STANDARD PROCTOR COMPACTION TEST (ASTM D-698)

Company Name: Birmingham Coal & Coke Co., Inc
Location: Old Union #2 Mine
Sample I.D.: Basins 085 & 086
Description: Dam Material

Sample Date: ######
Analyzed By: MWB
Date Analyzed: ######
Requested By: JRW

Weight of Mold (W1): 4,250 Grams

Test No.	Wt. of Mold & Wet Soil (w2) grams	Wt. of wet Soil (w2-w1) grams	Wet Unit Wt. (w2-w1)/c lb/cu-ft	Moisture Content (w) %	Dry Unit Weight lb/cu-ft
1	6,081	1,831	121.1	10.5	109.5
2	6,158	1,908	126.2	11.9	112.8
3	6,210	1,960	129.6	13.7	114.0
4	6,198	1,948	128.8	15.9	111.1
5	6,188	1,938	128.2	17.4	109.2
6					
7					

Constant C = 15.12 (conversion factor)

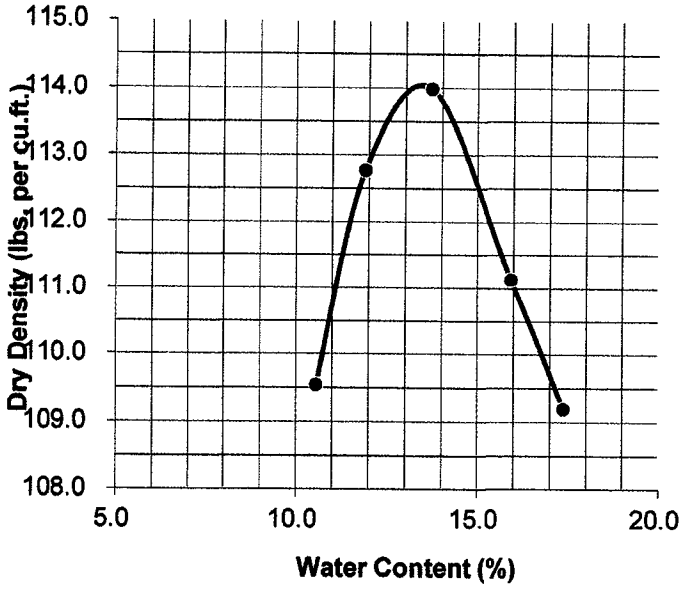
MOISTURE CONTENT DETERMINATION

Test No.	1	2	3	4	5	6	7
Can No.	1	2	3	4	5	6	
Wt. of Can, a, (g)	20.5	20.5	20.6	20.5	20.6		
Wt. of Can + Wet Soil, b, (g)	40.4	49.6	55.4	58.3	62.5		
Wt. of Can + Dry Soil, c, (g)	38.5	46.5	51.2	53.1	56.3		
* Moisture Content, w, (%)	10.5	11.9	13.7	15.9	17.4		

* Moisture Content, w = (b - c)/(c - a) x 100

Maximum Dry Density (Lb/Cu- 114.0
Optimum Moisture Content (% 13.7

Birmingham Coal & Coke Co., Inc
Old Union #2 Mine, Basins 085 & 086, Dam Material
Moisture Density Relationship
(Proctor Method)



ASTM D-698 Method C	Water Content %	Specific Gravity	%> No. 4	%< No. 200	LL %	PL %	PI %
			26.10	26.60	19.0	15.5	3.5

Sample Description, Classification and Location	Sample No.: Basins 085 & 086 Dam Material
Coarse Grained Silty Sand (SM)	Optimum Moisture Content= 13.7 Maximum Dry Density = 114.0

SIEVE ANALYSIS

(ASTM C136-96a)

Company Name: Birmingham Coal & Coke
Location: Old Union #2 Mine
Sample I.D.: Basins 085 & 086
Description: Dam Material

Sample Date: 3/26/14
Analyzed By: MWB
Date Analyzed: 3/27/14
Requested By: J.R.W.

Weight of Oven Dry Sample (W): **1200.0 Grams**

Sieve No.	Sieve + Sample Weight	Sieve Weight	Sample Weight Retained	Percent of Total Retained	Cumulative Weight Percent	Percent Retained	Percent Finer
1"	835.2	792.0	43.2	3.6	3.6	3.6	96.4
3/4"	853.4	795.5	57.9	4.9	8.5	8.5	91.5
1/2"	870.5	778.5	92.0	7.8	16.3	16.3	83.7
4	880.1	763.2	116.9	9.9	26.1	26.1	73.9
10	870.6	724.6	146.0	12.3	38.5	38.5	61.5
40	723.6	559.0	164.6	13.9	52.3	52.3	47.7
200	839.4	590.1	249.3	21.0	73.4	73.4	26.6
Pan	799.5	483.5	316.0	26.6	100.0	100.0	0.0
		Total Weight (W1):	1185.9				

SOIL CLASSIFICATION

Unified System (ASTM D-2487)

Liquid Limit: 19.0
Plastic Limit: 15.5
Plasticity Index: 3.5

Soil Classification: SM

Coarse Grained
Silty Sand

Effective Cohesion: 1.8750 psi
Total Cohesion: 6.528 psi
Permeability: 12.30 ft/yr
Maximum Dry Density: 115.0 pcf
Optimum Moisture: 14.9 %
Effective Cohesion: 270.0 psf
Angle of Internal Friction: 33.02 degrees
Mass Unit Weight: 132.14 pcf

SIEVE ANALYSIS

(ASTM C136-96a)

Company Name: Birmingham Coal & Coke
Location: Old Union #2 Mine
Sample I.D.: Basin 085
Description: Foundation

Sample Date: 3/26/14
Analyzed By: MB
Date Analyzed: 3/27/14
Requested By: J.R.W.

Weight of Oven Dry Sample (W): **1194.0 Grams**

Sieve No.	Sieve + Sample Weight	Sieve Weight	Sample Weight Retained	Percent of Total Retained	Cumulative Weight Percent	Percent Retained	Percent Finer
1"	824.3	792.0	32.3	2.7	2.7	2.7	97.3
3/4"	868.5	795.0	73.5	6.3	9.0	9.0	91.0
1/2"	645.3	540.0	105.3	9.0	18.0	18.0	82.0
4	650.1	513.0	137.1	11.7	29.6	29.6	70.4
10	621.4	462.0	159.4	13.6	43.2	43.2	56.8
40	567.6	383.0	184.6	15.7	58.9	58.9	41.1
200	547.6	333.0	214.6	18.3	77.2	77.2	22.8
Pan	630.4	362.0	268.4	22.8	100.0	100.0	0.0
		Total Weight (W1):	1175.2				

SOIL CLASSIFICATION

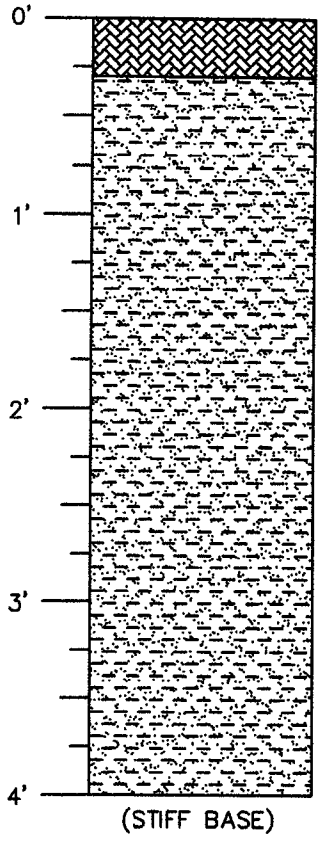
Unified System (ASTM D-2487)

Liquid Limit: 15.8
Plastic Limit: 11.1
Plasticity Index: 4.7

Soil Classification: **SM-SC**

Coarse Grained
Silty, Clayey Sand

Effective Cohesion: 1.2500 psi
Total Cohesion: 1.940 psi
Permeability: 1.40 ft/yr
Maximum Dry Density: 120.0 pcf
Optimum Moisture: 13.3 %
Effective Cohesion: 180.0 psf
Angle of Internal Friction: 30.54 degrees
Mass Unit Weight: 135.96 pcf



INTERVAL:	DESCRIPTION:
0' – 0.3'	Surface Material
0.3' – 4.0'	Silty, Clayey Sand

SAMPLED BY:MB on 3/26/14

BIRMINGHAM COAL AND COKE CO., INC.

DRAWN BY: JRW	DATE: 04/2/14	OLD UNION #2, P-3962 BASIN 085P FOUNDATION INVESTIGATION
APPROVED BY: J.R.W.	DATE: 04/20/14	
SCALE: 1" = 1'	SHEET: 1 OF 1	LYNN & POPLAR SPRINGS USGS QUADRANGLE

SIEVE ANALYSIS

(ASTM C136-96a)

Company Name: Birmingham Coal & Coke
Location: Old Union #2 Mine
Sample I.D.: Basin 086
Description: Foundation

Sample Date: 3/26/14
Analyzed By: MB
Date Analyzed: 3/27/14
Requested By: J.R.W.

Weight of Oven Dry Sample (W): **1087.0 Grams**

Sieve No.	Sieve + Sample Weight	Sieve Weight	Sample Weight Retained	Percent of Total Retained	Cumulative Weight Percent	Percent Retained	Percent Finer
1"	819.2	792.0	27.2	2.5	2.5	2.5	97.5
3/4"	858.4	795.0	63.4	5.9	8.5	8.5	91.5
1/2"	639.6	540.0	99.6	9.3	17.7	17.7	82.3
4	646.7	513.0	133.7	12.5	30.2	30.2	69.8
10	612.8	462.0	150.8	14.1	44.3	44.3	55.7
40	524.7	383.0	141.7	13.2	57.5	57.5	42.5
200	537.4	333.0	204.4	19.1	76.6	76.6	23.4
Pan	612.9	362.0	250.9	23.4	100.0	100.0	0.0
		Total Weight (W1):	1071.7				

SOIL CLASSIFICATION

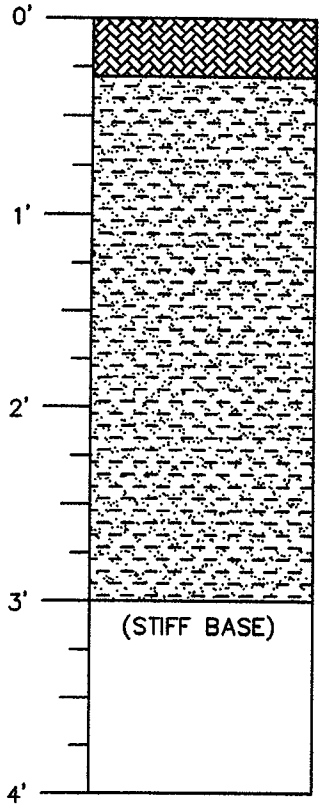
Unified System (ASTM D-2487)

Liquid Limit: 16.7
Plastic Limit: 12.3
Plasticity Index: 4.4

Soil Classification: **SM-SC**

Coarse Grained
Silty, Clayey Sand

Effective Cohesion: 1.2500 psi
Total Cohesion: 1.940 psi
Permeability: 1.40 ft/yr
Maximum Dry Density: 120.0 pcf
Optimum Moisture: 13.3 %
Effective Cohesion: 180.0 psf
Angle of Internal Friction: 30.54 degrees
Mass Unit Weight: 135.96 pcf



INTERVAL:	DESCRIPTION:
0' – 0.3'	Surface Material
0.3' – 3.0'	Silty, Clayey Sand

SAMPLED BY:MB on 3/26/14

BIRMINGHAM COAL AND COKE CO., INC.

DRAWN BY: JRW	DATE: 04/2/14	OLD UNION #2, P-3962 BASIN 086P FOUNDATION INVESTIGATION
APPROVED BY: J.R.W.	DATE: 04/20/14	
SCALE: 1" = 1'	SHEET: 1 OF 1	LYNN & POPLAR SPRINGS USGS QUADRANGLE