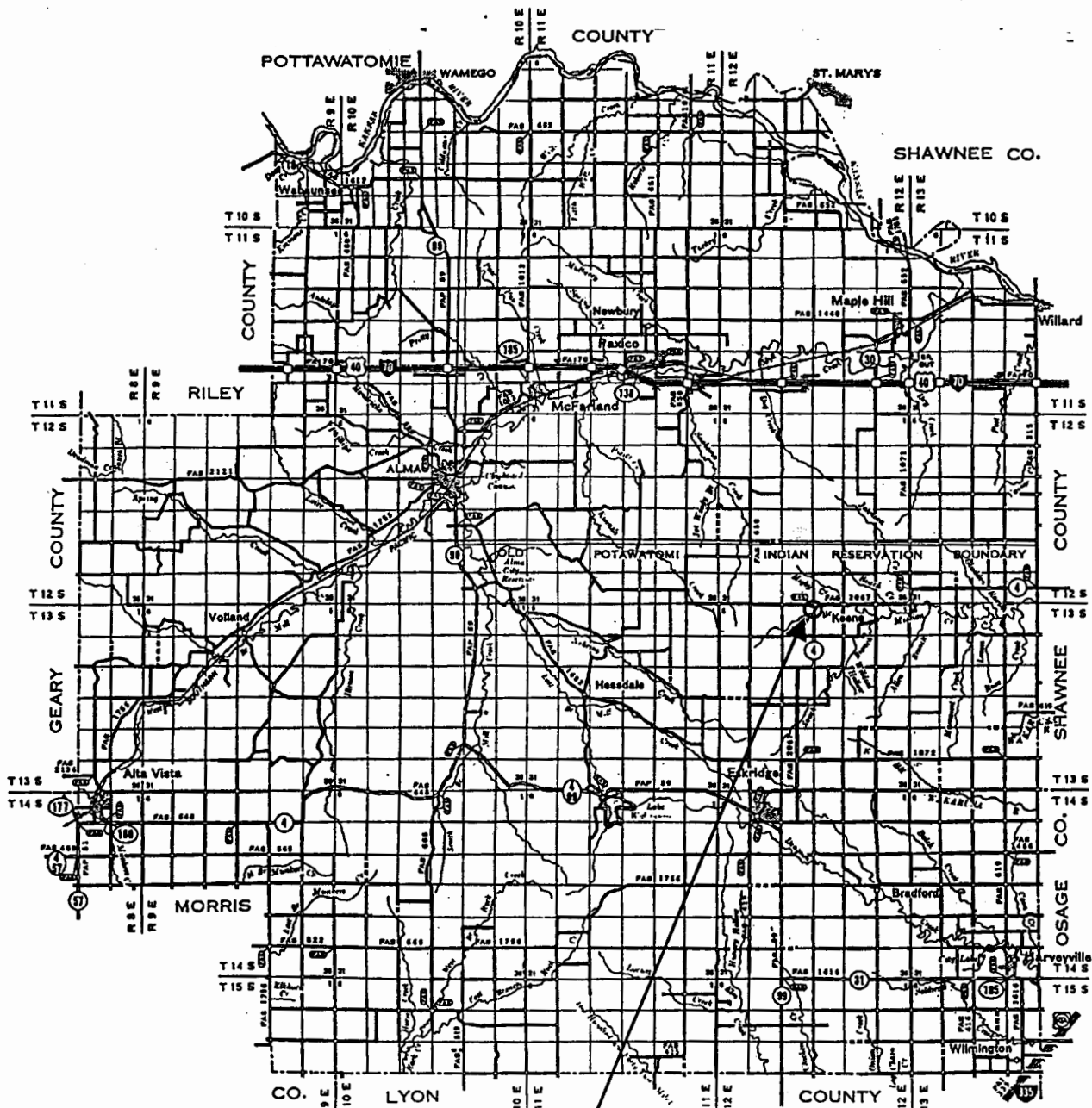


core 1



Project No. 4-99 K-6407-01

Bridge No. 4-99-33.22(090)

K-4 over The North Branch of Mission Creek Tributary
Wabaunsee County



KANSAS DEPARTMENT OF TRANSPORTATION

RTE./CO. 004 - 099	SOUNDING NO. CD #1	SHEET 1 OF 5
BRIDGE STA. 20+866.067	PROJ. NO. K-6407-01	BRIDGE NO. 4-99-33.22(090)
SITE NAME K-4 over North Branch of Mission CK. Tributary		HOLE STA. 20+850.5 4 m. Rt of improvem.
GEOLOGIST Randy Billinger	SCALE: 1:100 (10mm = 1 Meter)	DATE 9-20-99
DRILLER Bob Bergman	RIG TYPE Mobile B-61	TOP HOLE ELEV. 357.64
GROUNDWATER ELEV. 355.36	TOTAL DEPTH 17.22 m.	M/B ELEV. 354.24

Borehole Type	GEOLOGIC NAME	STRATIGRAPHIC COLUMN	DEPTH	ELEVATION	CLASSIFICATION OF MATERIALS DESCRIPTION AND REMARKS	UNCONFINED COMPRESSION KPA	STANDARD PENETRATION OR CASING DRIVE	
							BLOWS	ELEV
Casing	Hamlin Shale Mbr.		0.0	357.64				
				357	Silty Clay, Brown, some gravel near shale contact.	146.1	Shelby #1	357.04
				356		60.1	Shelby #2	356.20
				355				
			3.4	354.24		95.5	Shelby #3	354.28
	West Branch Shale Mbr.			353	Shale, gray to olive, limy.	500.7	Sample #1	353.35
			5.5	352.14		2052.5	Sample #2	352.64
						6428.8	Sample #3	352.06
				351	Limestone, gray, shaly.	15685.0	Sample #4	350.95
			6.98	350.64				
			7.16	350.48				
			7.60	350.04				
Longyear Carbide	West Branch Shale Mbr.				Shale, very limy. Limestone, hard.			
			8.75	348.85		812.8	Sample #5	349.43
			9.45	348.19		13544.9	Sample #6	348.44
			9.80	347.84				
					Shale, grey, silty.	10445.3	Sample #7	347.14
						11937.4	Sample #8	346.35
					Limestone, grey, very fossiliferous. Shale, grey, sandy.	132.0	Sample #9	345.35
						8703.9	Sample #10	344.30
						1401.6	Sample #11	343.65
					Sandstone, grey, shaly to micaceous.			
					Shale, grey, sandy, numerous SS lenses. Shale, green.			
					Limestone, grey, shaly.			

SOUNDING NO. CD #1		PROJECT NO. K-6407-01		SHEET 2 OF 5						
DATE 9-20-99		RTE/CO. 004-099		TOTAL DEPTH 17.22						
THE 357.64										
BIT TYPE	GEOLOGIC NAME	STRATIGRAPHIC COLUMN	DEPTH	ELEVATION	CLASSIFICATION OF MATERIALS DESCRIPTION AND REMARKS	UNCONFINED COMPRESSION	STANDARD PENETRATION OR CASING DRIVE			
							BLOWS	ELEV		
Longyear (bc)	West Branch Shale Mbr.	Core 7	13.78	343.86	Shale, grey to very dark grey, limy and blocky, very firm. Limestone, grey. Shale, dark grey, very firm. Limestone, dark grey, impure.	1059.3	Sample #12	342.24		
			15.25	341.89				4269.0	Sample #13	341.00
			16.14	341.50						
			17.22	340.42						
				340						
				339						
				338						

4-99 K-6407-01

North Branch of Mission Creek Tributary

CD#1
Sta 20+850.5
4m Rt C
9-20/9-23 1999
Bergman
Billinger
Vervynck
Law

0.00-0.60 Shelby #1 Pushed 0.60 Recov. 0.55
Silty Clay, brown, dry & Cracked.
0.60-0.84 Silty Clay brown
0.84-1.44 Shelby #2 Pushed 0.60 Recov. 0.60
Silty Clay, gray-brown, moist, organics.
1.44-2.36 Silty Clay, brown
2.36-2.86 Shelby #3 Pushed 0.50 Recov. 0.42
Silty clay with rock gravel
2.86-3.40 Silty clay with gravel
3.40-4.04 Shale, weathered
Casing set to 4.00 meters

Core #1
4.04-5.46
353.60-352.18
Cut 1.42
Recov. 1.55
RQD = 1.2/1.42
= 85%

4.04-4.44 Shale, dark, gray
4.44-5.04 Shale, very limy, gray
5.04-5.46 Shale, very limy, olive-gray
5.46 End core #1
Sample 1 4.09-4.29
Sample 2 4.76-5.00

Note: mud in top of the barrel

Core #2
5.46-6.98
352.18-350.66
Cut 1.52
Recov. 1.40
RQD = 0.90/1.52
= 59%

5.46-5.50 Shale, very limy, olive-gray
5.50-5.63 Limestone, gray
5.63-5.71 Limestone, shaly, gray
5.71-6.34 Limestone, light gray
6.34-6.43 Limestone, shaly
6.43-6.72 Limestone, light gray
6.72-6.98 Limestone, very shaly, gray
6.98 End Core #2
Sample 3 5.46-5.58
Sample 4 6.54-6.69

Note: At the end of core #2 we started loosing water. Had to pull the casing and ream out hole. Reset casing to a depth of 7.65 meters. Strated From 6.98 to 7.81

Hamlin

Member

Five
Point
Member

4-99 K-6407-01 North Branch of Mission Creek Tributary

	6.98-7.16	Shale, very limy to very shaly limestone
	7.16-7.60	Limestone, hard
	7.60-7.81	Shale, gray or coal shale
Core #3	7.81-7.88	Coal, black
7.81-8.50	7.88-8.50	Shale, gray, silty, pyrite nodules
349.83-349.14	8.50	End Core #3
Cut 0.69		
Recov. 0.69	Sample 5	8.01-8.21
RQD = $0.60/0.69$ = 87%		
Core #4	8.50-8.75	Shale, gray, silty to sandy
8.50-10.00	8.75-9.45	Limestone, gray, fossiliferous
349.14-347.64	9.45-9.80	Shale, gray, sandy
Cut 1.5	9.80-10.00	Sandstone, gray
Recov. 1.5	10.00	End Core #4
RQD = $1.27/1.50$ = 85%	Sample 6	9.04-9.20
Core #5	10.00-11.49	Sandstone, gray, good firm sandstone Some shaly zones
10.00-11.49	11.49	End Core 5
347.64-346.15		
Cut 1.49	Sample 7	10.30-10.50
Recov. 1.56	Sample 8	11.09-11.29
RQD = $1.48/1.56$ = 95%		
Core #6	11.49-11.69	Sandstone, gray
11.49-12.96	11.69-12.04	Shale, gray, sandy, sandstone lenses
346.15-344.68	12.04-12.72	Shale, green
Cut 1.47	12.72-12.96	Limestone, shaly gray-green, earthy
Recov. 1.47	12.96	End Core #6
RQD = $0.9/1.47$ = 61%	Sample 9	12.09-12.29

West

Branch Shale

Member

4-99 K-6407-01 North Branch of Mission Creek Tributary

Core #7	12.96-13.50	Limestone, gray-tan, earthy,
12.96-14.48	13.50-13.78	Limestone, shaly, gray
344.68-343.16	13.78-14.48	Shale, gray, limy, blocky
Cut 1.52	14.48	End Core #7

Recov. 1.52

$$RQD = 1.16 / 1.52$$

$$= 76\%$$

Sample 10 13.2-13.34
 Sample 11 13.79-13.99

Core #8	14.48-14.88	Shale, limy, blocky, gray
14.48-16.00	14.88-15.75	Shale, dark gray, very firm
343.16-341.64	15.75-16.00	Limestone, gray
Cut 1.52	16.00	End Core 8

Recov. 1.52

$$RQD = 1.32 / 1.52$$

$$= 87\%$$

Sample 12 15.2-15.4

Core #9	16.00-16.14	Limestone, gray
16.00-17.22	16.14-16.90	Shale, dark gray, very firm
341.64-340.42	16.90-17.22	Limestone
Cut 1.22	17.22	End Core Hole. Total Depth

Recov. 0.77

RQD = 100%

Sample 13 16.47-16.64

left 0.45 in the
hole