

December 16, 2010

Dept. of Environmental Protection

DEC 2 0 2010

Southwest District

Susan Pelz, P.E. Southwest District Florida Dept. of Environmental Protection 13051 North Telecom Pkwy. Temple Terrace, FL 33637

RE: Citrus County Central Landfill

Landfill Gas Remediation System As-Built Drawings

Jones Edmunds Project No.: 03860-038-01

Dear Ms. Pelz:

Jones Edmunds, on behalf of Citrus County, installed a solar powered soil vapor extraction system to remediate groundwater contamination near MW-10 at the Citrus Central Landfill. The system has been operating since October 2010. The well locations were surveyed by the County. A site map showing the location of the system is included as Figure 1.

The system consists of five soil vapor extraction wells installed between MW-10 and the closed landfill. The wells are spaced approximately 50 feet apart. Three wells were installed to 100 feet total depth and two wells were installed to 60 feet total depth. The wells are constructed of 4-inch-diameter PVC and 0.020-inch slotted PVC screen. Boring logs and well construction details are included in Attachment 1 and Figure 2.

The extraction wells are connected to a solar powered electric blower by a 2-inch diameter PVC suction line. Each well has a valve to modify flow from the well, a sample port to measure landfill gas concentration, and a condensate collection trap. The extraction system construction details are included in Figure 3. The system's electrical plan is shown in Figure 4.

Carbon Dioxide, Methane, and Oxygen measurements will be collected from each extraction well on a bi-monthly basis for one year. Table 1 presents gas measurements that have been collected since operation of the system began. Landfill gas has been detected in four of the five extraction wells. A minor amount of condensate has been observed in the condensate traps of GEW-3 and GEW-4. If enough condensate accumulates, a condensate sample will be collected for laboratory analysis. The condensate traps will be checked bi-monthly and accumulated condensate not collected for analysis will be disposed of at the landfill leachate collection system.

730 NE Waldo Rd Gainesville, FL 32641

		Tab	le 1 – Gas	Readings	from Extra	action Wel	ls	-	
Extraction	Oc	tober 1, 20	010	October 15, 2010			November 18, 2010		
Well	O_2	CH ₄	CO_2	O ₂	CH ₄	CO ₂	O_2	CH ₄	CO ₂
4	(%Vol.)	(%LEL)	(%Vol.)	(%Vol.)	(%LEL)	(%Vol.)	(%Vol.)	(%LEL)	(%Vol.)
GEW-1	20.9%	0%	0%	20.9%	0%	0.4%	18.5%	3%	1.8%
GEW-2	18.8%	0%	1.8%	15.8%	0%	4.8%	17.5%	0%	3.4%
GEW-3	20.3%	1%	0.6%	17.2%	3%	3.6%	15.4%	5%	5.4%
GEW-4	20.7%	0%	0.2%	20.9%	0%	0%	15.0%	0%	4.4%
GEW-5	20.3%	0%	0%	20.9%	0%	0%	20.9%	0%	0%

Table 1 Continued Gas Readings from									
	Extraction Wells								
Extraction December 10, 2010									
Well	O_2	CH ₄	CO_2						
	(%Vol.)	(%LEL)	(%Vol.)						
GEW-1	20.2%	0%	0.2%						
GEW-2	17.5%	0%	2.8%						
GEW-3	12.1%	7%	8.2%						
GEW-4	10.0%	1%	8.6%						
GEW-5	20.8%	0%	0%						

The system will be adjusted to maximize gas extraction based on the gas measurements by opening and closing the valves to the extraction wells. After one year of bi-monthly monitoring, we will submit a report detailing the groundwater sampling results and the gas measurements collected from the extraction system. The report will be submitted to FDEP by October 31, 2011.

If you have any questions concerning these documents, please call me at (352) 377-5821 ext. 5375.

Sincerely,

Troy Hays

Project Manager

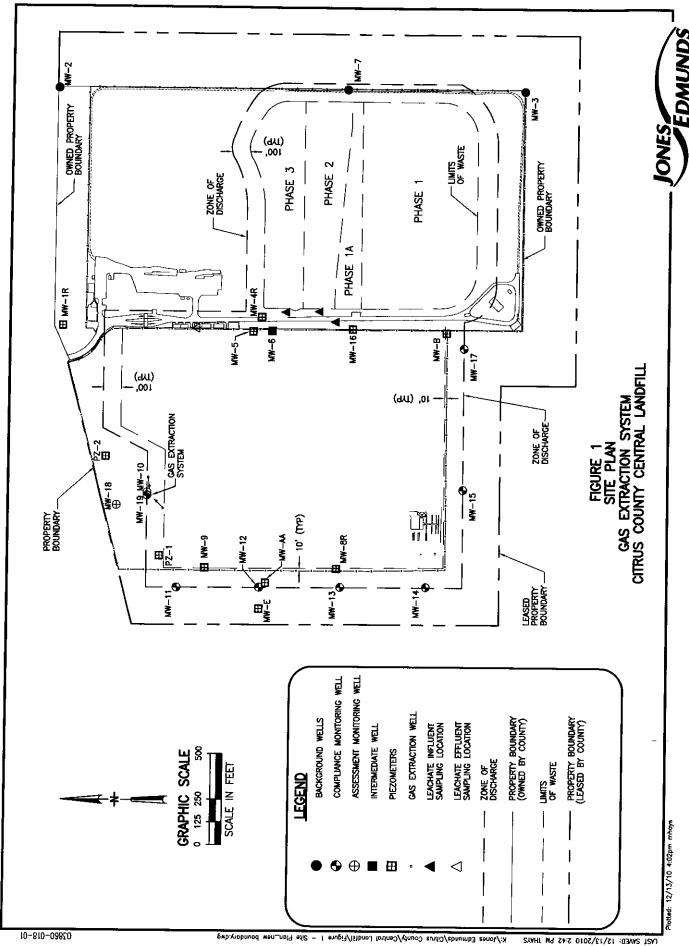
 $\label{lem:convergence} $$\GNV-PROJECTS\projects \colored as Sold and \colored as Built Report \colored as Built Report \colored as Builts. On the sold as Builts \colored as Builts \$

Enclosures

xc:

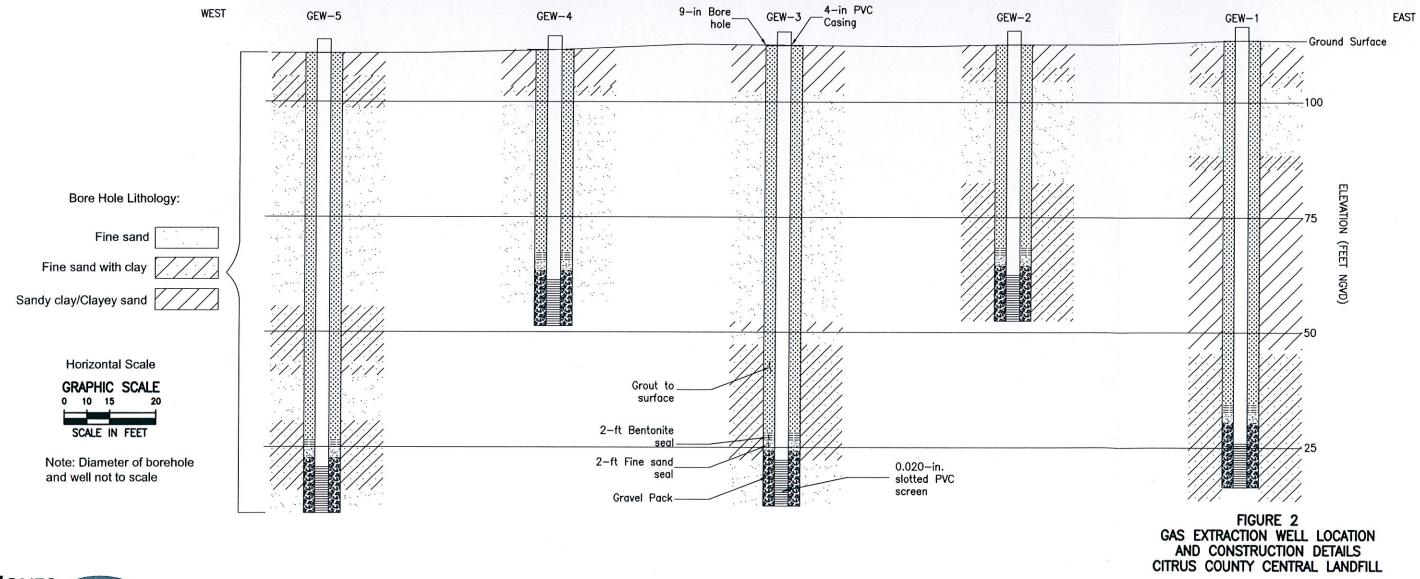
John Morris, FDEP

Casey Stephens, Citrus County

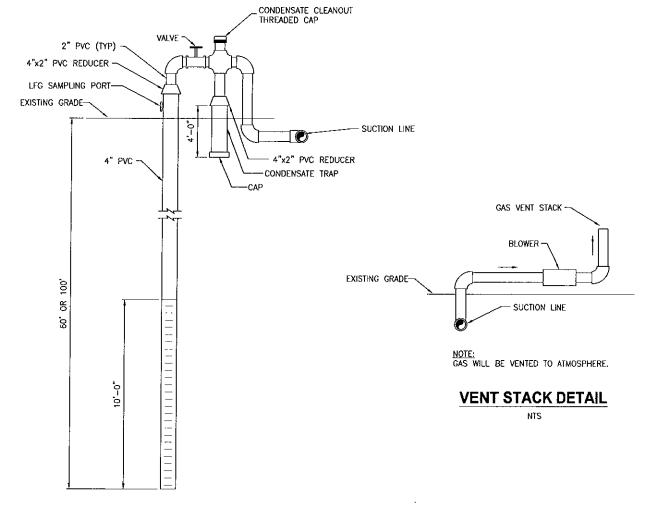


CV21 SYNED: 15/13/5010 5:45 PM THAYS

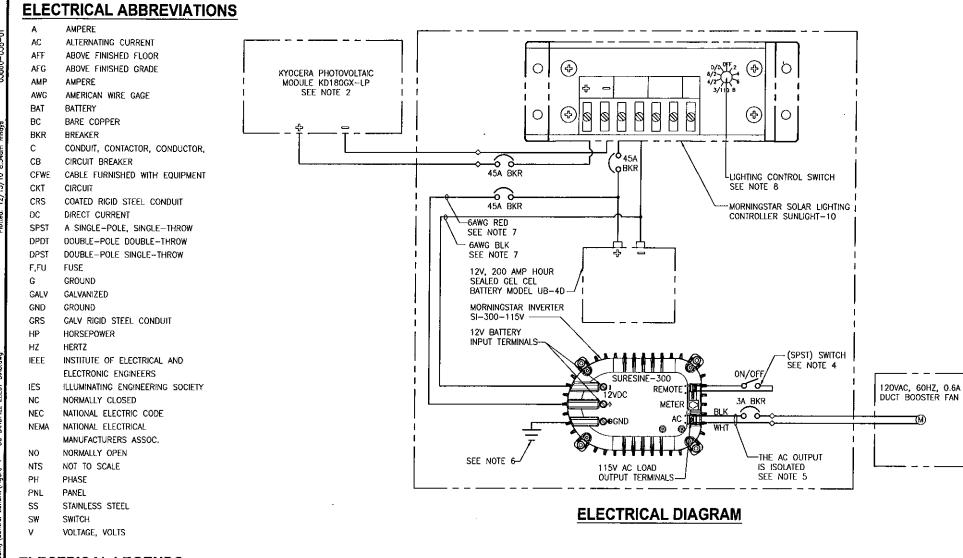








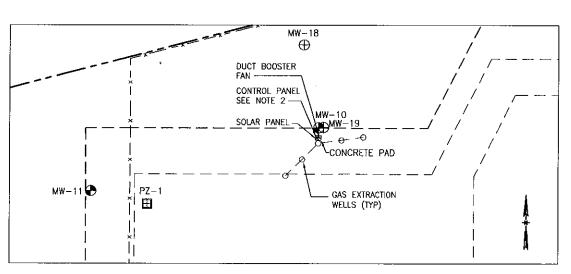
DEEP SOIL VAPOR EXTRACTION SYSTEM DETAIL



ELECTRICAL LEGENDS

SYMBOL DESCRIPTION MOTOR, HORSEPOWER INDICATED GROUND ROD, 5/8"x10'-0" COPPER CLAD CONDUIT UP (MULTIPLE OR SINGLE) CONDUIT DOWN (MULTIPLE OR SINGLE) - - CONDUIT, EXPOSED CONDUIT IN FLOOR OR UNDERGROUND _ - ____ MULTIPLE CONDUIT RUN (UNDERGROUND UNLESS OTHERWISE INDICATED) - - EQUIPMENT OUTLINE ON-OFF SWITCH \Diamond TERMINAL BLOCK (12VDC) 0 0 CIRCUIT BREAKER FUSE

SOME SYMBOLS AND ABBREVIATIONS MAY APPEAR ON THE LEGEND AND NOT ON THE DRAWINGS.



CITRUS COUNTY CENTRAL LANDFILL ELECTRICAL PLAN

NOTES

- 1. PROVIDE OND SPARE CIRCUIT BREAKER FOR EACH TYPE USED.
- MOUNT ALL ELECTRICAL DEVICES IN A NEMA 4X 316 STAINLESS STEEL ENCLOSURE WITH PADLOCKING HASP. ENCLOSURE SHALL BE MINIMUM 36"X30"X20" MODEL SPN4SS6—363020 BY SHAEFER'S.
- 3. ALL COMPONENTS SHALL BE SIZED PER NATIONAL ELECTRICAL CODE.
- 4. USE 16 AWG WIRE TO CONNECT REMOTE TERMINALS OF THE SPST ON/OFF SWITCH.
- AC LINE AND NEUTRAL ARE INTERCHANGEABLE. USE UL LISTED 12AWG BLACK WIRE FOR AC LINE AND UL LISTED 12AWG WHITE WIRE FOR AC NEUTRAL. THE EARTH GROUND LEG DEFINES AC NEUTRAL.
- 6. USE UL 4AWG OR LARGER GREEN WIRE FOR GROUND.
- 7. USE UL LISTED 6AWG OR LARGER BLACK WIRE TO CONNECT 12V BATTERY NEGATIVE TO NEGATIVE DC INPUT TERMINAL. USE UL LISTED 6AWG OR LARGER RED WIRE TO CONNECT THE 12V BATTERY POSITIVE TO THE DC INPUT POSITIVE TERMINAL ON THE SURESINE
- TURN LIGHTING CONTROL SWITCH TO THE LIGHTING OPTION DESIRED, REFER TO SUNLIGHT SOLAR LIGHTING CONTROLLER OPERATOR'S MANUAL FOR AVAILABLE LIGHTING CONTROL OPTIONS

FIGURE 4
GAS EXTRACTION SYSTEM
ELECTRICAL PLAN
CITRUS COUNTY CENTRAL LANDFILL



PM MHAYS

SAVED: 12/6/2010 3:29 PM MHA

ATTACHMENT 1 BORING LOGS

Project Name: Citrus County Central Remediation

Project Number: 03860-038-01

Drilling Contractor: Huss

Drilling/Sampling Methods: Hollow-stem auger

Boring Number: GEW-1

Page 1 of 3

Test Boring Completed: 3/9/2010, Well Completed: 3/10/2010

Jones Edmunds Field Geologist: M. Hays

Elevations: Ground: 113.540 ft NGVD 29 (Surveyed by Citrus County)

	SPT Data		Well C	Potoile
	ASTM D1586		vveii C	Details
0	per 6" N	Description of Soil		
	<u> </u>	SAND, brown, fine-grained, SP		
<u> </u>				
		CLAYEY SAND, orange-brown, SC CLAYEY SAND, red-brown/yellow-brown, SC		
		CLATET SAND, red-brown/yeilow-brown, SC		
5		CLAVEV CAND light valley beause CO	5 888	
	<u></u>	CLAYEY SAND, light yellow-brown, SC		
		SAND with clay, light yellow, fine-grained, SP-SC		
		o into with stay, light yellow, line-grained, or -oo		
10			10	
		SAND with clay, yellow-brown, SP-SC		
	, , , , , , , , , , , , , , , , , , , ,		1	
		SAND, light yellow, fine-grained, damp, SP		
<u></u>	المستسسي			
15			15	
		SAND, very light yellow/white, very fine-grained, SP		
		The state of the s		
╮┢┵				
0 1		CAND white you fine arrived days CD	20	
		SAND, white, very fine-grained, damp, SP		
21				
5	, a = a = a = a		25	
1		SAND, white/very light yellow, very fine-grained, damp, SP		
				::: :::
-				
-ئــــــــــــــــــــــــــــــــــــ		Company Comp	30	
		SAND, light yellow-brown, fing-grained, damp, SP	· · · · · · · · · · · · · · · · · · ·	
			APPENDED THE STATE OF THE SECOND SECO	
	-		· · · · · · · · · · · · · · · · · · ·	
5		SAND, light yellow-brown, fine-grained, damp, SP	35	
<u></u>		SAND, light yellow-brown, line-grained, damp, SP		
ت ا				
)			40	
1		SAND, very light yellow, fine-grained, damp, SP		
2			42	
42		Data/Info. (Specify if Other Meterials Head):	42	

Notes and Additional Data/Info. (Specify if Other Materials Used): Total Well Depth = 100 ft bls

Well Casing/Pipe: Diam. and Type = 2-in Sch. 40 PVC; Solid Length = 90 ft bls; Screen = 10 ft, 0.020-in Gravel Filter Pack = 6_50-lb Bags; Type = Pea Gravel; Placed from 100 to 88 ft bls (measured)

Annular Seal: Type = Fine Sand/Bentonite; Thickness = 1/3 ft; Placed from 88 to 84ft bls (measured)

Grout = 20 94-lb Bags of Cement Grout to Surface;



TE	ST BORIN	G FIE	LD REPORT	Boring Number: GEW-1	Page 2 o	f3
	oject Name:		County Central Remediation			
Pro	oject Number:	03860	-038-01			Well Details
Depth 42	ASTM D1586 per 6" N			Description of Soil		
-						
⁴⁵ –			OAND bits to light rollow brown	n to white fine project down SD	45_	
	2000		SAND, write to light yellow-brow	n to white, fine-grained, damp, SP		
			,			
⁵⁰ _					50	
	20 200		SAND with silt, orange-brown, fi	ne-grained, SP-SM		
	ar a		SAND, white/very light yellow, fi	ne-grained, damp, SP	•	
55_					. 55_	
			SAND, orange-brown to white, f	ine-grained, SP		
			, mind with the control of the contr			
	22 - 22					
60_		iniinii			60_	
			CLAYEY SAND, red-brown, dan	ıp, SC		
			SAND, light yellow, damp, SP			
65_					65_	
	2000000		SAND with clay, orange-brown,	SP-SC		
			SAND, light yellow, fine-grained	. SP	THE PARTY OF THE P	
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					
70_					70_	数 数
			SAND with clay, yellow-brown 8	orange-brown, damp, SP-SC		
75 __				AD 00	75_	
	1,100		SAND with clay, orange-brown,	3r-3U		

80_			DALID MANAGEMENT	AD 60	80_	
	111111		SAND with clay, orange-brown,	or-ou		
	2.2.2.2		4 100			
85_	anarar		OAND Bakk	minor alay SP	85_	
87	arrar -		SAND, light yellow, fine-grained	, minor day, SP	87	
	es and Addition	nal Data	Info. (Specify if Other Materials	Jsed):	Language Control of the Control of t	19 mg
			•		JONES EDMU	INIDE
					THE CHARGE LANGUAGES IN	ECUNIETE

TE	ST BO	RIN	G FIE	LD REPORT Boring Number: GEW-1	Page 3	of 3
	oject Nam			s County Central Remediation		
Pr	oject Num		0386	0-038-01 T		Well Details
Depth 87	ASTM D1 per 6"	1586 N		Description of Soil		
•	20,0					
90_					90_	
				SAND, light yellow, fine-grained, SP	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
					urer name name name, namene erene mentemente e name, decem e melle elder elder elder.	
95_					95_	
				SAND, light yellow, fine-grained, SP		
	and a second					
100					100	
-	م ما ما ما ما ما ما ما]
	م مسامه می			Boring over-drilled to ~ 104 feet to allow for cave-in, well set at 100 feet		
						•
105					105	}
103					100	1
	والمستمارين والمسترين					
110				The second secon	110_	1
]
115_					115_	
120					120	
			ł			

25					125_	
į						
İ					*****	

130	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				130	
					100	1
132					132	<u> </u>
lote	s and Add	dition	al Data	/Info. (Specify if Other Materials Used):	ONES EDMU	UNDS
					NEERS ARCHITECTS	

Project Name: Citrus County Central Remediation

Project Number: 03860-038-01 Drilling Contractor: Huss

Drilling/Sampling Methods: Hollow-stem auger

Boring Number: GEW-2

Page 1 of 2

Test Boring Completed: 3/9/2010, Well Completed: 3/9/2010

Jones Edmunds Field Geologist: M. Hays

Elevations: Ground: 112.25 ft NGVD 29 (Surveyed by Citrus County)

_	SPT Data		We	ell D
pth O		86 Description of Soil		
-	,,,,,,,,,	SANDY CLAY, yellow & red-brown, CL		
		CLAYEY SAND, yellow-brown, SC		į
				Ä
5_			5	4
-		SAND with clay, light yellow, fine-grained, damp, SP-SC		â
				ā
		SAND, very light yellow, fine-grained, SP		i
				ì
10_			10	
		SAND, very light yellow/white, fine-grained, SP	<u></u>	í
				á
15_			15	i
		SAND, very light yellow/white, fine-grained, minor clay, S	6P	
			<u></u>	
				8
			20	ā
20_		CAND your light pollow to light pollow for ground CD	20	
	2000	SAND, very light yellow to light yellow, fine-grained, SP		į

25	مستسمين		25	
٠,		SAND, very light yellow, fine-grained, damp, SP	A COLUMN CONTRACTOR CO	
	2000	i constant in the second secon		
		The state of the s		
30			30	
_		SAND with clay, yellow, fine-grained, damp, SP-SC		
				2
5			35	
_		SAND with clay, orange-brown, damp, SP-SC		
	والمستريد والمسترير			
ю			40	S
	,,,,,,,,,,,,	SAND with clay, orange-brown, damp, SP-SC		
42		itional Data/Info. (Specify if Other Materials Used):	42	

Notes and Additional Data/Info. (Specify if Other Materials Used):

Total Well Depth = 60 ft bis

Well Casing/Pipe: Diam. and Type = 2-in Sch. 40 PVC; Solid Length = 50 ft bls; Screen = 10 ft, 0.020-in Gravel Filter Pack = 9_50-lb Bags; Type = Pea Gravel; Placed from 60 to 48 ft bls (measured)

Annular Seal: Type = Fine Sand/Bentonite; Thickness = 2/2 ft; Placed from 48 to 44 ft bls (measured)

Grout = 10 94-lb Bags of Cement Grout to Surface;



TE	ST BC	RIN	G FII	LD REPORT	Boring Number: GEW-2	Page 2	of 2
	oject Nar oject Nur			s County Central Remediation 60-038-01			
	SPT D	ata	1	0-030-01		=	Well Details
Depth 42	ASTMID per 6"	1586 N			Description of Soil		
1.5		┤ 		SAND with clay, yellow-brown, SP-SC			
45_		1		SAND with clay, yellow-brown, SP-SC	/SC	45_	
		1]		, , , , , , , , , , , , , , , , , , ,			
]					
				<u> </u>			
⁵⁰ _				SAND with clay, yellow-brown, SP-SC	/SC	50 <u>}</u>	
	********	1]			
]					
55_	35777			SAND with clay, light yellow-brown, SF	2-SC	55	
		1					
	المناسسة مرا						
~~	2000000						
60_	المستور المستورية			SAND with clay, orange-brown, SP-SC	C/SC	60 :	
				Boring overdrilled to ~ 62 feet	ritt van delikkin vid al-vid van var en de dit televan en de vid de ditter de delikken de		
65						65	
03_	ا مسموم						
	- • • • • • • • • • • • • • • • • • • •						
70						70	•
`~	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			Section Section (1) and the section of the section	rina — vitar il manuscrito di colo como cilico del mano con estre aproven quagnata differenciamenta		
75						75	
1							
						,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
ŀ							•
80						80	
7	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						
-							
ŀ					MAN AN A		
85]						85	
]							
87 L	o opel Ari	dition	al Det	/Info (Chapify if Other Metarials Liced):	And the second s	87	
NO LE	a anu Au	ullion	ai Dala	/Info. (Specify if Other Materials Used):	JON	ES. EDMU	INDS
						1.000	

Project Name: Citrus County Central Remediation

Project Number: 03860-038-01

Drilling Contractor: Huss

Drilling/Sampling Methods: Hollow-stem auger

Boring Number: GEW-3

Page 1 of 3

Test Boring Completed: 3/8/2010, Well Completed: 3/8/2010

Jones Edmunds Field Geologist: M. Hays

Elevations: Ground: 112.58 ft NGVD 29 (Surveyed by Citrus County)

SPT Data th ASTM D158	,	
	Description of Soil	
	SANDY CLAY, red-brown, dry, CL	
3		5
	CLAYEY SAND, orange-brown, SC	
)		10
1	SAND with clay, yellow-brown, SP-SC	
, 	SAND, light yellow, fine-grained, damp, SP	to make the contrast of the contrast of the property of the contrast of the co
1		
5	1	15
	SAND, very light yellow/white, very fine-grained, SP	apanganing juan kadalan Addisi Addisi Mandrida Mandrida Mir Bertaman Prancip kerpencelara kalan dapah menjada Mandrida kadalan Addisi Addisi Addisi Mandrida Mandrida Mir Bertaman Prancip kerpencelara kada kada dapah menjada kerpencelara kada kerpencelara kada kerpencelara kada kerpencelara
,,,,,,,,		The state of the s
)		20
,	SAND, white, very fine-grained, damp, SP	
		, , , , , , , , , , , , , , , , , , ,
	The state of the s	
2.000		
5	The state of the s	25
/ 	SAND, white/very light yellow, very fine-grained, damp, SP	
2.2.2	Control of the contro	
	The state of the s	The first time of the state of
)	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	30
, <u> </u>	SAND, light yellow-brown, fing-grained, damp, SP	The same of the sa
	CARES, IIght yellow blomt, mig granted, damp, or	
-	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	· · · · · · · · · · · · · · · · · · ·
2000		
<u> </u>	The state of the s	35
,	SAND, light yellow-brown, fine-grained, damp, SP	
	1970 - JOANU, light yellow-brown, hine-grained, damp, or	
11000	222	
		40
استور ا	SAND, very light yellow, fine-grained, damp, SP	770

Notes and Additional Data/Info. (Specify if Other Materials Used): Total Well Depth = 100 ft bls

Well Casing/Pipe: Diam. and Type = 2-in Sch. 40 PVC; Solid Length = 90 ft bls; Screen = 10 ft, 0.020-in Gravel Filter Pack = 6_50-lb Bags; Type = Pea Gravel; Placed from 100 to 88 ft bls (measured)

Annular Seal: Type = Fine Sand/Bentonite; Thickness = 1/3 ft; Placed from 88 to 84ft bls (measured)

Grout = 20 94-lb Bags of Cement Grout to Surface;



Description of Soil Description of Soil Description of Soil At pre's N SAND, white to light yellow-brown to white, fine-grained, damp, SP SAND, white Nery light yellow, fine-grained, SP-SM SAND, white/very light yellow, fine-grained, damp, SP SAND, orange-brown to white, fine-grained, SP-SM CLAYEY SAND, red-brown, damp, SC SAND, light yellow, damp, SP CLAYEY SAND, ight yellow, damp, SP-SC SAND with clay, orange-brown, SP-SC	TE	ST BORIN	IG FIE	LD REPORT Boring Number: GEW-3	Page 2 of 3
SAND with clay, orange-brown, SP-SC SAND with clay w					
Description of Soil SAND, white to light yellow-brown to white, fine-grained, damp, SP		SPT Data	03860	U-036-01	Well Details
SAND, white to light yellow-brown to white, fine-grained, damp, SP 50 SAND with silt, orange-brown, fine-grained, SP-SM SAND, white/very light yellow, fine-grained, damp, SP 55 SAND, orange-brown to white, fine-grained, SP 55 SAND, light yellow, damp, SP 60 CLAYEY SAND, red-brown, damp, SC SAND, light yellow, damp, SP 55 SAND with clay, orange-brown, SP-SC SAND, light yellow, fine-grained, SP 70 SAND with clay, yellow-brown & orange-brown, damp, SP-SC 56 SAND with clay, orange-brown, SP-SC 57 SAND with clay, orange-brown, SP-SC 58 SAND with clay, orange-brown, SP-SC			<u> </u>	Description of Soil	
SAND, white to light yellow-brown to white, fine-grained, damp, SP 50 SAND with silt, orange-brown, fine-grained, SP-SM SAND, white/very light yellow, fine-grained, damp, SP 55 SAND, orange-brown to white, fine-grained, SP 55 SAND, light yellow, damp, SP 60 CLAYEY SAND, red-brown, damp, SC SAND, light yellow, damp, SP 55 SAND with clay, orange-brown, SP-SC SAND, light yellow, fine-grained, SP 70 SAND with clay, yellow-brown & orange-brown, damp, SP-SC 56 SAND with clay, orange-brown, SP-SC 57 SAND with clay, orange-brown, SP-SC 58 SAND with clay, orange-brown, SP-SC					
SAND, white to light yellow-brown to white, fine-grained, damp, SP 50 SAND with silt, orange-brown, fine-grained, SP-SM SAND, white/very light yellow, fine-grained, damp, SP 55 SAND, orange-brown to white, fine-grained, SP 55 SAND, light yellow, damp, SP 60 CLAYEY SAND, red-brown, damp, SC SAND, light yellow, damp, SP 55 SAND with clay, orange-brown, SP-SC SAND, light yellow, fine-grained, SP 70 SAND with clay, yellow-brown & orange-brown, damp, SP-SC 56 SAND with clay, orange-brown, SP-SC 57 SAND with clay, orange-brown, SP-SC 58 SAND with clay, orange-brown, SP-SC	45	المتاهدة			45
SAND with silt, orange-brown, fine-grained, SP-SM SAND, white/very light yellow, fine-grained, damp, SP 55 SAND, orange-brown to white, fine-grained, SP 60 CLAYEY SAND, red-brown, damp, SC SAND, light yellow, damp, SP 65 SAND with clay, orange-brown, SP-SC SAND with clay, yellow-brown & orange-brown, damp, SP-SC 70 SAND with clay, yellow-brown & orange-brown, damp, SP-SC 75 SAND with clay, orange-brown, SP-SC 66 SAND with clay, orange-brown, SP-SC	•	2000		SAND, white to light yellow-brown to white, fine-grained, damp, SP	
SAND with silt, orange-brown, fine-grained, SP-SM SAND, white/very light yellow, fine-grained, damp, SP 55 SAND, orange-brown to white, fine-grained, SP 60 CLAYEY SAND, red-brown, damp, SC SAND, light yellow, damp, SP 65 SAND with clay, orange-brown, SP-SC SAND, light yellow, fine-grained, SP 70 SAND with clay, yellow-brown & orange-brown, damp, SP-SC 75 SAND with clay, orange-brown, SP-SC 66 SAND with clay, orange-brown, SP-SC 67 SAND with clay, orange-brown, SP-SC		200000			
SAND with silt, orange-brown, fine-grained, SP-SM SAND, white/very light yellow, fine-grained, damp, SP 55 SAND, orange-brown to white, fine-grained, SP 60 CLAYEY SAND, red-brown, damp, SC SAND, light yellow, damp, SP 65 SAND with clay, orange-brown, SP-SC SAND with clay, yellow-brown & orange-brown, damp, SP-SC 70 SAND with clay, yellow-brown & orange-brown, damp, SP-SC 75 SAND with clay, orange-brown, SP-SC 66 SAND with clay, orange-brown, SP-SC					
SAND, white/very light yellow, fine-grained, damp, SP 55. SAND, orange-brown to white, fine-grained, SP 60. CLAYEY SAND, red-brown, damp, SC SAND, light yellow, damp, SP 65. SAND with clay, orange-brown, SP-SC 5AND with clay, yellow-brown & orange-brown, damp, SP-SC 5AND with clay, orange-brown, SP-SC	50_	ar a a a a a a a a a a a a a a a a a a			50
SAND, orange-brown to white, fine-grained, SP CLAYEY SAND, red-brown, damp, SC SAND, light yellow, damp, SP SAND with clay, orange-brown, SP-SC SAND with clay, yellow-brown & orange-brown, damp, SP-SC SAND with clay, yellow-brown & orange-brown, damp, SP-SC SAND with clay, orange-brown, SP-SC SAND with clay, orange-brown, SP-SC SAND with clay, orange-brown, SP-SC	_	,,,,,,,,,		SAND with silt, orange-brown, fine-grained, SP-SM	
SAND, orange-brown to white, fine-grained, SP CLAYEY SAND, red-brown, damp, SC SAND, light yellow, damp, SP SAND with clay, orange-brown, SP-SC SAND, light yellow, fine-grained, SP 70 SAND with clay, yellow-brown & orange-brown, damp, SP-SC SAND with clay, orange-brown, SP-SC SAND with clay, orange-brown, SP-SC SAND with clay, orange-brown, SP-SC				SAND whitehery light vellow fine grained damp SD	
SAND, orange-brown to white, fine-grained, SP CLAYEY SAND, red-brown, damp, SC SAND, light yellow, damp, SP SAND with clay, orange-brown, SP-SC SAND, light yellow, fine-grained, SP 70 SAND with clay, yellow-brown & orange-brown, damp, SP-SC SAND with clay, yellow-brown & orange-brown, damp, SP-SC SAND with clay, orange-brown, SP-SC SAND with clay, orange-brown, SP-SC		م م م		SAND, Willevery light yellow, line-granted, damp, SF	
60 CLAYEY SAND, red-brown, damp, SC SAND, light yellow, damp, SP SAND with clay, orange-brown, SP-SC SAND, light yellow, fine-grained, SP 70 SAND with clay, yellow-brown & orange-brown, damp, SP-SC 75 SAND with clay, orange-brown, SP-SC 80 SAND with clay, orange-brown, SP-SC 80 SAND with clay, orange-brown, SP-SC	55_				55
CLAYEY SAND, red-brown, damp, SC SAND, light yellow, damp, SP SAND with clay, orange-brown, SP-SC SAND, light yellow, fine-grained, SP 70 SAND with clay, yellow-brown & orange-brown, damp, SP-SC 75 SAND with clay, orange-brown, SP-SC 80 SAND with clay, orange-brown, SP-SC		2000		SAND, orange-brown to white, fine-grained, SP	
CLAYEY SAND, red-brown, damp, SC SAND, light yellow, damp, SP SAND with clay, orange-brown, SP-SC SAND, light yellow, fine-grained, SP 70 SAND with clay, yellow-brown & orange-brown, damp, SP-SC 75 SAND with clay, orange-brown, SP-SC 80 SAND with clay, orange-brown, SP-SC					M. A. PERLAMAN, AND AND A PRINCIPAL
CLAYEY SAND, red-brown, damp, SC SAND, light yellow, damp, SP SAND with clay, orange-brown, SP-SC SAND, light yellow, fine-grained, SP 70 SAND with clay, yellow-brown & orange-brown, damp, SP-SC 75 SAND with clay, orange-brown, SP-SC 80 SAND with clay, orange-brown, SP-SC					
SAND, light yellow, damp, SP SAND with clay, orange-brown, SP-SC SAND, light yellow, fine-grained, SP SAND with clay, yellow-brown & orange-brown, damp, SP-SC SAND with clay, orange-brown, SP-SC SAND with clay, orange-brown, SP-SC SAND with clay, orange-brown, SP-SC 80 SAND with clay, orange-brown, SP-SC	60_				60
SAND with clay, orange-brown, SP-SC SAND, light yellow, fine-grained, SP 70 SAND with clay, yellow-brown & orange-brown, damp, SP-SC 75 SAND with clay, orange-brown, SP-SC 80 SAND with clay, orange-brown, SP-SC		Jane Care		CLAYEY SAND, red-brown, damp, SC	
SAND with clay, orange-brown, SP-SC SAND, light yellow, fine-grained, SP 70 SAND with clay, yellow-brown & orange-brown, damp, SP-SC 75 SAND with clay, orange-brown, SP-SC 80 SAND with clay, orange-brown, SP-SC				SAND, light yellow, damp, SP	
SAND with clay, orange-brown, SP-SC SAND, light yellow, fine-grained, SP 70 SAND with clay, yellow-brown & orange-brown, damp, SP-SC 75 SAND with clay, orange-brown, SP-SC 80 SAND with clay, orange-brown, SP-SC 80 SAND with clay, orange-brown, SP-SC		المستوم مراد			
SAND, light yellow, fine-grained, SP 70 SAND with clay, yellow-brown & orange-brown, damp, SP-SC 75 SAND with clay, orange-brown, SP-SC 80 SAND with clay, orange-brown, SP-SC 80 SAND with clay, orange-brown, SP-SC	65_	ar ar ar ar		SAND with clay, grange brown, SD-SC	65
SAND with clay, yellow-brown & orange-brown, damp, SP-SC SAND with clay, orange-brown, SP-SC SAND with clay, orange-brown, SP-SC 80 SAND with clay, orange-brown, SP-SC				SAIND WILL Clay, Grange-Drown, Gr-SC	
SAND with clay, yellow-brown & orange-brown, damp, SP-SC 75 SAND with clay, orange-brown, SP-SC 80 SAND with clay, orange-brown, SP-SC 80 SAND with clay, orange-brown, SP-SC		********		SAND, light yellow, fine-grained, SP	ate for make one your planes of the first to the A. According to t
SAND with clay, yellow-brown & orange-brown, damp, SP-SC 75 SAND with clay, orange-brown, SP-SC 80 SAND with clay, orange-brown, SP-SC 80 SAND with clay, orange-brown, SP-SC		,,,,,,,			70
SAND with clay, orange-brown, SP-SC SAND with clay, orange-brown, SP-SC SAND with clay, orange-brown, SP-SC	′°+	معتد ما		SAND with clay, yellow-brown & orange-brown, damp, SP-SC	
SAND with clay, orange-brown, SP-SC 80 SAND with clay, orange-brown, SP-SC 85 85					
SAND with clay, orange-brown, SP-SC 80 SAND with clay, orange-brown, SP-SC 85 85					
SAND with clay, orange-brown, SP-SC 80 SAND with clay, orange-brown, SP-SC 85 85	75				75
SAND with clay, orange-brown, SP-SC 85	1			SAND with clay, orange-brown, SP-SC	
SAND with clay, orange-brown, SP-SC 85					
SAND with clay, orange-brown, SP-SC 85					
85 85	30 <u> </u>				80
	Ī			SAND with clay, orange-brown, SP-SC	
	-				
	Ì				
The state of the s	35				85_
SAND, light yellow, fine-grained, millior day, SP	₈₇	2000000		SAND, light yellow, fine-grained, minor clay, SP	
		s and Additiona	al Data/	Info. (Specify if Other Materials Used):	or Annua Annua
JONES				Jo	NES
Notes and Additional Data/Info. (Specify if Other Materials Used): JONES EDMUND ENGINEERS ARCHITECTS SCIENTIS				ENGL	SERS LARCHITECTS LECTENTISTS

	G FIELD REPORT Boring Number: GEW-3	Page 3 of 3
roject Name: roject Number:	Citrus County Central Remediation 03860-038-01	
SPT Data	03000-030-01	Well D
oth ASTM D1586 7 per 6" N	Description of Soil	
		90
0	SAND, light yellow, fine-grained, SP	30
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	10000	
27		
		95
5	SAND, light yellow, fine-grained, SP	95
	SAND, light yellow, line-grained, SF	
,,,,,,,,,		
00		100
	Boring over-drilled to ~ 104 feet to allow for cave-in, well set at 100 feet	-
January 1	Borning Over-united to 104 leet to allow for cave-iii, well set at 100 leet	
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		gyph ype - my mr yydd i'i adgadau ddiddireidiolaidd Milighaulidi
5		105
2000		
		M. R. Co. Co. Married M. C. Co. Co. Co. Co. Co. Co. Co. Co. Co.
10		110
		ne na sansan menengan menenga
	A SALE AND REAL PROPERTY AND	
15		115
10		120
0		120
		31 AA. 76 A. C. C. S. C.
5	The state of the s	125
· · · · · ·		**
January 1		
2000		
00		130
January Company		
top and Addition	al Date/Info (Specify if Other Materials Head):	132
ies and Addition	al Data/Info. (Specify if Other Materials Used): JO FIGURE	NES EDMUNI

Project Name: Citrus County Central Remediation

Project Number: 03860-038-01 Drilling Contractor: Huss

Drilling/Sampling Methods: Hollow-stem auger

Boring Number: GEW-4

Page 1 of 2

Test Boring Completed: 3/11/2010, Well Completed: 3/11/2010

Jones Edmunds Field Geologist: M. Hays

Elevations: Ground: 111.267 ft NGVD 29 (Surveyed by Citrus County)

_	ent p	, T			Well D	etails
Depth	SPT Dat ASTM D1				Γ	٦
0	рег 6"	N		Description of Soil	1000	مرين
				SILTY SAND, dark gray/black, fill		
				SANDY CLAY, orange-brown, CL		
	,,,,,,,-,,			CLAYEY SAND, orange/red-brown, SC		
5						
				CLAYEY SAND, red-brown, SC		
				SAND with clay, light orange, fine-grained, SP-SC		
10				10		
۱.¸			: : : : :	SAND, light orange, fine-grained, SP		
				O'mo, igit o'aligo; mo g'antoq o		
15				1		
'3⊣				SAND, light orange to light yellow, fine-grained, SP		
		ľ		Contab, light ordings to light yollow, into grantes, or		
					- 22	
	المستور المستور			LANGE (A) FROM 10 - 10 - 10 - 10 - 10 - 10 - 10 - 10	-	
				20		
20_	******	ŀ				
				SAND, light yellow, fine-grained, SP	- 🚟	
					- 🚟	
				The second secon		
				2!		
25_						
	المستعدر			SAND, very light yellow, fine-grained, SP, damp	-	33
				The state of the s		
				31		
30_					- 200	
				SAND, very light yellow/white, fine-grained, SP, damp		
				3		
35_					- 22	
				SAND, white, fine-grained, SP, dry		
40_				4		
				SAND, white to light yellow, fine-grained, SP, damp		
42					2	
Note	se and ∆d	ditions	u I latai	/Info (Specify if Other Materials Used):		

Notes and Additional Data/Info. (Specify if Other Materials Used):

Total Well Depth = 60 ft bis

Well Casing/Pipe: Diam. and Type = 2-in Sch. 40 PVC; Solid Length = 50 ft bls; Screen = 10 ft, 0.020-in Gravel Filter Pack = <u>9</u> 50-lb Bags; Type = <u>Pea Gravel</u>; Placed from <u>60</u> to <u>48</u> ft bls (measured) Annular Seal: Type = Fine Sand/<u>Bentonite</u>; Thickness = <u>2/2</u> ft; Placed from <u>48</u> to <u>44</u>ft bls (measured) Grout = <u>10</u> 94-lb Bags of Cement Grout to Surface;

JONES EDMUNDS ENGINEERS | ARCHITECTS | SCIENTISTS

TEST BORIN	IG FIELD REPORT Boring Number: GEW-4	Page 2 of 2
Project Name: Project Number:	Citrus County Central Remediation 03860-038-01	
SPT Data	03000-030-01	Well Details
Depth ASTM D1586 42 per6" N	Description of Soil	
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
45	SAND, very light yellow, fine-grained, SP, damp	45
	Cartes, very light years, line granted, et , damp	
50	SAND, light yellow to white, very fine-grained, SP, dry	50
200	in the state of th	
5	SAND, white, fine-grained, SP	55
رين ماريس		
		60
استستین 0	SAND, white, fine-grained, SP	00 1
, , , , , , , , , , , , , , , , , , ,	Boring overdrilled to ~ 62 feet	ala de a commungal de la colo de la construir de la colo de la col
		Ĉ.
5		65
		## 1 MAX \$1 PERSON # 2
	**************************************	70
0		
,,,,,,,,,,		
		gygy ny glycyndd cy maidd ngorfadddonid ffodd oddol i Modegoddol (
5	The second secon	75
المستسمين	The state of the s	
0	AND THE PROPERTY OF THE PROPER	80
V	The second of th	
		uppy Hungham Hamilton and a specific sp
5		85
5		
7		87
otes and Addition	nal Data/Info. (Specify if Other Materials Used):	NES
	The sales of the s	NES EDMUNDS

Project Name: Citrus County Central Remediation

Project Number: 03860-038-01 **Drilling Contractor: Huss**

Drilling/Sampling Methods: Hollow-stem auger

Boring Number: GEW-5

Page 1 of 3

Test Boring Completed: 3/10/2010, Well Completed: 3/10/2010

Jones Edmunds Field Geologist: M. Hays

Elevations: Ground: 110.531 ft NGVD 29 (Surveyed by Citrus County)

th	SPT Data ASTM D1586	3			ſ
1	per 6" I	N I	Description of Soil		
L			CLAYEY SAND, orange-brown, SC	AMPRICATION TO THE PROPERTY OF	
Ļ					•
Ī			The state of the s	5	
T			SAND with clay, orange-brown, fine-grained, SP-SC		
۲			The state of the s		
ŀ					
ľ			Manuscript Control of the Control of		
ŀ				10	
t			SAND, orange-brown to very light yellow, fine-grained, minor clay, SP-SC to SP		
ŀ			SAND, Grange-Drown to very light yellow, line-grained, fillinor clay, 57-50 to 57		
ŀ	,	1888	Angles from the first than the first		
ŀ			A PRINCIPAL AND	:	
ŀ					
Ļ			The second section of the	15_	
L			SAND, white, fine-grained, SP, damp		
L					
L					
L					
				20	
L	,,,,,,,,,,,,		SAND, white, fine-grained, SP		
٦			1		
ľ			The second secon		
۲				25	
ť			SAND, white/very light yellow, fine-grained, SP		
ľ			'		
۲			The second state of the se		
۲			To the control of the		
ŀ				30	
ŀ			CAND light volley fine grained SD dame	30_	
ŀ			SAND, light yellow, fine-grained, SP, damp		
ŀ			With a last and a strong company and the stro		
ŀ			A STATE OF THE PROPERTY OF THE		
Ł					•
ļ				35	
L			SAND, light yellow-brown, fine-grained, SP		
L					
L					
Ľ	, , , , , , , , , , , , , , , , , , , ,				
Γ				40	
Ť			SAND, light yellow, fine-grained, SP		
۲		100000		42	

Notes and Additional Data/Info. (Specify if Other Materials Used): Total Well Depth = 100 ft bls

Well Casing/Pipe: Diam. and Type = 2-in Sch. 40 PVC; Solid Length = 90 ft bls; Screen = 10 ft, 0.020-in Gravel Filter Pack = 6 50-lb Bags; Type = Pea Gravel; Placed from 100 to 88 ft bls (measured)

Annular Seal: Type = Fine Sand/Bentonite; Thickness = 1/3 ft; Placed from 88 to 84 ft bls (measured) Grout = 20 94-lb Bags of Cement Grout to Surface;



TE	ST BOR	RING	FIE	LD REPORT Boring Number: GEW-5	Page 2 of 3	
	oject Name			County Central Remediation		
Pr	oject Numb	er:	U3860	D-038-01	Well Do	etails
Depth 42	1 1	6 N		Description of Soil		
- "	por 0			55551pt.41.5.55		
45_					45	
				SAND, light yellow, fine-grained, SP		
	2000					
50_					50	
				SAND, light yellow, fine-grained, SP		
	20.00.00					
55					55_	
-				SAND, light yellow, fine-grained, SP	. THE EXPLOSION COMMISSION AND AND ADMITS ADMITS AND THE COMMISSION COMMISSIO	
			NIIII	CAND with also light assess brown Fac assisted CD CC		
				SAND with clay, light orange-brown, fine-grained, SP-SC	And contained a control temperature of the control	
60					60	
_				SAND with clay, orange-brown, SP-SC		
					general constant as dealer collect the pulse beginning or a constraint of the collect the collect telescope of tele	
65					65	
55 _				SAND with clay, orange-brown, SP-SC		
				SAND, very light yellow, fine-grained, SP		
70_	2000			SAND with clay, orange-brown, SP-SC	70	
			Allin	SAND, light yellow & orange, fine-grained, trace clay, SP		
				The state as the statement and the state of	HILL SHIP	
					75	
75_				SAND, orange-brown, fine-grained, trace clay, SP		
				9		
					80	
80_				SAND with clay, light orange, SP-SC	00	
				SAND WILL GIANGS, OF SS		
					7////	
85 87				SAND with clay, light orange, SP-SC	85_	
	1000			SAND WILL Gay, light Grange, SF-30	87	
	es and Addi	itiona	l Data	/Info. (Specify if Other Materials Used):	- S. A. S. A	
					JONES EDMUNI	De
					EDIVIUNI ENGINEERS ARCHITECTS SCIEN	いTISTS

TEST BORING FIELD REPORT Boring Number: GEW-5 Page 3 of 3				
Project Name:	Citrus County Central Remediation			
Project Number:	03860-038-01	Well Details		
Depth ASTM D1586 87 per6" N	Description of Soil			
90	SAND with clay, light orange, fine-grained, SP-SC	90		
	Ortho Military, light ordings, line grantos, or oo			
		95		
95	SAND, light orange, fine-grained, trace clay, SP	95 100		
	· · · · · · · · · · · · · · · · · · ·			
2000				
400		100		
100	SAND, light orange, fine-grained, trace clay, SP	100		
	Boring over-drilled to ~ 104 feet to allow for cave-in, well set at 100 feet			
*****		an construent allows a security of the securit		
405		105		
105		100_		
2000				
	The state of the s			
440		110		
110		110_		
		And the second s		
200000000		- Acids 194 (Amin) 194 (194 (194 (194 (194 (194 (194 (194		
115	The state of the s	115		
110 550				
120	Control Contro	120		
120				

125		125		
	Secretary of the secret			
130		130		
132		132		
Notes and Addition	nal Data/Info. (Specify if Other Materials Used):	IFS and the same of the same o		
		EDMUNDS		