Vicinity/21561975.00011

Lab Batch ID: 786515 **QC- Sample ID:** 355933-001 S **Batch #:** 1 **Matrix:** Water

Date Analyzed: 12/17/2009 Date Prepared: 12/17/2009 Analyst: KHM

Reporting Units: mg/L MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TCLP VOAs by EPA 8260B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	< 0.005	0.050	0.046	92	0.050	0.044	88	4	66-142	21	
2-Butanone	< 0.050	0.500	0.392	78	0.500	0.374	75	5	60-140	20	
Carbon Tetrachloride	< 0.005	0.050	0.048	96	0.050	0.048	96	0	62-125	20	
Chlorobenzene	< 0.005	0.050	0.056	112	0.050	0.055	110	2	60-133	21	
Chloroform	< 0.005	0.050	0.054	108	0.050	0.054	108	0	74-125	20	
1,2-Dichloroethane	< 0.005	0.050	0.048	96	0.050	0.047	94	2	68-127	20	
1,1-Dichloroethene	< 0.005	0.050	0.059	118	0.050	0.058	116	2	59-172	22	
Tetrachloroethylene	< 0.005	0.050	0.056	112	0.050	0.056	112	0	71-125	20	
Trichloroethene	< 0.005	0.050	0.052	104	0.050	0.052	104	0	62-137	24	
Vinyl Chloride	< 0.002	0.050	0.043	86	0.050	0.045	90	5	75-125	20	



Sample Duplicate Recovery



Project Name: 900 S. Central Avenue

Work Order #: 355933

Lab Batch #: 786438 **Project ID:** Route 111 & Rand Ave Vicinity/21561975.00011

Reporting Units: Deg F	SAMPLE / SAMPLE DUPLICATE RECOVERY									
Flash Point by EPA 1010 Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag					
Analyte										
Flash Point	> 150	> 150	0	25						

Lab Batch #: 786249

 Date Analyzed: 12/18/2009
 Date Prepared: 12/18/2009
 Analyst: MOR

 QC- Sample ID: 355933-001 D
 Batch #: 1
 Matrix: Water

Reporting Units: mg/L	SAMPLE / SAMPLE DUPLICATE RECOVERY									
Paint Filter Liquids Test by EPA 9095A	Parent Sample Result [A]	Sample Duplicate Result	RPD	Control Limits %RPD	Flag					
Analyte		[B]								
Free Liquids	Fail	Fail	0							

Lab Batch #: 786466

 Date Analyzed:
 12/21/2009
 Date Prepared:
 12/21/2009
 Analyst: MOR

 QC- Sample ID:
 355039-001 D
 Batch #:
 1
 Matrix:
 Water

Reporting Units: mg/L	SAMPLE	SAMPLE / SAMPLE DUPLICATE RECOVERY									
Phenolics Total by EPA 420.1	Parent Sample Result [A]	Sample Duplicate Result	RPD	Control Limits %RPD	Flag						
Analyte		[B]									
Phenolic	< 0.050	< 0.050	NC	20							

Lab Batch #: 786144

 Date Analyzed:
 12/17/2009
 Date Prepared:
 12/17/2009
 Analyst: MOR

 QC- Sample ID:
 355933-001 D
 Batch #:
 1
 Matrix:
 Water

Reporting Units: mg/L	SAMPLE / SAMPLE DUPLICATE RECOVERY							
Reactive Cyanide by EPA 9010B Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag			
Cyanide	< 0.200	< 0.200	NC	20				

Spike Relative Difference RPD 200 * | (B-A)/(B+A) | All Results are based on MDL and validated for QC purposes. BRL - Below Reporting Limit



Sample Duplicate Recovery



Project Name: 900 S. Central Avenue

Work Order #: 355933

Lab Batch #: 786142 **Project ID:** Route 111 & Rand Ave Vicinity/21561975.00011

 Date Analyzed: 12/17/2009
 Date Prepared: 12/17/2009
 Analyst: MOR

 QC- Sample ID: 355933-001 D
 Batch #: 1
 Matrix: Water

Reporting Units: mg/L	SAMPLE/SAMPLE DUPLICATE RECOVERY								
Reactive Sulfide by EPA 9030B Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag				
Sulfide	<50.0	<50.0	NC	20					

Lab Batch #: 786645

 Date Analyzed:
 12/21/2009
 Date Prepared:
 12/18/2009
 Analyst: HAT

 QC- Sample ID:
 355842-007 D
 Batch #:
 1
 Matrix:
 Soil

Reporting Units: ug/L SAMPLE / SAMPLE DUPLICATE RECOVERY **TCLP Metals by EPA 6020** Sample Control Parent Sample **RPD Duplicate** Limits Result Flag Result %RPD [A] [B] Analyte Arsenic 18.5 17.5 6 25 2 25 Barium 860 873 Cadmium < 5.00 < 5.00 NC 25 Chromium 13.0 <15.0 NC 25 Lead <10.0 <10.0 NC 25 Mercury < 2.000 < 2.000 NC 25 <15.0 <15.0 NC 25 Selenium <10.0 NC 25 Silver <10.0

Lab Batch #: 786589

 Date Analyzed: 12/21/2009
 Date Prepared: 12/21/2009
 Analyst: MAB

 QC- Sample ID: 355933-001 D
 Batch #: 1
 Matrix: Water

Reporting Units: mg/L SAMPLE / SAMPLE DUPLICATE RECOVERY TOX by EPA 9020B Sample Control Parent Sample **Duplicate RPD** Limits Result Flag Result %RPD [A] [B] Analyte Total Organic Halides 0.259 0.242 30

Spike Relative Difference RPD 200 * | (B-A)/(B+A) | All Results are based on MDL and validated for QC purposes. BRL - Below Reporting Limit

Shell Oil Products Chain Of Custody Record	INCIDENT # (ENV SERVICES) CHECK IF NO INCIDENT # APPLIES	9 7 2 1 6 6 4 0	SAP#	3 4 0 0 6 1 PAGE of	2 2 2		NA, ILLINOIS 62084 CONSULTANT PROJECT NAME IND.	Route 111 & Rand Ave Vicinity / 21561975.00011	" 355733+H	REQUESTED ANALYSIS							지	×					12/16/09 Time:	Date: Time:	7/109 Time: 09/5	D5/2/D5 Revision
I Products Chain	Print Bill To Contact Name:	WENDY PENNINGTON	# Od		SOPUS SITE ADDRESS (Street, City and State):		900 S. CENTRAL AVENUE; ROXANA, ILLINOIS 62084 CONSULTANT PROJECT CONTACT (Report to):	WENDY PENNINGTON SAMPLER NAME(S) (Print):	Kelly Hurst, Neeta Satam						als Syanid Sulfide	SVC Sylite Second	TCLP : TCLP TCLP Paint Reacti Reacti Total Total	x					FED EX			
Shell Oi	ie Box:	☐ MOTIVA RETAIL ☐ SHELL RETAIL	☐ CONSULTANT ☐ LUBES	О отнек		URS CORPORATION - FIELD OFFICE	170 E. RAND AVENUE	HARTFORD, ILLINOIS 62048	wendy penninglon@uiscom	RESULTS NEEDED ON WEEKEND	OTHER (SPECIFY) EDD	Cooler #3	SHELL CONTRACT RATE APPLIES	n, o-Cresol, m-Cresol, p-Cresol, Hexeachlorobenzene, Hexachloro-1,3-		PRESERVATIVE	MATRIX NO. OF CONT. HO. 1 HAO3 H2SO4 NONE OTHER	4					Received by: (Signalure)	Received by: (Signature)	Received by (Signalune)	
	Pleas	☑ ENV. SERVICES	☐ MOTIVA SD&CM	SHELL PIPELINE		URS CORP				S 🔼 2 DAYS	☐ LEVEL 4	Cooler #2		Chlorobenzene, Chlorofornethene, 2,4-Dinitrotoluene	obenzene, Pentacniorophe ichlorophenol, Vinyl Chlori n, Mercury, Selenium, Silv	SAMPLING	DATE TIME	12/16/09 1445								
LAB (LOCATION) 4143 Greenbriar Dr.: Stafford, TX 77477	☑ XENCO (CALSCIENCE (C test (OTHER (CONSULTANT COMPANY:	URS CORPORATION	ADDRESS 4001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300	on: ST. LOUIS, MISSOURI 63110	TELEPHONE OFF: 314-743-4166 CELL: 314-743-4166 CELL: 314-743-4166	TURNAROUND TIME (CALENDAR DÁYS): STANDARD (10 DAY)	DELIVERABLES: 🔲 LEVEL 1 🔟 LEVEL 2 🗀 LEVEL 3	TEMPERATURE ON RECEIPT C° Cooler #1 / 92	SPECIAL INSTRUCTIONS OR NOTES:	TCLP VOC/SVOC ≈ Benzene, Carbon Tetrachloride, Chlorobenzene, Chloroform, o-Cresol, m-Cresol, p-Cresol, 1,4-Dichlorobenzene, 1,2-Dichloroethane, 1,1-Dichloroethene, 2,4-Dinitrotoluene, Hexaachlorobenzene, Hexaachloro-1,3-	butadiene, Hexachloroethane, 2-Butanone, (MEK), Nutrobenzene, Pentachlorophenol Trichloroethylene, 2-4,5-Trichloropifenol, 2-4,6-Trichlorophenol, Vinyl Chloride TCLP Metals = Arsenic, Bartum, Cadmum, Chromium, Mercury, Selenium, Silver		Field Sample Identification	P4375 Water2					Relinquished by: (Signature) Recommodity	Relinquished by: (Signature)	Reinquished by: (Signaturo)	



Prelogin / Nonconformance Repor	t - Sampi	ie Log-ii	1	•
Client: URS (OIP	•	,	10/	
Date/Time: 12-16-09			4	-
Lab ID#: 355-933			, 17	•
Initials:	-92			
Sample Receipt Check	list)	ξ
1. Samples on ice?	Blue	Water	No	
2. Shipping container in good condition?	Yes	No	None	
3. Custody seals intact on shipping container (cooler) and bottles?	Yes	No	N/A	
4. Chain of Custody present?	Yes	No		
5. Sample instructions complete on chain of custody?	Yes	No	·	
6. Any missing / extra samples?	Yes	No	1	
7. Chain of custody signed when relinquished / received?	Tes	No		
8. Chain of custody agrees with sample label(s)?	Yes	No		
9. Container labels legible and intact?	Wes	No	,	
10. Sample matrix / properties agree with chain of custody?	Yes	No		
11. Samples in proper container / bottle?	Yes	No		
12. Samples properly preserved?	Yes	No	N/A	
13. Sample container intact?	Yes	No		
14. Sufficient sample amount for indicated test(s)?	Yes	No		
15. All samples received within sufficient hold time?	Yes	No	•	
16. Subcontract of sample(s)?	Yes	, No	N/A	
17. VOC sample have zero head space?	Yes	No	N/A	
18. Cooler 1 No. 5383 Cooler 2 No. Cooler 3 No.	Cooler 4 No	o	Cooler 5 No	
39 lbs 1.0 °C lbs °C lbs °C	lbs	°C	lbs	°C
Nonconformance Docume	ntation	•		<u></u>
Contact:Contacted by:		Date/Time	· ·	
Regarding:				
	····		<u> </u>	
Corrective Action Taken:			,	

Check all that apply:

☐ Client understands and would like to proceed with analysis ☐ Cooling process had begun shortly after sampling event