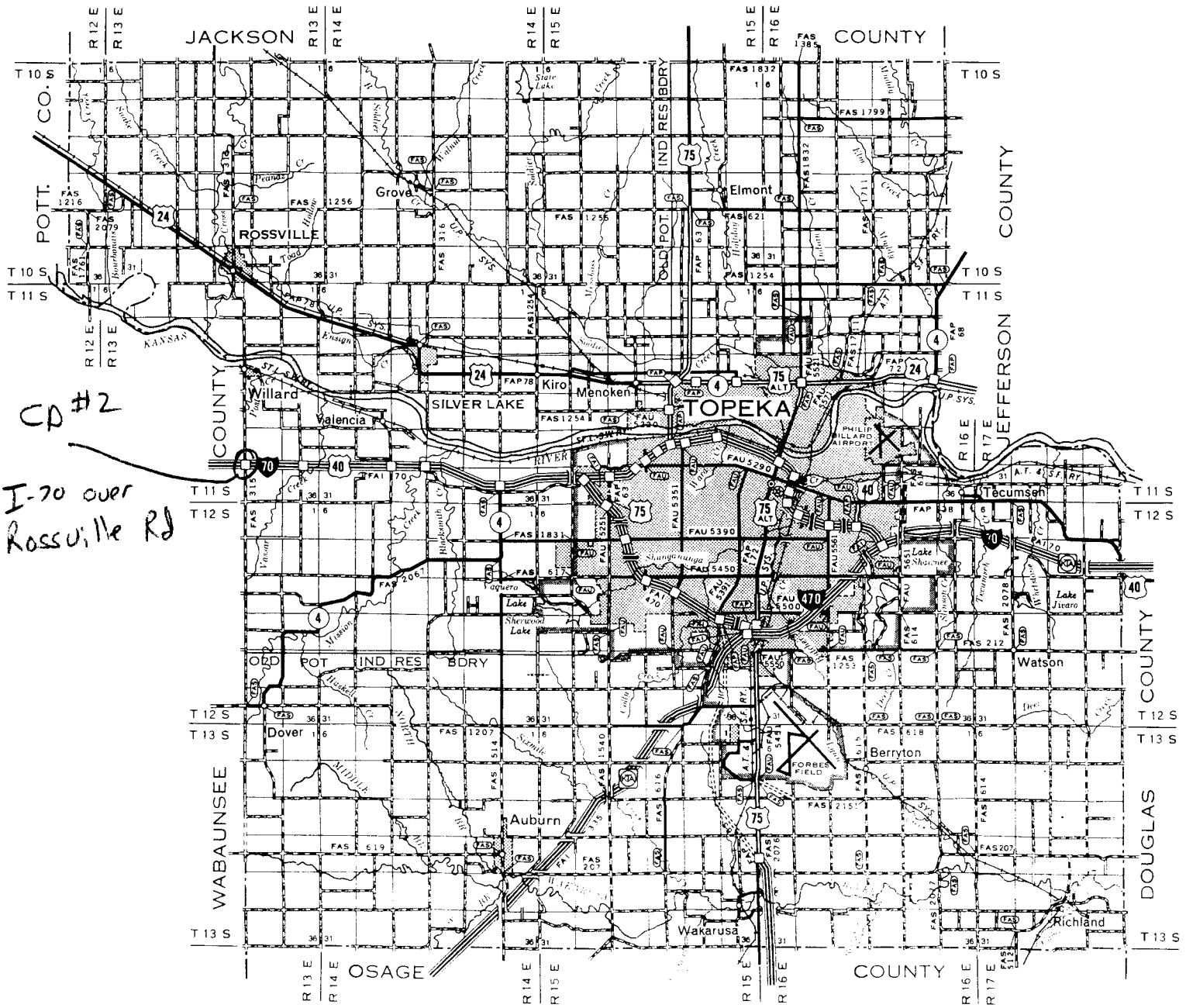
NW NW NW 35-11-13E

2A D1 ✓



CP #2

I-70 over Rossville Rd

LEGEND

ROADS AND ROADWAY FEATURES

- PRIMITIVE ROAD
- UNIMPROVED ROAD
- GRADED AND DRAINED ROAD
- SOIL SURFACED ROAD
- GRAVEL OR STONE ROAD—NOT GRADED OR DRAINED
- GRAVEL OR STONE ROAD—GRADED AND DRAINED
- GRAVEL OR STONE ROAD WITH STABILIZED SURFACE
- BITUMINOUS ROAD—LOW TYPE
- PAVED ROAD
- DIVIDED HIGHWAY
- HIGHWAY WITH FULL CONTROL OF ACCESS AND INTERCHANGE

ROAD SYSTEM DESIGNATION

- FEDERAL-AID INTERSTATE HIGHWAY SYSTEM — FAI
- FEDERAL-AID PRIMARY HIGHWAY SYSTEM — FAP
- FEDERAL-AID SECONDARY HIGHWAY SYSTEM — FAS
- INTERSTATE NUMBERED HIGHWAY — 70
- U.S. NUMBERED HIGHWAY — 40
- STATE HIGHWAY SYSTEM OR STATE NUMBERED HIGHWAY — 20
- END OF DESIGNATED SYSTEM OR MARKED ROUTE — 24 FAS

POLYCONIC PROJECTION

KEY TO COUNTIES

FA SYSTEM REVISED TO MAR. 15, 1988

GENERAL HIGHWAY MAP
SHAWNEE COUNTY
KANSAS

PREPARED BY THE
KANSAS DEPARTMENT OF TRANSPORTATION
IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

SCALE

1986

KANSAS DEPARTMENT OF TRANSPORTATION

RTE./CO. 70-89	SOUNDING NO. CD #2	SHEET 1 OF 3
BRIDGE STA. 40+598.795 EB & WB	PROJ. NO. K-6358-01	BRIDGE NO. 70-89-0.000(002) EB 70-89-0.010(001) WB
SITE NAME I-70 over Rossville Road		HOLE STA. 40+630, 31m Rt. Proj. ℄
GEOLOGIST Randy Billinger	SCALE: 1:100 (10mm = 1 Meter)	DATE 2-12-01
DRILLER Rob Vervynck	RIG TYPE Mobile B-61	TOP HOLE ELEV. 309.70
GROUNDWATER ELEV 307.08	TOTAL DEPTH 21.15 m	M/B ELEV. 304.31

BIT TYPE	GEOLOGIC NAME	STRATIGRAPHIC COLUMN	DEPTH	ELEVATION	CLASSIFICATION OF MATERIALS DESCRIPTION AND REMARKS	UNCONFINED COMPRESSION kPa	STANDARD PENETRATION OR CASING DRIVE BLOWS	STANDARD PENETRATION OR CASING DRIVE ELEV
			0.00	309.70				
	Mantle			309	Silty clay			
			1.70	308	308.0			
				307	Gravel, sand & silty clay. Some limestone pieces. Strated through this zone.			
				306				
			4.57	305	305.13			
					Brown clay & sand. Grades to gray shale or tight gray clay.			
			5.39		304.31			
	Willard Shale Formation	Core 1 Core 2		304	Shale, Sandy, gray to gray-green. Thin sandstone lenses common.	676.4	Sample 1	303.46
				303				
				302				

	SOUNDING NO. CD #2	PROJECT NO. K-6358-01	SHEET 2 OF 3
DATE 2-12-01	RTE./CO. 70-89	TOTAL DEPTH $21\frac{15}{}$ m	THE 309.70

BIT TYPE	GEOLOGIC NAME	STRATIGRAPHIC COLUMN	DEPTH	ELEVATION	CLASSIFICATION OF MATERIALS DESCRIPTION AND REMARKS	UNCONFINED COMPRESSION	STANDARD PENETRATION OR CASING DRIVE BLOWS	STANDARD PENETRATION OR CASING DRIVE ELEV
				302				
	Willard Shale Formation	Core 2	$8\frac{20}{}$		Shale, sandy, gray.	510.9	Sample 2	$301\frac{54}{}$
				301	301^{∞}			
		Core 3		300		1092.2	Sample 3	$300\frac{13}{}$
		Core 4		299	Shale, gray, clayey.	1429.0	Sample 4	$298\frac{79}{}$
				298				
		Core 5		297		2209.8	Sample 5	$297\frac{06}{}$
		Core 6		296				
		Core 7		295				
		8		294		1840.7	Sample 6	$293\frac{52}{}$
		Core 9		293				
		10		292				

	SOUNDING NO. CD #2	PROJECT NO. K-6358-01	SHEET 3 OF 3
DATE 2-12-01	RTE./CO. 70-89	TOTAL DEPTH 21.15 m	THE 309.70

BIT TYPE	GEOLOGIC NAME	STRATIGRAPHIC COLUMN	DEPTH	ELEVATION	CLASSIFICATION OF MATERIALS DESCRIPTION AND REMARKS	UNCONFINED COMPRESSION	STANDARD PENETRATION OR CASING DRIVE BLOWS	STANDARD PENETRATION OR CASING DRIVE ELEV
				292				
	Willard Shale Fm.	Core 10			Shale, gray, clayey.	2155.6	Sample 7	291.69
		Core 11		291				
		Core 12				1776.9	Sample 8	290.56
			19.87	290				
					289.83			
	Elmont LS Mbr.	Core 13			Limestone, platy, shaly.			
				289	Limy shale break.			
			21.15		288.55			
				288				
				287				
				286				

I-70 over Rossville Rd Core Hole #2

Project No. 70-89 K-6358-01

	Elevation	Depth		
Core Hole #2	309.70	0.00	Mantle, silty clay.	
Sta. 40+630	308.00	1.70	Gravel, limestone rubble, sand, silty clay.	
31 m Rt. Project C.L.	306.35	3.35	Heavy sand and gravel.	
Water Level 2.62 m	305.13	4.57	Clay with some sand.	**Mantle**
Water Elevation 307.08	304.58	5.12	Tight clay, gray.	
Date Drilled 2/12/01	304.31	5.39	Shale, gray.	**Willard**
	304.22	5.48	Shale, firm, gray-green.	**Shale**
	303.91	5.79	Start coring.	**Formation**

Note: We had to go in and strat through much of the sand and gravel. We could not drive our casing through it. When we cleaned out the casing after getting it to seat in the shale, we rinsed out lots of gravel, limestone chips sand, and some clumps of brown clay. We think this is an old creek bed that was covered when the existing bridge was built. The creek now flows through a RCB that is in place.

Core # 1	303.91	5.79	Shale, very sandy, gray-green.	**Willard**
5.79 to 7.13 m	303.18	6.52	Sandstone, shaly, gray-green.	**Shale**
Cut 1.34 m	302.85	6.85	Shale, sandy, gray-green.	**Formation**
Recovered 1.21 m	302.57	7.13	End core 1.	
RQD = 48%				
Lost 0.12 m off the top.			Sample 1 6.09 to 6.24 Shale, sandy, gray-green.	
Core # 2	302.57	7.13	Shale, gray to gray-green, sandy, thin ss lenses.	
7.13 to 8.65 m	301.05	8.65	End core 2.	
Cut 1.52 m				
Recovered 1.52 m				
RQD = 50%			Sample 2 7.98 to 8.16 Shale, sandy, gray.	
Core # 3	301.05	8.65	Shale, less sandy, but sandy lenses, gray	**Willard**
8.65 to 10.18 m	299.65	10.05	Limestone, hard, gray.	**Shale**
Cut 1.52 m	299.52	10.18	End core 3.	**Formation**
Recovered 1.52 m				
RQD = 100%			Sample 3 9.38 to 9.57 Shale, gray.	
Core # 4	299.52	10.18	Shale, firm, gray, clayey.	**Willard**
10.18 to 11.70 m	298.00	11.70	End core 4	**Shale**
Cut 1.52 m				**Formation**
Recovered 1.49 m				
RQD = 100%			Sample 4 10.72 to 10.91 Shale, gray.	
Core # 5	298.00	11.70	Shale, gray, clayey, firm.	**Willard**
11.70 to 13.22 m	296.48	13.22	End core 5.	**Shale**
Cut 1.52 m				**Formation**
Recovered 1.52 m				
RQD = 100%			Sample 5 12.49 to 12.64 Shale, gray.	
core came out all 1 piece.				

I-70 over Rossville Rd Core Hole #2

Project No. 70-89 K-6358-01

Core # 6	296.48	13.22	Shale, gray, firm, mostly clayey.	**Willard**
13.22 to 14.59 m	295.11	14.59	End core 6.	**Shale**
Cut 1.37 m				**Formation**
Recovered 1.37 m			No sample taken.	
RQD = 100%				
Core # 7	295.11	14.59	Shale, gray, clayey, firm.	**Willard**
14.59 to 15.24 m	294.46	15.24	End core 7.	**Shale**
Cut 0.64 m				**Formation**
Recovered 0.64 m			No sample taken.	
RQD = 100%				
Core # 8	294.46	15.24	Shale, gray, firm, clayey.	**Willard**
15.24 to 15.54 m	294.16	15.54	End core 8.	**Shale**
Cut 0.3 m				**Formation**
Recovered 0.3 m				
RQD = 100 %			No sample taken.	
Core # 9	294.16	15.54	Shale, gray, firm, clayey.	**Willard**
15.54 to 17.22 m	292.48	17.22	End core 9.	**Shale**
Cut 1.67 m				**Formation**
Recovered 1.61 m			Sample 6 16.00 to 16.18 Shale, gray.	
RQD = 100%				
Core # 10	292.48	17.22	Shale, gray, firm, clayey.	**Willard**
17.22 to 18.74 m	290.96	18.74	End core 10.	**Shale**
Cut 1.52 m				**Formation**
Recovered 1.52 m				
RQD = 100 %			Sample 7 17.83 to 18.01 Shale, gray.	
Core # 11	290.96	18.74	Shale, gray, firm, clayey.	**Willard**
18.74 to 19.32 m	290.38	19.32	End core 11.	**Shale**
Cut 0.57 m				**Formation**
Recovered 0.57 m				
RQD = 100%			Sample 8 18.98 to 19.14 Shale, gray.	
Core # 12	290.38	19.32	Shale, gray, firm, clayey.	**Willard**
19.32 to 19.62 m	290.08	19.62	End core 12.	**Shale**
Cut 0.3 m				**Formation**
Recovered 0.3 m				
RQD = 100%				

I-70 over Rossville Rd Core Hole #2

Project No. 70-89 K-6358-01

Core # 13	290.08	19.62	Shale, gray, firm, clayey.	**Willard Shale**
19.62 to 21.15 m	289.83	19.87	Limestone, platy, shaly, gray.	
Cut 1.52 m	289.53	20.17	Limestone, hard.	**Elmont**
Recovered 1.52 m	289.37	20.33	Limestone, platy, shaly, gray.	**Limestone**
RQD = 70%	288.98	20.72	Limestone, hard.	**Member**
	288.80	20.90	Shaly.	
	288.73	20.97	Limestone, hard.	
	288.58	21.12	Shale, gray-green, firm.	**Harveyville Shale**
	288.55	21.15	Total depth. End core hole 2. Stopped in shale.	

Kansas Department of Transportation

Report of sample of Shelby/ Geology Cores

Laboratory No. 01-419

Date Reported. February 26, 2001

Date Received. February 20, 2001

Specification No -- Quantity ---

Source of material Project

Sample from Project

Submitted by Delmar Thompson, Lawrence Regional Geology Office

Identification marks Tags with samples

Project or POV 70-89 K-6358-01, Shawnee County

Type of construction Bridge Replacement I-70 over Rossville Rd CD #2

TEST RESULTS

Sample No.	Station	℄ Dist. m	Depth m	Description	Qu. kPa	Dry Unit Weight kg/m^3	Moisture (% of Dry Wt.)
S# 1	40+630	31m RT	6.09-6.24	Shale, Sandy, Green	676.4	1,987	13.3%
S# 2	"	"	7.98-8.16	Shale, Sandy, Gray	510.9	1,964	13.1%
S# 3	"	"	9.38-9.57	Shale, Gray	1,092.2	2,014	12.2%
S# 4	"	"	10.72-10.91	Shale, Gray	1,429.0	2,030	12.0%
S# 5	"	"	12.49-12.64	Shale, Gray	2,209.8	2,042	11.9%
S# 6	"	"	16.00-16.18	Shale, Gray	1,840.7	2,057	11.5%
S# 7	"	"	17.83-18.01	Shale, Gray	2,155.6	2,080	11.1%
S# 8	"	"	18.98-19.14	Shale, Gray	1,776.9	1,991	12.9%
					18.5	124.3	

cc: L.S. Ingram
G.R. Koontz
D. Thompson
J.J. Brennan
Soil Section
File

Reported by: Maria Hunt for

Title James J. Brennan, Soils Engineer

2-12-01

Core Hole 2
Sta 40+630 31m Rt ℄
Randy, Rob, B. W
~~open~~ closed
w- 2.62m
307.08

meters		feet	
309.70	0°	0°-5⁶	casing set
308.0	1.70	5⁶-6⁶	strat. LS pieces, not in place
307.7	2.01	6⁶-11⁰	tried to core, LS pieces & silty clay & sand
	3.35	11⁰-12⁷	strat, heavy sand & gravel

casing 5⁰+2⁶ : 7⁶
7⁶+3' - 10⁷+4⁰ = 14⁷+2⁹ - 17⁴
17⁶+1⁸ = 19⁴ 17⁷ in ground 1⁷ out

305.83	3.87	12⁷-15⁰	strat, LS pieces, sand, gravel, clay
305.13	4.57	15⁰-16⁸	clay brown with sand?
304.58	5.12	16⁸-17⁷	shale? gray or tight gray clay
304.31	5.39	17⁷	

Stop @ 17⁷ and reset casing to 17⁷
think we are in gray shale, clean out casing

304.31	5.39	17⁷-18⁰	lots of LS chips. may be settlement
304.22	5.48	18⁰-19⁰	shale, firm gray/green
303.91	5.79	19⁰	start coring

	meters		feet		
Core 1	303.91	5.79		19°-21⁴	Shale, very sandy, greenish-gray
19°-23⁴ ft	303.18	6.52		21⁴-22⁵	Sandstone, shaly, gray-green
5.79-7.13 m	302.85	6.85		22⁵-23⁴	Shale, sandy, gray-green
Cut 4⁴ ft/1.34 m	302.57	7.13		23⁴	End core 1
Recov. 4⁰ ft/1.21 m					
RQD = 2'/4⁴ = 48%					Sample 1 20°-20⁵ Shale, sandy, green
lost 0⁴ ft off top					(6.09-6.24 m)
(0.12 m)					303.46
Core 2	302.57	7.13		23⁴-28⁴	Shale, gray to gray-green, very sandy
23⁴-28⁴ ft					numerous thin shaly sandstone lenses
7.13-8.65 m	301.05	8.65		28⁴	End core 2
cut 5⁰ ft/1.52 m					
Recov. 5⁰ ft/1.52 m					Sample 2 26²-26⁸ Sandy shale, gray
RQD = 2⁵/5⁰ = 50%					(7.98-8.16 m)
					301.54
Core 3	301.05	8.65		28⁴-33⁰	Shale, gray, firm, more clayey but
28⁴-33⁴ ft					still some thin sandy lenses
8.65-10.18 m	299.65	10.05		33⁰-33⁴	LS, hard, gray
Cut 5⁰ ft/1.52 m	299.52	10.18		33⁴	End core 3
Recov. 5⁰ ft/1.52 m					
RQD = 100%					Sample 3 30⁸-31⁴ Shale, gray
					(9.38-9.57 m)
					300.13

Willard Shale

	meters		feet		
Core 4	299.52	10.18		33^4-38^4	Shale, gray, firm, clayey
33^4-38^4 ft	298.0	11.70		38^4	End Core 4
10.18-11.70 m					
Cut 5^0 ft/1.52 m					
Recov. 4^9 ft/1.49 m					
RQD = 100%					
					Sample 4 35^2-35^8 Shale, gray, clayey
					(10.72-10.91 m)
					298.79
Core 5	298.0	11.70		38^4-43^4	Shale, gray, clayey, firm
38^4-43^4 ft	296.48	13.22		43^4	End Core 5
11.70-13.22 m					
Cut 5 ft/1.52 m					
Recov. 5 ft/1.52 m					Sample 5 41^0-41^5 Shale, gray, firm
RQD = 100%					(12.49-12.64m)
					297.06
core came out all 1 piece					
Core 6	296.48	13.22		43^4-47^9	Shale, gray, firm, clayey, sticky
43^4-47^9 ft	295.11	14.59		47^9	End Core 6
13.22-14.59 m					
Cut 45 ft/1.37 m					
Recov. 45 ft/1.37 m					
RQD = 100%					

Wilson 1976

	meters		feet	
Core 7	295.11	14.59	47⁹-50⁰	Shale, gray, firm, clayey, sticky
47⁹-50⁰ ft	294.46	15.24	50⁰	End Core 7
14.59-15.24 m				
Cut 2 ft / 0.64 m				
Recov 2 ft / 0.64 m				
RQD = 100%				
Core 8	294.46	15.24	50⁰-51⁰	Shale, gray, firm
50⁰-51⁰ ft	294.16	15.54	51⁰	End core 8.
15.24-15.54 m				
cut 1⁰ ft / 0.3 m				
Recov. 1⁰ ft / 0.3 m				
RQD = 100%				
Core 9	294.16	15.54	51⁰-56⁵	Shale, gray, firm
51⁰-56⁵ ft	292.48	17.22	56⁵	End Core 9
15.54-17.22 m				
cut 5⁵ ft / 1.67 m				
Recov. 5⁵ ft / 1.61 m				
RQD = 100%				

Sample 6 52⁵-53' Shale, gray
(16.00-16.18 m)
293.52

Core 7 Core 8 Core 9

	meters		feet	
Core 10	292.48	17.22	56^5-61^5	Shale, gray, firm.
56^5-61^5 ft	290.96	18.74	61^5	End core 10
17.22-18.74 m				
Cut 5 ft/1.52m				Sample 7 58^5-59' Shale gray
Recov 5 ft 1.52m				(17.83-18.01 m)
RQD = 100%				291.69
Core 11	290.96	18.74	61^5-63^4	Shale gray
61^5-63^4 ft	290.38	19.32	63^4	End core 11
18.74-19.32 m				
Cut 1 ft/0.57m				Sample 8 62^3-62^8 Shale, gray
Recov. 1 ft/0.57m				(18.98-19.14 m)
RQD = 100%				290.56
Core 12	290.38	19.32	63^4-64^4	Shale gray
63^4-64^4 ft	290.08	19.62	64^4	End core 12
19.32-19.62 m				
Cut 1 ft/0.3m				
Recov. 1 ft/0.3m				
RQD = 100%				

Ev. 11 0.22 Shale

		meters		feet		
Core 13		290.08	19.62		64^4-65^2	Shale, gray
64^4-69^4 ft		289.83	19.87		65^2 65^6	LS, shaly, platy, gray
19.62-21.15 m		289.71	19.99		65^6-66^2	LS, very platy, gray
Cut 5 ft/1.52 m		289.53	20.17		66^2-66^7	LS, hard solid piece
Recv. 5 ft/1.52 m		289.37	20.33		66^7-68^0	LS, shaly dark gray
RQD = 3.5/5.0		288.98	20.72		68^0-68^6	LS, hard gray solid
= 70%		288.80	20.90		68^6-68^8	Shaly
		288.73	20.97		68^8-69^3	LS, gray
		288.58	21.12		69^3-69^4	Shale, gray-green
		288.55	21.15		69^4	End core 13
						Total depth

Willard sh

Elmont LS.

Bm #143				312.414
T.	1.501	313.915		
PA 8			1.995	311.920
PA 9			3.01	310.905