

# RIAXIAL COMPRESSION TEST DATA

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B1-15A  
 DEPTH 41.0-41.5'  
 SAMPLE NO. -  
 SOIL DESCR. Sandy Clay  
 LOCATION Tailings Impoundment  
 CONF. PRES. PSF 5040

SAMPLED 11/21/13 MWH  
 TEST STARTED 02/09/14 DPM  
 TEST FINISHED 02/19/14 DPM  
 CELL NUMBER 25S  
 SATURATED TEST Yes  
 TEST TYPE TX/Pbp/Tap Water

## SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)	Pore Pressure (PSI)	Change	B
		Close	Open		
40.0	38.0	1.4	10.0		
50.0		11.5	11.7		
			Close	Open	
			38.5	48.3	9.8
					0.98

## CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Def. (CC)
0.00	0.00	11.70	0.00
0.25	0.50	14.45	-2.75
0.5	0.71	14.70	-3.00
1	1.00	14.95	-3.25
2	1.41	15.35	-3.65
4	2.00	16.10	-4.40
9	3.00	17.35	-5.65
16	4.00	18.60	-6.90
30	5.48	20.00	-8.30
60	7.75	21.10	-9.40
120	10.95	21.50	-9.80
240	15.49	21.85	-10.15
360	18.97	22.00	-10.30

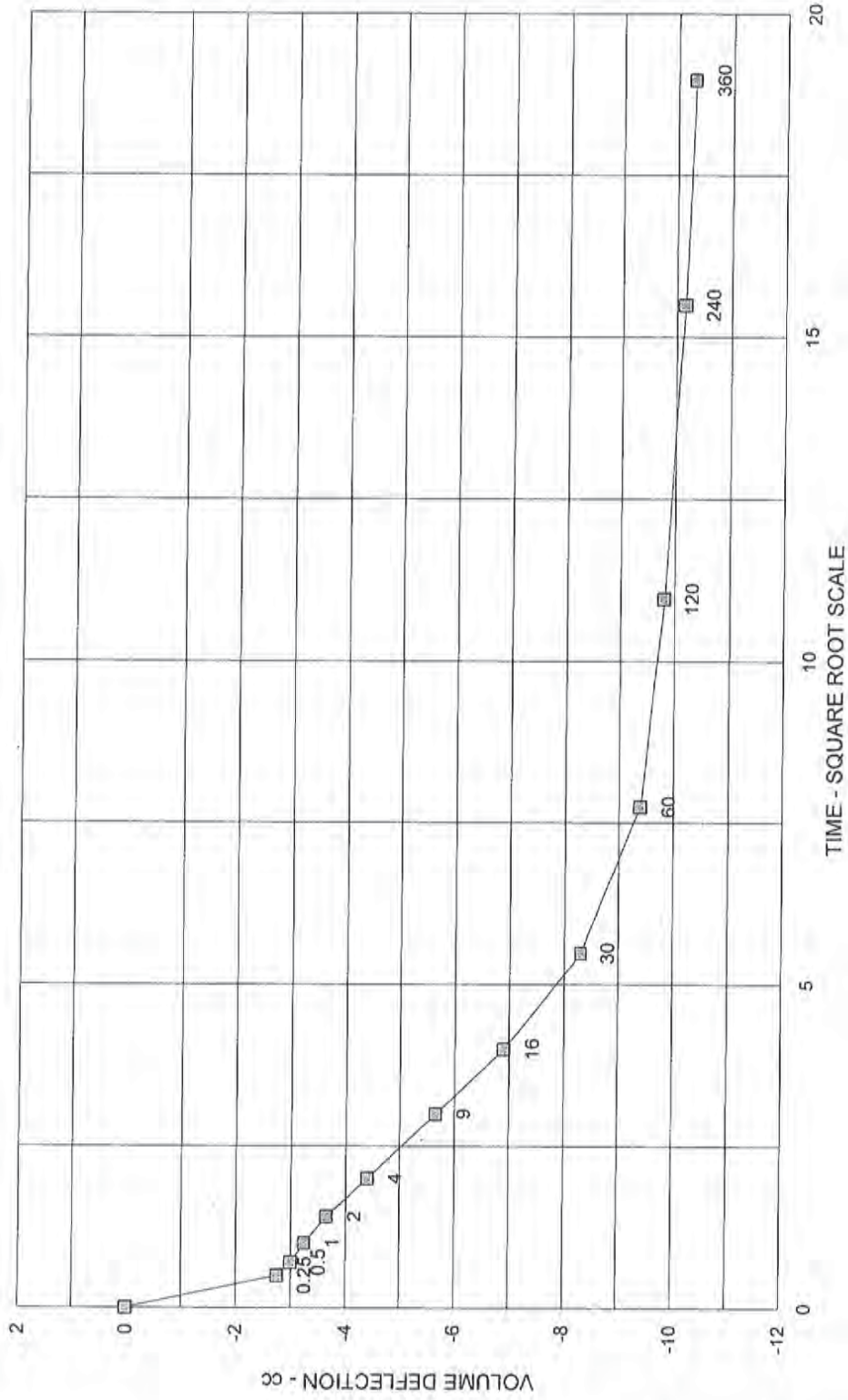
Initial Height (in)	2.960	Init. Vol. (CC)	141.42
Height Change (in)	0.085	Vol. Change (CC)	23.20
Ht. After Cons. (in)	2.875	Cell Exp. (CC)	14.50
Initial Area (sq in)	2.915	Net Change (CC)	8.70
Area After Cons. (sq in)	2.816	Cons. Vol. (CC)	132.71

Data entry by: 142 Date: 04/04/2014  
 Checked by: 4/5/14  
 FileName: PBCH115A



# CONSOLIDATION DATA

TI-B1-15A, 41.0-41.5', -



Time in Minutes / CONF. PRES. PSF 5040



PERMEABILITY TEST - BACK PRESSURE CONSTANT HEAD  
ASTM D 5084

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B1-13A	SAMPLED	11/21/13 MWH
DEPTH	36.0-36.5'	TEST STARTED	02/08/14 DPM
SAMPLE NO.	-	TEST FINISHED	02/19/14 DPM
SOIL DESCR.	Clayey Sand	CELL NUMBER	27S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
CONF. PRES. PSF	4608	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	272.8	278.0
Wt. Wet Soil & Pan (g)	279.4	284.5
Wt. Dry Soil & Pan (g)	227.3	227.3
Wt. Lost Moisture (g)	52.0	57.1
Wt. of Pan Only (g)	6.5	6.5
Wt. of Dry Soil (g)	220.8	220.8
Moisture Content %	23.6	25.9
Wet Density PCF	119.3	119.8
Dry Density PCF	96.6	95.2
Init. Diameter (in)	1.929	(cm) 4.900
Init. Area (sq in)	2.922	(sq cm) 18.856
Init. Height (in)	2.981	(cm) 7.572
Vol. Bef. Consol. (cu ft)	0.00504	
Vol. After Consol. (cu ft)	0.00511	
Porosity %	39.44	
Constant Head (PSI)	2.00	(cm) 140.79

Time Min	Time Sec	Init. Burette CC	Final Burette CC	Head Corr. CM	Permeability k cm/sec
480.0	28800	47.4	28.8	23.9	2.1E-06
440.0	26400	46.4	30.8	23.3	1.9E-06
240.0	14400	47.8	39.9	17.6	1.7E-06
426.0	25560	47.6	34.0	20.9	1.7E-06
240.0	14400	46.7	39.3	18.5	1.6E-06
240.0	14400	39.3	32.1	26.5	1.7E-06

Average Temperature 21.1

Data entry by: VR DPM Date: 04/04/2014  
 Checked by: VR Date: 4/5/14  
 FileName: PBCH113A



# RIAXIAL COMPRESSION TEST DATA

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B1-13A  
 DEPTH 36.0-36.5'  
 SAMPLE NO. -  
 SOIL DESCR. Clayey Sand  
 LOCATION Tailings Impoundment  
 CONF. PRES. PSF 4608

SAMPLED 11/21/13 MWH  
 TEST STARTED 02/08/14 DPM  
 TEST FINISHED 02/19/14 DPM  
 CELL NUMBER 27S  
 SATURATED TEST Yes  
 TEST TYPE TX/Pbp/Tap Water

## SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)	Pore Pressure (PSI)	Change	B
		Close Open	Close Open		
40.0	38.0	1.8	8.3		
50.0	48.0	9.1	9.9	38.1	46.9
60.0		9.4	9.4	48.0	57.6
				8.8	0.88
				9.6	0.96

## CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (CC)
0.00	0.00	9.40	0.00
0.25	0.50	14.25	-4.85
0.5	0.71	14.45	-5.05
1	1.00	14.60	-5.20
2	1.41	14.70	-5.30
4	2.00	14.85	-5.45
9	3.00	14.90	-5.50
16	4.00	15.00	-5.60
30	5.48	15.15	-5.75
60	7.75	15.30	-5.90
120	10.95	15.40	-6.00
240	15.49	15.60	-6.20
360	18.97	15.80	-6.40

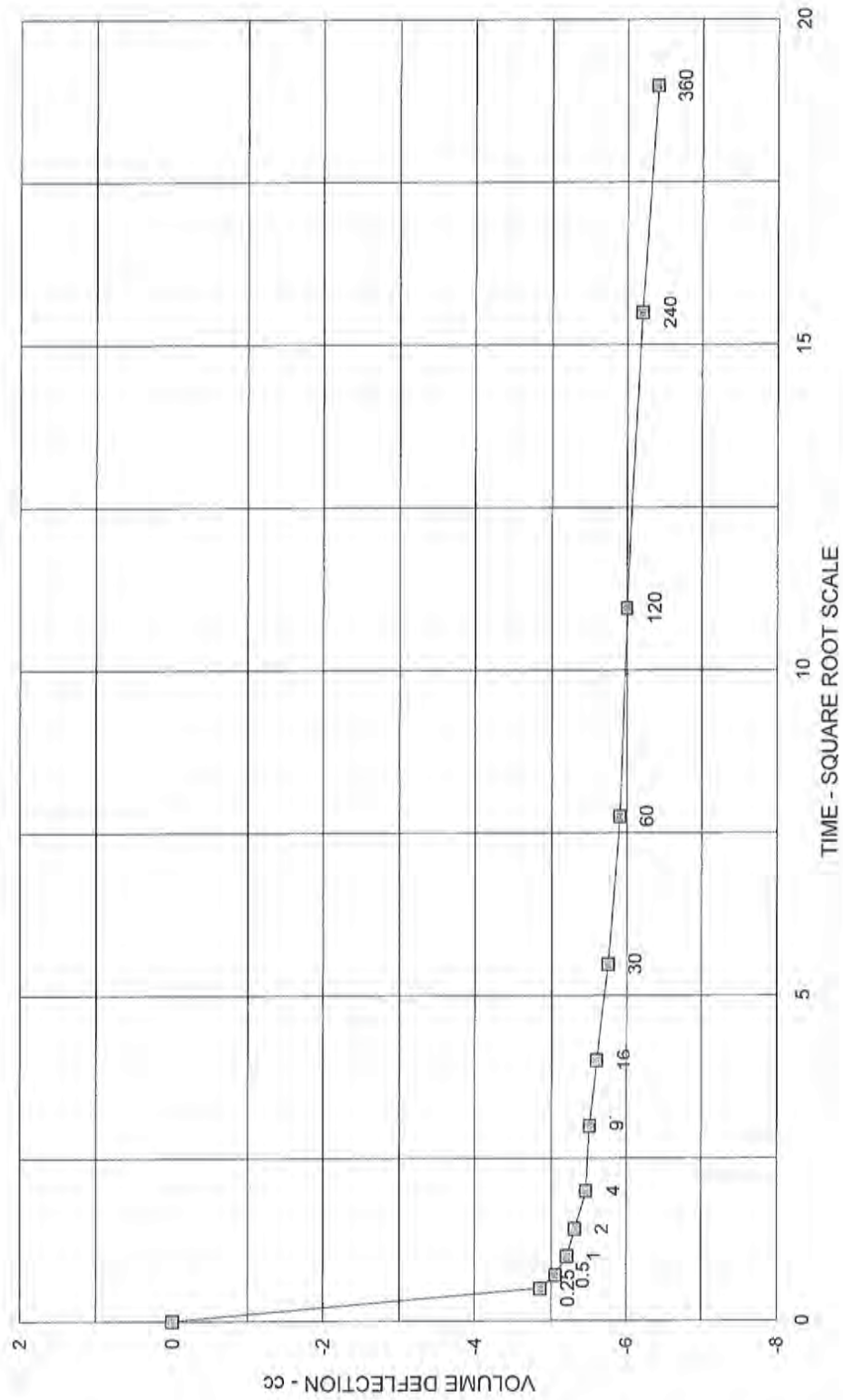
Initial Height (in)	2.981	Init. Vol. (CC)	142.79
Height Change (in)	0.052	Vol. Change (CC)	17.70
Ht. After Cons. (in)	2.929	Cell Exp. (CC)	19.72
Initial Area (sq in)	2.922	Net Change (CC)	-2.02
Area After Cons. (sq in)	3.017	Cons. Vol. (CC)	144.81

Data entry by:     DPM Date: 04/04/2014  
 Checked by:     Date: 4/5/14  
 FileName: PBCH113A



# CONSOLIDATION DATA

TI-B1-13A, 36.0-36.5', -



Time in Minutes CONF. PRES. PSF 4608



PERMEABILITY TEST - BACK PRESSURE CONSTANT HEAD  
ASTM D 5084

CLIENT MWH

JOB NO. 2512-77

BORING NO.	TI-B1-11B	SAMPLED	11/21/13 MWH
DEPTH	30.5-31.0'	TEST STARTED	02/08/14 DPM
SAMPLE NO.	-	TEST FINISHED	02/20/14 DPM
SOIL DESCR.	Sand Tailings (v. fine)	CELL NUMBER	26S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
CONF. PRES. PSF	3600	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	249.8	243.4
Wt. Wet Soil & Pan (g)	256.2	249.9
Wt. Dry Soil & Pan (g)	191.2	191.2
Wt. Lost Moisture (g)	65.1	58.7
Wt. of Pan Only (g)	6.5	6.5
Wt. of Dry Soil (g)	184.7	184.7
Moisture Content %	35.2	31.8
Wet Density PCF	109.4	113.6
Dry Density PCF	80.9	86.2

Init. Diameter (in)	1.891	(cm)	4.803
Init. Area (sq in)	2.808	(sq cm)	18.120
Init. Height (in)	3.096	(cm)	7.864
Vol. Bef. Consol. (cu ft)	0.00503		
Vol. After Consol. (cu ft)	0.00472		
Porosity %	43.91		
Constant Head (PSI)	2.00	(cm)	140.79

Time Min	Time Sec	Init. Burette CC	Final Burette CC	Head Corr. CM	Permeability k cm/sec
480.0	28800	47.5	43.3	15.9	4.9E-07
1440.0	86400	47.4	36.4	19.7	4.4E-07
1331.0	79860	46.7	40.0	18.1	2.9E-07
510.0	30600	40.0	37.5	23.2	2.9E-07
860.0	51600	37.5	33.3	26.8	3.0E-07
489.0	29340	33.3	31.0	30.4	3.0E-07

Note: The sample contains a facies change, Clayey Silt on the bottom with Sand on the top of the sample.

Average Temperature 20.7

Data entry by: DPM Date: 04/10/2014  
Checked by: VR Date: 4/11/14  
FileName: PBCH111B





# RIAXIAL COMPRESSION TEST DATA

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B1-11B  
 DEPTH 30.5-31.0'  
 SAMPLE NO. -  
 SOIL DESCR. Sand Tailings (v. fine)  
 LOCATION Tailings Impoundment  
 CONF. PRES. PSF 3600

SAMPLED 11/21/13 MWH  
 TEST STARTED 02/08/14 DPM  
 TEST FINISHED 02/20/14 DPM  
 CELL NUMBER 26S  
 SATURATED TEST Yes  
 TEST TYPE TX/Pbp/Tap Water

## SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)	Pore Pressure (PSI)	Change	B
		Close Open	Close Open		
40.0	38.0	1.9 9.2			
50.0	48.0	10.1 11.1	38.7 48.1	9.4	0.94
60.0		10.8 10.7	48.2 58.0	9.8	0.98

## CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (CC)
0.00	0.00	10.70	0.00
0.25	0.50	15.40	-4.70
0.5	0.71	16.10	-5.40
1	1.00	16.90	-6.20
2	1.41	17.80	-7.10
4	2.00	18.80	-8.10
9	3.00	20.10	-9.40
16	4.00	20.70	-10.00
30	5.48	21.05	-10.35
60	7.75	21.30	-10.60
120	10.95	21.60	-10.90
240	15.49	21.85	-11.15
360	18.97	22.00	-11.30

Initial Height (in)	3.096	Init. Vol. (CC)	142.51
Height Change (in)	0.152	Vol. Change (CC)	27.00
Ht. After Cons. (in)	2.944	Cell Exp. (CC)	18.23
Initial Area (sq in)	2.808	Net Change (CC)	8.77
Area After Cons. (sq in)	2.772	Cons. Vol. (CC)	133.74

Data entry by: DPM Date: 04/10/2014  
 Checked by: VP Date: 4/11/14  
 FileName: PBCH111B



# CONSOLIDATION DATA

TI-B1-11B, 30.5-31.0', -



■ Time in Minutes      CONF. PRES. PSF 3600

PERMEABILITY TEST - BACK PRESSURE CONSTANT HEAD  
ASTM D 5084

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B10-14  
DEPTH 40.0-41.0' (40-42.5')  
SAMPLE NO. -  
SOIL DESCR. Clayey Silt Tailings  
LOCATION Tailings Impoundment  
CONF. PRES. PSF 8352

SAMPLED 11/26/13 MWH  
TEST STARTED 02/21/14 DPM  
TEST FINISHED 03/04/14 DPM  
CELL NUMBER 26S  
SATURATED TEST Yes  
TEST TYPE TX/Pbp/Tap Water

MOISTURE/DENSITY  
DATA

BEFORE  
TEST

AFTER  
TEST

Wt. Soil + Moisture (g)	558.6	536.3
Wt. Wet Soil & Pan (g)	572.4	552.1
Wt. Dry Soil & Pan (g)	396.2	396.2
Wt. Lost Moisture (g)	176.2	155.9
Wt. of Pan Only (g)	15.8	15.8
Wt. of Dry Soil (g)	380.4	380.4
Moisture Content %	46.3	41.0
Wet Density PCF	108.5	116.7
Dry Density PCF	74.2	82.7

Init. Diameter (in)	2.822	(cm)	7.168
Init. Area (sq in)	6.255	(sq cm)	40.355
Init. Height (in)	3.124	(cm)	7.935
Vol. Bef. Consol. (cu ft)	0.01131		
Vol. After Consol. (cu ft)	0.01014		
Porosity %	54.32		
Constant Head (PSI)	2.00	(cm)	140.79

Time	Time	Init.	Final	Head	Permeability
Min	Sec	Burette	Burette	Corr.	k
		CC	CC	CM	cm/sec
1440.0	86400	47.2	44.8	15.3	4.4E-08
1440.0	86400	44.8	42.7	17.7	3.9E-08
1440.0	86400	42.7	41.1	19.7	3.1E-08
1590.0	95400	41.1	39.3	21.6	3.2E-08
2880.0	172800	39.3	36.5	24.1	2.8E-08
1440.0	86400	36.5	35.1	26.4	2.9E-08

Average Temperature 20.5

Data entry by: DPM Date: 04/10/2014  
Checked by: VR Date: 4/11/14  
FileName: PBCH1014



# TRIAXIAL COMPRESSION TEST DATA

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B10-14  
 DEPTH 40.0-41.0' (40-42.5')  
 SAMPLE NO. -  
 SOIL DESCR. Clayey Silt Tailings  
 LOCATION Tailings Impoundment  
 CONF. PRES. PSF 8352

SAMPLED 11/26/13 MWH  
 TEST STARTED 02/21/14 DPM  
 TEST FINISHED 03/04/14 DPM  
 CELL NUMBER 26S  
 SATURATED TEST Yes  
 TEST TYPE TX/Pbp/Tap Water

## SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	3.2	9.3				
50.0	48.0	9.6	10.4	38.4	47.6	9.2	0.92
60.0		10.8	10.8	48.3	58.0	9.7	0.97

## CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (CC)
0.00	0.00	0.30	0.00
0.25	0.50	7.80	-7.50
0.5	0.71	8.60	-8.30
1	1.00	9.60	-9.30
2	1.41	11.00	-10.70
4	2.00	12.90	-12.60
9	3.00	16.10	-15.80
16	4.00	19.20	-18.90
30	5.48	23.40	-23.10
60	7.75	29.00	-28.70
120	10.95	34.60	-34.30
240	15.49	38.60	-38.30
360	18.97	40.00	-39.70

Initial Height (in)	3.124	Init. Vol. (CC)	320.25
Height Change (in)	0.144	Vol. Change (CC)	54.70
Ht. After Cons. (in)	2.980	Cell Exp. (CC)	21.51
Initial Area (sq in)	6.255	Net Change (CC)	33.19
Area After Cons. (sq in)	5.877	Cons. Vol. (CC)	287.07

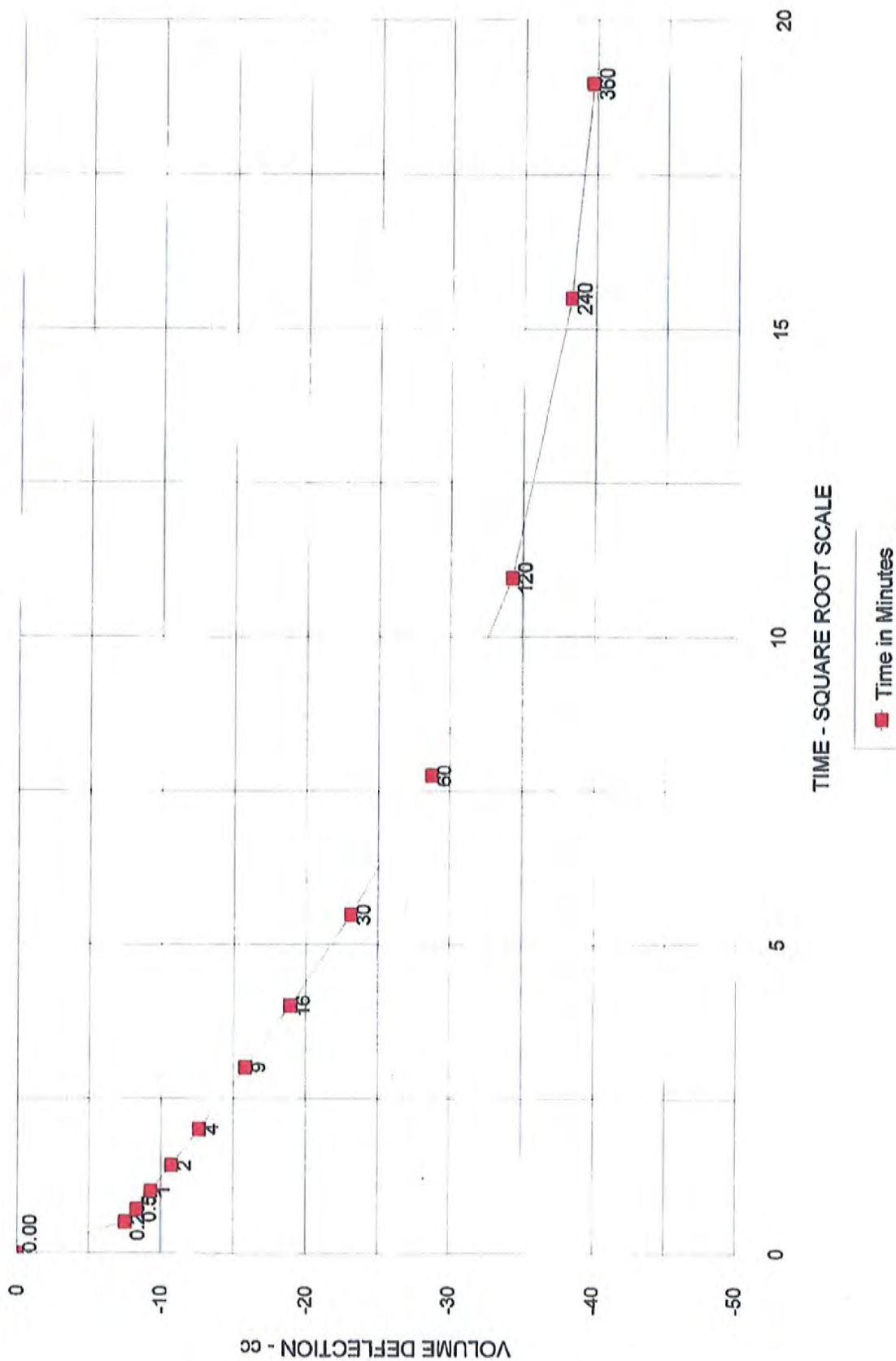
Data entry by: VR DPM Date: 03/12/2014  
 Checked by: VR Date: 4/11/14  
 FileName: PBCH1014





# CONSOLIDATION DATA

TI-B10-14, 40.0-41.0' (40-42.5'), -



PERMEABILITY TEST - BACK PRESSURE CONSTANT HEAD  
ASTM D 5084

CLIENT MWH

JOB NO. 2512-77

BORING NO.	TI-B10-26	SAMPLED	11/27/13 MWH
DEPTH	106.9-107.3	TEST STARTED	02/27/14 DPM
SAMPLE NO.	-	TEST FINISHED	3/7/14 DPM
SOIL DESCR.	Weathered Sandstone	CELL NUMBER	27S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
CONF. PRES. PSF	16560	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY  
DATA

BEFORE  
TEST

AFTER  
TEST

Wt. Soil + Moisture (g)	803.5	811.5
Wt. Wet Soil & Pan (g)	819.3	827.3
Wt. Dry Soil & Pan (g)	719.3	719.3
Wt. Lost Moisture (g)	100.1	108.0
Wt. of Pan Only (g)	15.8	15.8
Wt. of Dry Soil (g)	703.4	703.4
Moisture Content %	14.2	15.4
Wet Density PCF	124.6	131.6
Dry Density PCF	109.1	114.1

Init. Diameter (in)	3.040	(cm)	7.722
Init. Area (sq in)	7.258	(sq cm)	46.831
Init. Height (in)	3.384	(cm)	8.595
Vol. Bef. Consol. (cu ft)	0.01421		
Vol. After Consol. (cu ft)	0.01359		
Porosity %	28.06		
Constant Head (PSI)	2.00	(cm)	140.79

Time	Time	Init.	Final	Head	Permeability
Min	Sec	Burette	Burette	Corr.	k
		CC	CC	CM	cm/sec
244.0	14640	43.6	42.3	18.6	1.4E-07
240.0	14400	42.3	40.8	20.1	1.6E-07
916.0	54960	40.8	35.9	23.6	1.4E-07
420.0	25200	35.9	33.8	27.4	1.4E-07

Average Temperature 22.1

Data entry by: DPM Date: 04/10/2014  
 Checked by: KE Date: 4/11/14  
 FileName: PBCH1026



# TRIAXIAL COMPRESSION TEST DATA

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B10-26  
 DEPTH 106.9-107.3  
 SAMPLE NO. -  
 SOIL DESCR. Weathered Sandstone  
 LOCATION Tailings Impoundment  
 CONF. PRES. PSF 16560

SAMPLED 11/27/13 MWH  
 TEST STARTED 02/27/14 DPM  
 TEST FINISHED 3/7/14 DPM  
 CELL NUMBER 27S  
 SATURATED TEST Yes  
 TEST TYPE TX/Pbp/Tap Water

## SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	5.5	19.3				
50.0		21.6	22.0	38.6	48.2	9.6	0.96

## CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (CC)
0.00	0.00	0.30	0.00
0.25	0.50	16.10	-15.80
0.5	0.71	17.60	-17.30
1	1.00	19.45	-19.15
2	1.41	21.85	-21.55
4	2.00	24.40	-24.10
9	3.00	26.25	-25.95
16	4.00	26.70	-26.40
30	5.48	26.95	-26.65
60	7.75	27.20	-26.90
120	10.95	27.40	-27.10
240	15.49	27.80	-27.50
360	18.97	27.80	-27.50

Initial Height (in)	3.384	Init. Vol. (CC)	402.57
Height Change (in)	0.031	Vol. Change (CC)	45.50
Ht. After Cons. (in)	3.353	Cell Exp. (CC)	27.94
Initial Area (sq in)	7.258	Net Change (CC)	17.56
Area After Cons. (sq in)	7.006	Cons. Vol. (CC)	385.02

Data entry by: KA DPM Date: 03/12/2014  
 Checked by: 4/10/14  
 FileName: PBCH1026



# CONSOLIDATION DATA

TI-B10-26, 106.9-107.3, -



TIME - SQUARE ROOT SCALE

■ Time in Minutes



PERMEABILITY TEST - BACK PRESSURE CONSTANT HEAD  
ASTM D 5084

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B1-09  
DEPTH 27.0-27.5' (25-27.5')  
SAMPLE NO. -  
SOIL DESCR. Sand Tailings  
LOCATION Tailings Impoundment  
CONF. PRES. PSF 2016

SAMPLED 11/21/13 MWH  
TEST STARTED 03/27/14 DPM  
TEST FINISHED 04/17/14 DPM  
CELL NUMBER 25S  
SATURATED TEST Yes  
TEST TYPE TX/Pbp/Tap Water

MOISTURE/DENSITY  
DATA

BEFORE  
TEST

AFTER  
TEST

Wt. Soil + Moisture (g)	669.8	794.1
Wt. Wet Soil & Pan (g)	685.6	809.8
Wt. Dry Soil & Pan (g)	659.6	659.6
Wt. Lost Moisture (g)	26.0	150.3
Wt. of Pan Only (g)	15.8	15.8
Wt. of Dry Soil (g)	643.8	643.8
Moisture Content %	4.0	23.3
Wet Density PCF	101.6	122.1
Dry Density PCF	97.6	99.0

Init. Diameter (in)	2.407	(cm)	6.114
Init. Area (sq in)	4.550	(sq cm)	29.359
Init. Height (in)	5.520	(cm)	14.021
Vol. Bef. Consol. (cu ft)	0.01454		
Vol. After Consol. (cu ft)	0.01434		
Porosity %	37.01		
Constant Head (PSI)	2.00	(cm)	140.79

Time	Time	Init.	Final	Head	Permeability
Min	Sec	Burette	Burette	Corr.	k
		CC	CC	CM	cm/sec
0.5	30	47.1	26.6	25.2	2.8E-03
0.5	30	47.0	25.7	25.8	2.9E-03
0.5	30	47.7	26.8	24.8	2.9E-03
0.5	30	44.9	24.4	27.6	2.9E-03

Average Temperature 25.3

Data entry by: DPM/DAW Date: 05/20/2014  
Checked by: DPM Date: 5/24/14  
FileName: PBCHB109

# TRIAxIAL COMPRESSION TEST DATA

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B1-09  
 DEPTH 27.0-27.5' (25-27.5')  
 SAMPLE NO. -  
 SOIL DESCR. Sand Tailings  
 LOCATION Tailings Impoundment  
 CONF. PRES. PSF 2016

SAMPLED 11/21/13 MWH  
 TEST STARTED 03/27/14 DPM  
 TEST FINISHED 04/17/14 DPM  
 CELL NUMBER 25S  
 SATURATED TEST Yes  
 TEST TYPE TX/Pbp/Tap Water

## SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)	Pore Pressure (PSI)	Change	B
		Close Open	Close Open		
40.0	38.0	2.9 13.5			
50.0	48.0	14.6 15.5	37.9 44.5	6.6	0.66
60.0	58.0	15.7 16.8	48.6 57.0	8.4	0.84
70.0	68.0	16.1 17.0	58.0 66.8	8.8	0.88
80.0		19.9 19.7	67.4 77.4	10.0	1.00

## CONSOLIDATION DATA

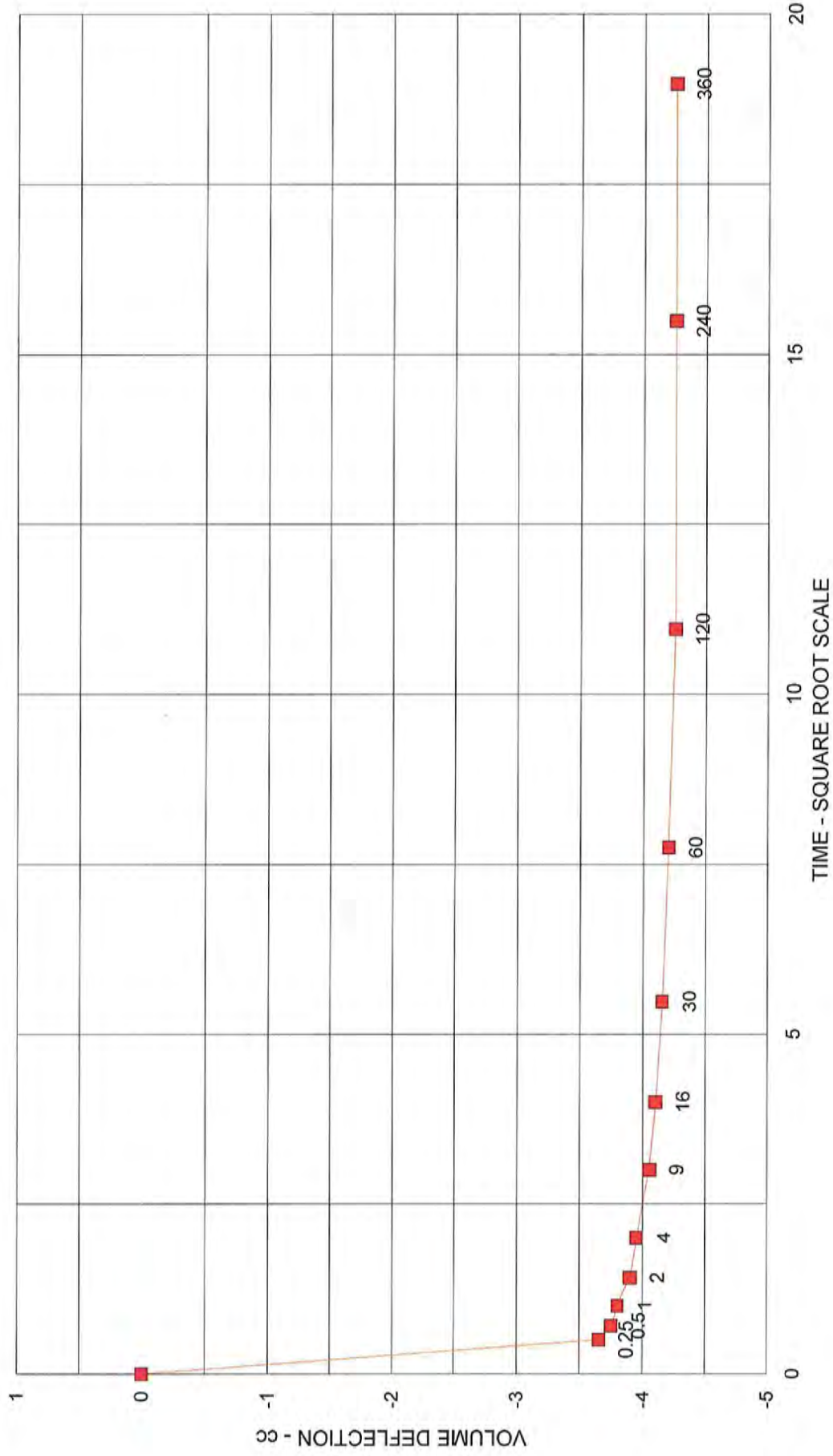
Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (CC)
0.00	0.00	0.60	0.00
0.25	0.50	4.25	-3.65
0.5	0.71	4.35	-3.75
1	1.00	4.40	-3.80
2	1.41	4.50	-3.90
4	2.00	4.55	-3.95
9	3.00	4.65	-4.05
16	4.00	4.70	-4.10
30	5.48	4.75	-4.15
60	7.75	4.80	-4.20
120	10.95	4.85	-4.25
240	15.49	4.85	-4.25
360	18.97	4.85	-4.25

Initial Height (in)	5.520	Init. Vol. (CC)	411.68
Height Change (in)	0.040	Vol. Change (CC)	21.30
Ht. After Cons. (in)	5.480	Cell Exp. (CC)	15.68
Initial Area (sq in)	4.550	Net Change (CC)	5.62
Area After Cons. (sq in)	4.521	Cons. Vol. (CC)	406.06

Data entry by: DPM/DAW Date: 05/20/2014  
 Checked by: DPM Date: 5/22/14  
 FileName: PBCHB109

# CONSOLIDATION DATA

TI-B1-09, 27.0-27.5' (25-27.5'), -



■ Time in Minutes      ◆ CONF. PRES. PSF 2016



EFFECTIVE STRESS PATH ANALYSIS TEST DATA  
ASTM D4767

CLIENT MWH  
BORING NO. TI-B1-09  
DEPTH 27.0-27.5' (25-27.5')  
SAMPLE NO. A,B&C  
PROJECT NO. --  
LOCATION Tailings Impoundment

JOB NO. 2512-77  
SAMPLED 11/21/13 MWH  
SATURATED TEST  
TEST TYPE TX/CUPP

				Peak Points	
				p'	q
				PSF	PSF
CONF. PRES. PSF	SAMPLE A	2016	PSF	SAMPLE A	1958
	SAMPLE B	3168	PSF	SAMPLE B	3372
	SAMPLE C	4320	PSF	SAMPLE C	21139
					12125

SAMPLE A				SAMPLE B				SAMPLE C			
$\sigma$ 3'	$\sigma$ 1'	p'	q	$\sigma$ 3'	$\sigma$ 1'	p'	q	$\sigma$ 3'	$\sigma$ 1'	p'	q
PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF
2016	2016	2016	0	3168	3168	3168	0	4320	4320	4320	0
1987	2370	2179	191	2650	4717	3683	1034	3686	7289	5488	1801
1786	2837	2311	526	2333	5055	3694	1361	3499	8206	5852	2353
1541	2878	2209	668	2146	5147	3646	1501	3384	8731	6057	2673
1354	2785	2069	715	2002	5093	3548	1546	3269	9071	6170	2901
1195	2720	1958	762	1901	5083	3492	1591	3197	9269	6233	3036
1080	2603	1842	762	1814	5087	3451	1636	3154	9404	6279	3125
994	2515	1754	761	1757	5026	3392	1635	3110	9630	6370	3260
922	2442	1682	760	1699	5059	3379	1680	3082	9686	6384	3302
850	2368	1609	759	1656	5012	3334	1678	3053	9834	6443	3390
806	2229	1518	711	1627	4980	3304	1676	3038	9904	6471	3433
763	2184	1474	710	1584	5027	3305	1721	3038	9988	6513	3475
720	2140	1430	710	1570	5009	3289	1720	3024	10058	6541	3517
691	2109	1400	709	1541	4977	3259	1718	3053	10346	6700	3647
662	2079	1371	708	1526	5051	3289	1763	3053	10514	6783	3730
634	2049	1341	708	1512	5034	3273	1761	3082	10800	6941	3859
619	2033	1326	707	1498	5016	3257	1759	3125	11009	7067	3942
590	2003	1297	706	1498	5105	3301	1803	3139	11188	7163	4024
590	2001	1296	706	1483	5087	3285	1802	3211	11604	7408	4196
576	1986	1281	705	1483	5175	3329	1846	3240	11805	7522	4282
562	1970	1266	704	1483	5172	3327	1844	3398	12637	8018	4619
				1483	5260	3372	1888	3600	13594	8597	4997
				1483	5259	3371	1888	3845	14763	9304	5459
								4090	15923	10006	5916
								4378	17115	10746	6369
								4982	19672	12327	7345
								5674	22443	14058	8385
								6379	25180	15779	9400
								7085	27700	17393	10308
								7790	30010	18900	11110
								9014	33264	21139	12125
								9864	33286	21575	11711

Data entry by: DAW  
Data checked by: *DPW*  
FileName: MWPQB109.WK4

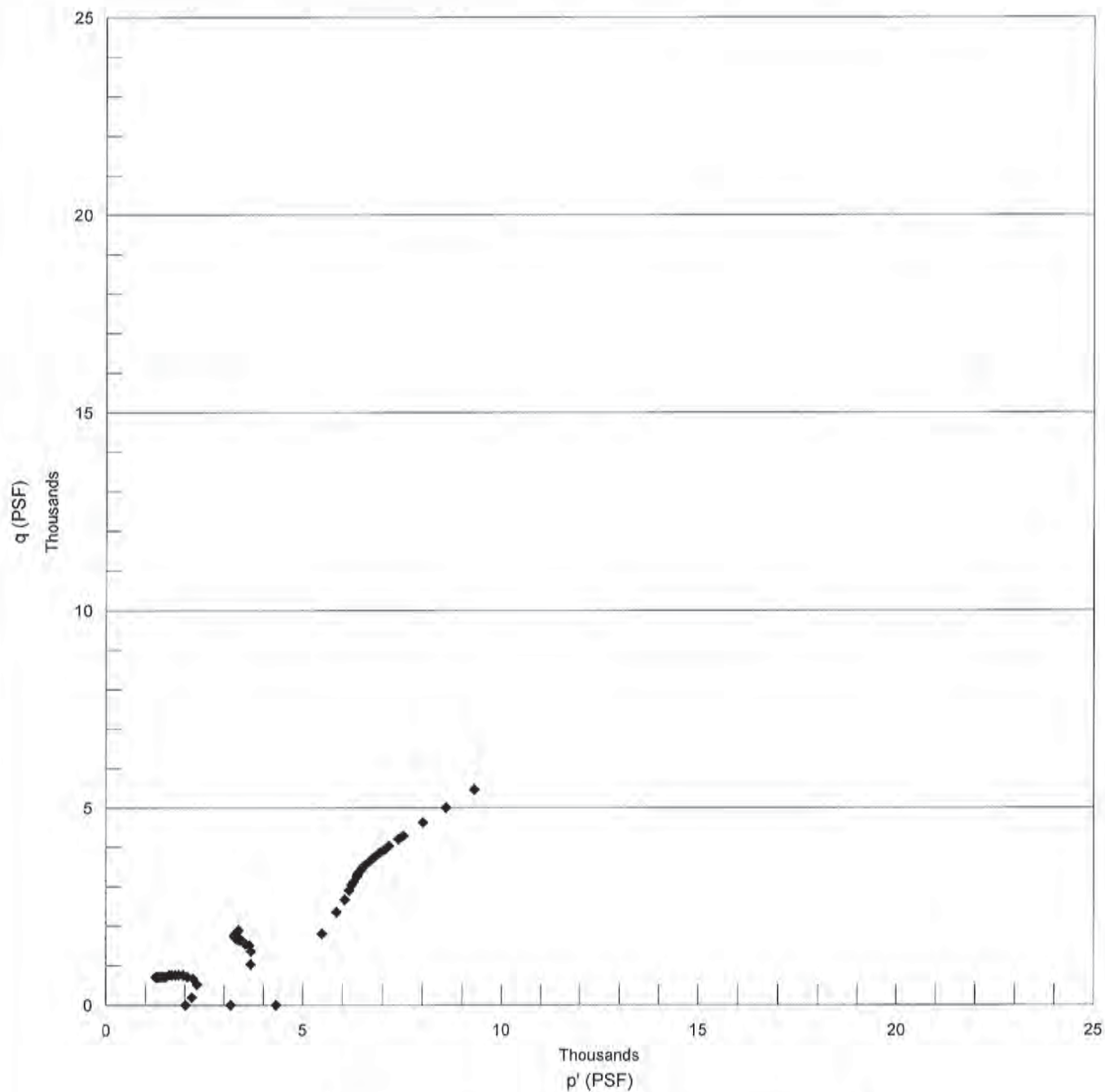
Date: 05/22/2014  
Date: *5/22/14*





## Effective Stress Path Analysis - p' q Plots

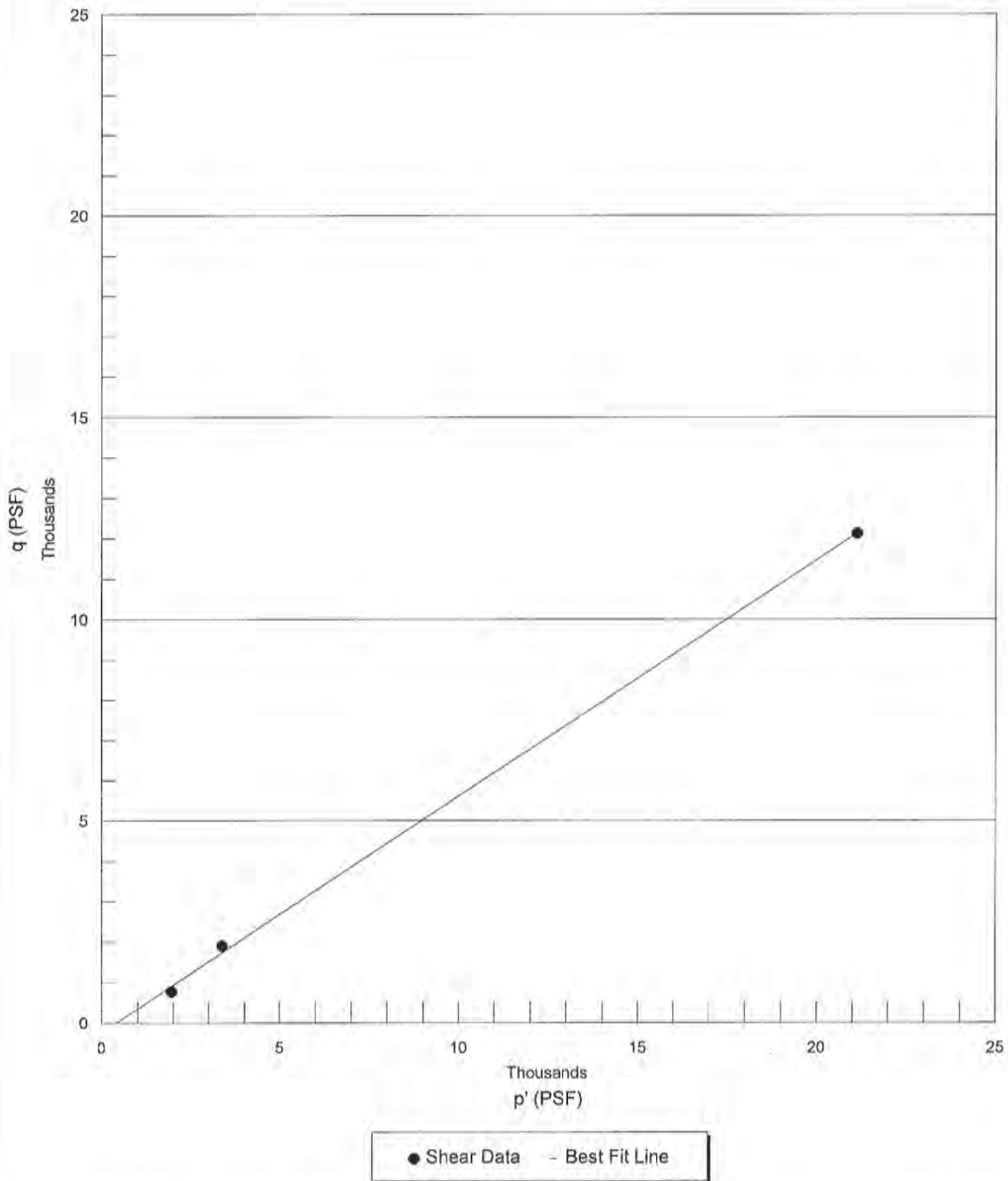
MWH, Tailings Impoundment, --, TI-B1-09, A, B & C, 27.0-27.5' (25-27.5')



◆ Stress Paths of Samples A, B & C

## Effective Stress Path Analysis - $p'$ - $q$ Regression Plot

MWH, Tailings Impoundment, --, TI-B1-09, A, B&C, 27.0-27.5' (25-27.5')



NOTE: Peak points are plotted for visual verification only. Least squared regression analysis, yields a negative alpha ( $\alpha$ ) value; therefore no regression analysis has been provided.

TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-BI-09	SAMPLED	11/21/13 MWH
DEPTH	27.0-27.5' (25-27.5')	TEST STARTED	03/27/14 DPM
SAMPLE NO.	--	TEST FINISHED	04/17/14 DPM
SOIL DESCR.	Sand Tailings	CELL NUMBER	25S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 1	CONF. PRES. PSF	2016

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	669.8	794.1
Wt. Wet Soil & Pan (g)	685.6	809.8
Wt. Dry Soil & Pan (g)	659.6	659.6
Wt. Lost Moisture (g)	26.0	150.3
Wt. of Pan Only (g)	15.8	15.8
Wt. of Dry Soil (g)	643.8	643.8
Moisture Content %	4.0	23.3
Wet Density PCF	101.6	122.4
Dry Density PCF	97.6	99.2
Init. Diameter (in)	2.407	
Init. Area (sq in)	4.550	
Init. Height (in)	5.520	
Vol. Bef. Consol. (cu ft)	0.01454	
Vol. After Consol. (cu ft)	0.01430	

Notes & Comments:

Data entry by: DAW  
Data checked by: DPM  
FileName: MWT0B109.WK4

Date: 05/20/2014  
Date: 5/22/14



TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-BI-09	SAMPLED	11/21/13 MWH
DEPTH	27.0-27.5' (25-27.5')	TEST STARTED	03/27/14 DPM
SAMPLE NO.	--	TEST FINISHED	04/17/14 DPM
SOIL DESCR.	Sand Tailings	CELL NUMBER	25S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/Cupp, Stage 1	CONF. PRES. PSF	2016

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	2.9	13.5				
50.0	48.0	14.6	15.5	37.9	44.5	6.6	0.66
60.0	58.0	15.7	16.8	48.6	57.0	8.4	0.84
70.0	68.0	16.1	17.0	58.0	66.8	8.8	0.88
80.0		19.9	19.7	67.4	77.4	10.0	1.00

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT TIME (Min)	Burette Reading (CC)	Vol. Defl. (CC)
0.00	0.0	0.60	0.00
0.25	0.5	4.25	-3.65
0.5	0.7	4.35	-3.75
1	1.0	4.40	-3.80
2	1.4	4.50	-3.90
4	2.0	4.55	-3.95
9	3.0	4.65	-4.05
16	4.0	4.70	-4.10
30	5.5	4.75	-4.15
60	7.7	4.80	-4.20
120	11.0	4.85	-4.25
240	15.5	4.85	-4.25
360	19.0	4.85	-4.25

Initial Height (in)	5.520	Init. Vol. (CC)	411.68
Height Change (in)	0.040	Vol. Change (CC)	22.10
Ht. After Cons. (in)	5.480	Cell Exp. (CC)	15.55
Initial Area (sq in)	4.550	Net Change (CC)	6.55
Area After Cons. (sq in)	4.511	Cons. Vol. (CC)	405.13

Data entry by: DAW  
Data checked by: *OPM*  
FileName: MWT0B109.WK4

Date: 05/20/2014  
Date: *5/22/14*





# TRIAxIAL COMPRESSION TEST DATA

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-BI-09	SAMPLED	11/21/13 MWH
DEPTH	27.0-27.5' (25-27.5')	TEST STARTED	03/27/14 DPM
SAMPLE NO.	--	TEST FINISHED	04/17/14 DPM
SOIL DESCR.	Sand Tailings	CELL NUMBER	25S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 1	CONF. PRES. PSF	2016

Init. Ht. (in)	5.520	Init. Area (sq in)	4.550
Consol. Ht. (in)	5.480	Consol. Area (sq in)	4.511
Back Pres. PSI	69.2	Strain Rate (in/min)	0.003

Axial Load Lbs.	Axial Load PSF	Delta Ht. In.	Axial % Strain	Area Final Sq In.	Dev. Stress PSF	Pore Pres. PSI	Delta Pres. PSF	Sigma 3' PSF	Sigma 1' PSF	Prin. Stress Ratio
0.0	0	0.000	0.00	4.511	0	69.2	0	2016	2016	1.00
12.0	383	0.005	0.10	4.515	383	69.4	29	1987	2370	1.19
33.0	1054	0.011	0.20	4.519	1051	70.8	230	1786	2837	1.59
42.0	1341	0.016	0.30	4.524	1337	72.5	475	1541	2878	1.87
45.0	1437	0.022	0.39	4.528	1431	73.8	662	1354	2785	2.06
48.0	1532	0.027	0.49	4.533	1525	74.9	821	1195	2720	2.28
48.0	1532	0.033	0.59	4.537	1523	75.7	936	1080	2603	2.41
48.0	1532	0.038	0.69	4.542	1522	76.3	1022	994	2515	2.53
48.0	1532	0.043	0.79	4.547	1520	76.8	1094	922	2442	2.65
48.0	1532	0.049	0.89	4.551	1519	77.3	1166	850	2368	2.79
45.0	1437	0.054	0.99	4.556	1422	77.6	1210	806	2229	2.76
45.0	1437	0.060	1.09	4.560	1421	77.9	1253	763	2184	2.86
45.0	1437	0.065	1.19	4.565	1420	78.2	1296	720	2140	2.97
45.0	1437	0.071	1.29	4.569	1418	78.4	1325	691	2109	3.05
45.0	1437	0.076	1.39	4.574	1417	78.6	1354	662	2079	3.14
45.0	1437	0.081	1.49	4.579	1415	78.8	1382	634	2049	3.23
45.0	1437	0.087	1.58	4.583	1414	78.9	1397	619	2033	3.28
45.0	1437	0.092	1.68	4.588	1412	79.1	1426	590	2003	3.39
45.0	1437	0.098	1.78	4.592	1411	79.1	1426	590	2001	3.39
45.0	1437	0.103	1.88	4.597	1410	79.2	1440	576	1986	3.45
45.0	1437	0.109	1.98	4.602	1408	79.3	1454	562	1970	3.51

Data entry by: DAW Date: 05/20/2014  
 Data checked by: DPM Date: 5/22/14  
 FileName: MWT0B109.WK4



TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-BI-09  
DEPTH 27.0-27.5' (25-27.5')  
SAMPLE NO. --  
SOIL DESCR. Sand Tailings  
LOCATION Tailings Impoundment  
TEST TYPE TX/CUpp, Stage 2

SAMPLED 11/21/13 MWH  
TEST STARTED 03/27/14 DPM  
TEST FINISHED 04/17/14 DPM  
CELL NUMBER 25S  
SATURATED TEST Yes  
CONF. PRES. PSF 3168

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	669.8	794.1
Wt. Wet Soil & Pan (g)	685.6	809.8
Wt. Dry Soil & Pan (g)	659.6	659.6
Wt. Lost Moisture (g)	26.0	150.3
Wt. of Pan Only (g)	15.8	15.8
Wt. of Dry Soil (g)	643.8	643.8
Moisture Content %	4.0	23.3
Wet Density PCF	103.2	122.7
Dry Density PCF	99.2	99.5
Init. Diameter (in)	2.421	
Init. Area (sq in)	4.602	
Init. Height (in)	5.372	
Vol. Bef. Consol. (cu ft)	0.01430	
Vol. After Consol. (cu ft)	0.01427	

Notes & Comments:

Data entry by: DAW  
Data checked by: DPM  
FileName: MWT0B109.WK4

Date: 05/20/2014  
Date: 5/22/14



TRIAxIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-BI-09  
DEPTH 27.0-27.5' (25-27.5')  
SAMPLE NO. --  
SOIL DESCR. Sand Tailings  
LOCATION Tailings Impoundment  
TEST TYPE TX/Cupp, Stage 2

SAMPLED 11/21/13 MWH  
TEST STARTED 03/27/14 DPM  
TEST FINISHED 04/17/14 DPM  
CELL NUMBER 25S  
SATURATED TEST Yes  
CONF. PRES. PSF 3168

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT TIME (Min)	Burette Reading (CC)	Vol. Defl. (CC)
0.00	0.0	9.40	0.00
0.25	0.5	10.80	-1.40
0.5	0.7	10.85	-1.45
1	1.0	10.90	-1.50
2	1.4	10.95	-1.55
4	2.0	10.95	-1.55
9	3.0	11.00	-1.60
16	4.0	11.05	-1.65
30	5.5	11.10	-1.70
60	7.7	11.15	-1.75
120	11.0	11.25	-1.85
240	15.5	11.25	-1.85
360	19.0	11.25	-1.85

Initial Height (in) 5.372  
Height Change (in) 0.002  
Ht. After Cons. (in) 5.370  
Initial Area (sq in) 4.602  
Area After Cons. (sq in) 4.593

Init. Vol. (CC) 405.13  
Vol. Change (CC) 2.00  
Cell Exp. (CC) 1.05  
Net Change (CC) 0.95  
Cons. Vol. (CC) 404.18

Data entry by: DAW  
Data checked by: *DPM*  
FileName: MWT0B109.WK4

Date: 05/20/2014  
Date: *5/22/14*





# TRIAxIAL COMPRESSION TEST DATA

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-BI-09	SAMPLED	11/21/13 MWH
DEPTH	27.0-27.5' (25-27.5')	TEST STARTED	03/27/14 DPM
SAMPLE NO.	--	TEST FINISHED	04/17/14 DPM
SOIL DESCR.	Sand Tailings	CELL NUMBER	25S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 2	CONF. PRES. PSF	3168
Init. Ht. (in)	5.372	Init. Area (sq in)	4.602
Consol. Ht. (in)	5.370	Consol. Area (sq in)	4.593
Back Pres. PSI	69.0	Strain Rate (in/min)	0.004

Axial Load Lbs.	Axial Load PSF	Delta Ht. In.	Axial % Strain	Area Final Sq In.	Dev. Stress PSF	Pore Pres. PSI	Delta Pres. PSF	Sigma 3' PSF	Sigma 1' PSF	Prin. Stress Ratio
0.0	0	0.000	0.00	4.593	0	69.0	0	3168	3168	1.00
66.0	2069	0.005	0.10	4.597	2067	72.6	518	2650	4717	1.78
87.0	2728	0.011	0.20	4.602	2722	74.8	835	2333	5055	2.17
96.0	3010	0.016	0.30	4.606	3001	76.1	1022	2146	5147	2.40
99.0	3104	0.021	0.39	4.611	3092	77.1	1166	2002	5093	2.54
102.0	3198	0.027	0.49	4.615	3182	77.8	1267	1901	5083	2.67
105.0	3292	0.032	0.59	4.620	3273	78.4	1354	1814	5087	2.80
105.0	3292	0.037	0.69	4.625	3270	78.8	1411	1757	5026	2.86
108.0	3386	0.042	0.79	4.629	3360	79.2	1469	1699	5059	2.98
108.0	3386	0.048	0.89	4.634	3356	79.5	1512	1656	5012	3.03
108.0	3386	0.053	0.99	4.638	3353	79.7	1541	1627	4980	3.06
111.0	3480	0.058	1.09	4.643	3443	80.0	1584	1584	5027	3.17
111.0	3480	0.064	1.18	4.648	3439	80.1	1598	1570	5009	3.19
111.0	3480	0.069	1.28	4.652	3436	80.3	1627	1541	4977	3.23
114.0	3574	0.074	1.38	4.657	3525	80.4	1642	1526	5051	3.31
114.0	3574	0.080	1.48	4.662	3522	80.5	1656	1512	5034	3.33
114.0	3574	0.085	1.58	4.666	3518	80.6	1670	1498	5016	3.35
117.0	3669	0.090	1.68	4.671	3607	80.6	1670	1498	5105	3.41
117.0	3669	0.095	1.78	4.676	3603	80.7	1685	1483	5087	3.43
120.0	3763	0.101	1.88	4.680	3692	80.7	1685	1483	5175	3.49
120.0	3763	0.106	1.97	4.685	3688	80.7	1685	1483	5172	3.49
123.0	3857	0.111	2.07	4.690	3777	80.7	1685	1483	5260	3.55
123.0	3857	0.112	2.09	4.691	3776	80.7	1685	1483	5259	3.55

Data entry by: DAW Date: 05/20/2014  
 Data checked by: *DPM* Date: *5/22/14*  
 FileName: MWT0B109.WK4



TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT MWH

JOB NO. 2512-77

BORING NO.	TI-BI-09	SAMPLED	11/21/13 MWH
DEPTH	27.0-27.5' (25-27.5')	TEST STARTED	03/27/14 DPM
SAMPLE NO.	--	TEST FINISHED	04/17/14 DPM
SOIL DESCR.	Sand Tailings	CELL NUMBER	25S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUp, Stage 3	CONF. PRES. PSF	4320

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	669.8	794.1
Wt. Wet Soil & Pan (g)	685.6	809.8
Wt. Dry Soil & Pan (g)	659.6	659.6
Wt. Lost Moisture (g)	26.0	150.3
Wt. of Pan Only (g)	15.8	15.8
Wt. of Dry Soil (g)	643.8	643.8
Moisture Content %	4.0	23.3
Wet Density PCF	103.5	123.0
Dry Density PCF	99.5	99.7

Init. Diameter (in)	2.444
Init. Area (sq in)	4.691
Init. Height (in)	5.257
Vol. Bef. Consol. (cu ft)	0.01427
Vol. After Consol. (cu ft)	0.01423

Notes & Comments:

Data entry by: DAW  
Data checked by: *DPM*  
FileName: MWT0B109.WK4

Date: 05/20/2014  
Date: *5/22/14*



TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-BI-09  
DEPTH 27.0-27.5' (25-27.5')  
SAMPLE NO. --  
SOIL DESCR. Sand Tailings  
LOCATION Tailings Impoundment  
TEST TYPE TX/CUpp, Stage 3

SAMPLED 11/21/13 MWH  
TEST STARTED 03/27/14 DPM  
TEST FINISHED 04/17/14 DPM  
CELL NUMBER 25S  
SATURATED TEST Yes  
CONF. PRES. PSF 4320

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT TIME (Min)	Burette Reading (CC)	Vol. Defl. (CC)
0.00	0.0	13.10	0.00
0.25	0.5	14.30	-1.20
0.5	0.7	14.35	-1.25
1	1.0	14.35	-1.25
2	1.4	14.40	-1.30
4	2.0	14.45	-1.35
9	3.0	14.50	-1.40
16	4.0	14.50	-1.40
30	5.5	14.55	-1.45
60	7.7	14.55	-1.45
120	11.0	14.55	-1.45
240	15.5	14.55	-1.45
360	19.0	14.55	-1.45

Initial Height (in) 5.257  
Height Change (in) -0.006  
Ht. After Cons. (in) 5.263  
Initial Area (sq in) 4.691  
Area After Cons. (sq in) 4.672

Init. Vol. (CC) 404.18  
Vol. Change (CC) 2.20  
Cell Exp. (CC) 1.05  
Net Change (CC) 1.15  
Cons. Vol. (CC) 403.03

Data entry by: DAW  
Data checked by: DPM  
FileName: MWT0B109.WK4

Date: 05/20/2014  
Date: 5/20/14





# TRIAxIAL COMPRESSION TEST DATA

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-BI-09	SAMPLED	11/21/13 MWH
DEPTH	27.0-27.5' (25-27.5')	TEST STARTED	03/27/14 DPM
SAMPLE NO.	--	TEST FINISHED	04/17/14 DPM
SOIL DESCR.	Sand Tailings	CELL NUMBER	25S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUp, Stage 3	CONF. PRES. PSF	4320
Init. Ht. (in)	5.257	Init. Area (sq in)	4.691
Consol. Ht. (in)	5.263	Consol. Area (sq in)	4.672
Back Pres. PSI	69.4	Strain Rate (in/min)	0.010

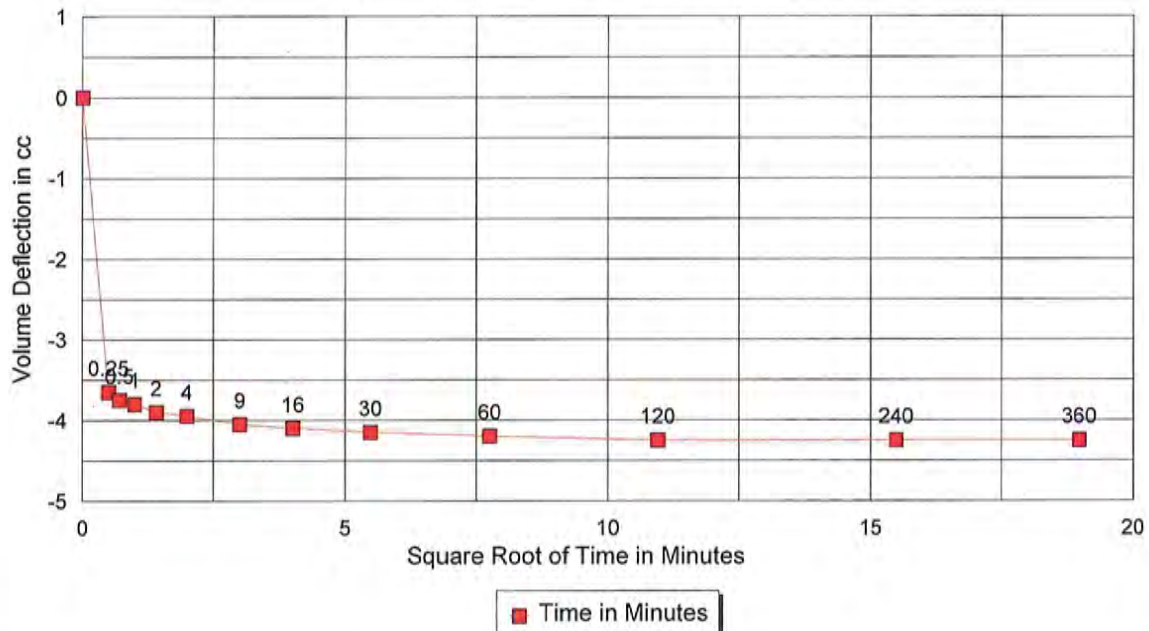
Axial Load Lbs.	Axial Load PSF	Delta Ht. In.	Axial % Strain	Area Final Sq In.	Dev. Stress PSF	Pore Pres. PSI	Delta Pres. PSF	Sigma 3' PSF	Sigma 1' PSF	Prin. Stress Ratio
0.0	0	0.000	0.00	4.672	0	69.4	0	4320	4320	1.00
117.0	3606	0.005	0.10	4.677	3603	73.8	634	3686	7289	1.98
153.0	4716	0.011	0.20	4.681	4706	75.1	821	3499	8206	2.34
174.0	5363	0.016	0.30	4.686	5347	75.9	936	3384	8731	2.58
189.0	5825	0.021	0.40	4.691	5802	76.7	1051	3269	9071	2.77
198.0	6103	0.026	0.50	4.695	6072	77.2	1123	3197	9269	2.90
204.0	6288	0.032	0.60	4.700	6250	77.5	1166	3154	9404	2.98
213.0	6565	0.037	0.70	4.705	6519	77.8	1210	3110	9630	3.10
216.0	6658	0.042	0.80	4.710	6604	78.0	1238	3082	9686	3.14
222.0	6842	0.047	0.90	4.714	6781	78.2	1267	3053	9834	3.22
225.0	6935	0.053	1.00	4.719	6866	78.3	1282	3038	9904	3.26
228.0	7027	0.058	1.10	4.724	6950	78.3	1282	3038	9988	3.29
231.0	7120	0.063	1.20	4.729	7034	78.4	1296	3024	10058	3.33
240.0	7397	0.074	1.40	4.738	7294	78.2	1267	3053	10346	3.39
246.0	7582	0.084	1.60	4.748	7461	78.2	1267	3053	10514	3.44
255.0	7860	0.095	1.80	4.758	7718	78.0	1238	3082	10800	3.50
261.0	8045	0.105	2.00	4.767	7884	77.7	1195	3125	11009	3.52
267.0	8229	0.116	2.20	4.777	8048	77.6	1181	3139	11188	3.56
279.0	8599	0.126	2.40	4.787	8393	77.1	1109	3211	11604	3.61
285.0	8784	0.132	2.50	4.792	8565	76.9	1080	3240	11805	3.64
309.0	9524	0.158	3.00	4.817	9238	75.8	922	3398	12637	3.72
336.0	10356	0.184	3.50	4.841	9994	74.4	720	3600	13594	3.78
369.0	11373	0.211	4.00	4.867	10918	72.7	475	3845	14763	3.84
402.0	12390	0.237	4.50	4.892	11833	71.0	230	4090	15923	3.89
435.0	13408	0.263	5.00	4.918	12737	69.0	-58	4378	17115	3.91
507.0	15627	0.316	6.00	4.970	14689	64.8	-662	4982	19672	3.95
585.0	18031	0.368	7.00	5.024	16769	60.0	-1354	5674	22443	3.96
663.0	20435	0.421	8.00	5.078	18800	55.1	-2059	6379	25180	3.95
735.0	22654	0.474	9.00	5.134	20616	50.2	-2765	7085	27700	3.91
801.0	24688	0.526	10.00	5.191	22220	45.3	-3470	7790	30010	3.85
894.0	27555	0.631	12.00	5.309	24249	36.8	-4694	9014	33264	3.69
894.0	27555	0.789	15.00	5.496	23422	30.9	-5544	9864	33286	3.37

Data entry by: DAW Date: 05/20/2014  
 Data checked by: DPM Date: 5/22/14  
 FileName: MWT0B109.WK4



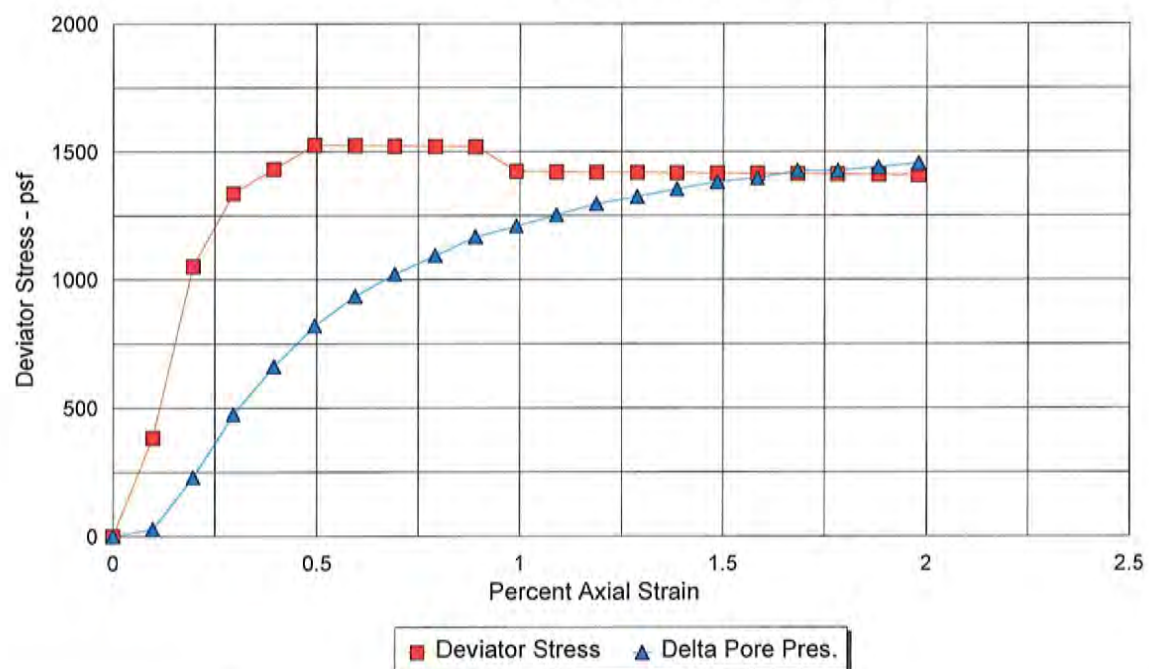
## CONSOLIDATION DATA

TI-BI-09, 27.0-27.5' (25-27.5'), --, Stage 1



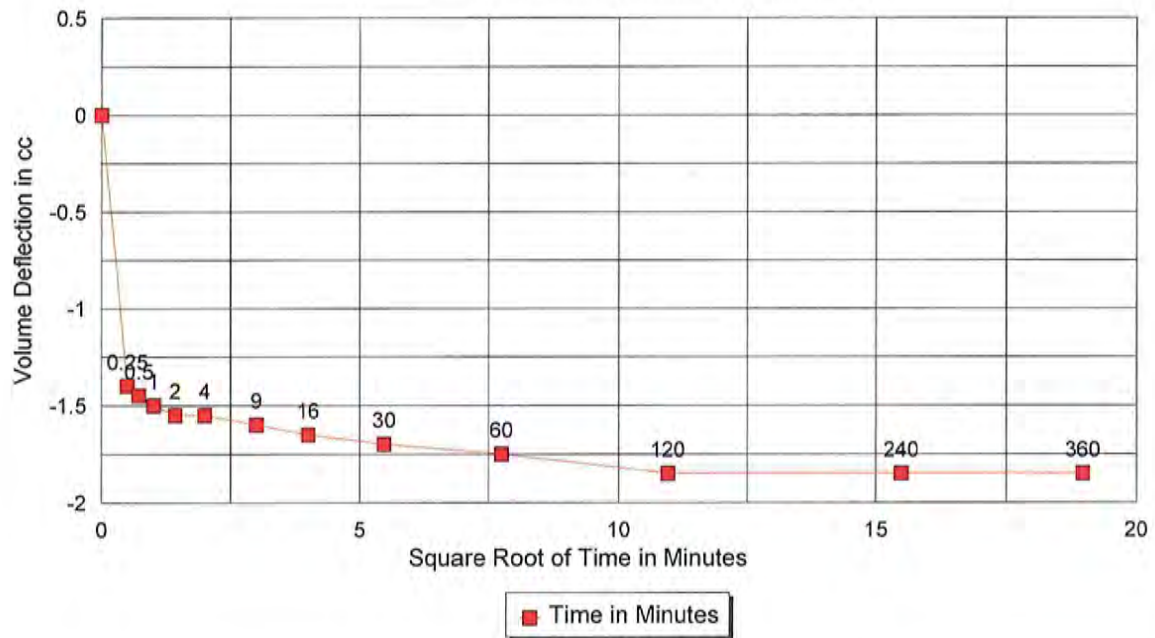
## TRIAXIAL TEST - TX/CUpp

TI-BI-09, 27.0-27.5' (25-27.5'), --, Stage 1



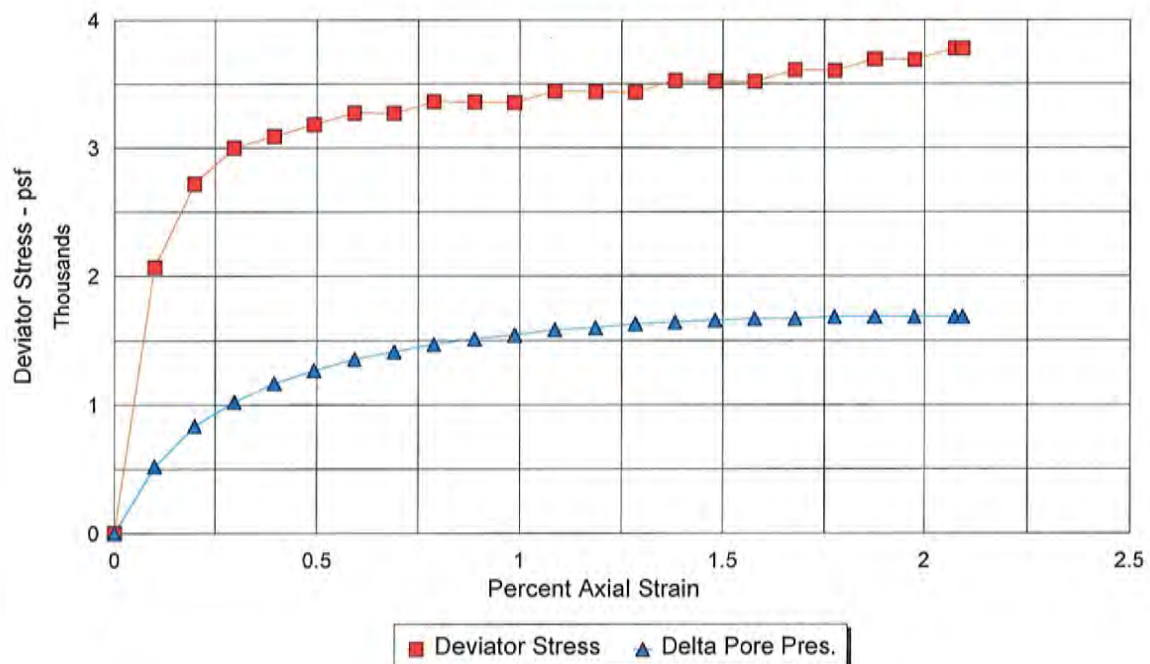
## CONSOLIDATION DATA

TI-BI-09, 27.0-27.5' (25-27.5'), --, Stage 2



## TRIAXIAL TEST - TX/CUpp

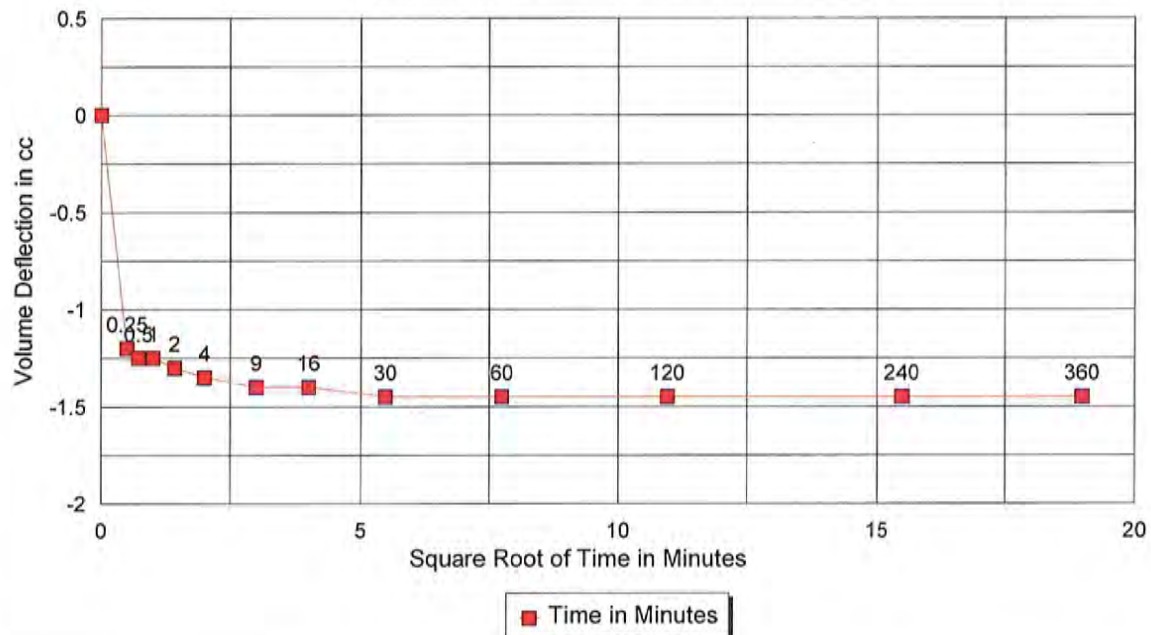
TI-BI-09, 27.0-27.5' (25-27.5'), --, Stage 2





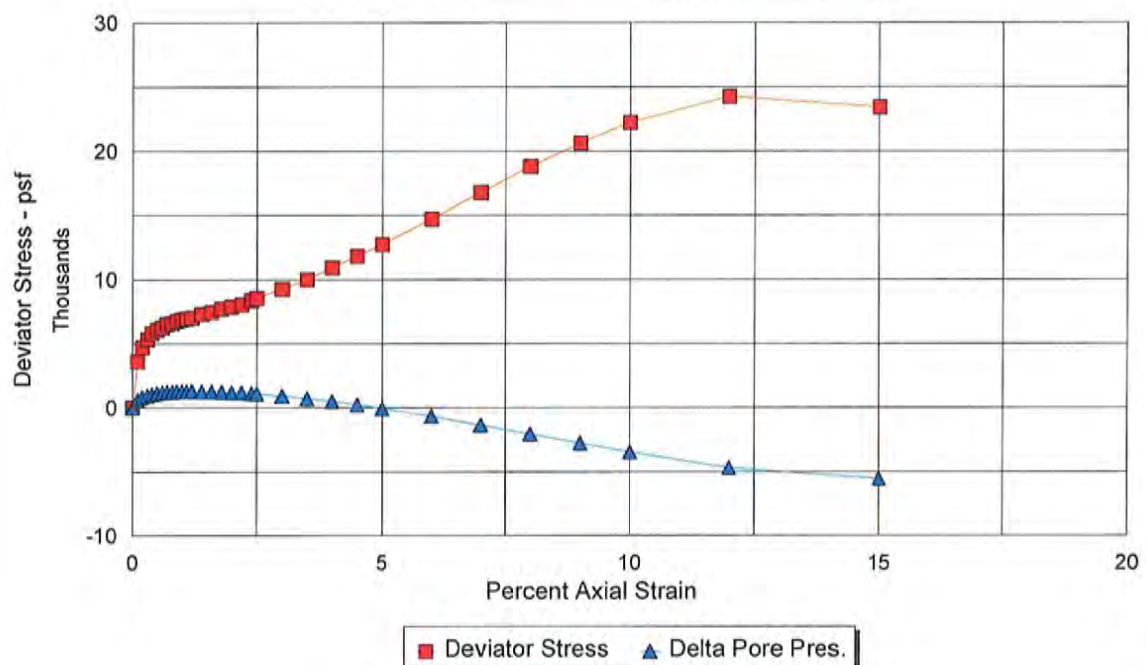
## CONSOLIDATION DATA

TI-BI-09, 27.0-27.5' (25-27.5'), --, Stage 3



## TRIAXIAL TEST - TX/CUpp

TI-BI-09, 27.0-27.5' (25-27.5'), --, Stage 3



EFFECTIVE STRESS PATH ANALYSIS TEST DATA  
ASTM D4767

CLIENT MWH  
BORING NO. TI-B1-11A  
DEPTH 31.0-31.5'  
SAMPLE NO. A,B&C  
PROJECT NO. --  
LOCATION Tailings Impoundment

JOB NO. 2512-77  
SAMPLED 11/21/13 MWH  
SATURATED TEST  
TEST TYPE TX/CUPP

				Peak Points		
				p'	q	
				PSF	PSF	
CONF. PRES. PSF	SAMPLE A	2736	PSF	SAMPLE A	2479	1212
	SAMPLE B	3888	PSF	SAMPLE B	3499	1872
	SAMPLE C	5040	PSF	SAMPLE C	4537	2607

SAMPLE A				SAMPLE B				SAMPLE C			
$\sigma$ 3'	$\sigma$ 1'	p'	q	$\sigma$ 3'	$\sigma$ 1'	p'	q	$\sigma$ 3'	$\sigma$ 1'	p'	q
PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF
2736	2736	2736	0	3888	3888	3888	0	5040	5040	5040	0
2462	3235	2849	386	3456	4990	4223	767	4406	6363	5385	978
2290	3370	2830	540	3154	5146	4150	996	3960	6666	5313	1353
2102	3336	2719	617	2880	5177	4028	1148	3614	6769	5191	1577
1958	3345	2652	693	2678	5126	3902	1224	3355	6806	5081	1726
1858	3397	2627	770	2520	5118	3819	1299	3154	7051	5102	1949
1771	3463	2617	846	2376	5124	3750	1374	2995	7038	5017	2021
1699	3542	2621	922	2275	5173	3724	1449	2866	7054	4960	2094
1642	3483	2562	921	2189	5236	3712	1523	2750	7084	4917	2167
1584	3424	2504	920	2117	5161	3639	1522	2664	7142	4903	2239
1555	3546	2551	995	2045	5237	3641	1596	2520	7138	4829	2309
1512	3501	2506	994	2002	5191	3596	1595	2405	7162	4783	2379
1469	3609	2539	1070	1944	5282	3613	1669	2318	7066	4692	2374
1440	3578	2509	1069	1901	5235	3568	1667	2246	7132	4689	2443
1411	3547	2479	1068	1872	5203	3538	1666	2203	7227	4715	2512
1382	3516	2449	1067	1829	5308	3568	1740	2146	7159	4652	2507
1354	3637	2495	1142	1800	5275	3538	1738	2102	7105	4604	2501
1339	3620	2480	1141	1771	5243	3507	1736	2074	7066	4570	2496
1325	3604	2464	1139	1742	5362	3552	1810	2030	7153	4592	2561
1296	3573	2434	1138	1714	5329	3521	1808	1930	7144	4537	2607
1282	3556	2419	1137	1699	5311	3505	1806	1886	7051	4469	2582
1267	3691	2479	1212	1685	5293	3489	1804	1872	6987	4430	2558
1238	3659	2449	1210	1656	5261	3458	1802	1858	7064	4461	2603
1238	3657	2448	1209	1656	5257	3456	1800	1872	7027	4450	2578
1238	3657	2448	1209	1642	5239	3440	1799	1886	6991	4439	2552
				1627	5370	3499	1872	1901	6954	4427	2527
				1613	5352	3482	1870	1944	6946	4445	2501
				1598	5334	3466	1868	1987	6939	4463	2476
				1584	5316	3450	1866	2045	6680	4363	2318
				1570	5297	3434	1864	2030	6487	4258	2228
								2016	6166	4091	2075
								1987	6093	4040	2053

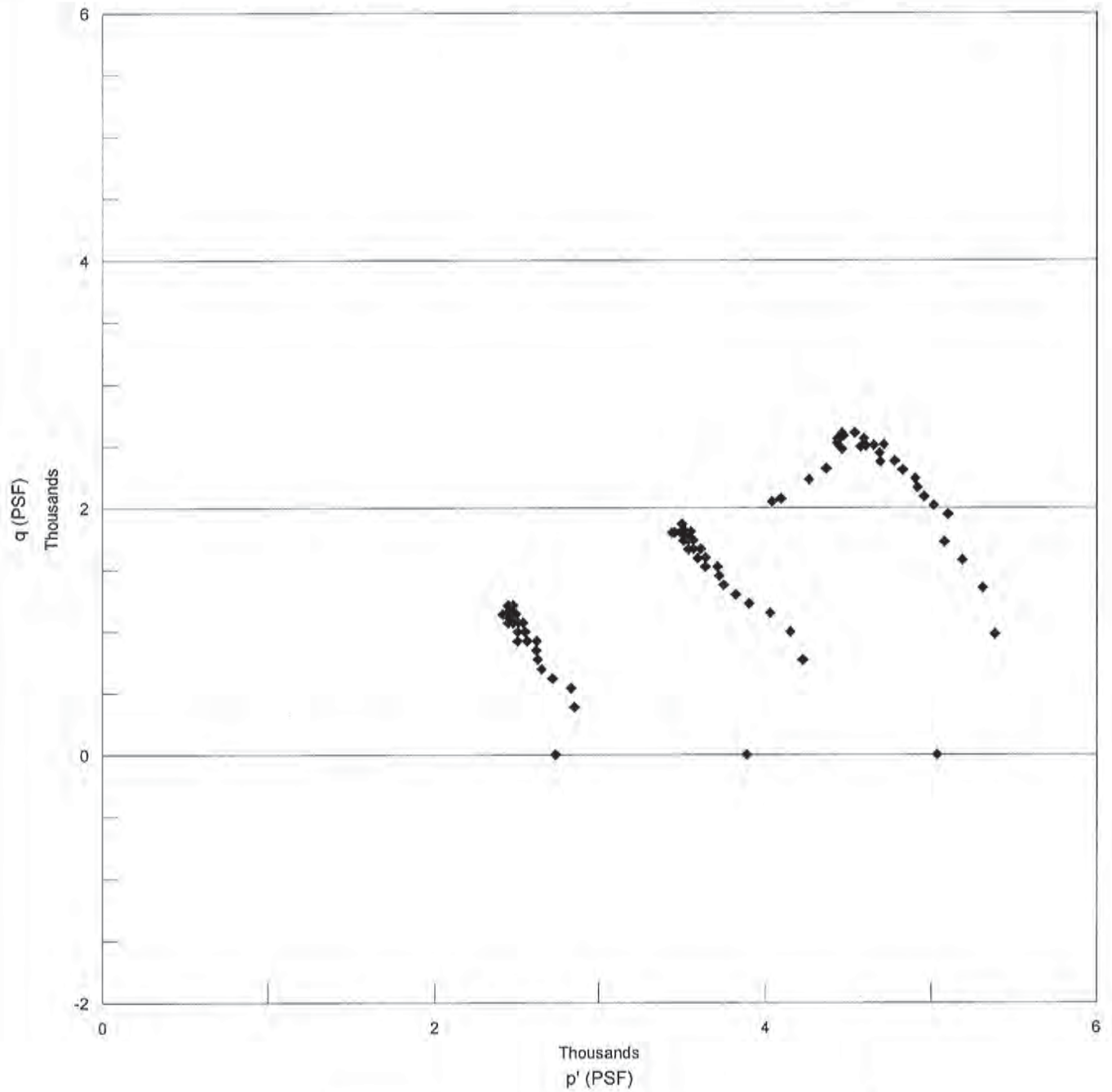
Data entry by: DAW  
Data checked by: *DDM*  
FileName: MWPQ111A.WK4

Date: 05/22/2014  
Date: *5/22/14*



## Effective Stress Path Analysis - $p'$ $q$ Plots

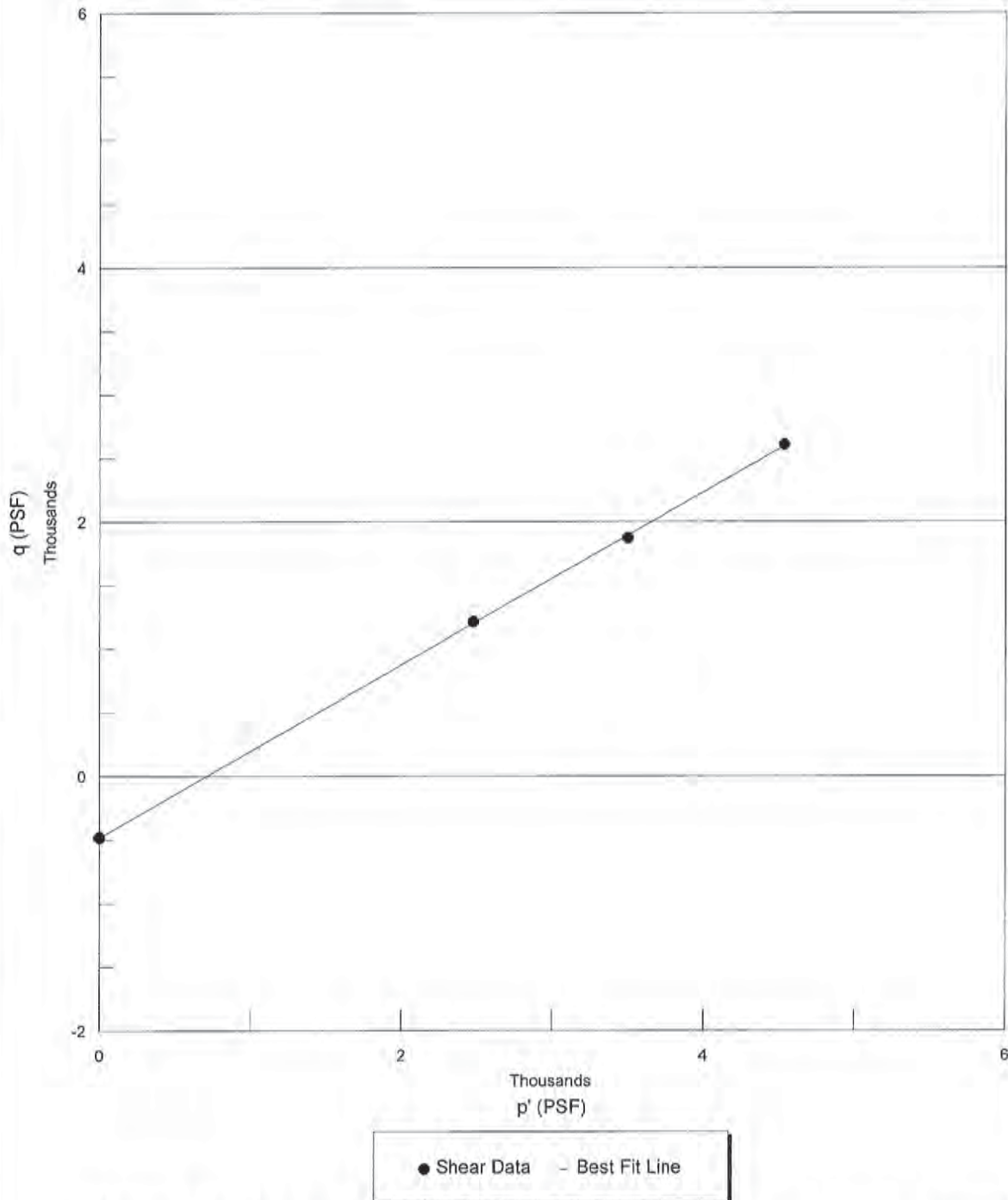
MWH, Tailings Impoundment, --, TI-B1-11A, A, B & C, 31.0-31.5'



◆ Stress Paths of Samples A, B & C

## Effective Stress Path Analysis - $p'$ - $q$ Regression Plot

MWH, Tailings Impoundment, --, TI-B1-11A, A, B&C, 31.0-31.5'



NOTE: Peak points are plotted for visual verification only. Least squared regression analysis, yields a negative alpha ( $\alpha$ ) value; therefore no regression analysis has been provided.



TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT MWH

JOB NO. 2512-77

BORING NO.	TI-B1-11A	SAMPLED	11/21/13 MWH
DEPTH	31.0-31.5'	TEST STARTED	04/21/14 DPM
SAMPLE NO.	--	TEST FINISHED	04/30/14 DPM
SOIL DESCR.	Sand Tailings (V. Fine Clay)	CELL NUMBER	26S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 1	CONF. PRES. PSF	2736

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	370.8	352.4
Wt. Wet Soil & Pan (g)	386.6	368.2
Wt. Dry Soil & Pan (g)	277.8	277.8
Wt. Lost Moisture (g)	108.9	90.5
Wt. of Pan Only (g)	15.9	15.9
Wt. of Dry Soil (g)	261.9	261.9
Moisture Content %	41.6	34.6
Wet Density PCF	108.3	107.6
Dry Density PCF	76.5	80.0
 Init. Diameter (in)	 1.902	
Init. Area (sq in)	2.841	
Init. Height (in)	4.591	
Vol. Bef. Consol. (cu ft)	0.00755	
Vol. After Consol. (cu ft)	0.00722	

Notes & Comments: Dried at 60 degrees C.

Data entry by: DAW  
Data checked by: DPM  
FileName: MWT0111A.WK4

Date: 05/22/2014  
Date: 5/22/14



TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B1-11A	SAMPLED	11/21/13 MWH
DEPTH	31.0-31.5'	TEST STARTED	04/21/14 DPM
SAMPLE NO.	--	TEST FINISHED	04/30/14 DPM
SOIL DESCR.	Sand Tailings (V. Fine Clay)	CELL NUMBER	26S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 1	CONF. PRES. PSF	2736

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	2.0	9.0				
50.0		10.3	10.4	39.0	48.7	9.7	0.97

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT TIME (Min)	Burette Reading (CC)	Vol. Defl. (CC)
0.00	0.0	10.40	0.00
0.25	0.5	13.80	-3.40
0.5	0.7	15.40	-5.00
1	1.0	16.40	-6.00
2	1.4	18.10	-7.70
4	2.0	20.20	-9.80
9	3.0	22.30	-11.90
16	4.0	24.40	-14.00
30	5.5	25.50	-15.10
60	7.7	26.10	-15.70
120	11.0	26.50	-16.10
240	15.5	26.80	-16.40
360	19.0	26.80	-16.40

Initial Height (in)	4.591	Init. Vol. (CC)	213.79
Height Change (in)	0.125	Vol. Change (CC)	25.90
Ht. After Cons. (in)	4.466	Cell Exp. (CC)	16.53
Initial Area (sq in)	2.841	Net Change (CC)	9.37
Area After Cons. (sq in)	2.793	Cons. Vol. (CC)	204.43

Data entry by: DAW  
Data checked by: *[Signature]*  
FileName: MWT0111A.WK4

Date: 05/22/2014  
Date: *5/22/14*



# TRIAxIAL COMPRESSION TEST DATA

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B1-11A	SAMPLED	11/21/13 MWH
DEPTH	31.0-31.5'	TEST STARTED	04/21/14 DPM
SAMPLE NO.	--	TEST FINISHED	04/30/14 DPM
SOIL DESCR.	Sand Tailings (V. Fine Clay)	CELL NUMBER	26S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 1	CONF. PRES. PSF	2736
Init. Ht. (in)	4.591	Init. Area (sq in)	2.841
Consol. Ht. (in)	4.466	Consol. Area (sq in)	2.793
Back Pres. PSI	38.9	Strain Rate (in/min)	0.001

Axial Load Lbs.	Axial Load PSF	Delta Ht. In.	Axial % Strain	Area Final Sq In.	Dev. Stress PSF	Pore Pres. PSI	Delta Pres. PSF	Sigma 3' PSF	Sigma 1' PSF	Prin. Stress Ratio
0.0	0	0.000	0.00	2.793	0	38.9	0	2736	2736	1.00
15.0	773	0.004	0.10	2.796	773	40.8	274	2462	3235	1.31
21.0	1083	0.009	0.20	2.798	1081	42.0	446	2290	3370	1.47
24.0	1237	0.013	0.30	2.801	1234	43.3	634	2102	3336	1.59
27.0	1392	0.018	0.39	2.804	1387	44.3	778	1958	3345	1.71
30.0	1547	0.022	0.49	2.807	1539	45.0	878	1858	3397	1.83
33.0	1701	0.027	0.60	2.810	1691	45.6	965	1771	3463	1.95
36.0	1856	0.031	0.69	2.812	1843	46.1	1037	1699	3542	2.08
36.0	1856	0.035	0.79	2.815	1841	46.5	1094	1642	3483	2.12
36.0	1856	0.040	0.89	2.818	1840	46.9	1152	1584	3424	2.16
39.0	2011	0.044	0.99	2.821	1991	47.1	1181	1555	3546	2.28
39.0	2011	0.049	1.09	2.824	1989	47.4	1224	1512	3501	2.32
42.0	2166	0.053	1.19	2.826	2140	47.7	1267	1469	3609	2.46
42.0	2166	0.058	1.29	2.829	2138	47.9	1296	1440	3578	2.48
42.0	2166	0.062	1.39	2.832	2135	48.1	1325	1411	3547	2.51
42.0	2166	0.066	1.49	2.835	2133	48.3	1354	1382	3516	2.54
45.0	2320	0.071	1.59	2.838	2283	48.5	1382	1354	3637	2.69
45.0	2320	0.075	1.68	2.841	2281	48.6	1397	1339	3620	2.70
45.0	2320	0.080	1.78	2.844	2279	48.7	1411	1325	3604	2.72
45.0	2320	0.084	1.88	2.846	2277	48.9	1440	1296	3573	2.76
45.0	2320	0.088	1.98	2.849	2274	49.0	1454	1282	3556	2.77
48.0	2475	0.093	2.08	2.852	2423	49.1	1469	1267	3691	2.91
48.0	2475	0.097	2.18	2.855	2421	49.3	1498	1238	3659	2.95
48.0	2475	0.102	2.28	2.858	2419	49.3	1498	1238	3657	2.95
48.0	2475	0.102	2.28	2.858	2418	49.3	1498	1238	3657	2.95

Data entry by: DAW Date: 05/22/2014  
 Data checked by: *OPM* Date: *5/22/14*  
 FileName: MWT0111A.WK4



TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT MWH

JOB NO. 2512-77

BORING NO.	TI-B1-11A	SAMPLED	11/21/13 MWH
DEPTH	31.0-31.5'	TEST STARTED	04/21/14 DPM
SAMPLE NO.	--	TEST FINISHED	04/30/14 DPM
SOIL DESCR.	Sand Tailings (V. Fine Clay)	CELL NUMBER	26S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 2	CONF. PRES. PSF	3888

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	370.8	352.4
Wt. Wet Soil & Pan (g)	386.6	368.2
Wt. Dry Soil & Pan (g)	277.8	277.8
Wt. Lost Moisture (g)	108.9	90.5
Wt. of Pan Only (g)	15.9	15.9
Wt. of Dry Soil (g)	261.9	261.9
Moisture Content %	41.6	34.6
Wet Density PCF	113.2	109.5
Dry Density PCF	80.0	81.3
Init. Diameter (in)	1.908	
Init. Area (sq in)	2.858	
Init. Height (in)	4.364	
Vol. Bef. Consol. (cu ft)	0.00722	
Vol. After Consol. (cu ft)	0.00710	

Notes & Comments:

Data entry by: DAW  
Data checked by: *DPM*  
FileName: MWTD111A.WK4

Date: 05/22/2014  
Date: *5/22/14*





TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B1-11A  
DEPTH 31.0-31.5'  
SAMPLE NO. --  
SOIL DESCR. Sand Tailings (V. Fine Clay)  
LOCATION Tailings Impoundment  
TEST TYPE TX/CUpp, Stage 2

SAMPLED 11/21/13 MWH  
TEST STARTED 04/21/14 DPM  
TEST FINISHED 04/30/14 DPM  
CELL NUMBER 26S  
SATURATED TEST Yes  
CONF. PRES. PSF 3888

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT TIME (Min)	Burette Reading (CC)	Vol. Defl. (CC)
0.00	0.0	0.50	0.00
0.25	0.5	1.30	-0.80
0.5	0.7	1.40	-0.90
1	1.0	1.60	-1.10
2	1.4	1.85	-1.35
4	2.0	2.15	-1.65
9	3.0	2.50	-2.00
16	4.0	2.75	-2.25
30	5.5	2.90	-2.40
60	7.7	3.15	-2.65
120	11.0	3.25	-2.75
260	16.1	3.40	-2.90
360	19.0	3.40	-2.90

Initial Height (in)	4.364	Init. Vol. (CC)	204.43
Height Change (in)	0.004	Vol. Change (CC)	4.20
Ht. After Cons. (in)	4.360	Cell Exp. (CC)	0.80
Initial Area (sq in)	2.858	Net Change (CC)	3.40
Area After Cons. (sq in)	2.813	Cons. Vol. (CC)	201.03

Data entry by: DAW  
Data checked by: DPM  
FileName: MWT0111A.WK4

Date: 05/22/2014  
Date: 5/22/14



# TRIAxIAL COMPRESSION TEST DATA

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B1-11A	SAMPLED	11/21/13 MWH
DEPTH	31.0-31.5'	TEST STARTED	04/21/14 DPM
SAMPLE NO.	--	TEST FINISHED	04/30/14 DPM
SOIL DESCR.	Sand Tailings (V. Fine Clay)	CELL NUMBER	26S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 2	CONF. PRES. PSF	3888
Init. Ht. (in)	4.364	Init. Area (sq in)	2.858
Consol. Ht. (in)	4.360	Consol. Area (sq in)	2.813
Back Pres. PSI	39.2	Strain Rate (in/min)	0.002

Axial Load Lbs.	Axial Load PSF	Delta Ht. In.	Axial % Strain	Area Final Sq In.	Dev. Stress PSF	Pore Pres. PSI	Delta Pres. PSF	Sigma 3' PSF	Sigma 1' PSF	Prin. Stress Ratio
0.0	0	0.000	0.00	2.813	0	39.2	0	3888	3888	1.00
30.0	1536	0.005	0.11	2.816	1534	42.2	432	3456	4990	1.44
39.0	1996	0.009	0.20	2.819	1992	44.3	734	3154	5146	1.63
45.0	2304	0.013	0.30	2.822	2297	46.2	1008	2880	5177	1.80
48.0	2457	0.017	0.40	2.824	2447	47.6	1210	2678	5126	1.91
51.0	2611	0.022	0.50	2.827	2598	48.7	1368	2520	5118	2.03
54.0	2764	0.026	0.60	2.830	2748	49.7	1512	2376	5124	2.16
57.0	2918	0.031	0.70	2.833	2897	50.4	1613	2275	5173	2.27
60.0	3071	0.035	0.80	2.836	3047	51.0	1699	2189	5236	2.39
60.0	3071	0.039	0.90	2.839	3044	51.5	1771	2117	5161	2.44
63.0	3225	0.044	1.00	2.842	3193	52.0	1843	2045	5237	2.56
63.0	3225	0.048	1.10	2.844	3189	52.3	1886	2002	5191	2.59
66.0	3378	0.052	1.20	2.847	3338	52.7	1944	1944	5282	2.72
66.0	3378	0.057	1.30	2.850	3335	53.0	1987	1901	5235	2.75
66.0	3378	0.061	1.40	2.853	3331	53.2	2016	1872	5203	2.78
69.0	3532	0.065	1.50	2.856	3479	53.5	2059	1829	5308	2.90
69.0	3532	0.070	1.60	2.859	3475	53.7	2088	1800	5275	2.93
69.0	3532	0.074	1.70	2.862	3472	53.9	2117	1771	5243	2.96
72.0	3686	0.079	1.80	2.865	3619	54.1	2146	1742	5362	3.08
72.0	3686	0.083	1.90	2.868	3616	54.3	2174	1714	5329	3.11
72.0	3686	0.087	2.00	2.871	3612	54.4	2189	1699	5311	3.13
72.0	3686	0.092	2.10	2.873	3608	54.5	2203	1685	5293	3.14
72.0	3686	0.096	2.20	2.876	3605	54.7	2232	1656	5261	3.18
72.0	3686	0.100	2.30	2.879	3601	54.7	2232	1656	5257	3.17
72.0	3686	0.105	2.40	2.882	3597	54.8	2246	1642	5239	3.19
75.0	3839	0.109	2.50	2.885	3743	54.9	2261	1627	5370	3.30
75.0	3839	0.113	2.60	2.888	3739	55.0	2275	1613	5352	3.32
75.0	3839	0.118	2.70	2.891	3736	55.1	2290	1598	5334	3.34
75.0	3839	0.122	2.80	2.894	3732	55.2	2304	1584	5316	3.36
75.0	3839	0.126	2.90	2.897	3728	55.3	2318	1570	5297	3.38

Data entry by: DAW Date: 05/22/2014  
 Data checked by: DPM Date: 5/22/14  
 FileName: MWT0111A.WK4



TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B1-11A	SAMPLED	11/21/13 MWH
DEPTH	31.0-31.5'	TEST STARTED	04/21/14 DPM
SAMPLE NO.	--	TEST FINISHED	04/30/14 DPM
SOIL DESCR.	Sand Tailings (V. Fine Clay)	CELL NUMBER	26S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUp, Stage 3	CONF. PRES. PSF	5040

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	370.8	352.4
Wt. Wet Soil & Pan (g)	386.6	368.2
Wt. Dry Soil & Pan (g)	277.8	277.8
Wt. Lost Moisture (g)	108.9	90.5
Wt. of Pan Only (g)	15.9	15.9
Wt. of Dry Soil (g)	261.9	261.9
Moisture Content %	41.6	34.6
Wet Density PCF	115.2	110.6
Dry Density PCF	81.3	82.2
Init. Diameter (in)	1.921	
Init. Area (sq in)	2.897	
Init. Height (in)	4.234	
Vol. Bef. Consol. (cu ft)	0.00710	
Vol. After Consol. (cu ft)	0.00702	

Notes & Comments:

Data entry by: DAW  
Data checked by: *DPM*  
FileName: MWT0111A.WK4

Date: 05/22/2014  
Date: *5/22/14*



TRIAxIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B1-11A  
DEPTH 31.0-31.5'  
SAMPLE NO. --  
SOIL DESCR. Sand Tailings (V. Fine Clay)  
LOCATION Tailings Impoundment  
TEST TYPE TX/CUpp, Stage 3

SAMPLED 11/21/13 MWH  
TEST STARTED 04/21/14 DPM  
TEST FINISHED 04/30/14 DPM  
CELL NUMBER 26S  
SATURATED TEST Yes  
CONF. PRES. PSF 5040

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT TIME (Min)	Burette Reading (CC)	Vol. Defl. (CC)
0.00	0.0	7.70	0.00
0.25	0.5	9.30	-1.60
0.5	0.7	9.40	-1.70
1	1.0	9.50	-1.80
2	1.4	9.60	-1.90
4	2.0	9.70	-2.00
9	3.0	9.90	-2.20
16	4.0	9.95	-2.25
30	5.5	10.00	-2.30
60	7.7	10.10	-2.40
120	11.0	10.15	-2.45
240	15.5	10.20	-2.50
360	19.0	10.30	-2.60

Initial Height (in)	4.234	Init. Vol. (CC)	201.03
Height Change (in)	0.001	Vol. Change (CC)	2.90
Ht. After Cons. (in)	4.233	Cell Exp. (CC)	0.80
Initial Area (sq in)	2.897	Net Change (CC)	2.10
Area After Cons. (sq in)	2.867	Cons. Vol. (CC)	198.92

Data entry by: DAW  
Data checked by: DPM  
FileName: MWT0111A.WK4

Date: 05/22/2014  
Date: 5/22/14





# TRIAxIAL COMPRESSION TEST DATA

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B1-11A	SAMPLED	11/21/13 MWH
DEPTH	31.0-31.5'	TEST STARTED	04/21/14 DPM
SAMPLE NO.	--	TEST FINISHED	04/30/14 DPM
SOIL DESCR.	Sand Tailings (V. Fine Clay)	CELL NUMBER	26S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 3	CONF. PRES. PSF	5040

Init. Ht. (in)	4.234	Init. Area (sq in)	2.897
Consol. Ht. (in)	4.233	Consol. Area (sq in)	2.867
Back Pres. PSI	38.1	Strain Rate (in/min)	0.002

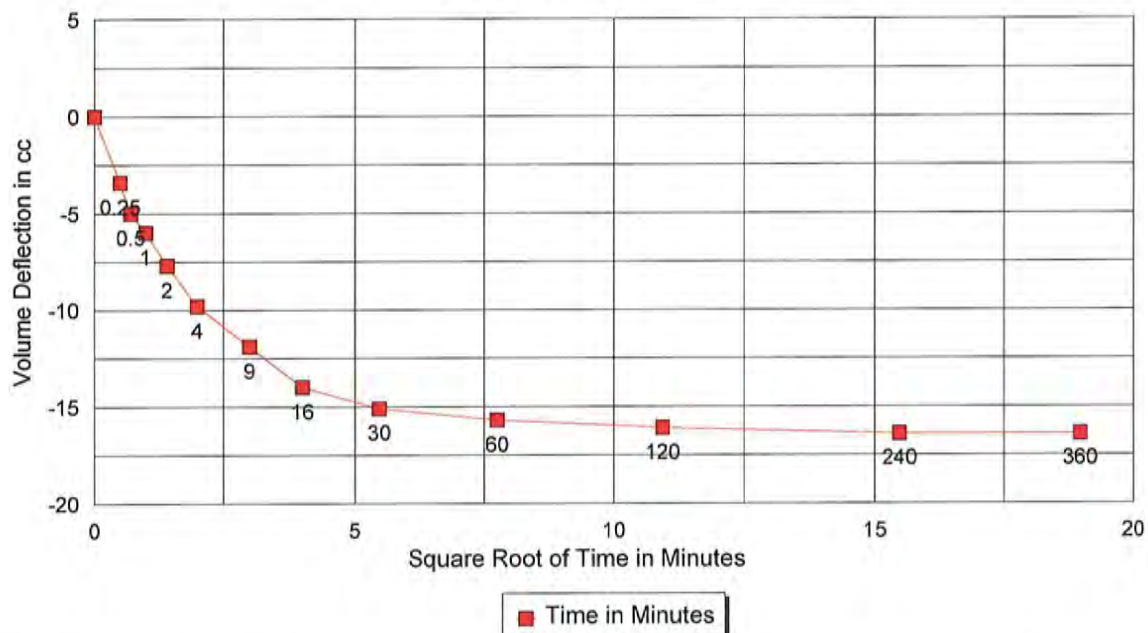
Axial Load Lbs.	Axial Load PSF	Delta Ht. In.	Axial % Strain	Area Final Sq In.	Dev. Stress PSF	Pore Pres. PSI	Delta Pres. PSF	Sigma 3' PSF	Sigma 1' PSF	Prin. Stress Ratio
0.0	0	0.000	0.00	2.867	0	38.1	0	5040	5040	1.00
39.0	1959	0.004	0.10	2.870	1957	42.5	634	4406	6363	1.44
54.0	2712	0.009	0.20	2.873	2706	45.6	1080	3960	6666	1.68
63.0	3164	0.013	0.30	2.876	3154	48.0	1426	3614	6769	1.87
69.0	3465	0.017	0.41	2.879	3451	49.8	1685	3355	6806	2.03
78.0	3917	0.022	0.51	2.882	3897	51.2	1886	3154	7051	2.24
81.0	4068	0.026	0.61	2.885	4043	52.3	2045	2995	7038	2.35
84.0	4218	0.030	0.71	2.888	4188	53.2	2174	2866	7054	2.46
87.0	4369	0.034	0.81	2.891	4334	54.0	2290	2750	7084	2.58
90.0	4520	0.039	0.91	2.894	4478	54.6	2376	2664	7142	2.68
93.0	4670	0.047	1.12	2.900	4618	55.6	2520	2520	7138	2.83
96.0	4821	0.056	1.32	2.906	4757	56.4	2635	2405	7162	2.98
96.0	4821	0.065	1.52	2.912	4748	57.0	2722	2318	7066	3.05
99.0	4972	0.073	1.73	2.918	4886	57.5	2794	2246	7132	3.17
102.0	5122	0.082	1.93	2.924	5023	57.8	2837	2203	7227	3.28
102.0	5122	0.090	2.13	2.930	5013	58.2	2894	2146	7159	3.34
102.0	5122	0.099	2.34	2.936	5003	58.5	2938	2102	7105	3.38
102.0	5122	0.108	2.54	2.942	4992	58.7	2966	2074	7066	3.41
105.0	5273	0.120	2.84	2.951	5123	59.0	3010	2030	7153	3.52
108.0	5424	0.163	3.86	2.983	5214	59.7	3110	1930	7144	3.70
108.0	5424	0.202	4.77	3.011	5165	60.0	3154	1886	7051	3.74
108.0	5424	0.241	5.69	3.040	5115	60.1	3168	1872	6987	3.73
111.0	5574	0.280	6.60	3.070	5206	60.2	3182	1858	7064	3.80
111.0	5574	0.318	7.52	3.101	5155	60.1	3168	1872	7027	3.75
111.0	5574	0.357	8.43	3.132	5104	60.0	3154	1886	6991	3.71
111.0	5574	0.396	9.35	3.163	5053	59.9	3139	1901	6954	3.66
111.0	5574	0.434	10.26	3.195	5002	59.6	3096	1944	6946	3.57
111.0	5574	0.473	11.18	3.228	4951	59.3	3053	1987	6939	3.49
105.0	5273	0.512	12.09	3.262	4635	58.9	2995	2045	6680	3.27
102.0	5122	0.550	13.00	3.296	4456	59.0	3010	2030	6487	3.19
96.0	4821	0.589	13.92	3.331	4150	59.1	3024	2016	6166	3.06
96.0	4821	0.628	14.83	3.367	4106	59.3	3053	1987	6093	3.07

Data entry by: DAW Date: 05/22/2014  
 Data checked by: DPM Date: 5/24/14  
 FileName: MWT0111A.WK4



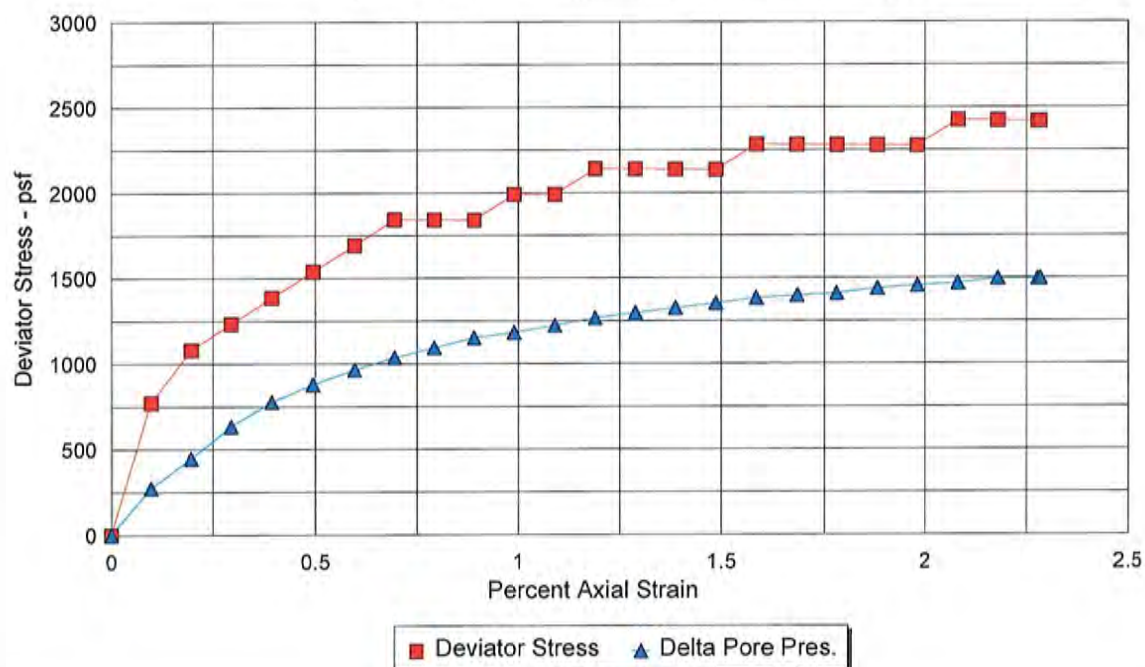
## CONSOLIDATION DATA

TI-B1-11A, 31.0-31.5', --, Stage 1



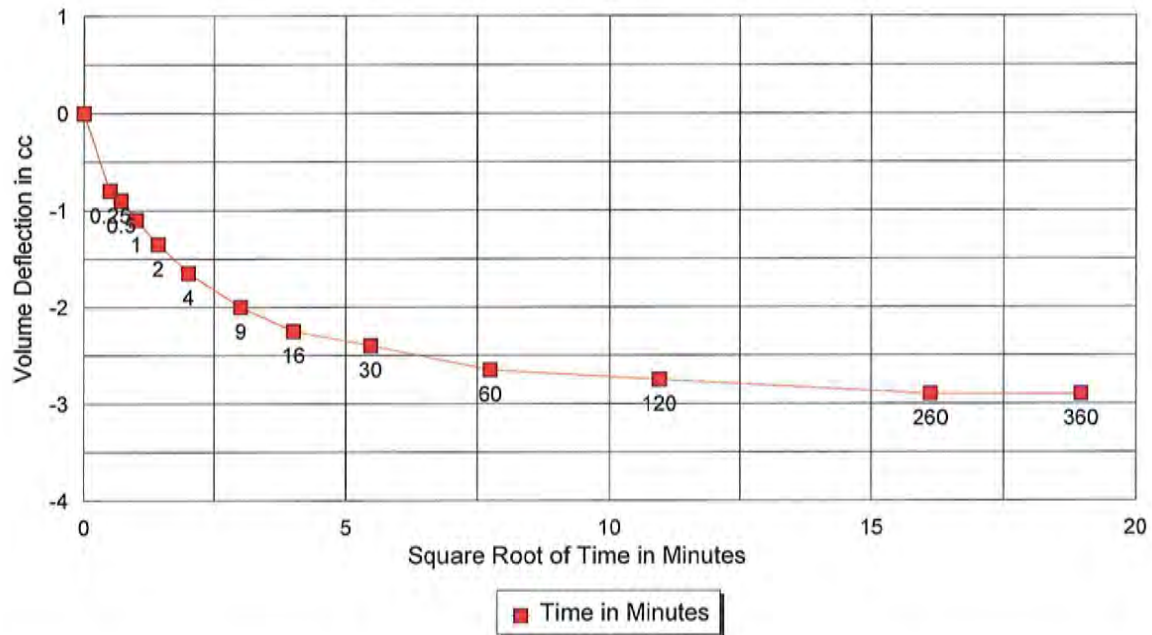
## TRIAXIAL TEST - TX/CUpp

TI-B1-11A, 31.0-31.5', --, Stage 1



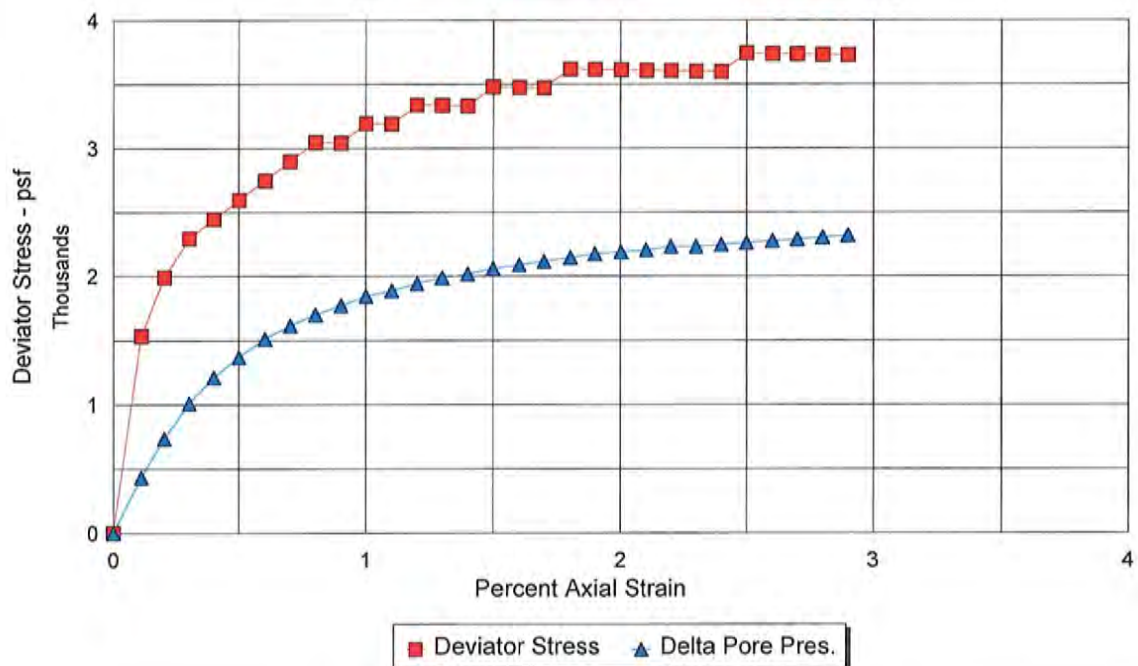
## CONSOLIDATION DATA

TI-B1-11A, 31.0-31.5', --, Stage 2



## TRIAXIAL TEST - TX/CUpp

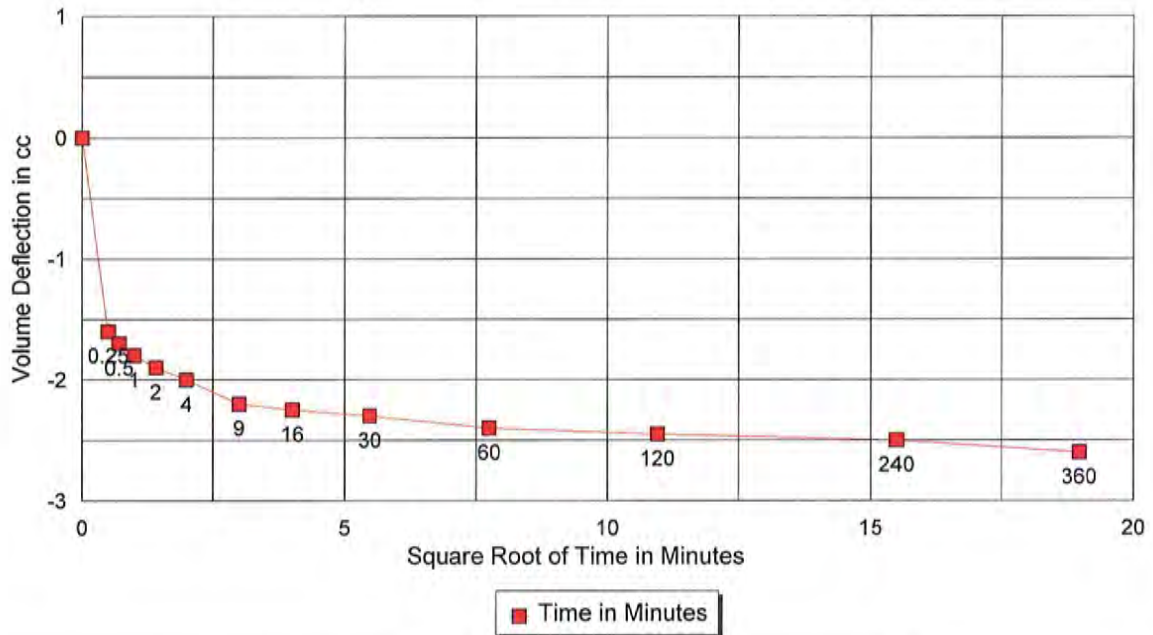
TI-B1-11A, 31.0-31.5', --, Stage 2





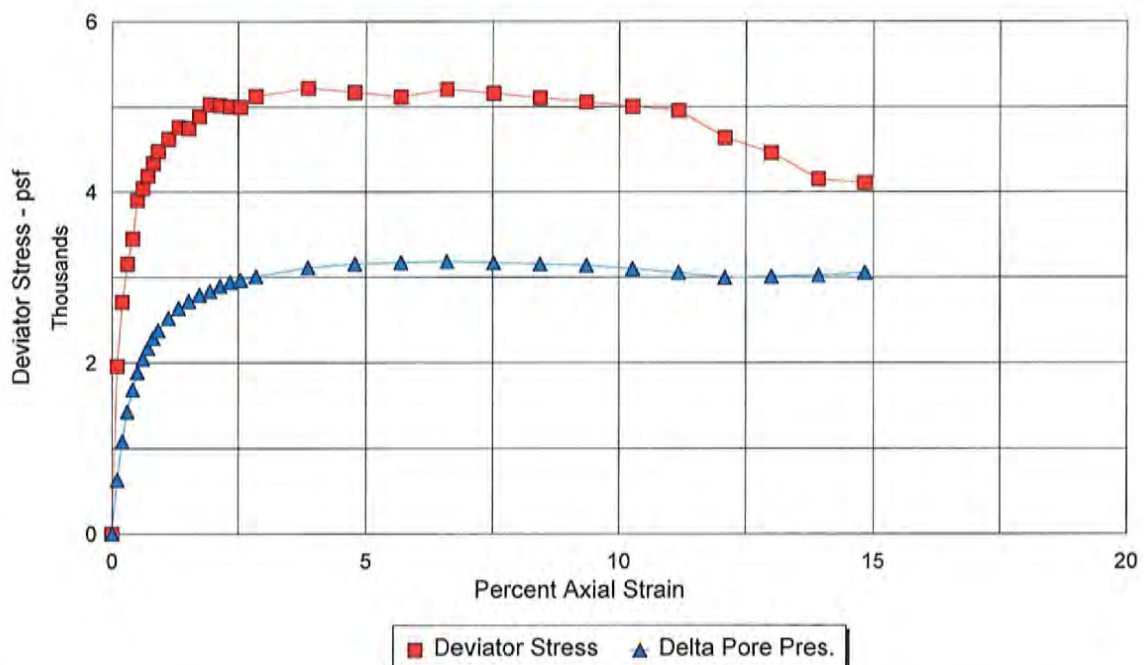
## CONSOLIDATION DATA

TI-B1-11A, 31.0-31.5', --, Stage 3



## TRIAXIAL TEST - TX/CUpp

TI-B1-11A, 31.0-31.5', --, Stage 3





EFFECTIVE STRESS PATH ANALYSIS TEST DATA  
ASTM D4767

CLIENT MWH  
BORING NO. TI-B1-17  
DEPTH 45-46' (45-47.5')  
SAMPLE NO. A,B&C  
PROJECT NO. --  
LOCATION Tailings Impoundment

JOB NO. 2512-77  
SAMPLED 11/21/13 MWH  
SATURATED TEST  
TEST TYPE TX/CUPP

				Peak Points	
				p'	q
				PSF	PSF
CONF. PRES. PSF	SAMPLE A	4608	PSF	SAMPLE A	3317
	SAMPLE B	5706	PSF	SAMPLE B	6663
	SAMPLE C	6912	PSF	SAMPLE C	12621
					7163

SAMPLE A				SAMPLE B				SAMPLE C			
$\sigma$ 3'	$\sigma$ 1'	p'	q	$\sigma$ 3'	$\sigma$ 1'	p'	q	$\sigma$ 3'	$\sigma$ 1'	p'	q
PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF
4608	4608	4608	0	5760	5760	5760	0	6912	6912	6912	0
4277	5232	4754	478	5443	6946	6195	752	5962	10091	8026	2065
3629	5442	4535	906	4810	8470	6640	1830	5501	12010	8755	3254
3125	5317	4221	1096	4378	8972	6675	2297	5213	12997	9105	3892
2750	5226	3988	1238	4075	9226	6651	2576	4997	13597	9297	4300
2506	5074	3790	1284	3830	9351	6591	2760	4838	13978	9408	4570
2318	4979	3649	1330	3658	9453	6555	2897	4723	14219	9471	4748
2160	4913	3537	1377	3499	9475	6487	2988	4622	14382	9502	4880
2045	4890	3467	1423	3384	9447	6415	3031	4550	14573	9562	5011
1958	4895	3427	1469	3298	9541	6419	3122	4493	14596	9545	5052
1886	4820	3353	1467	3226	9555	6391	3165	4378	14893	9635	5258
1829	4854	3342	1513	3168	9584	6376	3208	4291	15124	9708	5417
1771	4794	3282	1511	3110	9613	6362	3251	4291	15439	9865	5574
1728	4842	3285	1557	3067	9656	6362	3294	4306	15676	9991	5685
1699	4810	3255	1555	3038	9713	6376	3337	4334	15925	10130	5795
1670	4872	3271	1601	3010	9770	6390	3380	4378	16186	10282	5904
1642	4934	3288	1646	2981	9827	6404	3423	4493	16906	10699	6207
1627	4916	3272	1645	2966	9805	6386	3419	4637	17468	11053	6416
1613	4992	3303	1690	2952	9876	6414	3462	4781	18108	11445	6664
1584	4960	3272	1688	2938	9947	6442	3505	4853	18295	11574	6721
1584	5050	3317	1733	2938	10032	6485	3547	4925	18652	11788	6864
1584	5047	3315	1731	2923	10010	6467	3543	5098	19216	12157	7059
1584	4857	3221	1637	2923	10095	6509	3586	5270	19433	12352	7081
				2923	10179	6551	3628	5357	19645	12501	7144
				2923	10263	6593	3670	5458	19784	12621	7163
				2909	10333	6621	3712	5515	19794	12655	7139
				2909	10417	6663	3754	5573	19803	12688	7115
				2923	10423	6673	3750	5616	19796	12706	7090
				2923	10327	6625	3702	5645	19694	12669	7024
								5659	19497	12578	6919
								5645	19401	12523	6878
								5630	19289	12460	6829

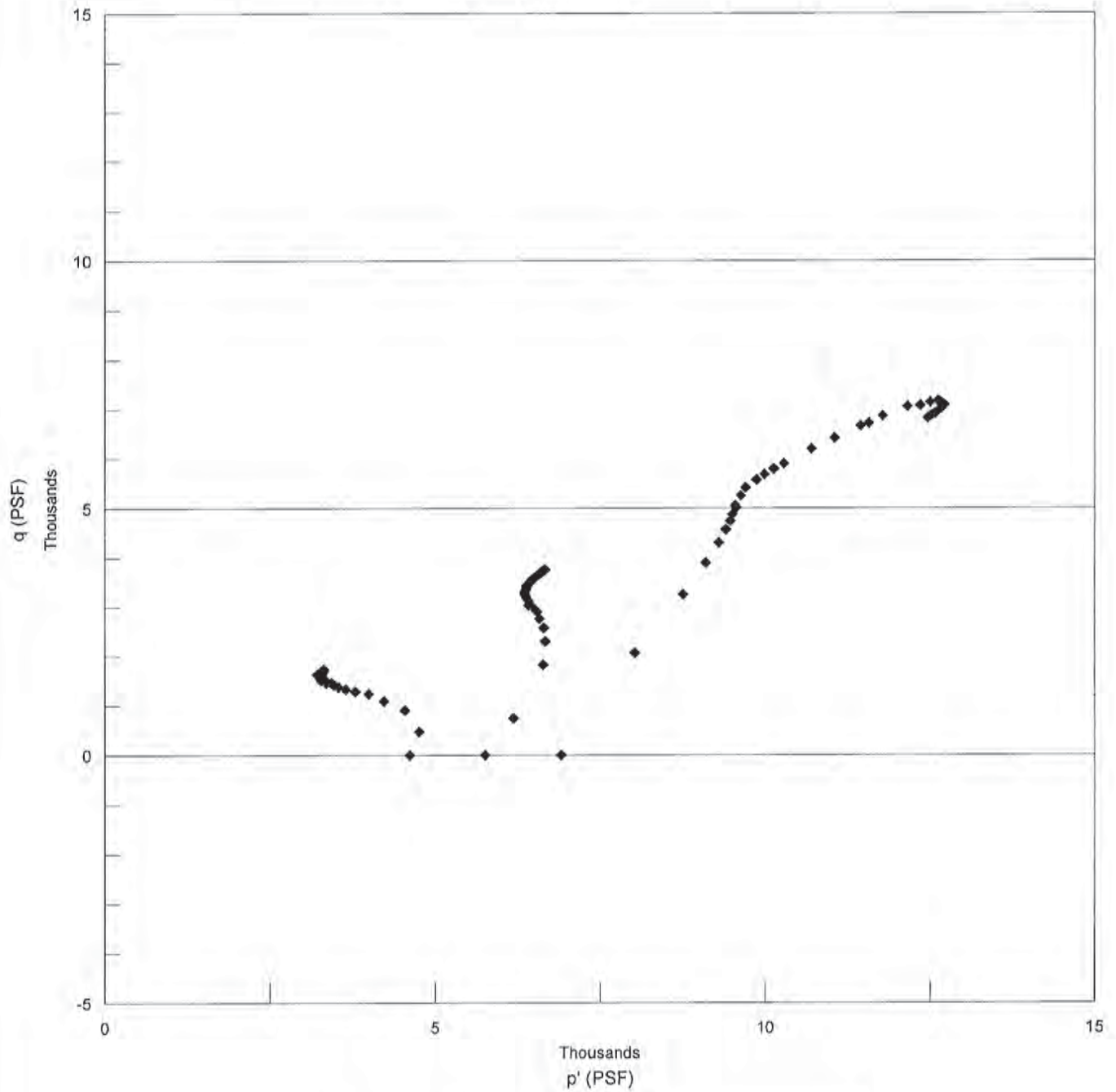
Data entry by: DAW  
Data checked by: *DPM*  
FileName: MWPQB117.WK4

Date: 05/22/2014  
Date: *5/22/14*



## Effective Stress Path Analysis - $p'$ $q$ Plots

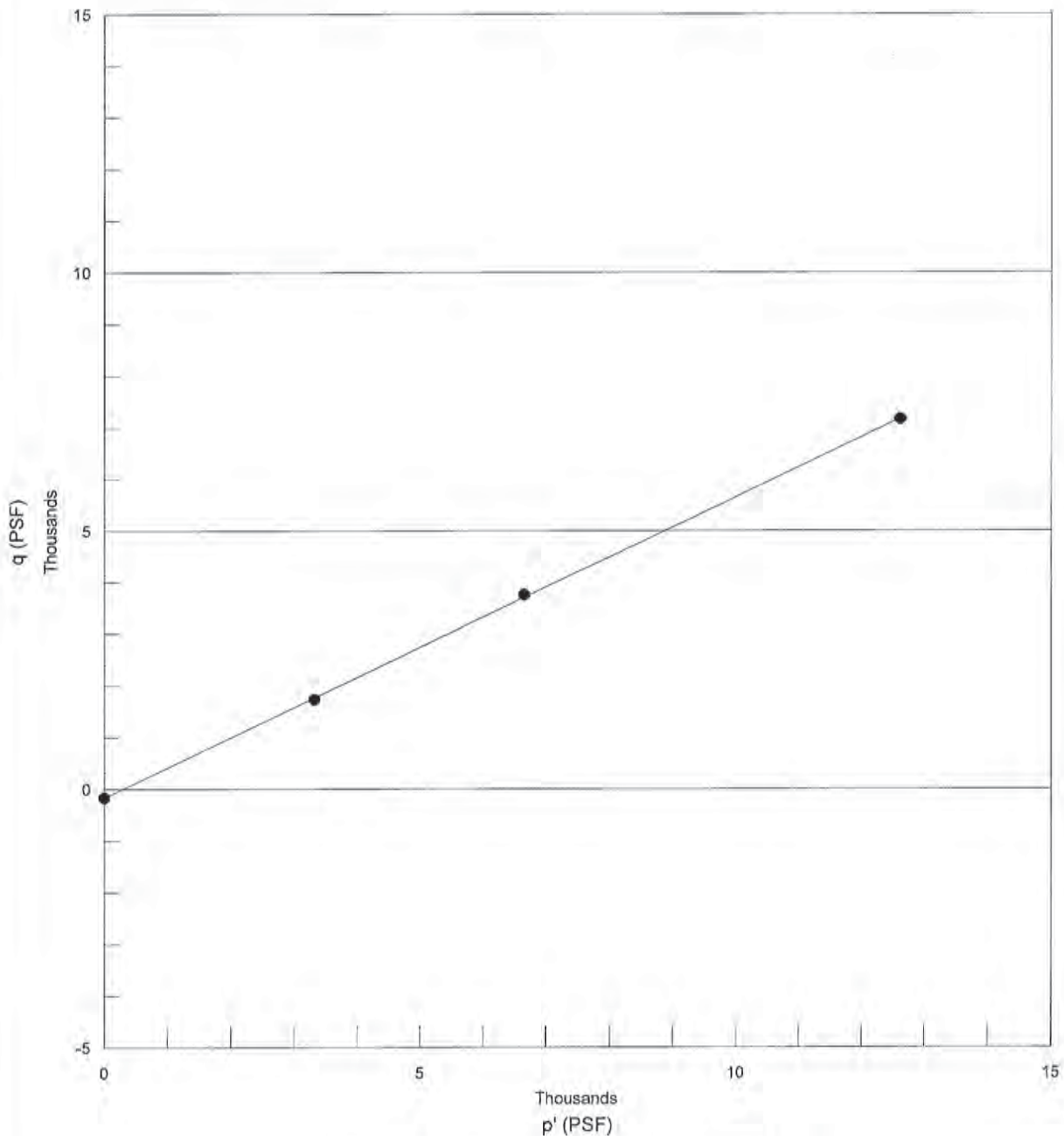
MWH, Tailings Impoundment, --, TI-B1-17, A, B & C, 45-46' (45-47.5')



◆ Stress Paths of Samples A, B & C

## Effective Stress Path Analysis - $p'$ - $q$ Regression Plot

MWH, Tailings Impoundment, --, TI-B1-17, A, B&C, 45-46' (45-47.5')



● Best Fit Line - Shear Data

NOTE: Peak points are plotted for visual verification only. Least squared regression analysis, yields a negative alpha ( $\alpha$ ) value; therefore no regression analysis has been provided.

TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B1-17  
DEPTH 45-46' (45-47.5')  
SAMPLE NO. -  
SOIL DESCR. Clayey Sand  
LOCATION Tailings Impoundment  
TEST TYPE TX/Cupp, Stage 1

SAMPLED 11/21/13 MWH  
TEST STARTED 04/18/14 DPM  
TEST FINISHED 04/23/14 DPM  
CELL NUMBER 27S  
SATURATED TEST Yes  
CONF. PRES. PSF 4608

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	787.6	776.7
Wt. Wet Soil & Pan (g)	803.4	792.4
Wt. Dry Soil & Pan (g)	665.7	665.7
Wt. Lost Moisture (g)	137.7	126.7
Wt. of Pan Only (g)	15.8	15.8
Wt. of Dry Soil (g)	650.0	650.0
Moisture Content %	21.2	19.5
Wet Density PCF	125.9	126.9
Dry Density PCF	103.9	106.2
Init. Diameter (in)	2.404	
Init. Area (sq in)	4.539	
Init. Height (in)	5.252	
Vol. Bef. Consol. (cu ft)	0.01380	
Vol. After Consol. (cu ft)	0.01349	

Notes & Comments: The sample consolidated approximately 0.33" during sub-sampling.  
The sample was dried at 60 degrees C.

Data entry by: DPM/DAW Date: 05/22/2014  
Data checked by: *DPM* Date: *5/22/14*  
FileName: MWT0B117





TRIAxIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B1-17	SAMPLED	11/21/13 MWH
DEPTH	45-46' (45-47.5')	TEST STARTED	04/18/14 DPM
SAMPLE NO.	-	TEST FINISHED	04/23/14 DPM
SOIL DESCR.	Clayey Sand	CELL NUMBER	27S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 1	CONF. PRES. PSF	4608

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	2.5	11.8				
50.0	48.0	13.7	14.6	38.4	47.7	9.3	0.93
60.0		15.1	15.1	48.0	57.9	9.9	0.99

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT TIME (Min)	Burette Reading (CC)	Vol. Defl. (CC)
0.00	0.0	0.30	0.00
0.25	0.5	9.30	-9.00
0.5	0.7	10.90	-10.60
1	1.0	12.30	-12.00
2	1.4	13.25	-12.95
4	2.0	13.80	-13.50
9	3.0	14.15	-13.85
16	4.0	14.35	-14.05
30	5.5	14.50	-14.20
60	7.7	14.70	-14.40
120	11.0	14.90	-14.60
240	15.5	15.00	-14.70
360	19.0	15.00	-14.70

Initial Height (in)	5.252	Init. Vol. (CC)	390.72
Height Change (in)	0.092	Vol. Change (CC)	28.20
Ht. After Cons. (in)	5.160	Cell Exp. (CC)	19.61
Initial Area (sq in)	4.539	Net Change (CC)	8.59
Area After Cons. (sq in)	4.518	Cons. Vol. (CC)	382.13

Data entry by: DPM/DAW Date: 05/22/2014  
 Data checked by: *DPM* Date: *5/22/14*  
 FileName: MWT0B117



# TRIAxIAL COMPRESSION TEST DATA

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B1-17	SAMPLED	11/21/13 MWH
DEPTH	45-46' (45-47.5')	TEST STARTED	04/18/14 DPM
SAMPLE NO.	-	TEST FINISHED	04/23/14 DPM
SOIL DESCR.	Clayey Sand	CELL NUMBER	27S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 1	CONF. PRES. PSF	4608

Init. Ht. (in)	5.252	Init. Area (sq in)	4.539
Consol. Ht. (in)	5.160	Consol. Area (sq in)	4.518
Back Pres. PSI	48.4	Strain Rate (in/min)	0.006

Axial Load Lbs.	Axial Load PSF	Delta Ht. In.	Axial % Strain	Area Final Sq In.	Dev. Stress PSF	Pore Pres. PSI	Delta Pres. PSF	Sigma 3' PSF	Sigma 1' PSF	Prin. Stress Ratio
0.0	0	0.000	0.00	4.518	0	48.4	0	4608	4608	1.00
30.0	956	0.005	0.10	4.523	955	50.7	331	4277	5232	1.22
57.0	1817	0.010	0.20	4.527	1813	55.2	979	3629	5442	1.50
69.0	2199	0.016	0.30	4.532	2192	58.7	1483	3125	5317	1.70
78.0	2486	0.021	0.40	4.537	2476	61.3	1858	2750	5226	1.90
81.0	2581	0.026	0.50	4.541	2568	63.0	2102	2506	5074	2.03
84.0	2677	0.031	0.60	4.546	2661	64.3	2290	2318	4979	2.15
87.0	2773	0.036	0.71	4.550	2753	65.4	2448	2160	4913	2.27
90.0	2868	0.042	0.81	4.555	2845	66.2	2563	2045	4890	2.39
93.0	2964	0.047	0.91	4.560	2937	66.8	2650	1958	4895	2.50
93.0	2964	0.052	1.01	4.564	2934	67.3	2722	1886	4820	2.56
96.0	3060	0.057	1.11	4.569	3026	67.7	2779	1829	4854	2.65
96.0	3060	0.062	1.21	4.574	3023	68.1	2837	1771	4794	2.71
99.0	3155	0.068	1.31	4.578	3114	68.4	2880	1728	4842	2.80
99.0	3155	0.073	1.41	4.583	3111	68.6	2909	1699	4810	2.83
102.0	3251	0.078	1.51	4.588	3202	68.8	2938	1670	4872	2.92
105.0	3346	0.083	1.61	4.592	3292	69.0	2966	1642	4934	3.01
105.0	3346	0.088	1.71	4.597	3289	69.1	2981	1627	4916	3.02
108.0	3442	0.094	1.81	4.602	3380	69.2	2995	1613	4992	3.10
108.0	3442	0.099	1.91	4.607	3376	69.4	3024	1584	4960	3.13
111.0	3538	0.104	2.02	4.611	3466	69.4	3024	1584	5050	3.19
111.0	3538	0.109	2.12	4.616	3463	69.4	3024	1584	5047	3.19
105.0	3346	0.112	2.18	4.619	3273	69.4	3024	1584	4857	3.07

Data entry by: DPM/DAW Date: 05/22/2014  
 Data checked by: DPM Date: 5/22/14  
 FileName: MWT0B117



TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B1-17  
DEPTH 45-46' (45-47.5')  
SAMPLE NO. -  
SOIL DESCR. Clayey Sand  
LOCATION Tailings Impoundment  
TEST TYPE TX/CUp, Stage 2

SAMPLED 11/21/13 MWH  
TEST STARTED 04/18/14 DPM  
TEST FINISHED 04/23/14 DPM  
CELL NUMBER 27S  
SATURATED TEST Yes  
CONF. PRES. PSF 5760

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	787.6	776.7
Wt. Wet Soil & Pan (g)	803.4	792.4
Wt. Dry Soil & Pan (g)	665.7	665.7
Wt. Lost Moisture (g)	137.7	126.7
Wt. of Pan Only (g)	15.8	15.8
Wt. of Dry Soil (g)	650.0	650.0
Moisture Content %	21.2	19.5
Wet Density PCF	128.7	127.5
Dry Density PCF	106.2	106.7
Init. Diameter (in)	2.425	
Init. Area (sq in)	4.619	
Init. Height (in)	5.048	
Vol. Bef. Consol. (cu ft)	0.01349	
Vol. After Consol. (cu ft)	0.01343	

Notes & Comments:

Data entry by: DPM/DAW Date: 05/22/2014  
Data checked by: DPM Date: 5/22/14  
FileName: MWT0B117



TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B1-17  
DEPTH 45-46' (45-47.5')  
SAMPLE NO. -  
SOIL DESCR. Clayey Sand  
LOCATION Tailings Impoundment  
TEST TYPE TX/CUpp, Stage 2

SAMPLED 11/21/13 MWH  
TEST STARTED 04/18/14 DPM  
TEST FINISHED 04/23/14 DPM  
CELL NUMBER 27S  
SATURATED TEST Yes  
CONF. PRES. PSF 5760

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT TIME (Min)	Burette Reading (CC)	Vol. Defl. (CC)
0.00	0.0	0.80	0.00
0.25	0.5	1.70	-0.90
0.5	0.7	1.80	-1.00
1	1.0	1.90	-1.10
2	1.4	2.00	-1.20
4	2.0	2.05	-1.25
9	3.0	2.10	-1.30
16	4.0	2.20	-1.40
30	5.5	2.25	-1.45
60	7.7	2.35	-1.55
120	11.0	2.40	-1.60
240	15.5	2.40	-1.60
360	19.0	2.40	-1.60

Initial Height (in) 5.048  
Height Change (in) -0.005  
Ht. After Cons. (in) 5.053  
Initial Area (sq in) 4.619  
Area After Cons. (sq in) 4.594

Init. Vol. (CC) 382.13  
Vol. Change (CC) 2.60  
Cell Exp. (CC) 0.90  
Net Change (CC) 1.70  
Cons. Vol. (CC) 380.43

Data entry by: DPM/DAW Date: 05/22/2014  
Data checked by: *[Signature]* Date: *5/22/14*  
FileName: MWT0B117





# TRIAXIAL COMPRESSION TEST DATA

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B1-17	SAMPLED	11/21/13 MWH
DEPTH	45-46' (45-47.5')	TEST STARTED	04/18/14 DPM
SAMPLE NO.	-	TEST FINISHED	04/23/14 DPM
SOIL DESCR.	Clayey Sand	CELL NUMBER	27S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/Cupp, Stage 2	CONF. PRES. PSF	5760

Init. Ht. (in)	5.048	Init. Area (sq in)	4.619
Consol. Ht. (in)	5.053	Consol. Area (sq in)	4.594
Back Pres. PSI	48.7	Strain Rate (in/min)	0.009

Axial Load Lbs.	Axial Load PSF	Delta Ht. In.	Axial % Strain	Area Final Sq In.	Dev. Stress PSF	Pore Pres. PSI	Delta Pres. PSF	Sigma 3' PSF	Sigma 1' PSF	Prin. Stress Ratio
0.0	0	0.000	0.00	4.594	0	48.7	0	5760	5760	1.00
48.0	1505	0.005	0.10	4.599	1503	50.9	317	5443	6946	1.28
117.0	3667	0.010	0.20	4.603	3660	55.3	950	4810	8470	1.76
147.0	4608	0.015	0.30	4.608	4594	58.3	1382	4378	8972	2.05
165.0	5172	0.020	0.40	4.612	5151	60.4	1685	4075	9226	2.26
177.0	5548	0.026	0.50	4.617	5520	62.1	1930	3830	9351	2.44
186.0	5830	0.031	0.61	4.622	5795	63.3	2102	3658	9453	2.58
192.0	6018	0.036	0.71	4.627	5976	64.4	2261	3499	9475	2.71
195.0	6112	0.041	0.81	4.631	6063	65.2	2376	3384	9447	2.79
201.0	6301	0.046	0.91	4.636	6243	65.8	2462	3298	9541	2.89
204.0	6395	0.051	1.01	4.641	6330	66.3	2534	3226	9555	2.96
207.0	6489	0.056	1.11	4.646	6416	66.7	2592	3168	9584	3.03
210.0	6583	0.062	1.22	4.650	6503	67.1	2650	3110	9613	3.09
213.0	6677	0.067	1.32	4.655	6589	67.4	2693	3067	9656	3.15
216.0	6771	0.072	1.42	4.660	6675	67.6	2722	3038	9713	3.20
219.0	6865	0.077	1.52	4.665	6760	67.8	2750	3010	9770	3.25
222.0	6959	0.082	1.62	4.670	6846	68.0	2779	2981	9827	3.30
222.0	6959	0.087	1.73	4.675	6839	68.1	2794	2966	9805	3.31
225.0	7053	0.092	1.83	4.679	6924	68.2	2808	2952	9876	3.35
228.0	7147	0.097	1.93	4.684	7009	68.3	2822	2938	9947	3.39
231.0	7241	0.103	2.03	4.689	7094	68.3	2822	2938	10032	3.41
231.0	7241	0.108	2.13	4.694	7087	68.4	2837	2923	10010	3.42
234.0	7335	0.113	2.23	4.699	7171	68.4	2837	2923	10095	3.45
237.0	7429	0.118	2.33	4.704	7256	68.4	2837	2923	10179	3.48
240.0	7523	0.123	2.43	4.708	7340	68.4	2837	2923	10263	3.51
243.0	7617	0.128	2.54	4.713	7424	68.5	2851	2909	10333	3.55
246.0	7711	0.133	2.64	4.718	7508	68.5	2851	2909	10417	3.58
246.0	7711	0.138	2.74	4.723	7500	68.4	2837	2923	10423	3.57
243.0	7617	0.141	2.79	4.726	7404	68.4	2837	2923	10327	3.53

Data entry by: DPM/DAW Date: 05/22/2014  
 Data checked by: *PLM* Date: 5/22/14  
 FileName: MWT0B117



TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B1-17	SAMPLED	11/21/13 MWH
DEPTH	45-46' (45-47.5')	TEST STARTED	04/18/14 DPM
SAMPLE NO.	-	TEST FINISHED	04/23/14 DPM
SOIL DESCR.	Clayey Sand	CELL NUMBER	27S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 3	CONF. PRES. PSF	6912

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	787.6	776.7
Wt. Wet Soil & Pan (g)	803.4	792.4
Wt. Dry Soil & Pan (g)	665.7	665.7
Wt. Lost Moisture (g)	137.7	126.7
Wt. of Pan Only (g)	15.8	15.8
Wt. of Dry Soil (g)	650.0	650.0
Moisture Content %	21.2	19.5
Wet Density PCF	129.3	127.8
Dry Density PCF	106.7	107.0
Init. Diameter (in)	2.453	
Init. Area (sq in)	4.726	
Init. Height (in)	4.911	
Vol. Bef. Consol. (cu ft)	0.01343	
Vol. After Consol. (cu ft)	0.01339	

Notes & Comments:

Data entry by: DPM/DAW Date: 05/22/2014  
Data checked by: DPM Date: 5/22/14  
FileName: MWT0B117



TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B1-17	SAMPLED	11/21/13 MWH
DEPTH	45-46' (45-47.5')	TEST STARTED	04/18/14 DPM
SAMPLE NO.	-	TEST FINISHED	04/23/14 DPM
SOIL DESCR.	Clayey Sand	CELL NUMBER	27S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 3	CONF. PRES. PSF	6912

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT TIME (Min)	Burette Reading (CC)	Vol. Defl. (CC)
0.00	0.0	5.90	0.00
0.25	0.5	6.70	-0.80
0.5	0.7	6.80	-0.90
1	1.0	6.85	-0.95
2	1.4	6.90	-1.00
4	2.0	6.95	-1.05
9	3.0	7.00	-1.10
16	4.0	7.05	-1.15
30	5.5	7.15	-1.25
60	7.7	7.15	-1.25
120	11.0	7.15	-1.25
240	15.5	7.15	-1.25
360	19.0	7.15	-1.25

Initial Height (in)	4.911	Init. Vol. (CC)	380.43
Height Change (in)	-0.010	Vol. Change (CC)	2.00
Ht. After Cons. (in)	4.921	Cell Exp. (CC)	0.90
Initial Area (sq in)	4.726	Net Change (CC)	1.10
Area After Cons. (sq in)	4.703	Cons. Vol. (CC)	379.33

Data entry by: DPM/DAW Date: 05/22/2014  
 Data checked by: DPM Date: 5/22/14  
 FileName: MWT0B117





# TRIAXIAL COMPRESSION TEST DATA

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B1-17	SAMPLED	11/21/13 MWH
DEPTH	45-46' (45-47.5')	TEST STARTED	04/18/14 DPM
SAMPLE NO.	-	TEST FINISHED	04/23/14 DPM
SOIL DESCR.	Clayey Sand	CELL NUMBER	27S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 3	CONF. PRES. PSF	6912

Init. Ht. (in)	4.911	Init. Area (sq in)	4.726
Consol. Ht. (in)	4.921	Consol. Area (sq in)	4.703
Back Pres. PSI	48.6	Strain Rate (in/min)	0.002

Axial Load Lbs.	Axial Load PSF	Delta Ht. In.	Axial % Strain	Area Final Sq In.	Dev. Stress PSF	Pore Pres. PSI	Delta Pres. PSF	Sigma 3' PSF	Sigma 1' PSF	Prin. Stress Ratio
0.0	0	0.000	0.00	4.703	0	48.6	0	6912	6912	1.00
135.0	4134	0.005	0.10	4.707	4130	55.2	950	5962	10091	1.69
213.0	6522	0.010	0.20	4.712	6509	58.4	1411	5501	12010	2.18
255.0	7808	0.015	0.30	4.717	7784	60.4	1699	5213	12997	2.49
282.0	8635	0.020	0.41	4.722	8600	61.9	1915	4997	13597	2.72
300.0	9186	0.025	0.51	4.727	9140	63.0	2074	4838	13978	2.89
312.0	9554	0.030	0.61	4.732	9495	63.8	2189	4723	14219	3.01
321.0	9829	0.035	0.71	4.736	9759	64.5	2290	4622	14382	3.11
330.0	10105	0.040	0.81	4.741	10023	65.0	2362	4550	14573	3.20
333.0	10197	0.045	0.91	4.746	10103	65.4	2419	4493	14596	3.25
348.0	10656	0.065	1.32	4.766	10515	66.2	2534	4378	14893	3.40
360.0	11023	0.085	1.73	4.785	10833	66.8	2621	4291	15124	3.52
372.0	11391	0.105	2.13	4.805	11148	66.8	2621	4291	15439	3.60
381.0	11666	0.125	2.54	4.825	11370	66.7	2606	4306	15676	3.64
390.0	11942	0.145	2.95	4.845	11590	66.5	2578	4334	15925	3.67
399.0	12218	0.165	3.35	4.866	11808	66.2	2534	4378	16186	3.70
423.0	12953	0.205	4.17	4.907	12413	65.4	2419	4493	16906	3.76
441.0	13504	0.245	4.98	4.949	12831	64.4	2275	4637	17468	3.77
462.0	14147	0.285	5.79	4.992	13327	63.4	2131	4781	18108	3.79
468.0	14330	0.305	6.20	5.013	13442	62.9	2059	4853	18295	3.77
480.0	14698	0.325	6.60	5.035	13727	62.4	1987	4925	18652	3.79
498.0	15249	0.365	7.42	5.079	14118	61.2	1814	5098	19216	3.77
504.0	15433	0.405	8.23	5.124	14163	60.0	1642	5270	19433	3.69
513.0	15708	0.445	9.04	5.170	14288	59.4	1555	5357	19645	3.67
519.0	15892	0.485	9.85	5.217	14326	58.7	1454	5458	19784	3.62
522.0	15984	0.525	10.67	5.264	14279	58.3	1397	5515	19794	3.59
525.0	16076	0.565	11.48	5.313	14230	57.9	1339	5573	19803	3.55
528.0	16168	0.605	12.29	5.362	14180	57.6	1296	5616	19796	3.52
528.0	16168	0.645	13.11	5.412	14049	57.4	1267	5645	19694	3.49
525.0	16076	0.685	13.92	5.463	13838	57.3	1253	5659	19497	3.45
525.0	16076	0.710	14.43	5.496	13757	57.4	1267	5645	19401	3.44
525.0	16076	0.740	15.04	5.535	13659	57.5	1282	5630	19289	3.43

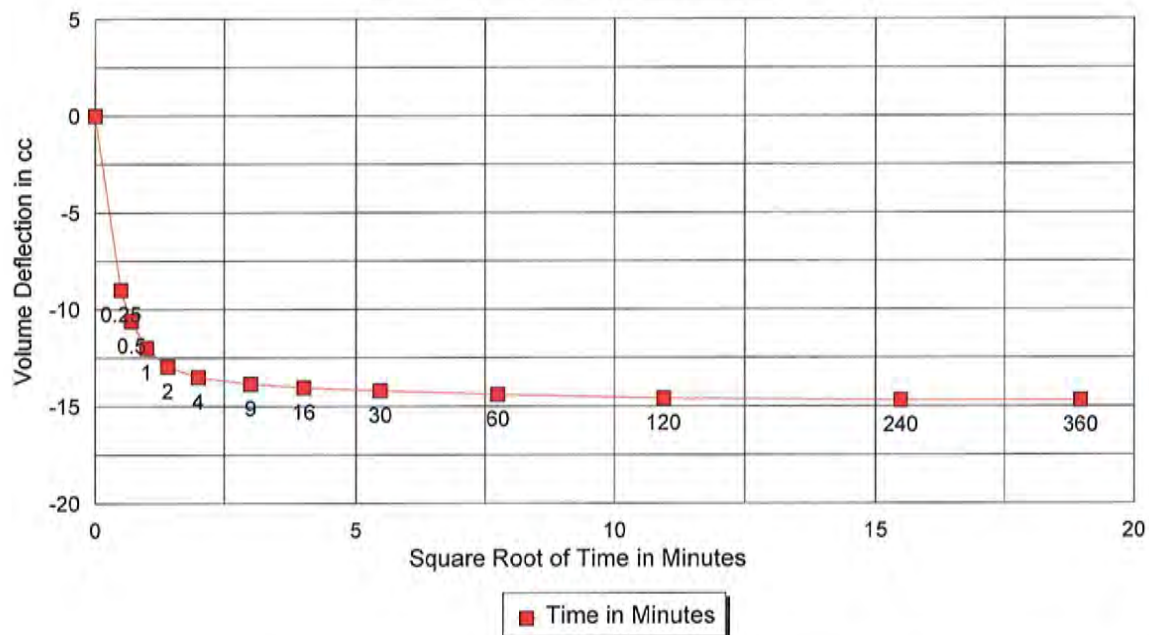
Data entry by: DPM/DAW Date: 05/22/2014  
 Data checked by: DPM Date: 5/22/14  
 FileName: MWT0B117





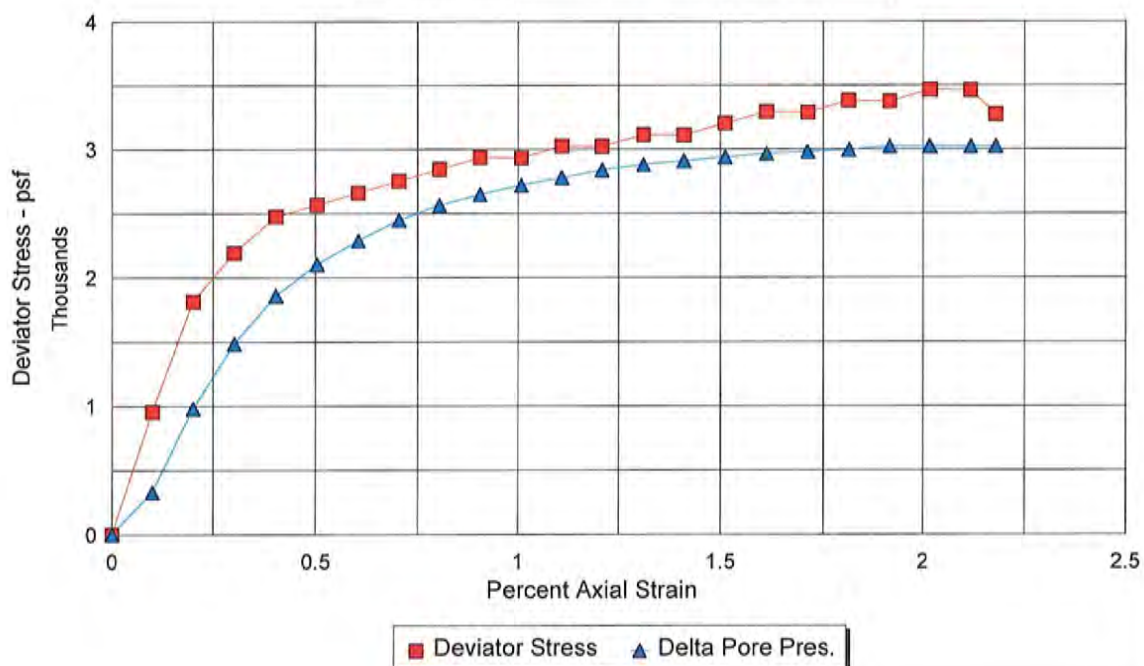
## CONSOLIDATION DATA

TI-B1-17, 45-46' (45-47.5'), -, Stage 1



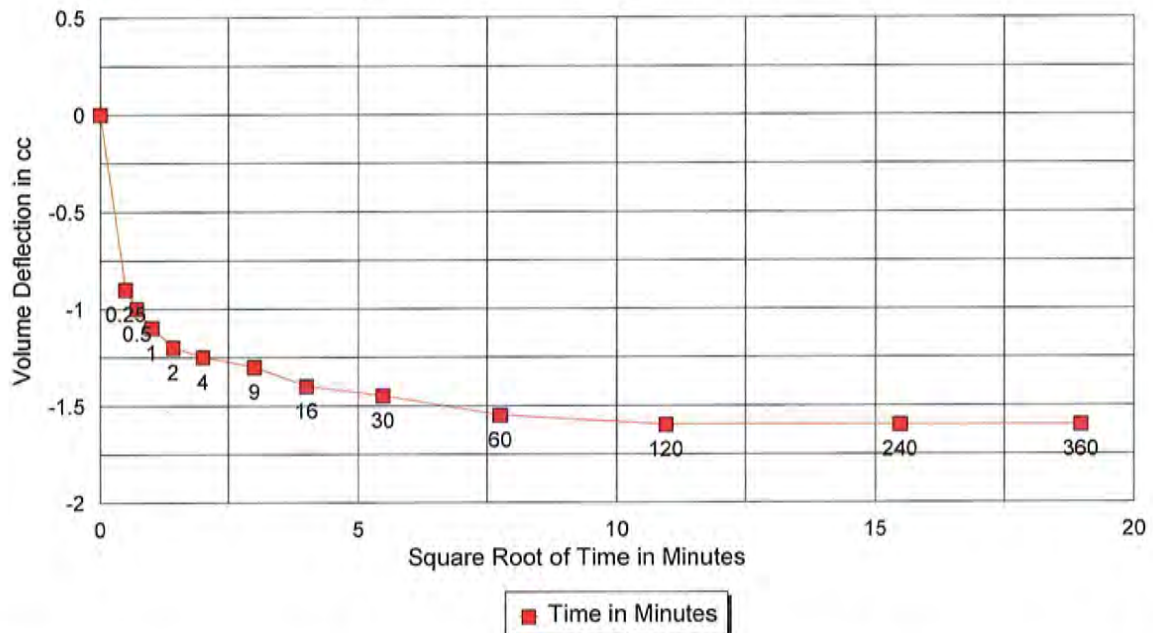
## TRIAXIAL TEST - TX/CUpp

TI-B1-17, 45-46' (45-47.5'), -, Stage 1



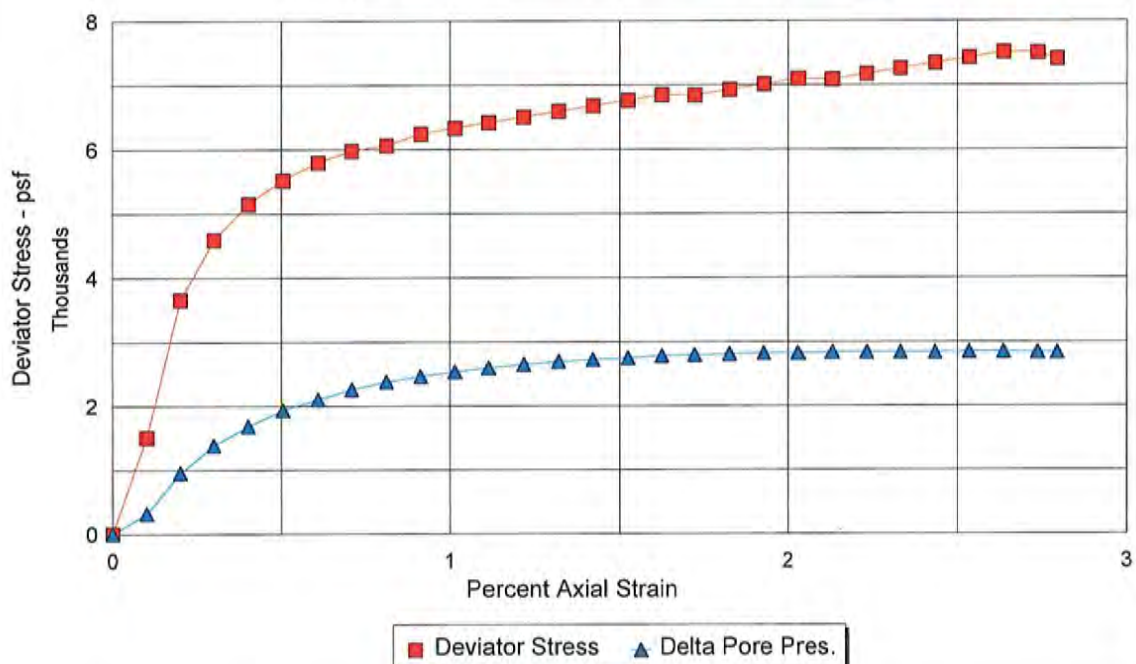
## CONSOLIDATION DATA

TI-B1-17, 45-46' (45-47.5'), -, Stage 2



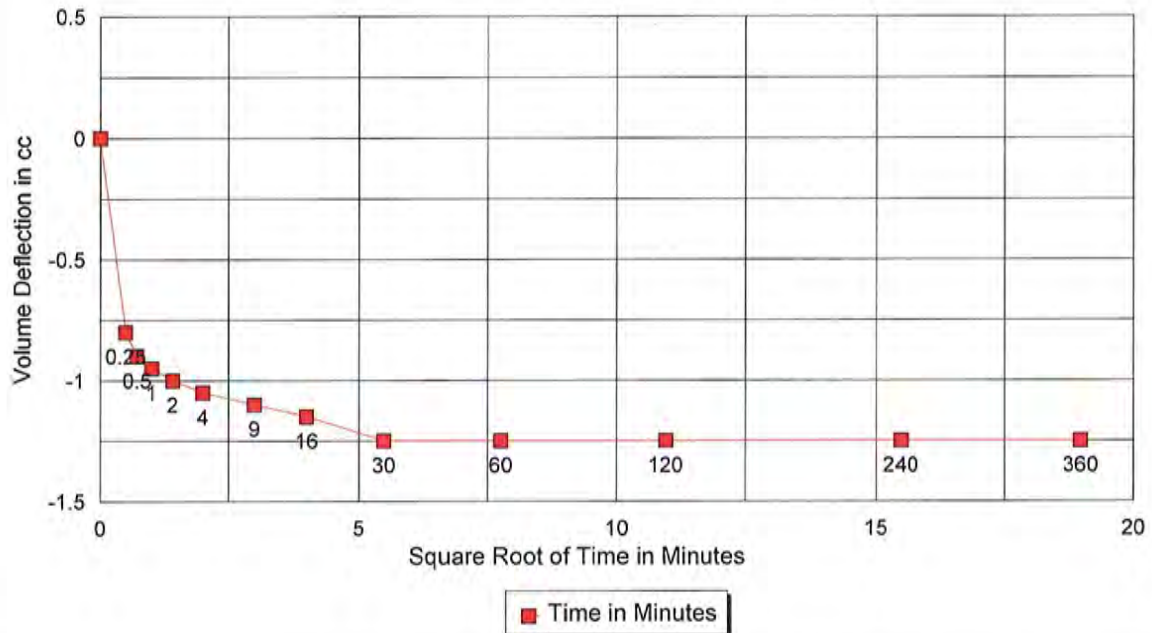
## TRIAXIAL TEST - TX/CUpp

TI-B1-17, 45-46' (45-47.5'), -, Stage 2



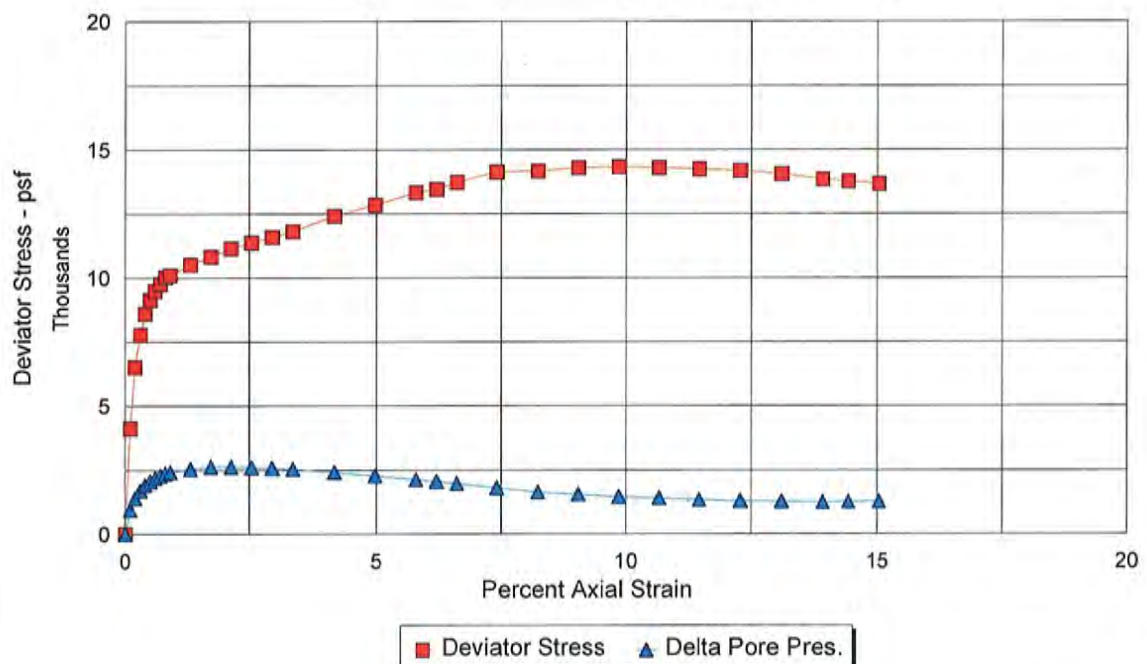
## CONSOLIDATION DATA

TI-B1-17, 45-46' (45-47.5'), -, Stage 3



## TRIAXIAL TEST - TX/CUpp

TI-B1-17, 45-46' (45-47.5'), -, Stage 3





EFFECTIVE STRESS PATH ANALYSIS TEST DATA  
ASTM D4767

CLIENT MWH  
BORING NO. TI-B3-10  
DEPTH 56-57' (55-57')  
SAMPLE NO. A,B&C  
PROJECT NO. --  
LOCATION Tailings Impoundment

JOB NO. 2512-77  
SAMPLED 11/19/13 MWH  
SATURATED TEST  
TEST TYPE TX/CUPP  
Peak Points

					p'	q
					PSF	PSF
CONF. PRES. PSF	SAMPLE A	6048	PSF	SAMPLE A	6409	2867
	SAMPLE B	7200	PSF	SAMPLE B	8918	3849
	SAMPLE C	8352	PSF	SAMPLE C	11550	4810

SAMPLE A				SAMPLE B				SAMPLE C			
$\sigma$ 3'	$\sigma$ 1'	p'	q	$\sigma$ 3'	$\sigma$ 1'	p'	q	$\sigma$ 3'	$\sigma$ 1'	p'	q
PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF
6048	6048	6048	0	7200	7200	7200	0	8352	8352	8352	0
5674	6529	6101	428	6408	8700	7554	1146	7243	10214	8729	1485
5256	6775	6016	760	6034	9423	7728	1695	6869	11095	8982	2113
4982	6880	5931	949	5818	10027	7922	2105	6667	11788	9228	2560
4795	6975	5885	1090	5645	10582	8113	2468	6552	12386	9469	2917
4637	7004	5820	1183	5515	10995	8255	2740	6466	12921	9693	3228
4507	7061	5784	1277	5414	11345	8380	2965	6422	13409	9916	3493
4392	7132	5762	1370	5342	11541	8442	3099	6336	13763	10050	3714
4306	7137	5721	1416	5270	11736	8503	3233	6307	14085	10196	3889
4219	7237	5728	1509	5227	11868	8548	3320	6278	14316	10297	4019
4133	7241	5687	1554	5198	11923	8561	3362	6250	14717	10483	4234
4075	7275	5675	1600	5170	12069	8620	3450	6250	15047	10648	4399
3960	7435	5697	1737	5126	12110	8618	3492	6221	15089	10655	4434
3830	7486	5658	1828	5098	12165	8631	3534	6235	15254	10744	4509
3758	7594	5676	1918	5098	12248	8673	3575	6235	15324	10779	4544
3701	7715	5708	2007	5098	12331	8715	3617	6235	15384	10810	4574
3658	7850	5754	2096	5083	12310	8697	3613	6250	15380	10815	4565
3629	7906	5767	2138	5098	12407	8752	3655	6278	15556	10917	4639
3600	8054	5827	2227	5083	12475	8779	3696	6293	15610	10952	4659
3542	8172	5857	2315	5083	12558	8821	3737	6394	15837	11115	4722
3542	8255	5899	2356	5083	12551	8817	3734	6466	15946	11206	4740
3514	8401	5957	2444	5083	12633	8858	3775	6566	16084	11325	4759
3485	8455	5970	2485	5098	12640	8869	3771	6624	16177	11401	4777
3499	8643	6071	2572	5069	12693	8881	3812	6710	16298	11504	4794
3514	8830	6172	2658	5069	12685	8877	3808	6739	16360	11550	4810
3514	8910	6212	2698	5069	12767	8918	3849	6782	16352	11567	4785
3528	9011	6269	2741	5069	12759	8914	3845	6826	16343	11585	4759
3542	9111	6327	2784	5083	12766	8924	3841	6869	16335	11602	4733
3557	9119	6338	2781	5098	12778	8938	3840	6941	16356	11649	4708
3542	9190	6366	2824					6984	16348	11666	4682
3542	9276	6409	2867					7027	16269	11648	4621
3571	9298	6435	2864					7027	16065	11546	4519

Data entry by: DAW  
Data checked by: *DDM*  
FileName: MWPQB310.WK4

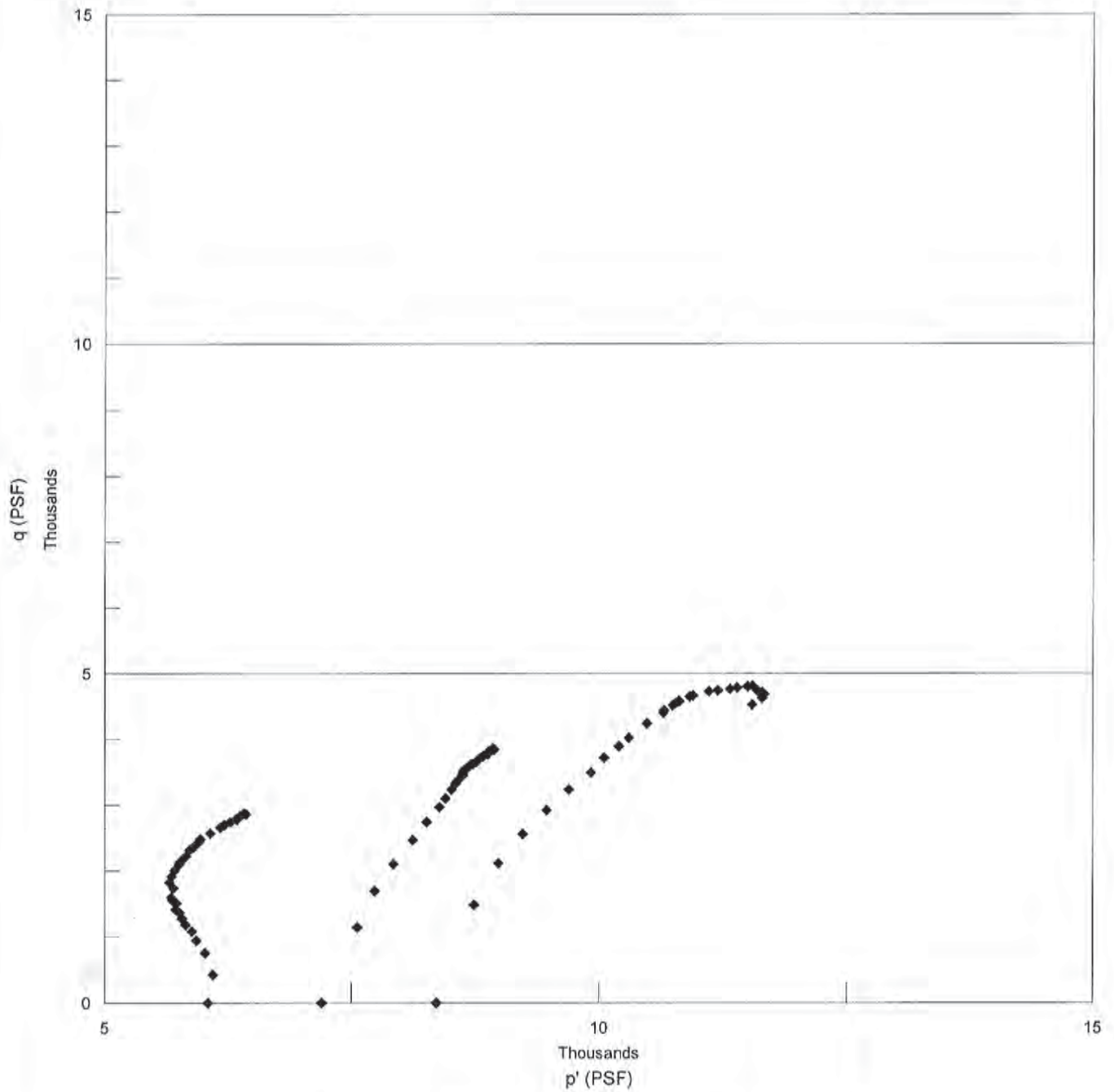
Date: 05/22/2014  
Date: *5/22/14*





## Effective Stress Path Analysis - $p'$ $q$ Plots

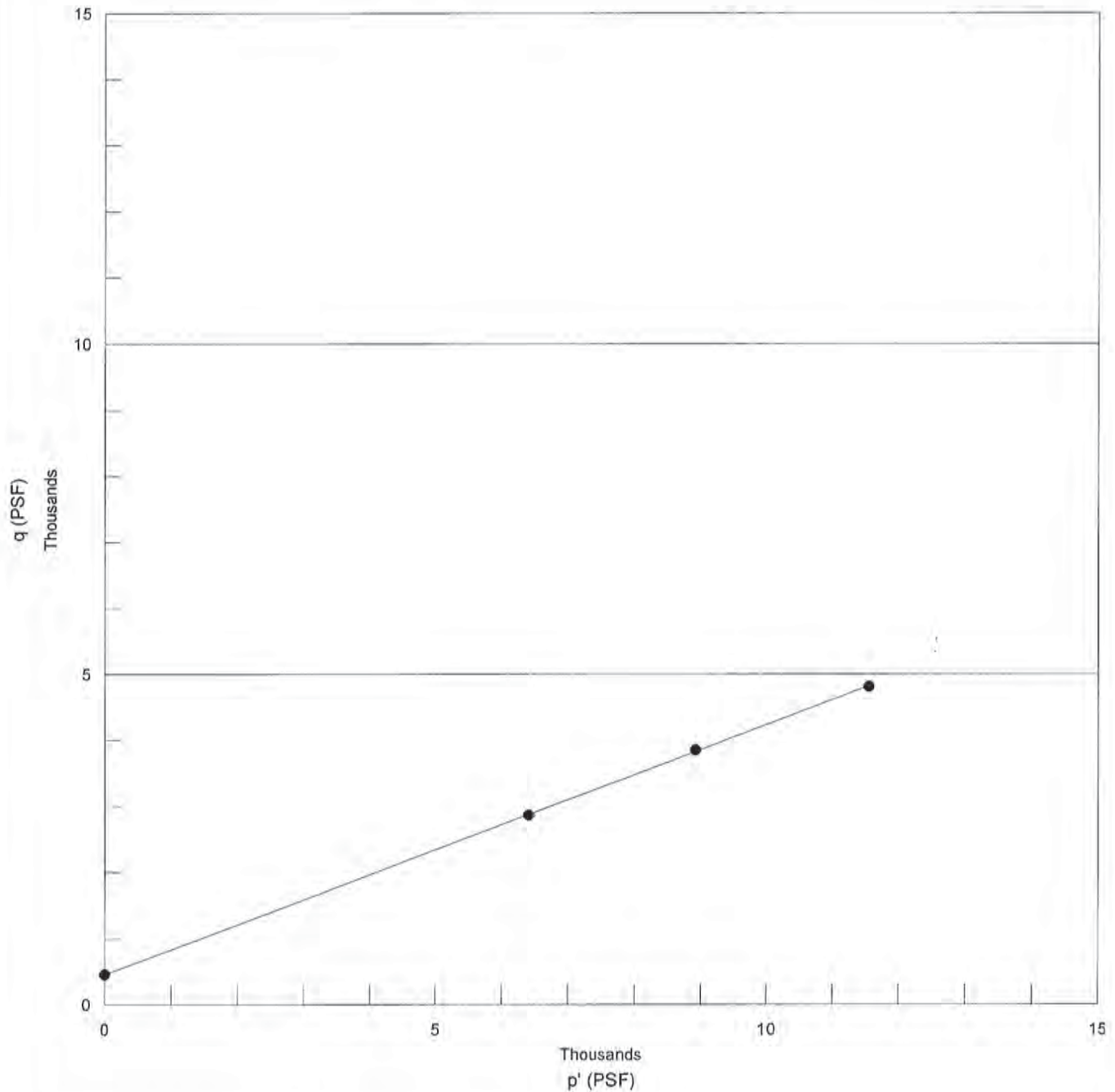
MWH, Tailings Impoundment, --, TI-B3-10, A, B & C, 56-57' (55-57')



◆ Stress Paths of Samples A, B & C

## Effective Stress Path Analysis - p'-q Regression Plot

MWH, Tailings Impoundment, --, TI-B3-10, A, B&C, 56-57' (55-57')



● Shear Data

- Best Fit Line

psi = 20.7 degrees

a = 455.3 PSF

TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B3-10  
DEPTH 56-57' (55-57')  
SAMPLE NO. -  
SOIL DESCR. Silty Clay  
LOCATION Tailings Impoundment  
TEST TYPE TX/CUpp, Stage 1

SAMPLED 11/19/13 MWH  
TEST STARTED 04/25/14 DPM  
TEST FINISHED 05/05/14 DPM  
CELL NUMBER 27S  
SATURATED TEST Yes  
CONF. PRES. PSF 6048

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	816.0	800.3
Wt. Wet Soil & Pan (g)	831.8	816.1
Wt. Dry Soil & Pan (g)	689.3	689.3
Wt. Lost Moisture (g)	142.5	126.7
Wt. of Pan Only (g)	15.8	15.8
Wt. of Dry Soil (g)	673.5	673.5
Moisture Content %	21.1	18.8
Wet Density PCF	128.6	129.7
Dry Density PCF	106.2	109.2
Init. Diameter (in)	2.411	
Init. Area (sq in)	4.564	
Init. Height (in)	5.296	
Vol. Bef. Consol. (cu ft)	0.01399	
Vol. After Consol. (cu ft)	0.01360	

Notes & Comments: Dried at 60 degrees C.

Data entry by: DPM/DAW Date: 05/21/2014  
Data checked by: DPM Date: 5/21/14  
FileName: MWT0B310



TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B3-10	SAMPLED	11/19/13 MWH
DEPTH	56-57' (55-57')	TEST STARTED	04/25/14 DPM
SAMPLE NO.	-	TEST FINISHED	05/05/14 DPM
SOIL DESCR.	Silty Clay	CELL NUMBER	27S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 1	CONF. PRES. PSF	6048

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	3.6	13.0				
50.0		7.7	8.1	38.0	47.7	9.7	0.97

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT TIME (Min)	Burette Reading (CC)	Vol. Defl. (CC)
0.00	0.0	0.50	0.00
0.25	0.5	5.80	-5.30
0.5	0.7	6.30	-5.80
1	1.0	6.90	-6.40
2	1.4	7.60	-7.10
4	2.0	8.60	-8.10
9	3.0	10.30	-9.80
16	4.0	11.90	-11.40
30	5.5	14.15	-13.65
60	7.7	17.30	-16.80
120	11.0	20.85	-20.35
240	15.5	23.80	-23.30
360	19.0	24.85	-24.35

Initial Height (in)	5.296	Init. Vol. (CC)	396.12
Height Change (in)	0.121	Vol. Change (CC)	30.60
Ht. After Cons. (in)	5.175	Cell Exp. (CC)	19.61
Initial Area (sq in)	4.564	Net Change (CC)	10.99
Area After Cons. (sq in)	4.541	Cons. Vol. (CC)	385.13

Data entry by: DPM/DAW Date: 05/21/2014  
 Data checked by: DPM Date: 5/21/14  
 FileName: MWT0B310





# TRIAXIAL COMPRESSION TEST DATA

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B3-10	SAMPLED	11/19/13 MWH
DEPTH	56-57' (55-57')	TEST STARTED	04/25/14 DPM
SAMPLE NO.	-	TEST FINISHED	05/05/14 DPM
SOIL DESCR.	Silty Clay	CELL NUMBER	27S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 1	CONF. PRES. PSF	6048

Init. Ht. (in)	5.296	Init. Area (sq in)	4.564
Consol. Ht. (in)	5.175	Consol. Area (sq in)	4.541
Back Pres. PSI	38.2	Strain Rate (in/min)	0.0003

Axial Load Lbs.	Axial Load PSF	Delta Ht. In.	Axial % Strain	Area Final Sq In.	Dev. Stress PSF	Pore Pres. PSI	Delta Pres. PSF	Sigma 3' PSF	Sigma 1' PSF	Prin. Stress Ratio
0.0	0	0.000	0.00	4.541	0	38.2	0	6048	6048	1.00
27.0	856	0.005	0.10	4.545	855	40.8	374	5674	6529	1.15
48.0	1522	0.010	0.20	4.550	1519	43.7	792	5256	6775	1.29
60.0	1903	0.015	0.30	4.554	1897	45.6	1066	4982	6880	1.38
69.0	2188	0.021	0.40	4.559	2180	46.9	1253	4795	6975	1.45
75.0	2378	0.026	0.49	4.563	2367	48.0	1411	4637	7004	1.51
81.0	2569	0.031	0.59	4.568	2554	48.9	1541	4507	7061	1.57
87.0	2759	0.036	0.69	4.572	2740	49.7	1656	4392	7132	1.62
90.0	2854	0.041	0.79	4.577	2832	50.3	1742	4306	7137	1.66
96.0	3044	0.046	0.89	4.581	3017	50.9	1829	4219	7237	1.72
99.0	3140	0.051	0.99	4.586	3109	51.5	1915	4133	7241	1.75
102.0	3235	0.056	1.09	4.591	3200	51.9	1973	4075	7275	1.79
111.0	3520	0.066	1.28	4.600	3475	52.7	2088	3960	7435	1.88
117.0	3710	0.077	1.48	4.609	3655	53.6	2218	3830	7486	1.95
123.0	3901	0.087	1.68	4.618	3835	54.1	2290	3758	7594	2.02
129.0	4091	0.097	1.88	4.628	4014	54.5	2347	3701	7715	2.08
135.0	4281	0.108	2.08	4.637	4192	54.8	2390	3658	7850	2.15
138.0	4376	0.118	2.28	4.646	4277	55.0	2419	3629	7906	2.18
144.0	4567	0.128	2.48	4.656	4454	55.2	2448	3600	8054	2.24
150.0	4757	0.138	2.67	4.665	4630	55.6	2506	3542	8172	2.31
153.0	4852	0.149	2.87	4.675	4713	55.6	2506	3542	8255	2.33
159.0	5042	0.159	3.07	4.684	4888	55.8	2534	3514	8401	2.39
162.0	5138	0.169	3.26	4.694	4970	56.0	2563	3485	8455	2.43
168.0	5328	0.179	3.46	4.703	5143	55.9	2549	3499	8643	2.47
174.0	5518	0.189	3.66	4.713	5316	55.8	2534	3514	8830	2.51
177.0	5613	0.200	3.86	4.723	5397	55.8	2534	3514	8910	2.54
180.0	5708	0.205	3.95	4.728	5483	55.7	2520	3528	9011	2.55
183.0	5804	0.210	4.05	4.732	5568	55.6	2506	3542	9111	2.57
183.0	5804	0.215	4.15	4.737	5563	55.5	2491	3557	9119	2.56
186.0	5899	0.220	4.25	4.742	5648	55.6	2506	3542	9190	2.59
189.0	5994	0.225	4.35	4.747	5733	55.6	2506	3542	9276	2.62
189.0	5994	0.230	4.45	4.752	5727	55.4	2477	3571	9298	2.60

Data entry by: DPM/DAW Date: 05/21/2014  
 Data checked by: DPM Date: 5/21/14  
 FileName: MWT0B310



TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B3-10	SAMPLED	11/19/13 MWH
DEPTH	56-57' (55-57')	TEST STARTED	04/25/14 DPM
SAMPLE NO.	-	TEST FINISHED	05/05/14 DPM
SOIL DESCR.	Silty Clay	CELL NUMBER	27S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 2	CONF. PRES. PSF	7200

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	816.0	800.3
Wt. Wet Soil & Pan (g)	831.8	816.1
Wt. Dry Soil & Pan (g)	689.3	689.3
Wt. Lost Moisture (g)	142.5	126.7
Wt. of Pan Only (g)	15.8	15.8
Wt. of Dry Soil (g)	673.5	673.5
Moisture Content %	21.1	18.8
Wet Density PCF	132.3	130.5
Dry Density PCF	109.2	109.9
Init. Diameter (in)	2.460	
Init. Area (sq in)	4.752	
Init. Height (in)	4.945	
Vol. Bef. Consol. (cu ft)	0.01360	
Vol. After Consol. (cu ft)	0.01352	

Notes & Comments:

Data entry by: DPM/DAW Date: 05/21/2014  
Data checked by: DPM Date: 5/21/14  
FileName: MWT0B310



TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B3-10  
DEPTH 56-57' (55-57")  
SAMPLE NO. -  
SOIL DESCR. Silty Clay  
LOCATION Tailings Impoundment  
TEST TYPE TX/CUpp, Stage 2

SAMPLED 11/19/13 MWH  
TEST STARTED 04/25/14 DPM  
TEST FINISHED 05/05/14 DPM  
CELL NUMBER 27S  
SATURATED TEST Yes  
CONF. PRES. PSF 7200

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT TIME (Min)	Burette Reading (CC)	Vol. Defl. (CC)
0.00	0.0	0.90	0.00
0.25	0.5	1.50	-0.60
0.5	0.7	1.55	-0.65
1	1.0	1.55	-0.65
2	1.4	1.60	-0.70
4	2.0	1.60	-0.70
9	3.0	1.70	-0.80
16	4.0	1.80	-0.90
30	5.5	1.95	-1.05
60	7.7	2.20	-1.30
120	11.0	2.60	-1.70
240	15.5	3.10	-2.20
360	19.0	3.30	-2.40

Initial Height (in) 4.945  
Height Change (in) -0.018  
Ht. After Cons. (in) 4.963  
Initial Area (sq in) 4.752  
Area After Cons. (sq in) 4.706

Init. Vol. (CC) 385.13  
Vol. Change (CC) 3.20  
Cell Exp. (CC) 0.90  
Net Change (CC) 2.30  
Cons. Vol. (CC) 382.83

Data entry by: DPM/DAW Date: 05/21/2014  
Data checked by: DPM Date: 5/21/14  
FileName: MWT0B310





# TRIAXIAL COMPRESSION TEST DATA

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B3-10	SAMPLED	11/19/13 MWH
DEPTH	56-57' (55-57')	TEST STARTED	04/25/14 DPM
SAMPLE NO.	-	TEST FINISHED	05/05/14 DPM
SOIL DESCR.	Silty Clay	CELL NUMBER	27S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 2	CONF. PRES. PSF	7200
Init. Ht. (in)	4.945	Init. Area (sq in)	4.752
Consol. Ht. (in)	4.963	Consol. Area (sq in)	4.706
Back Pres. PSI	38.3	Strain Rate (in/min)	0.0003

Axial Load Lbs.	Axial Load PSF	Delta Ht. In.	Axial % Strain	Area Final Sq In.	Dev. Stress PSF	Pore Pres. PSI	Delta Pres. PSF	Sigma 3' PSF	Sigma 1' PSF	Prin. Stress Ratio
0.0	0	0.000	0.00	4.706	0	38.3	0	7200	7200	1.00
75.0	2295	0.005	0.10	4.711	2292	43.8	792	6408	8700	1.36
111.0	3396	0.010	0.20	4.716	3389	46.4	1166	6034	9423	1.56
138.0	4222	0.015	0.30	4.720	4210	47.9	1382	5818	10027	1.72
162.0	4957	0.020	0.39	4.725	4937	49.1	1555	5645	10582	1.87
180.0	5507	0.025	0.49	4.730	5480	50.0	1685	5515	10995	1.99
195.0	5966	0.030	0.59	4.735	5931	50.7	1786	5414	11345	2.10
204.0	6242	0.034	0.69	4.739	6198	51.2	1858	5342	11541	2.16
213.0	6517	0.039	0.79	4.744	6465	51.7	1930	5270	11736	2.23
219.0	6701	0.044	0.89	4.749	6641	52.0	1973	5227	11868	2.27
222.0	6792	0.049	0.99	4.754	6725	52.2	2002	5198	11923	2.29
228.0	6976	0.054	1.09	4.758	6900	52.4	2030	5170	12069	2.33
231.0	7068	0.059	1.19	4.763	6984	52.7	2074	5126	12110	2.36
234.0	7159	0.064	1.29	4.768	7067	52.9	2102	5098	12165	2.39
237.0	7251	0.069	1.39	4.773	7151	52.9	2102	5098	12248	2.40
240.0	7343	0.074	1.49	4.778	7234	52.9	2102	5098	12331	2.42
240.0	7343	0.079	1.59	4.782	7227	53.0	2117	5083	12310	2.42
243.0	7435	0.084	1.69	4.787	7309	52.9	2102	5098	12407	2.43
246.0	7527	0.089	1.79	4.792	7392	53.0	2117	5083	12475	2.45
249.0	7618	0.094	1.88	4.797	7475	53.0	2117	5083	12558	2.47
249.0	7618	0.098	1.98	4.802	7467	53.0	2117	5083	12551	2.47
252.0	7710	0.103	2.08	4.807	7550	53.0	2117	5083	12633	2.49
252.0	7710	0.108	2.18	4.811	7542	52.9	2102	5098	12640	2.48
255.0	7802	0.113	2.28	4.816	7624	53.1	2131	5069	12693	2.50
255.0	7802	0.118	2.38	4.821	7616	53.1	2131	5069	12685	2.50
258.0	7894	0.123	2.48	4.826	7698	53.1	2131	5069	12767	2.52
258.0	7894	0.128	2.58	4.831	7690	53.1	2131	5069	12759	2.52
258.0	7894	0.133	2.68	4.836	7683	53.0	2117	5083	12766	2.51
258.0	7894	0.134	2.71	4.837	7680	52.9	2102	5098	12778	2.51

Data entry by: DPM/DAW Date: 05/21/2014  
 Data checked by: *DPM* Date: *5/21/14*  
 FileName: MWT0B310





TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT MWH

JOB NO. 2512-77

BORING NO.	TI-B3-10	SAMPLED	11/19/13 MWH
DEPTH	56-57' (55-57')	TEST STARTED	04/25/14 DPM
SAMPLE NO.	-	TEST FINISHED	05/05/14 DPM
SOIL DESCR.	Silty Clay	CELL NUMBER	27S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 3	CONF. PRES. PSF	8352

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	816.0	800.3
Wt. Wet Soil & Pan (g)	831.8	816.1
Wt. Dry Soil & Pan (g)	689.3	689.3
Wt. Lost Moisture (g)	142.5	126.7
Wt. of Pan Only (g)	15.8	15.8
Wt. of Dry Soil (g)	673.5	673.5
Moisture Content %	21.1	18.8
Wet Density PCF	133.1	131.0
Dry Density PCF	109.9	110.2
Init. Diameter (in)	2.482	
Init. Area (sq in)	4.837	
Init. Height (in)	4.829	
Vol. Bef. Consol. (cu ft)	0.01352	
Vol. After Consol. (cu ft)	0.01347	

Notes & Comments:

Data entry by: DPM/DAW Date: 05/21/2014  
Data checked by: *DPM* Date: *5/21/14*  
FileName: MWT0B310



TRIAxIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B3-10  
DEPTH 56-57' (55-57')  
SAMPLE NO. -  
SOIL DESCR. Silty Clay  
LOCATION Tailings Impoundment  
TEST TYPE TX/CUpp, Stage 3

SAMPLED 11/19/13 MWH  
TEST STARTED 04/25/14 DPM  
TEST FINISHED 05/05/14 DPM  
CELL NUMBER 27S  
SATURATED TEST Yes  
CONF. PRES. PSF 8352

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT TIME (Min)	Burette Reading (CC)	Vol. Defl. (CC)
0.00	0.0	5.70	0.00
0.25	0.5	6.25	-0.55
0.5	0.7	6.30	-0.60
1	1.0	6.30	-0.60
2	1.4	6.30	-0.60
4	2.0	6.30	-0.60
9	3.0	6.40	-0.70
16	4.0	6.40	-0.70
30	5.5	6.50	-0.80
60	7.7	6.65	-0.95
120	11.0	6.85	-1.15
240	15.5	7.00	-1.30
360	19.0	7.10	-1.40

Initial Height (in) 4.829  
Height Change (in) -0.027  
Ht. After Cons. (in) 4.856  
Initial Area (sq in) 4.837  
Area After Cons. (sq in) 4.794

Init. Vol. (CC) 382.83  
Vol. Change (CC) 2.20  
Cell Exp. (CC) 0.90  
Net Change (CC) 1.30  
Cons. Vol. (CC) 381.54

Data entry by: DPM/DAW Date: 05/21/2014  
Data checked by: DPM Date: 5/21/14  
FileName: MWT0B310



# TRIAXIAL COMPRESSION TEST DATA

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B3-10	SAMPLED	11/19/13 MWH
DEPTH	56-57' (55-57')	TEST STARTED	04/25/14 DPM
SAMPLE NO.	-	TEST FINISHED	05/05/14 DPM
SOIL DESCR.	Silty Clay	CELL NUMBER	27S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 3	CONF. PRES. PSF	8352

Init. Ht. (in)	4.829	Init. Area (sq in)	4.837
Consol. Ht. (in)	4.856	Consol. Area (sq in)	4.794
Back Pres. PSI	38.3	Strain Rate (in/min)	0.0003

Axial Load Lbs.	Axial Load PSF	Delta Ht. In.	Axial % Strain	Area Final Sq In.	Dev. Stress PSF	Pore Pres. PSI	Delta Pres. PSF	Sigma 3' PSF	Sigma 1' PSF	Prin. Stress Ratio
0.0	0	0.000	0.00	4.794	0	38.3	0	8352	8352	1.00
99.0	2974	0.005	0.10	4.799	2971	46.0	1109	7243	10214	1.41
141.0	4235	0.010	0.20	4.804	4227	48.6	1483	6869	11095	1.62
171.0	5136	0.014	0.30	4.809	5121	50.0	1685	6667	11788	1.77
195.0	5857	0.019	0.40	4.813	5834	50.8	1800	6552	12386	1.89
216.0	6488	0.024	0.49	4.818	6456	51.4	1886	6466	12921	2.00
234.0	7028	0.029	0.59	4.823	6987	51.7	1930	6422	13409	2.09
249.0	7479	0.034	0.69	4.828	7427	52.3	2016	6336	13763	2.17
261.0	7839	0.038	0.79	4.832	7777	52.5	2045	6307	14085	2.23
270.0	8110	0.043	0.89	4.837	8038	52.7	2074	6278	14316	2.28
285.0	8560	0.053	1.09	4.847	8467	52.9	2102	6250	14717	2.35
297.0	8921	0.067	1.38	4.862	8797	52.9	2102	6250	15047	2.41
300.0	9011	0.077	1.58	4.871	8868	53.1	2131	6221	15089	2.43
306.0	9191	0.091	1.88	4.886	9018	53.0	2117	6235	15254	2.45
309.0	9281	0.101	2.08	4.896	9088	53.0	2117	6235	15324	2.46
312.0	9371	0.115	2.37	4.911	9149	53.0	2117	6235	15384	2.47
312.0	9371	0.125	2.57	4.921	9130	52.9	2102	6250	15380	2.46
318.0	9551	0.139	2.87	4.936	9278	52.7	2074	6278	15556	2.48
321.0	9642	0.163	3.36	4.961	9317	52.6	2059	6293	15610	2.48
327.0	9822	0.187	3.86	4.987	9443	51.9	1958	6394	15837	2.48
330.0	9912	0.211	4.35	5.012	9481	51.4	1886	6466	15946	2.47
333.0	10002	0.235	4.84	5.038	9517	50.7	1786	6566	16084	2.45
336.0	10092	0.259	5.34	5.065	9553	50.3	1728	6624	16177	2.44
339.0	10182	0.284	5.84	5.092	9587	49.7	1642	6710	16298	2.43
342.0	10272	0.308	6.34	5.119	9621	49.5	1613	6739	16360	2.43
342.0	10272	0.332	6.84	5.146	9569	49.2	1570	6782	16352	2.41
342.0	10272	0.357	7.34	5.174	9518	48.9	1526	6826	16343	2.39
342.0	10272	0.381	7.84	5.202	9467	48.6	1483	6869	16335	2.38
342.0	10272	0.405	8.34	5.231	9415	48.1	1411	6941	16356	2.36
342.0	10272	0.429	8.84	5.259	9364	47.8	1368	6984	16348	2.34
339.0	10182	0.449	9.24	5.282	9241	47.5	1325	7027	16269	2.32
333.0	10002	0.468	9.64	5.306	9038	47.5	1325	7027	16065	2.29

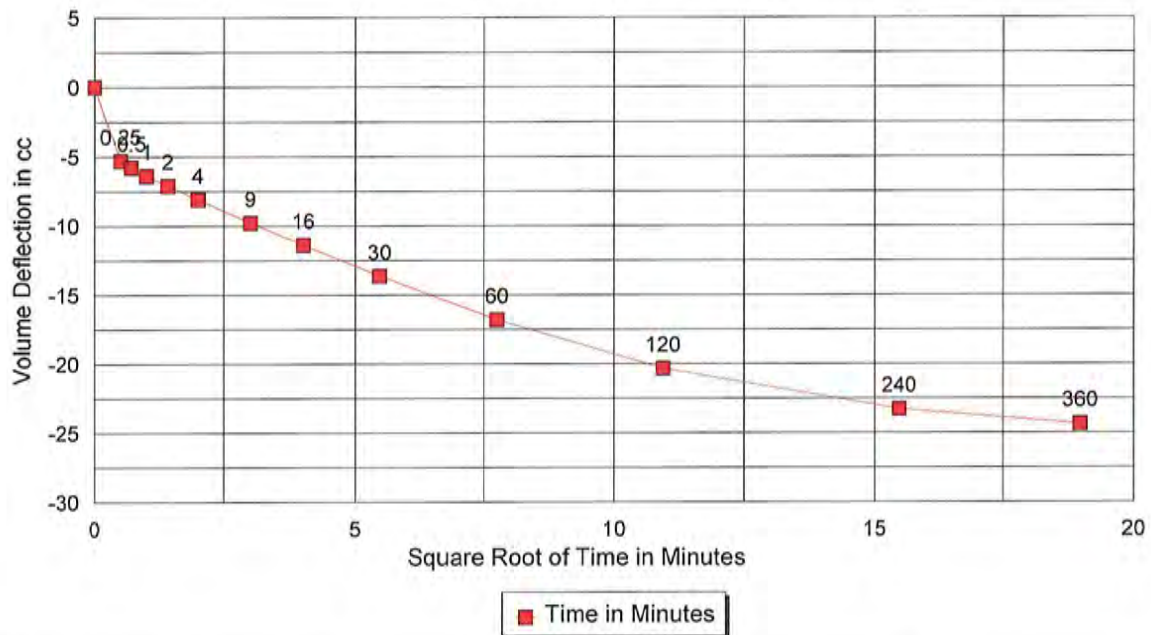
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 Data checked by: DPM Date: 5/21/14  
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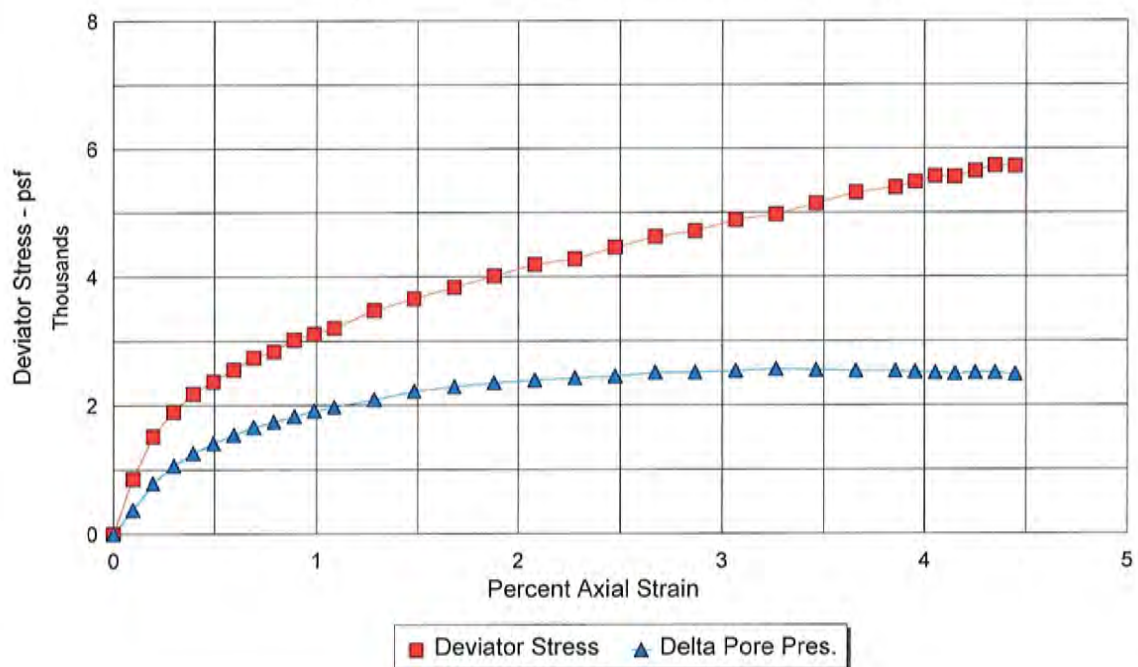
## CONSOLIDATION DATA

TI-B3-10, 56-57' (55-57'), -, Stage 1



## TRIAXIAL TEST - TX/CUpp

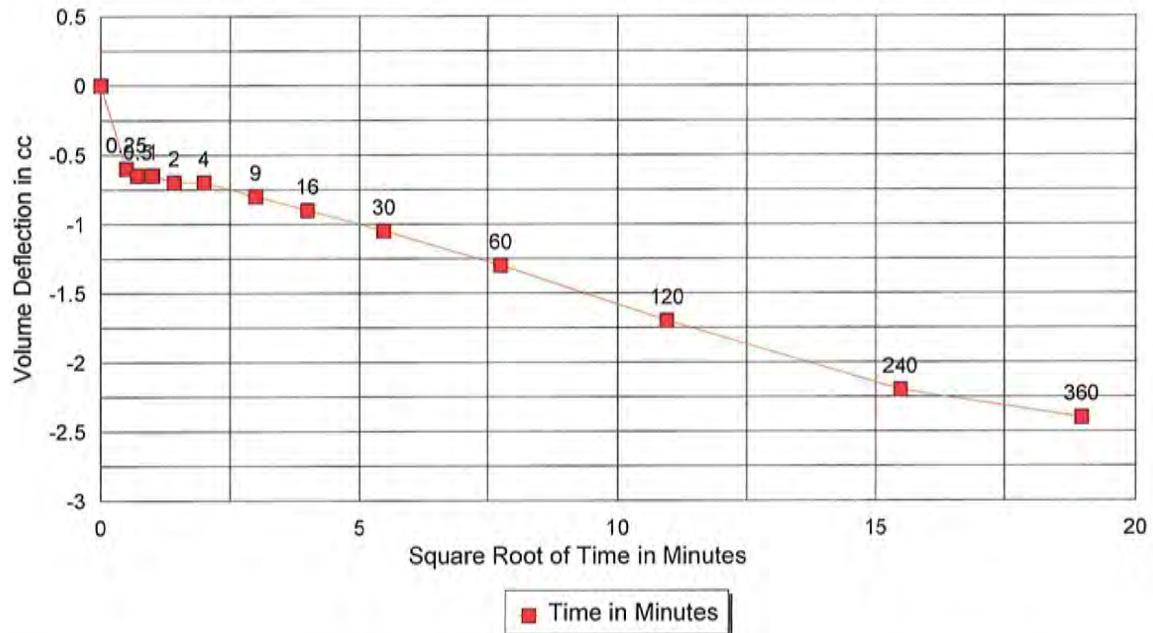
TI-B3-10, 56-57' (55-57'), -, Stage 1





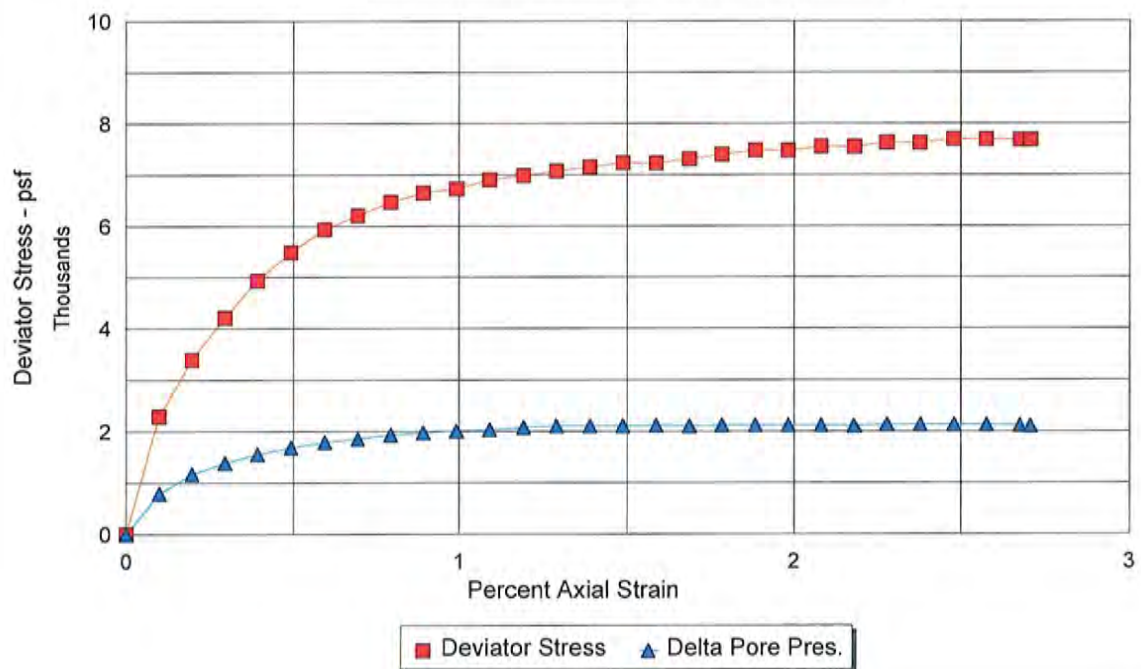
## CONSOLIDATION DATA

TI-B3-10, 56-57' (55-57'), -, Stage 2



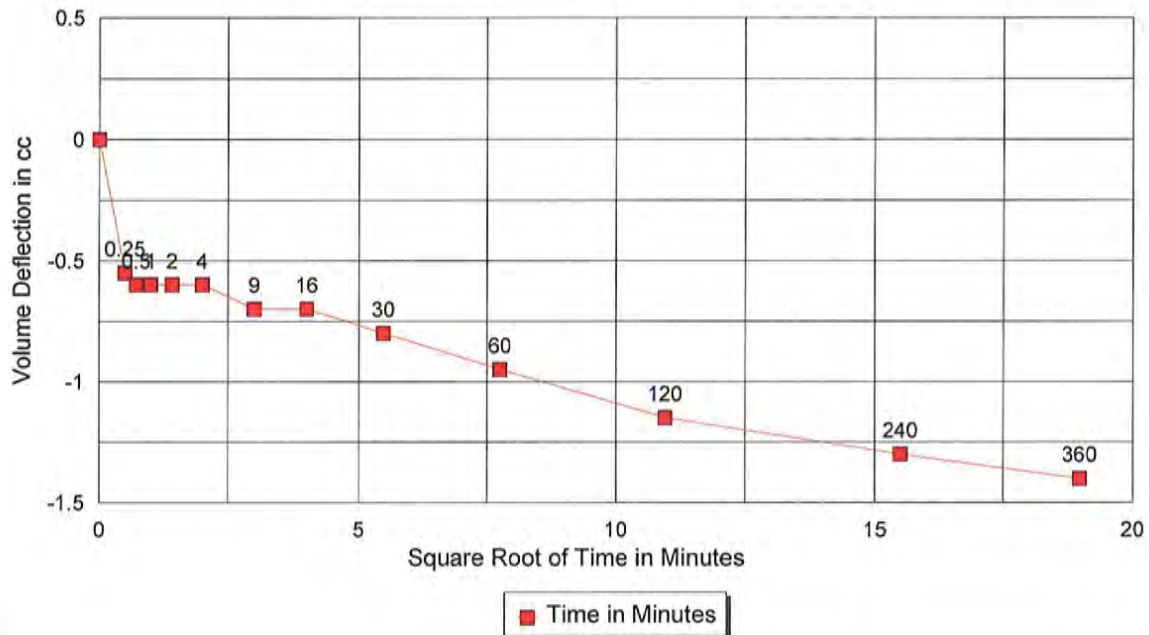
## TRIAXIAL TEST - TX/CUpp

TI-B3-10, 56-57' (55-57'), -, Stage 2



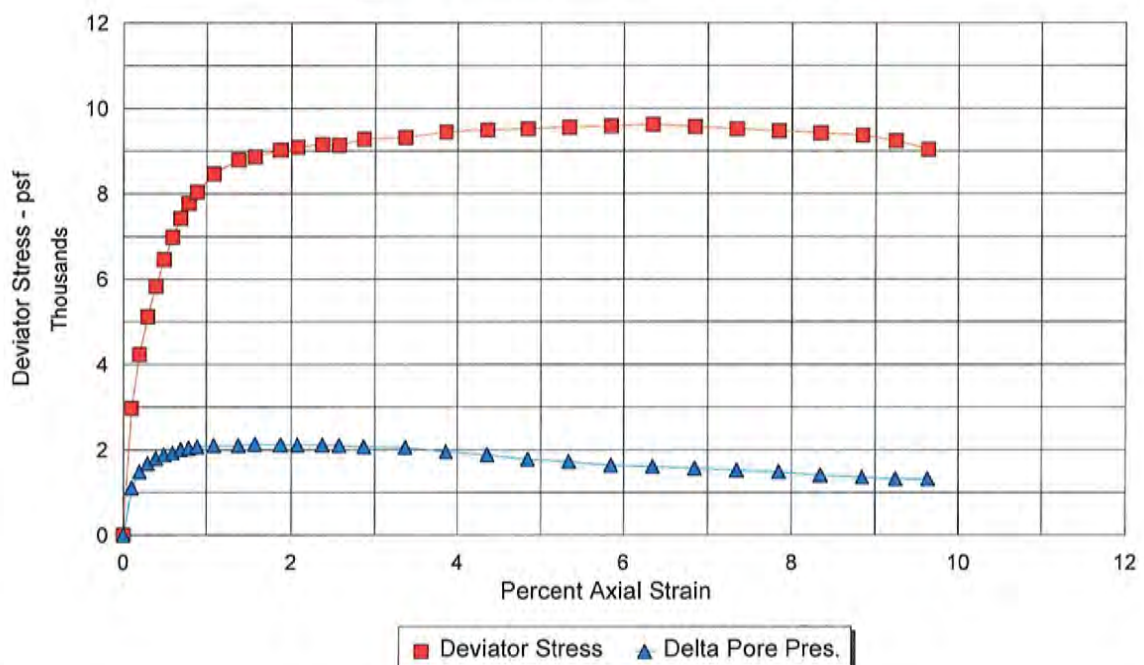
## CONSOLIDATION DATA

TI-B3-10, 56-57' (55-57'), -, Stage 3



## TRIAXIAL TEST - TX/CUpp

TI-B3-10, 56-57' (55-57'), -, Stage 3



EFFECTIVE STRESS PATH ANALYSIS TEST DATA  
ASTM D4767

CLIENT MWH  
BORING NO. TI-B3-08B  
DEPTH 45.5-46.0'  
SAMPLE NO. A,B&C  
PROJECT NO. --  
LOCATION Tailings Impoundment

JOB NO. 2512-77  
SAMPLED 11/19/13 MWH  
SATURATED TEST  
TEST TYPE TX/CUPP

				Peak Points				
				p'	q			
				PSF	PSF			
CONF. PRES. PSF	SAMPLE A	4752	PSF	SAMPLE A	4304	2345		
	SAMPLE B	5904	PSF	SAMPLE B	6742	3574		
	SAMPLE C	7056	PSF	SAMPLE C	9941	5103		

SAMPLE A				SAMPLE B				SAMPLE C			
$\sigma$ 3'	$\sigma$ 1'	p'	q	$\sigma$ 3'	$\sigma$ 1'	p'	q	$\sigma$ 3'	$\sigma$ 1'	p'	q
PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF
4752	4752	4752	0	5904	5904	5904	0	7056	7056	7056	0
4291	5654	4973	681	4997	8797	6897	1900	6106	9678	7892	1786
3830	5948	4889	1059	4450	9705	7077	2628	5602	11026	8314	2712
3499	6069	4784	1285	4219	9470	6844	2625	5285	11844	8564	3280
3240	6109	4674	1434	4003	9540	6772	2768	5040	12448	8744	3704
3053	6070	4561	1508	3845	9667	6756	2911	4896	12723	8810	3914
2894	6059	4477	1582	3715	9823	6769	3054	4766	13012	8889	4123
2779	6091	4435	1656	3614	9861	6738	3123	4680	13202	8941	4261
2678	6137	4408	1729	3542	9928	6735	3193	4608	13263	8935	4327
2578	6183	4380	1803	3470	9994	6732	3262	4550	13338	8944	4394
2506	6108	4307	1801	3427	10090	6758	3331	4421	13456	8938	4517
2419	6167	4293	1874	3384	10040	6712	3328	4349	13488	8918	4570
2362	6256	4309	1947	3355	10149	6752	3397	4320	13563	8941	4621
2318	6209	4263	1945	3312	10099	6705	3393	4291	13496	8894	4602
2275	6161	4218	1943	3298	10077	6688	3390	4277	13583	8930	4653
2232	6264	4248	2016	3269	10042	6655	3386	4277	13545	8911	4634
2189	6216	4203	2014	3254	10164	6709	3455	4291	13758	9025	4734
2160	6332	4246	2086	3240	10143	6692	3452	4291	13816	9054	4763
2131	6299	4215	2084	3226	10122	6674	3448	4320	13805	9063	4743
2117	6281	4199	2082	3211	10244	6727	3516	4320	13901	9110	4790
2074	6377	4226	2152	3197	10222	6710	3513	4378	14012	9195	4817
2030	6325	4178	2148	3197	10215	6706	3509	4406	14091	9249	4842
2016	6450	4233	2217	3182	10194	6688	3506	4450	14313	9381	4932
1987	6412	4200	2213	3168	10315	6742	3574	4478	14386	9432	4954
1973	6536	4254	2282	3168	10308	6738	3570	4522	14342	9432	4910
1958	6512	4235	2277	3168	10301	6734	3566	4565	14554	9560	4995
1958	6649	4304	2345	3168	10293	6731	3563	4608	14635	9622	5014
1958	6644	4301	2343	3168	10286	6727	3559	4666	14728	9697	5031
1944	6625	4284	2340					4709	14804	9757	5048
1944	6620	4282	2338					4752	14879	9815	5063
1944	6615	4280	2336					4795	14951	9873	5078
1944	6610	4277	2333					4838	15044	9941	5103

Data entry by: DAW  
Data checked by: *plm*  
FileName: MWPQB308.WK4

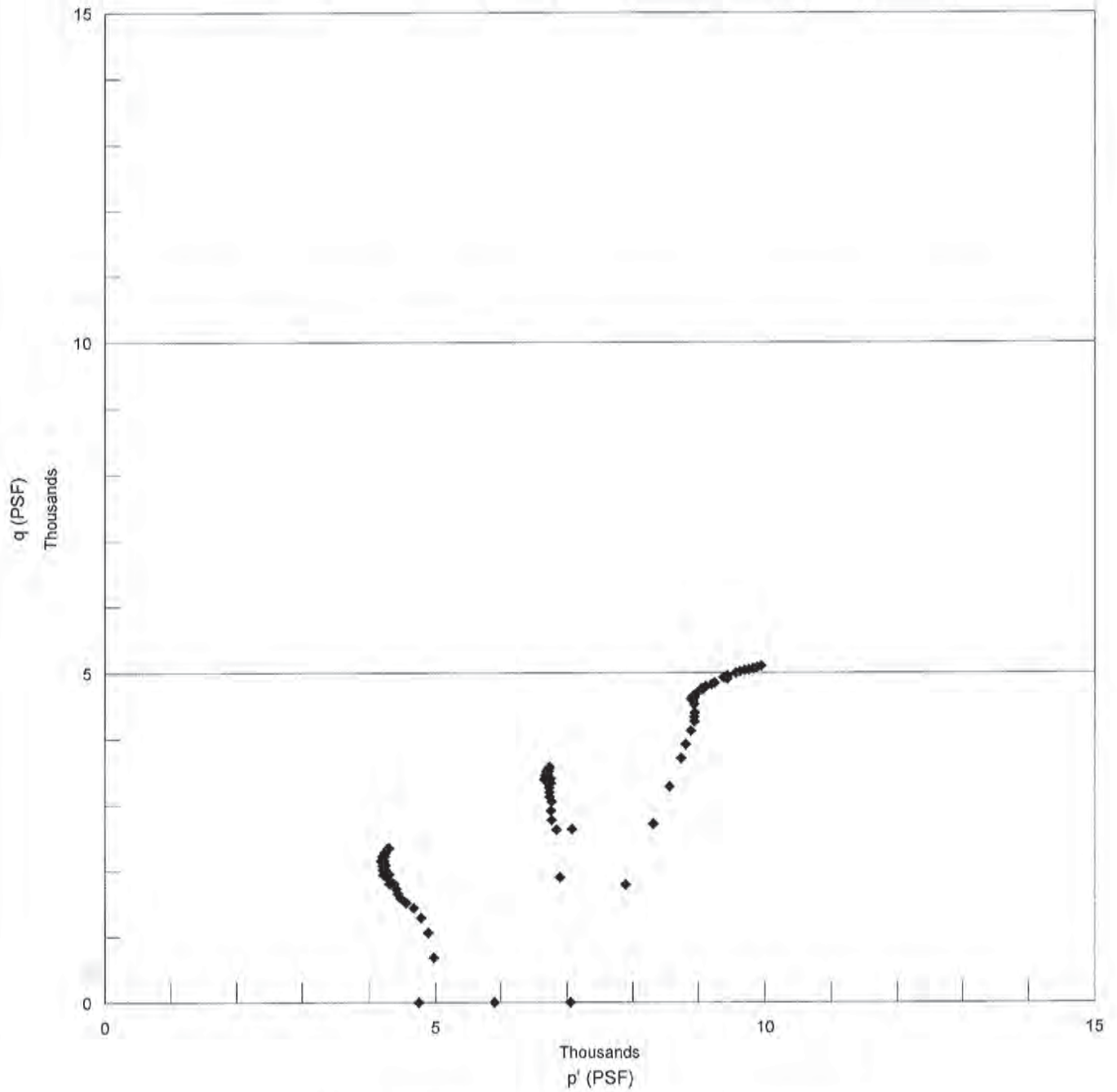
Date: 05/22/2014  
Date: *5/22/14*





## Effective Stress Path Analysis - $p'$ $q$ Plots

MWH, Tailings Impoundment, --, TI-B3-08B,A,B&C, 45.5-46.0'

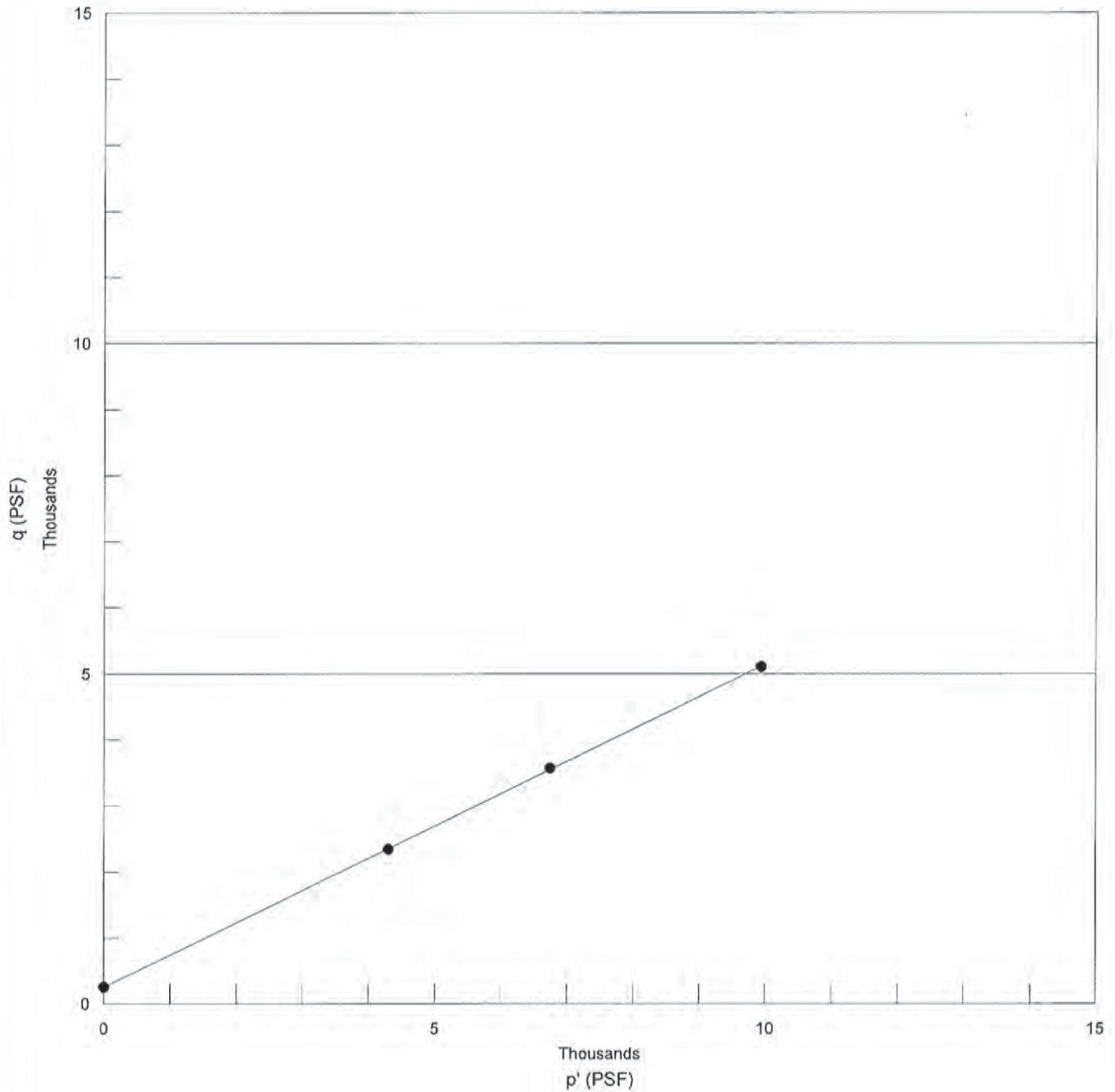


◆ Stress Paths of Samples A, B & C



## Effective Stress Path Analysis - p'-q Regression Plot

MWH, Tailings Impoundment, --, TI-B3-08B, A, B&C, 45.5-46.0'



● Shear Data

— Best Fit Line

psi= 26.0 degrees

a = 256.1 PSF

TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B3-08B  
DEPTH 45.5-46.0  
SAMPLE NO. -  
SOIL DESCR. Silty Clay  
LOCATION Tailings Impoundment  
TEST TYPE TX/Cupp, Stage 1

SAMPLED 11/19/13 MWH  
TEST STARTED 05/01/14 DPM  
TEST FINISHED 05/08/14 DPM  
CELL NUMBER 26S  
SATURATED TEST Yes  
CONF. PRES. PSF 4752

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	405.8	401.2
Wt. Wet Soil & Pan (g)	441.5	436.9
Wt. Dry Soil & Pan (g)	380.5	380.5
Wt. Lost Moisture (g)	61.0	56.4
Wt. of Pan Only (g)	35.7	35.7
Wt. of Dry Soil (g)	344.8	344.8
Moisture Content %	17.7	16.3
Wet Density PCF	128.8	127.4
Dry Density PCF	109.4	109.5
Init. Diameter (in)	1.892	
Init. Area (sq in)	2.811	
Init. Height (in)	4.270	
Vol. Bef. Consol. (cu ft)	0.00695	
Vol. After Consol. (cu ft)	0.00694	

Notes & Comments: Dried at 60 degrees C.

Data entry by: DPM/DAW Date: 05/21/2014  
Data checked by: *DPM* Date: *5/21/14*  
FileName: MWT0B308



TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B3-08B	SAMPLED	11/19/13 MWH
DEPTH	45.5-46.0	TEST STARTED	05/01/14 DPM
SAMPLE NO.	-	TEST FINISHED	05/08/14 DPM
SOIL DESCR.	Silty Clay	CELL NUMBER	26S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 1	CONF. PRES. PSF	4752

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	2.0	9.1				
50.0	48.0	9.4	10.1	38.3	47.6	9.3	0.93
60.0		10.5	10.6	48.2	57.9	9.7	0.97

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT TIME (Min)	Burette Reading (CC)	Vol. Defl. (CC)
0.00	0.0	0.30	0.00
0.25	0.5	4.30	-4.00
0.5	0.7	4.85	-4.55
1	1.0	5.40	-5.10
2	1.4	6.15	-5.85
4	2.0	7.00	-6.70
9	3.0	8.10	-7.80
16	4.0	8.70	-8.40
30	5.5	9.25	-8.95
60	7.7	9.55	-9.25
120	11.0	9.70	-9.40
240	15.5	9.80	-9.50
360	19.0	9.90	-9.60

Initial Height (in)	4.270	Init. Vol. (CC)	196.76
Height Change (in)	0.060	Vol. Change (CC)	19.05
Ht. After Cons. (in)	4.210	Cell Exp. (CC)	18.92
Initial Area (sq in)	2.811	Net Change (CC)	0.13
Area After Cons. (sq in)	2.850	Cons. Vol. (CC)	196.64

Data entry by: DPM/DAW Date: 05/21/2014  
 Data checked by: *DPM* Date: *5/21/14*  
 FileName: MWT0B308



# TRIAXIAL COMPRESSION TEST DATA

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B3-08B	SAMPLED	11/19/13 MWH
DEPTH	45.5-46.0	TEST STARTED	05/01/14 DPM
SAMPLE NO.	-	TEST FINISHED	05/08/14 DPM
SOIL DESCR.	Silty Clay	CELL NUMBER	26S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 1	CONF. PRES. PSF	4752

Init. Ht. (in)	4.270	Init. Area (sq in)	2.811
Consol. Ht. (in)	4.210	Consol. Area (sq in)	2.850
Back Pres. PSI	48.1	Strain Rate (in/min)	0.002

Axial Load Lbs.	Axial Load PSF	Delta Ht. In.	Axial % Strain	Area Final Sq In.	Dev. Stress PSF	Pore Pres. PSI	Delta Pres. PSF	Sigma 3' PSF	Sigma 1' PSF	Prin. Stress Ratio
0.0	0	0.000	0.00	2.850	0	48.1	0	4752	4752	1.00
27.0	1364	0.004	0.10	2.853	1363	51.3	461	4291	5654	1.32
42.0	2122	0.008	0.20	2.855	2118	54.5	922	3830	5948	1.55
51.0	2577	0.013	0.30	2.858	2569	56.8	1253	3499	6069	1.73
57.0	2880	0.017	0.40	2.861	2869	58.6	1512	3240	6109	1.89
60.0	3032	0.021	0.50	2.864	3017	59.9	1699	3053	6070	1.99
63.0	3183	0.025	0.60	2.867	3164	61.0	1858	2894	6059	2.09
66.0	3335	0.029	0.70	2.870	3312	61.8	1973	2779	6091	2.19
69.0	3487	0.034	0.80	2.873	3459	62.5	2074	2678	6137	2.29
72.0	3638	0.038	0.90	2.876	3606	63.2	2174	2578	6183	2.40
72.0	3638	0.042	1.00	2.878	3602	63.7	2246	2506	6108	2.44
75.0	3790	0.046	1.10	2.881	3748	64.3	2333	2419	6167	2.55
78.0	3941	0.051	1.20	2.884	3894	64.7	2390	2362	6256	2.65
78.0	3941	0.055	1.30	2.887	3890	65.0	2434	2318	6209	2.68
78.0	3941	0.059	1.40	2.890	3886	65.3	2477	2275	6161	2.71
81.0	4093	0.063	1.50	2.893	4032	65.6	2520	2232	6264	2.81
81.0	4093	0.068	1.60	2.896	4027	65.9	2563	2189	6216	2.84
84.0	4245	0.072	1.70	2.899	4172	66.1	2592	2160	6332	2.93
84.0	4245	0.076	1.80	2.902	4168	66.3	2621	2131	6299	2.96
84.0	4245	0.080	1.90	2.905	4164	66.4	2635	2117	6281	2.97
87.0	4396	0.089	2.10	2.911	4304	66.7	2678	2074	6377	3.08
87.0	4396	0.097	2.30	2.917	4295	67.0	2722	2030	6325	3.12
90.0	4548	0.105	2.50	2.923	4434	67.1	2736	2016	6450	3.20
90.0	4548	0.114	2.70	2.929	4425	67.3	2765	1987	6412	3.23
93.0	4699	0.122	2.90	2.935	4563	67.4	2779	1973	6536	3.31
93.0	4699	0.131	3.10	2.941	4554	67.5	2794	1958	6512	3.33
96.0	4851	0.139	3.30	2.947	4691	67.5	2794	1958	6649	3.40
96.0	4851	0.143	3.40	2.950	4686	67.5	2794	1958	6644	3.39
96.0	4851	0.148	3.51	2.953	4681	67.6	2808	1944	6625	3.41
96.0	4851	0.152	3.61	2.956	4676	67.6	2808	1944	6620	3.41
96.0	4851	0.156	3.71	2.960	4671	67.6	2808	1944	6615	3.40
96.0	4851	0.161	3.81	2.963	4666	67.6	2808	1944	6610	3.40

Data entry by: DPM/DAW Date: 05/21/2014  
 Data checked by: *DPM* Date: *5/21/14*  
 FileName: MWT0B308





TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B3-08B  
DEPTH 45.5-46.0  
SAMPLE NO. -  
SOIL DESCR. Silty Clay  
LOCATION Tailings Impoundment  
TEST TYPE TX/CUp, Stage 2

SAMPLED 11/19/13 MWH  
TEST STARTED 05/01/14 DPM  
TEST FINISHED 05/08/14 DPM  
CELL NUMBER 26S  
SATURATED TEST Yes  
CONF. PRES. PSF 5904

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	405.8	401.2
Wt. Wet Soil & Pan (g)	441.5	436.9
Wt. Dry Soil & Pan (g)	380.5	380.5
Wt. Lost Moisture (g)	61.0	56.4
Wt. of Pan Only (g)	35.7	35.7
Wt. of Dry Soil (g)	344.8	344.8
Moisture Content %	17.7	16.3
Wet Density PCF	128.9	127.8
Dry Density PCF	109.5	109.8
Init. Diameter (in)	1.942	
Init. Area (sq in)	2.963	
Init. Height (in)	4.050	
Vol. Bef. Consol. (cu ft)	0.00694	
Vol. After Consol. (cu ft)	0.00692	

Notes & Comments:

Data entry by: DPM/DAW Date: 05/21/2014  
Data checked by: DPM Date: 5/21/14  
FileName: MWT0B308



TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B3-08B	SAMPLED	11/19/13 MWH
DEPTH	45.5-46.0	TEST STARTED	05/01/14 DPM
SAMPLE NO.	-	TEST FINISHED	05/08/14 DPM
SOIL DESCR.	Silty Clay	CELL NUMBER	26S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 2	CONF. PRES. PSF	5904

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT TIME (Min)	Burette Reading (CC)	Vol. Defl. (CC)
0.00	0.0	12.80	0.00
0.25	0.5	13.35	-0.55
0.5	0.7	13.40	-0.60
1	1.0	13.40	-0.60
2	1.4	13.45	-0.65
4	2.0	13.50	-0.70
9	3.0	13.60	-0.80
16	4.0	13.65	-0.85
30	5.5	13.70	-0.90
60	7.7	13.80	-1.00
120	11.0	13.90	-1.10
240	15.5	13.90	-1.10
360	19.0	13.90	-1.10

Initial Height (in)	4.050	Init. Vol. (CC)	196.64
Height Change (in)	-0.001	Vol. Change (CC)	1.40
Ht. After Cons. (in)	4.051	Cell Exp. (CC)	0.80
Initial Area (sq in)	2.963	Net Change (CC)	0.60
Area After Cons. (sq in)	2.953	Cons. Vol. (CC)	196.03

Data entry by: DPM/DAW Date: 05/21/2014  
 Data checked by: DPM Date: 5/21/14  
 FileName: MWT0B308



# TRIAXIAL COMPRESSION TEST DATA

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B3-08B	SAMPLED	11/19/13 MWH
DEPTH	45.5-46.0	TEST STARTED	05/01/14 DPM
SAMPLE NO.	-	TEST FINISHED	05/08/14 DPM
SOIL DESCR.	Silty Clay	CELL NUMBER	26S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 2	CONF. PRES. PSF	5904

Init. Ht. (in)	4.050	Init. Area (sq in)	2.963
Consol. Ht. (in)	4.051	Consol. Area (sq in)	2.953
Back Pres. PSI	48.1	Strain Rate (in/min)	0.001

Axial Load Lbs.	Axial Load PSF	Delta Ht. In.	Axial % Strain	Area Final Sq In.	Dev. Stress PSF	Pore Pres. PSI	Delta Pres. PSF	Sigma 3' PSF	Sigma 1' PSF	Prin. Stress Ratio
0.0	0	0.000	0.00	2.953	0	48.1	0	5904	5904	1.00
78.0	3804	0.004	0.11	2.956	3800	54.4	907	4997	8797	1.76
108.0	5267	0.009	0.21	2.959	5256	58.2	1454	4450	9705	2.18
108.0	5267	0.013	0.31	2.962	5251	59.8	1685	4219	9470	2.24
114.0	5559	0.017	0.41	2.965	5537	61.3	1901	4003	9540	2.38
120.0	5852	0.021	0.51	2.968	5822	62.4	2059	3845	9667	2.51
126.0	6145	0.025	0.60	2.971	6107	63.3	2189	3715	9823	2.64
129.0	6291	0.029	0.70	2.974	6247	64.0	2290	3614	9861	2.73
132.0	6437	0.033	0.80	2.977	6386	64.5	2362	3542	9928	2.80
135.0	6583	0.037	0.90	2.980	6524	65.0	2434	3470	9994	2.88
138.0	6730	0.041	1.00	2.983	6662	65.3	2477	3427	10090	2.94
138.0	6730	0.045	1.10	2.986	6656	65.6	2520	3384	10040	2.97
141.0	6876	0.049	1.20	2.989	6793	65.8	2549	3355	10149	3.02
141.0	6876	0.053	1.30	2.992	6787	66.1	2592	3312	10099	3.05
141.0	6876	0.057	1.40	2.995	6780	66.2	2606	3298	10077	3.06
141.0	6876	0.061	1.50	2.998	6773	66.4	2635	3269	10042	3.07
144.0	7022	0.065	1.60	3.001	6910	66.5	2650	3254	10164	3.12
144.0	7022	0.069	1.70	3.004	6903	66.6	2664	3240	10143	3.13
144.0	7022	0.073	1.80	3.007	6896	66.7	2678	3226	10122	3.14
147.0	7169	0.077	1.90	3.010	7033	66.8	2693	3211	10244	3.19
147.0	7169	0.081	2.00	3.013	7026	66.9	2707	3197	10222	3.20
147.0	7169	0.085	2.10	3.016	7018	66.9	2707	3197	10215	3.20
147.0	7169	0.089	2.19	3.019	7011	67.0	2722	3182	10194	3.20
150.0	7315	0.093	2.30	3.022	7147	67.1	2736	3168	10315	3.26
150.0	7315	0.097	2.39	3.025	7140	67.1	2736	3168	10308	3.25
150.0	7315	0.101	2.49	3.028	7133	67.1	2736	3168	10301	3.25
150.0	7315	0.105	2.59	3.032	7125	67.1	2736	3168	10293	3.25
150.0	7315	0.109	2.69	3.035	7118	67.1	2736	3168	10286	3.25

Data entry by: DPM/DAW Date: 05/21/2014  
 Data checked by: *DPM* Date: *5/21/14*  
 FileName: MWT0B308



TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B3-08B	SAMPLED	11/19/13 MWH
DEPTH	45.5-46.0	TEST STARTED	05/01/14 DPM
SAMPLE NO.	-	TEST FINISHED	05/08/14 DPM
SOIL DESCR.	Silty Clay	CELL NUMBER	26S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/Cupp, Stage 3	CONF. PRES. PSF	7056

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	405.8	401.2
Wt. Wet Soil & Pan (g)	441.5	436.9
Wt. Dry Soil & Pan (g)	380.5	380.5
Wt. Lost Moisture (g)	61.0	56.4
Wt. of Pan Only (g)	35.7	35.7
Wt. of Dry Soil (g)	344.8	344.8
Moisture Content %	17.7	16.3
Wet Density PCF	129.3	128.4
Dry Density PCF	109.8	110.3
Init. Diameter (in)	1.966	
Init. Area (sq in)	3.035	
Init. Height (in)	3.941	
Vol. Bef. Consol. (cu ft)	0.00692	
Vol. After Consol. (cu ft)	0.00689	

Notes & Comments:

Data entry by: DPM/DAW Date: 05/21/2014  
Data checked by: DPM Date: 5/21/14  
FileName: MWT0B308





TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B3-08B  
DEPTH 45.5-46.0  
SAMPLE NO. -  
SOIL DESCR. Silty Clay  
LOCATION Tailings Impoundment  
TEST TYPE TX/CUpp, Stage 3

SAMPLED 11/19/13 MWH  
TEST STARTED 05/01/14 DPM  
TEST FINISHED 05/08/14 DPM  
CELL NUMBER 26S  
SATURATED TEST Yes  
CONF. PRES. PSF 7056

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT TIME (Min)	Burette Reading (CC)	Vol. Defl. (CC)
0.00	0.0	15.70	0.00
0.25	0.5	16.25	-0.55
0.5	0.7	16.25	-0.55
1	1.0	16.25	-0.55
2	1.4	16.30	-0.60
4	2.0	16.30	-0.60
9	3.0	16.35	-0.65
16	4.0	16.40	-0.70
30	5.5	16.45	-0.75
60	7.7	16.50	-0.80
120	11.0	16.60	-0.90
240	15.5	16.80	-1.10
360	19.0	16.90	-1.20

Initial Height (in)	3.941	Init. Vol. (CC)	196.03
Height Change (in)	0.000	Vol. Change (CC)	1.70
Ht. After Cons. (in)	3.941	Cell Exp. (CC)	0.80
Initial Area (sq in)	3.035	Net Change (CC)	0.90
Area After Cons. (sq in)	3.021	Cons. Vol. (CC)	195.13

Data entry by: DPM/DAW Date: 05/21/2014  
Data checked by: DPM Date: 5/21/14  
FileName: MWT0B308



# TRIAXIAL COMPRESSION TEST DATA

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B3-08B	SAMPLED	11/19/13 MWH
DEPTH	45.5-46.0	TEST STARTED	05/01/14 DPM
SAMPLE NO.	-	TEST FINISHED	05/08/14 DPM
SOIL DESCR.	Silty Clay	CELL NUMBER	26S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 3	CONF. PRES. PSF	7056

Init. Ht. (in)	3.941	Init. Area (sq in)	3.035
Consol. Ht. (in)	3.941	Consol. Area (sq in)	3.021
Back Pres. PSI	48.5	Strain Rate (in/min)	0.001

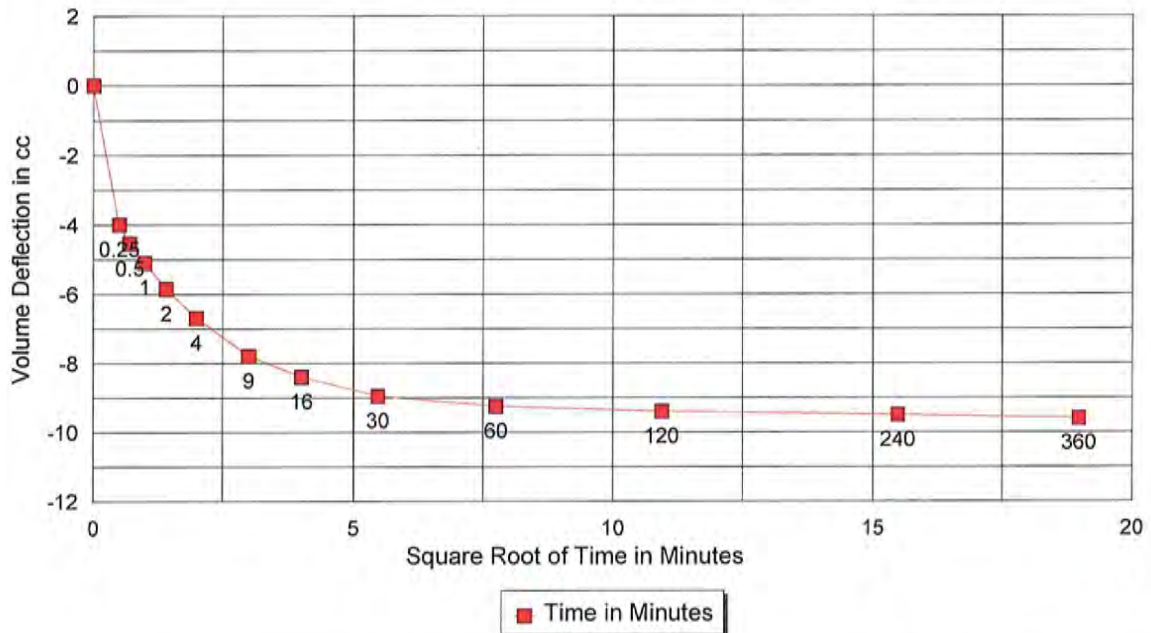
Axial Load Lbs.	Axial Load PSF	Delta Ht. In.	Axial % Strain	Area Final Sq In.	Dev. Stress PSF	Pore Pres. PSI	Delta Pres. PSF	Sigma 3' PSF	Sigma 1' PSF	Prin. Stress Ratio
0.0	0	0.000	0.00	3.021	0	48.5	0	7056	7056	1.00
75.0	3575	0.004	0.10	3.024	3572	55.1	950	6106	9678	1.59
114.0	5435	0.008	0.20	3.027	5424	58.6	1454	5602	11026	1.97
138.0	6579	0.012	0.30	3.030	6559	60.8	1771	5285	11844	2.24
156.0	7437	0.016	0.40	3.033	7408	62.5	2016	5040	12448	2.47
165.0	7866	0.020	0.49	3.036	7827	63.5	2160	4896	12723	2.60
174.0	8295	0.023	0.59	3.039	8246	64.4	2290	4766	13012	2.73
180.0	8581	0.027	0.69	3.042	8522	65.0	2376	4680	13202	2.82
183.0	8724	0.031	0.79	3.045	8655	65.5	2448	4608	13263	2.88
186.0	8867	0.035	0.89	3.048	8788	65.9	2506	4550	13338	2.93
192.0	9153	0.051	1.29	3.060	9035	66.8	2635	4421	13456	3.04
195.0	9296	0.067	1.69	3.072	9139	67.3	2707	4349	13488	3.10
198.0	9439	0.082	2.08	3.085	9243	67.5	2736	4320	13563	3.14
198.0	9439	0.098	2.48	3.097	9205	67.7	2765	4291	13496	3.15
201.0	9582	0.113	2.88	3.110	9307	67.8	2779	4277	13583	3.18
201.0	9582	0.129	3.27	3.123	9269	67.8	2779	4277	13545	3.17
207.0	9868	0.160	4.06	3.149	9467	67.7	2765	4291	13758	3.21
210.0	10011	0.191	4.86	3.175	9525	67.7	2765	4291	13816	3.22
210.0	10011	0.207	5.25	3.188	9485	67.5	2736	4320	13805	3.20
213.0	10154	0.223	5.65	3.201	9581	67.5	2736	4320	13901	3.22
216.0	10297	0.254	6.44	3.228	9634	67.1	2678	4378	14012	3.20
219.0	10440	0.285	7.24	3.256	9684	66.9	2650	4406	14091	3.20
225.0	10726	0.317	8.04	3.285	9864	66.6	2606	4450	14313	3.22
228.0	10869	0.349	8.84	3.314	9908	66.4	2578	4478	14386	3.21
228.0	10869	0.380	9.65	3.343	9821	66.1	2534	4522	14342	3.17
234.0	11155	0.412	10.45	3.373	9990	65.8	2491	4565	14554	3.19
237.0	11298	0.443	11.25	3.403	10027	65.5	2448	4608	14635	3.18
240.0	11441	0.475	12.05	3.435	10062	65.1	2390	4666	14728	3.16
243.0	11584	0.507	12.85	3.466	10095	64.8	2347	4709	14804	3.14
246.0	11727	0.538	13.65	3.498	10127	64.5	2304	4752	14879	3.13
249.0	11870	0.570	14.45	3.531	10155	64.2	2261	4795	14951	3.12
252.0	12014	0.593	15.05	3.556	10206	63.9	2218	4838	15044	3.11

Data entry by: DPM/DAW Date: 05/21/2014  
 Data checked by: DPM Date: 5/21/14  
 FileName: MWT0B308



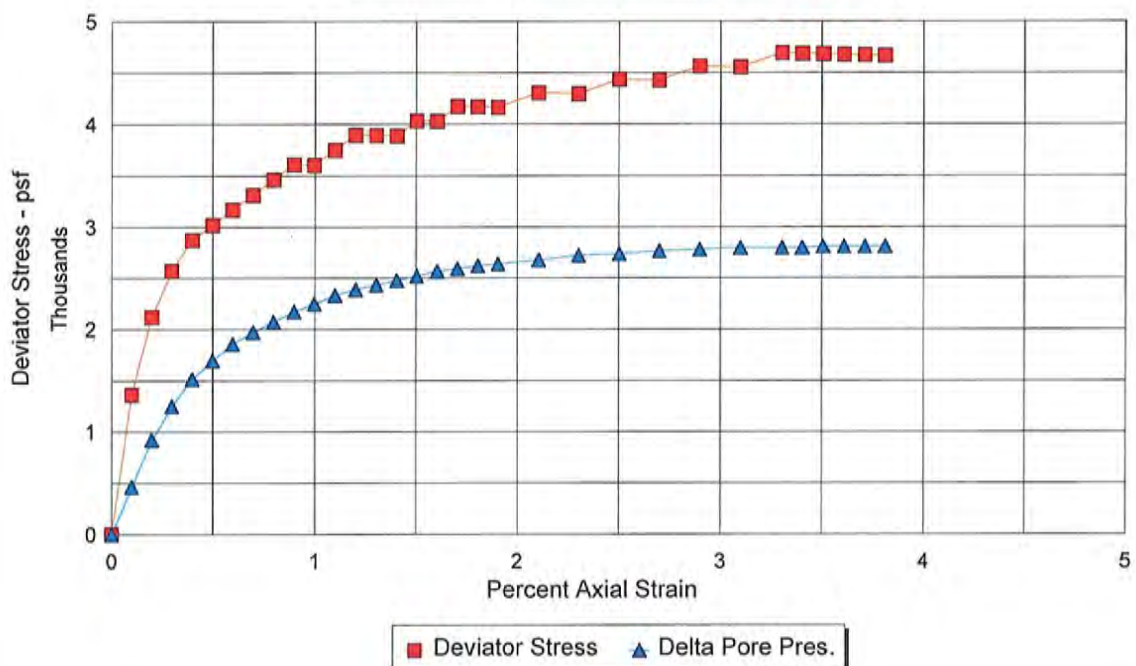
## CONSOLIDATION DATA

TI-B3-08B, 45.5-46.0, -, Stage 1



## TRIAXIAL TEST - TX/CUpp

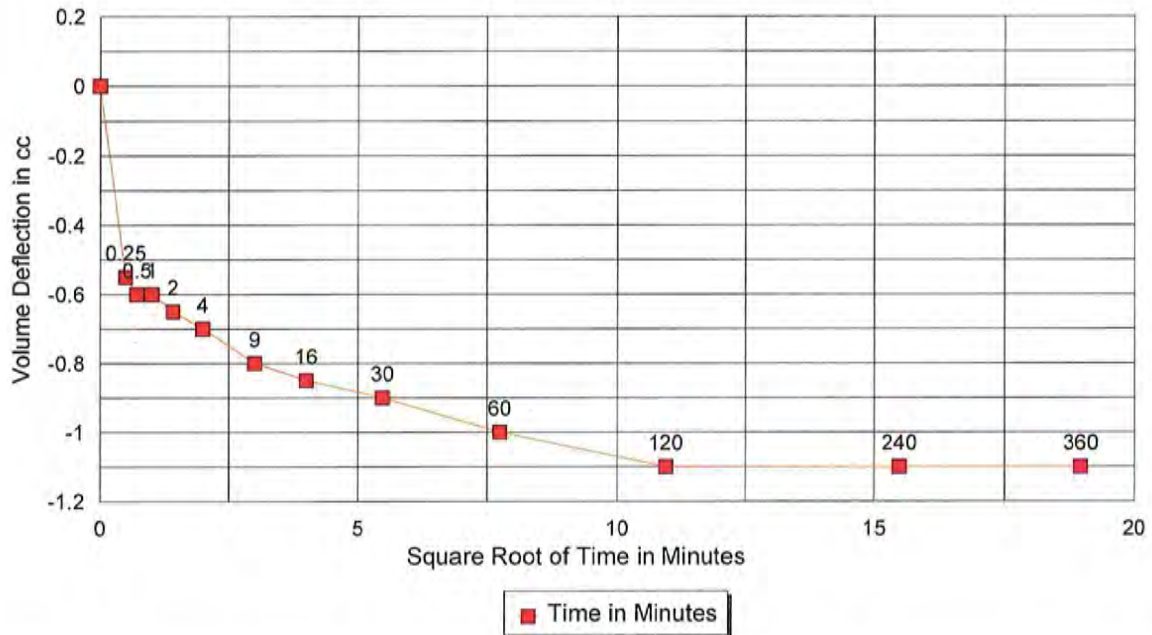
TI-B3-08B, 45.5-46.0, -, Stage 1





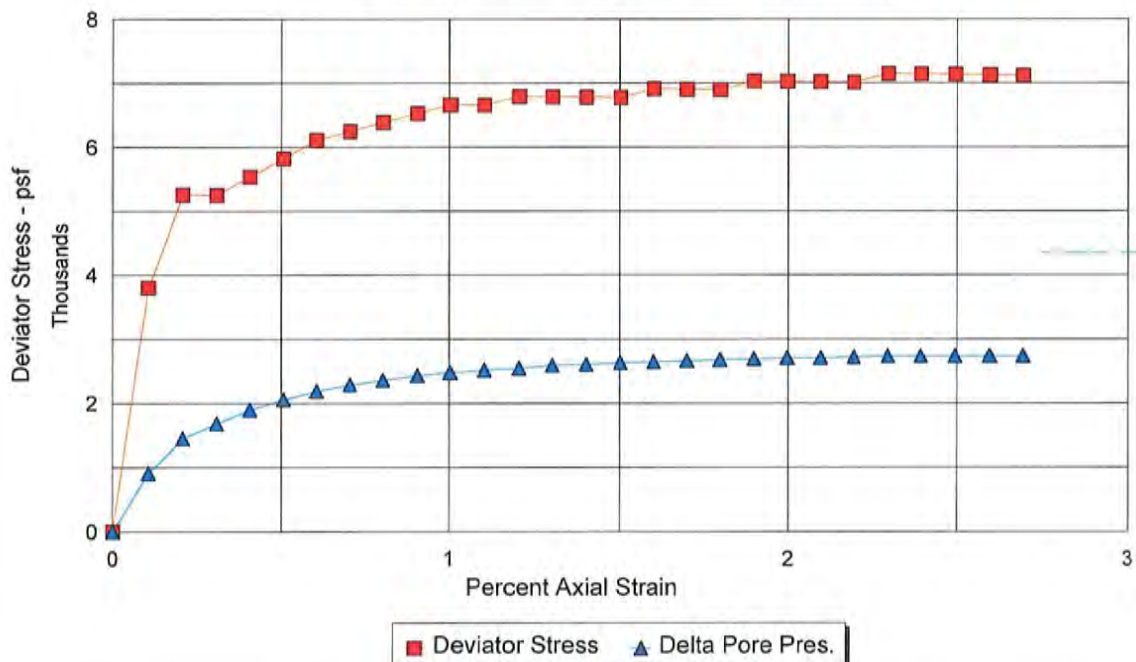
## CONSOLIDATION DATA

TI-B3-08B, 45.5-46.0, -, Stage 2



## TRIAXIAL TEST - TX/CUpp

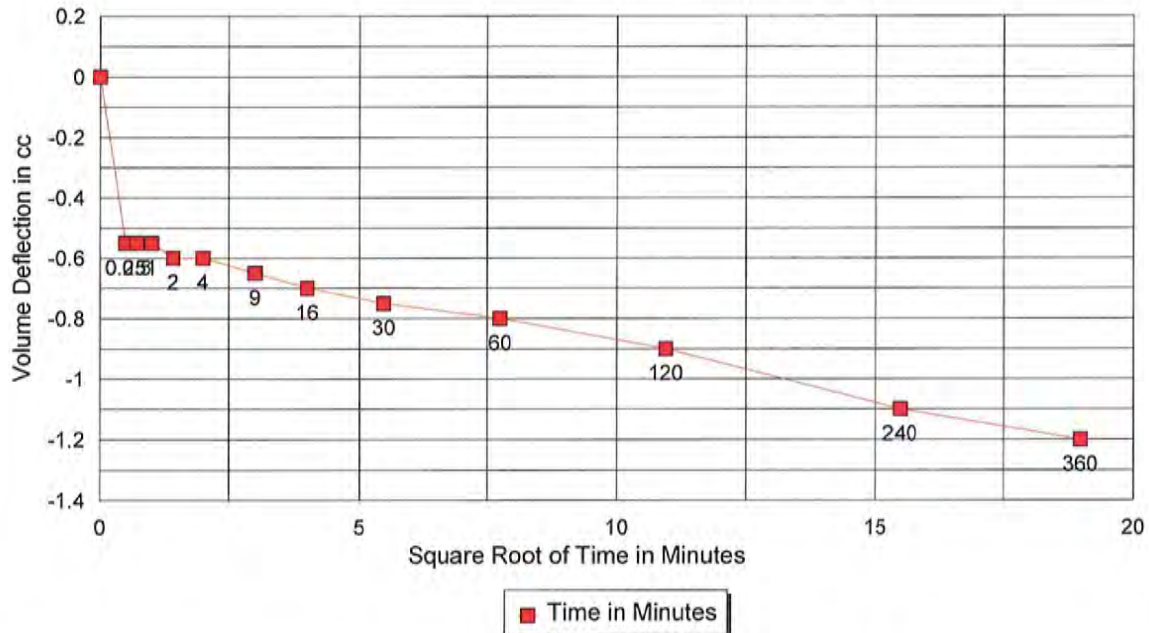
TI-B3-08B, 45.5-46.0, -, Stage 2





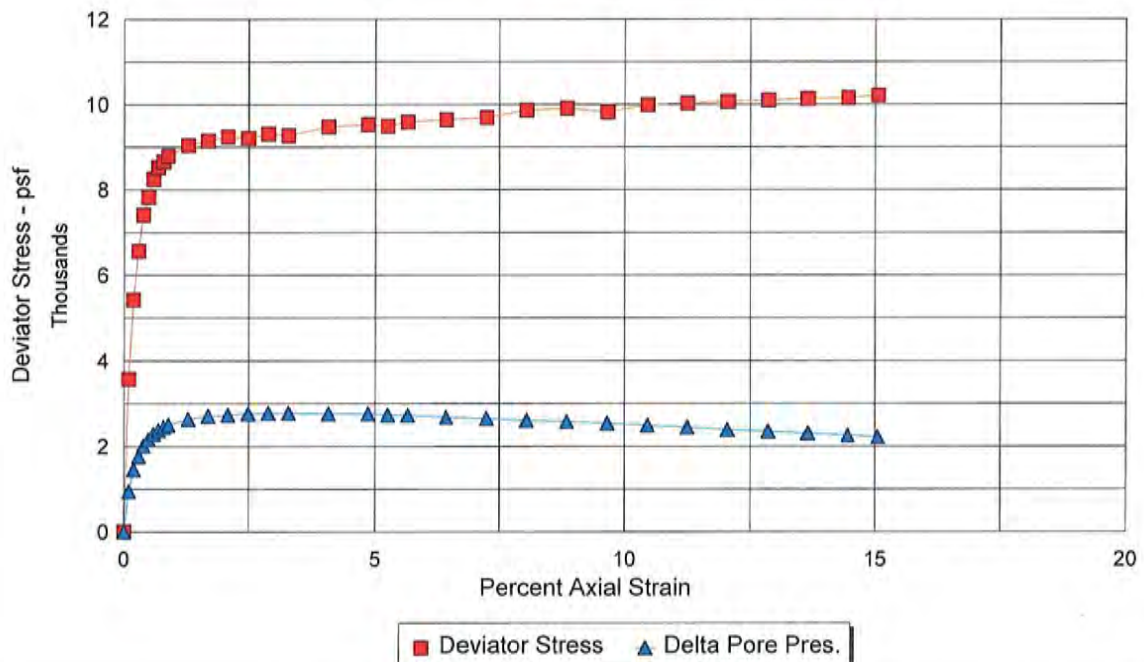
## CONSOLIDATION DATA

TI-B3-08B, 45.5-46.0, -, Stage 3



## TRIAXIAL TEST - TX/CUpp

TI-B3-08B, 45.5-46.0, -, Stage 3



EFFECTIVE STRESS PATH ANALYSIS TEST DATA  
ASTM D4767

CLIENT MWH  
BORING NO. TI-B3 06  
DEPTH 35-36' (35-37.3')  
SAMPLE NO. A,B&C  
PROJECT NO. --  
LOCATION Tailings Impoundment

JOB NO. 2512-77  
SAMPLED 11/19/13 MWH  
SATURATED TEST  
TEST TYPE TX/CUPP

				Peak Points		
				p'	q	
				PSF	PSF	
CONF. PRES. PSF	SAMPLE A	3456	PSF	SAMPLE A	1924	1118
	SAMPLE B	4608	PSF	SAMPLE B	6117	3583
	SAMPLE C	5760	PSF	SAMPLE C	19533	10922

SAMPLE A				SAMPLE B				SAMPLE C			
$\sigma$ 3'	$\sigma$ 1'	p'	q	$\sigma$ 3'	$\sigma$ 1'	p'	q	$\sigma$ 3'	$\sigma$ 1'	p'	q
PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF
3456	3456	3456	0	4608	4608	4608	0	5760	5760	5760	0
3053	3914	3484	431	3744	6346	5045	1301	5083	7868	6476	1392
2549	3887	3218	669	3240	6644	4942	1702	4781	9448	7114	2333
2146	3674	2910	764	2952	6847	4899	1947	4493	11665	8079	3586
1858	3384	2621	763	2765	6934	4849	2084	4421	12482	8451	4031
1670	3291	2481	810	2621	7063	4842	2221	4349	13028	8688	4340
1512	3226	2369	857	2520	7050	4785	2265	4306	13513	8909	4604
1397	3109	2253	856	2434	7144	4789	2355	4277	13921	9099	4822
1282	2992	2137	855	2390	7189	4789	2399	4248	14150	9199	4951
1282	2991	2136	855	2347	7233	4790	2443	4234	14394	9314	5080
1080	2788	1934	854	2304	7277	4790	2486	4234	14651	9442	5208
1080	2881	1980	900	2261	7407	4834	2573	4262	15014	9638	5376
1051	2850	1951	899	2261	7494	4877	2617	4320	15571	9945	5625
1008	2805	1907	899	2246	7566	4906	2660	4522	16573	10547	6026
965	2760	1862	898	2218	7623	4920	2703	4738	17577	11158	6420
950	2744	1847	897	2218	7795	5006	2789	4968	18670	11819	6851
922	2807	1865	943	2232	7804	5018	2786	5227	19692	12460	7233
907	2791	1849	942	2232	7889	5061	2829	5515	20731	13123	7608
893	2775	1834	941	2246	7989	5118	2871	5818	21856	13837	8019
864	2836	1850	986	2275	8188	5232	2957	6106	22951	14528	8423
850	2820	1835	985	2290	8288	5289	2999	6408	23963	15185	8777
850	2818	1834	984	2290	8372	5331	3041	6725	25061	15893	9168
835	2895	1865	1030	2304	8471	5387	3083	7013	26033	16523	9510
835	2893	1864	1029	2347	8683	5515	3168	7301	26911	17106	9805
821	2876	1849	1028	2362	8781	5571	3210	7603	27874	17739	10135
806	2860	1833	1027	2376	8879	5628	3252	7877	28634	18256	10379
806	2951	1879	1072	2405	8991	5698	3293	8122	29356	18739	10617
806	3042	1924	1118	2448	9201	5825	3377	8366	29988	19177	10811
806	3040	1923	1117	2448	9284	5866	3418	8611	30455	19533	10922
806	3038	1922	1116	2462	9381	5922	3459	8798	30467	19633	10834
821	3050	1935	1115	2506	9589	6048	3542	8842	30284	19563	10721
821	3049	1935	1114	2534	9700	6117	3583	8914	29977	19445	10532

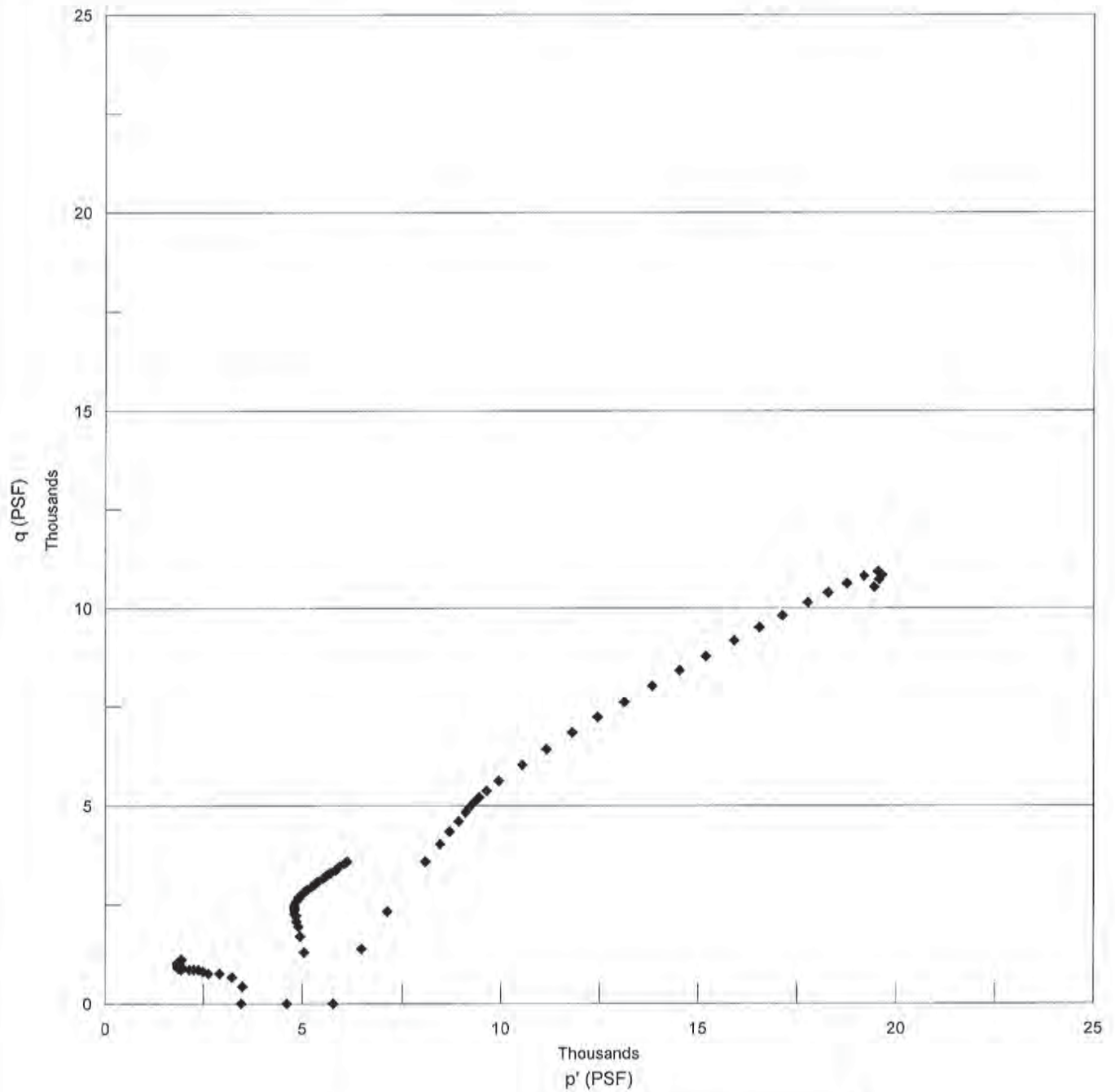
Data entry by: DAW  
Data checked by: *DPm*  
FileName: MW/PQB306.WK4

Date: 05/22/2014  
Date: *5/22/14*



# Effective Stress Path Analysis - $p'$ $q$ Plots

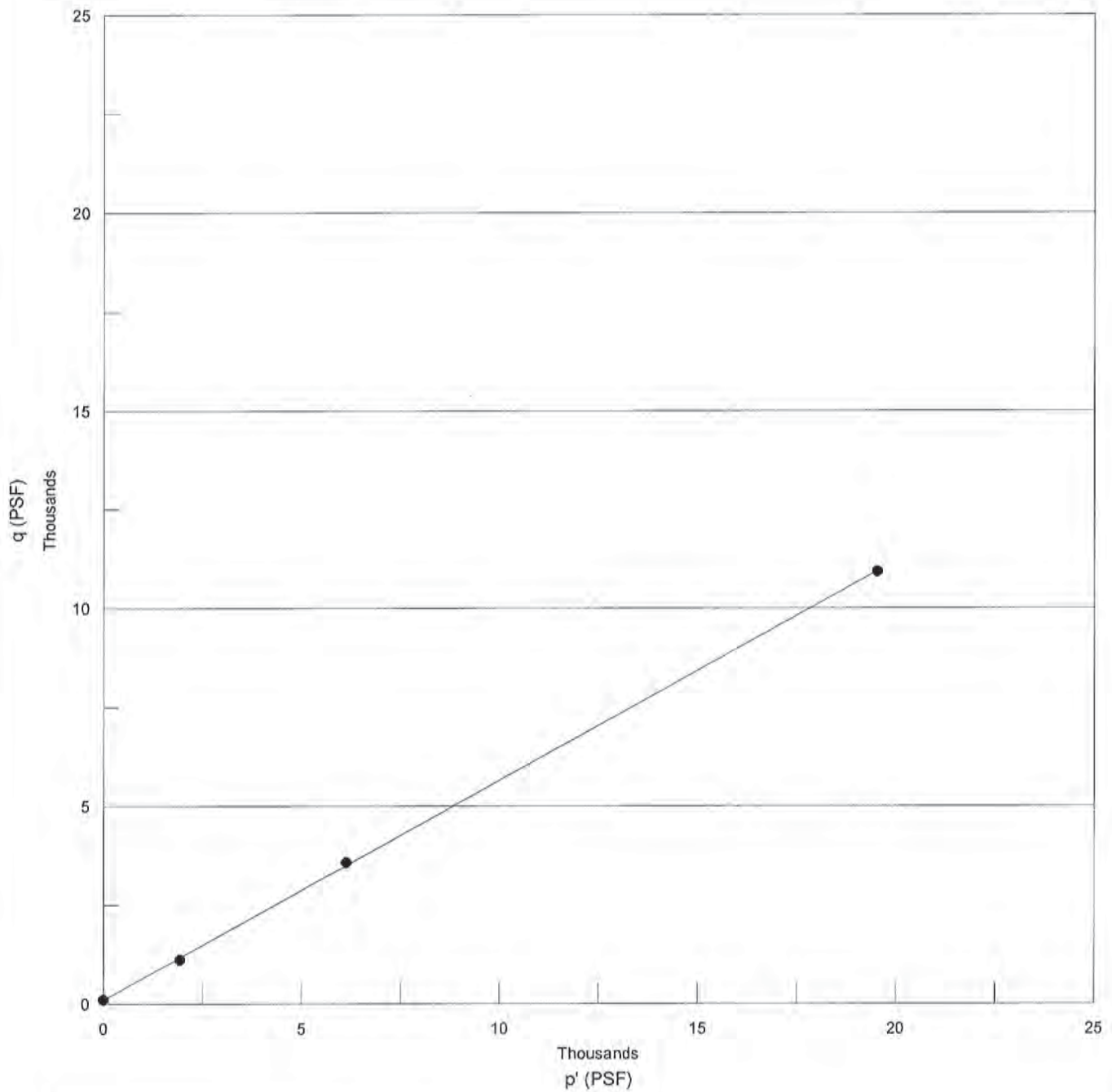
MWH, Tailings Impoundment, --, TI-B3 06, A, B & C, 35-36' (35-37.3')



◆ Stress Paths of Samples A, B & C

## Effective Stress Path Analysis - p'-q Regression Plot

MWH, Tailings Impoundment, --, TI-B3 06, A, B&C, 35-36' (35-37.3')



● Shear Data

- Best Fit Line

psi = 29.0 degrees

a = 111.8 PSF



TRIAxIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B3 06  
DEPTH 35-36' (35-37.3')  
SAMPLE NO. -  
SOIL DESCR. Silty Clay  
LOCATION Tailings Impoundment  
TEST TYPE TX/CUpp, Stage 1

SAMPLED 11/19/13 MWH  
TEST STARTED 04/25/14 DPM  
TEST FINISHED 05/04/14 DPM  
CELL NUMBER 25s  
SATURATED TEST Yes  
CONF. PRES. PSF 3456

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	688.2	758.3
Wt. Wet Soil & Pan (g)	704.1	774.1
Wt. Dry Soil & Pan (g)	640.3	640.3
Wt. Lost Moisture (g)	63.8	133.8
Wt. of Pan Only (g)	15.8	15.8
Wt. of Dry Soil (g)	624.5	624.5
Moisture Content %	10.2	21.4
Wet Density PCF	109.2	123.4
Dry Density PCF	99.1	101.7
Init. Diameter (in)	2.402	
Init. Area (sq in)	4.531	
Init. Height (in)	5.300	
Vol. Bef. Consol. (cu ft)	0.01390	
Vol. After Consol. (cu ft)	0.01354	

Notes & Comments: Dried at 60 degrees C.

Data entry by: DPM/DAW Date: 05/21/2014  
Data checked by: *DPM* Date: 5/21/14  
FileName: MWT0B306



TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B3 06  
DEPTH 35-36' (35-37.3')  
SAMPLE NO. -  
SOIL DESCR. Silty Clay  
LOCATION Tailings Impoundment  
TEST TYPE TX/CUpp, Stage 1

SAMPLED 11/19/13 MWH  
TEST STARTED 04/25/14 DPM  
TEST FINISHED 05/04/14 DPM  
CELL NUMBER 25s  
SATURATED TEST Yes  
CONF. PRES. PSF 3456

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	3.8	14.0				
50.0	48.0	15.1	16.0	38.1	47.1	9.0	0.90
60.0		17.0	17.1	47.7	57.6	9.9	0.99

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT TIME (Min)	Burette Reading (CC)	Vol. Defl. (CC)
0.00	0.0	0.30	0.00
0.25	0.5	8.90	-8.60
0.5	0.7	9.25	-8.95
1	1.0	9.60	-9.30
2	1.4	9.90	-9.60
4	2.0	10.10	-9.80
9	3.0	10.40	-10.10
16	4.0	10.50	-10.20
30	5.5	10.65	-10.35
60	7.7	10.70	-10.40
120	11.0	10.80	-10.50
240	15.5	10.90	-10.60
360	19.0	10.95	-10.65

Initial Height (in)	5.300	Init. Vol. (CC)	393.63
Height Change (in)	0.110	Vol. Change (CC)	24.30
Ht. After Cons. (in)	5.190	Cell Exp. (CC)	14.24
Initial Area (sq in)	4.531	Net Change (CC)	10.06
Area After Cons. (sq in)	4.509	Cons. Vol. (CC)	383.57

Data entry by: DPM/DAW Date: 05/21/2014  
Data checked by: DPM Date: 5/21/14  
FileName: MWT0B306



# TRIAXIAL COMPRESSION TEST DATA

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B3 06	SAMPLED	11/19/13 MWH
DEPTH	35-36' (35-37.3')	TEST STARTED	04/25/14 DPM
SAMPLE NO.	-	TEST FINISHED	05/04/14 DPM
SOIL DESCR.	Silty Clay	CELL NUMBER	25s
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 1	CONF. PRES. PSF	3456

Init. Ht. (in)	5.300	Init. Area (sq in)	4.531
Consol. Ht. (in)	5.190	Consol. Area (sq in)	4.509
Back Pres. PSI	48.3	Strain Rate (in/min)	0.002

Axial Load Lbs.	Axial Load PSF	Delta Ht. In.	Axial % Strain	Area Final Sq In.	Dev. Stress PSF	Pore Pres. PSI	Delta Pres. PSF	Sigma 3' PSF	Sigma 1' PSF	Prin. Stress Ratio
0.0	0	0.000	0.00	4.509	0	48.3	0	3456	3456	1.00
27.0	862	0.005	0.10	4.514	861	51.1	403	3053	3914	1.28
42.0	1341	0.010	0.20	4.518	1339	54.6	907	2549	3887	1.53
48.0	1533	0.015	0.30	4.523	1528	57.4	1310	2146	3674	1.71
48.0	1533	0.021	0.39	4.527	1527	59.4	1598	1858	3384	1.82
51.0	1629	0.026	0.49	4.532	1621	60.7	1786	1670	3291	1.97
54.0	1724	0.031	0.59	4.536	1714	61.8	1944	1512	3226	2.13
54.0	1724	0.036	0.69	4.540	1713	62.6	2059	1397	3109	2.23
54.0	1724	0.041	0.79	4.545	1711	63.4	2174	1282	2992	2.33
54.0	1724	0.046	0.89	4.549	1709	63.4	2174	1282	2991	2.33
54.0	1724	0.051	0.98	4.554	1708	64.8	2376	1080	2788	2.58
57.0	1820	0.056	1.08	4.559	1801	64.8	2376	1080	2881	2.67
57.0	1820	0.061	1.18	4.563	1799	65.0	2405	1051	2850	2.71
57.0	1820	0.066	1.28	4.568	1797	65.3	2448	1008	2805	2.78
57.0	1820	0.072	1.38	4.572	1795	65.6	2491	965	2760	2.86
57.0	1820	0.077	1.48	4.577	1793	65.7	2506	950	2744	2.89
60.0	1916	0.082	1.58	4.581	1886	65.9	2534	922	2807	3.05
60.0	1916	0.087	1.68	4.586	1884	66.0	2549	907	2791	3.08
60.0	1916	0.092	1.77	4.591	1882	66.1	2563	893	2775	3.11
63.0	2012	0.102	1.97	4.600	1972	66.3	2592	864	2836	3.28
63.0	2012	0.108	2.07	4.605	1970	66.4	2606	850	2820	3.32
63.0	2012	0.113	2.17	4.609	1968	66.4	2606	850	2818	3.32
66.0	2108	0.118	2.27	4.614	2060	66.5	2621	835	2895	3.47
66.0	2108	0.123	2.37	4.619	2058	66.5	2621	835	2893	3.46
66.0	2108	0.128	2.47	4.623	2056	66.6	2635	821	2876	3.50
66.0	2108	0.133	2.57	4.628	2054	66.7	2650	806	2860	3.55
69.0	2204	0.138	2.66	4.633	2145	66.7	2650	806	2951	3.66
72.0	2299	0.143	2.76	4.637	2236	66.7	2650	806	3042	3.77
72.0	2299	0.149	2.86	4.642	2234	66.7	2650	806	3040	3.77
72.0	2299	0.154	2.96	4.647	2231	66.7	2650	806	3038	3.77
72.0	2299	0.159	3.06	4.651	2229	66.6	2635	821	3050	3.72
72.0	2299	0.160	3.07	4.652	2229	66.6	2635	821	3049	3.72

Data entry by: DPM/DA Date: 05/21/2014  
 Data checked by: DPM Date: 5/21/14  
 FileName: MWT0B306



TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B3 06	SAMPLED	11/19/13 MWH
DEPTH	35-36' (35-37.3')	TEST STARTED	04/25/14 DPM
SAMPLE NO.	-	TEST FINISHED	05/04/14 DPM
SOIL DESCR.	Silty Clay	CELL NUMBER	25s
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUp, Stage 2	CONF. PRES. PSF	4608

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	688.2	758.3
Wt. Wet Soil & Pan (g)	704.1	774.1
Wt. Dry Soil & Pan (g)	640.3	640.3
Wt. Lost Moisture (g)	63.8	133.8
Wt. of Pan Only (g)	15.8	15.8
Wt. of Dry Soil (g)	624.5	624.5
Moisture Content %	10.2	21.4
Wet Density PCF	112.0	123.6
Dry Density PCF	101.7	101.8
Init. Diameter (in)	2.434	
Init. Area (sq in)	4.652	
Init. Height (in)	5.031	
Vol. Bef. Consol. (cu ft)	0.01354	
Vol. After Consol. (cu ft)	0.01352	

Notes & Comments:

Data entry by: DPM/DAW Date: 05/21/2014  
Data checked by: *DPM* Date: *5/21/14*  
FileName: MWT0B306





TRIAxIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B3 06  
DEPTH 35-36' (35-37.3')  
SAMPLE NO. -  
SOIL DESCR. Silty Clay  
LOCATION Tailings Impoundment  
TEST TYPE TX/CUpp, Stage 2

SAMPLED 11/19/13 MWH  
TEST STARTED 04/25/14 DPM  
TEST FINISHED 05/04/14 DPM  
CELL NUMBER 25s  
SATURATED TEST Yes  
CONF. PRES. PSF 4608

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT TIME (Min)	Burette Reading (CC)	Vol. Defl. (CC)
0.00	0.0	14.70	0.00
0.25	0.5	15.70	-1.00
0.5	0.7	15.75	-1.05
1	1.0	15.80	-1.10
2	1.4	15.85	-1.15
4	2.0	15.90	-1.20
9	3.0	15.95	-1.25
16	4.0	16.00	-1.30
30	5.5	16.00	-1.30
60	7.7	16.05	-1.35
120	11.0	16.20	-1.50
240	15.5	16.30	-1.60
360	19.0	16.30	-1.60

Initial Height (in) 5.031  
Height Change (in) -0.001  
Ht. After Cons. (in) 5.032  
Initial Area (sq in) 4.652  
Area After Cons. (sq in) 4.645

Init. Vol. (CC) 383.57  
Vol. Change (CC) 1.60  
Cell Exp. (CC) 1.05  
Net Change (CC) 0.55  
Cons. Vol. (CC) 383.02

Data entry by: DPM/DAW Date: 05/21/2014  
Data checked by: *DPM* Date: *05/21/14*  
FileName: MWT0B306



# TRIAxIAL COMPRESSION TEST DATA

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B3 06	SAMPLED	11/19/13 MWH
DEPTH	35-36' (35-37.3')	TEST STARTED	04/25/14 DPM
SAMPLE NO.	-	TEST FINISHED	05/04/14 DPM
SOIL DESCR.	Silty Clay	CELL NUMBER	25s
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 2	CONF. PRES. PSF	4608

Init. Ht. (in)	5.031	Init. Area (sq in)	4.652
Consol. Ht. (in)	5.032	Consol. Area (sq in)	4.645
Back Pres. PSI	48.8	Strain Rate (in/min)	0.001

Axial Load Lbs.	Axial Load PSF	Delta Ht. In.	Axial % Strain	Area Final Sq In.	Dev. Stress PSF	Pore Pres. PSI	Delta Pres. PSF	Sigma 3' PSF	Sigma 1' PSF	Prin. Stress Ratio
0.0	0	0.000	0.00	4.645	0	48.8	0	4608	4608	1.00
84.0	2604	0.005	0.10	4.649	2602	54.8	864	3744	6346	1.69
110.0	3410	0.010	0.20	4.654	3404	58.3	1368	3240	6644	2.05
126.0	3907	0.015	0.30	4.658	3895	60.3	1656	2952	6847	2.32
135.0	4186	0.020	0.40	4.663	4169	61.6	1843	2765	6934	2.51
144.0	4465	0.025	0.50	4.668	4442	62.6	1987	2621	7063	2.70
147.0	4558	0.030	0.60	4.672	4530	63.3	2088	2520	7050	2.80
153.0	4744	0.035	0.70	4.677	4711	63.9	2174	2434	7144	2.94
156.0	4837	0.040	0.80	4.682	4798	64.2	2218	2390	7189	3.01
159.0	4930	0.045	0.90	4.687	4885	64.5	2261	2347	7233	3.08
162.0	5023	0.050	1.00	4.691	4973	64.8	2304	2304	7277	3.16
168.0	5209	0.060	1.19	4.701	5146	65.1	2347	2261	7407	3.28
171.0	5302	0.065	1.29	4.705	5233	65.1	2347	2261	7494	3.31
174.0	5395	0.070	1.40	4.710	5319	65.2	2362	2246	7566	3.37
177.0	5488	0.075	1.49	4.715	5406	65.4	2390	2218	7623	3.44
183.0	5674	0.085	1.70	4.725	5578	65.4	2390	2218	7795	3.52
183.0	5674	0.090	1.79	4.729	5572	65.3	2376	2232	7804	3.50
186.0	5767	0.095	1.90	4.734	5657	65.3	2376	2232	7889	3.53
189.0	5860	0.100	2.00	4.739	5743	65.2	2362	2246	7989	3.56
195.0	6046	0.111	2.20	4.749	5913	65.0	2333	2275	8188	3.60
198.0	6139	0.116	2.30	4.754	5998	64.9	2318	2290	8288	3.62
201.0	6232	0.121	2.40	4.759	6082	64.9	2318	2290	8372	3.66
204.0	6325	0.126	2.50	4.763	6167	64.8	2304	2304	8471	3.68
210.0	6511	0.136	2.70	4.773	6335	64.5	2261	2347	8683	3.70
213.0	6604	0.141	2.79	4.778	6419	64.4	2246	2362	8781	3.72
216.0	6697	0.146	2.89	4.783	6503	64.3	2232	2376	8879	3.74
219.0	6790	0.151	2.99	4.788	6587	64.1	2203	2405	8991	3.74
225.0	6976	0.161	3.19	4.798	6753	63.8	2160	2448	9201	3.76
228.0	7069	0.166	3.30	4.803	6836	63.8	2160	2448	9284	3.79
231.0	7162	0.171	3.39	4.808	6919	63.7	2146	2462	9381	3.81
237.0	7348	0.181	3.60	4.818	7084	63.4	2102	2506	9589	3.83
240.0	7441	0.186	3.69	4.823	7166	63.2	2074	2534	9700	3.83

Data entry by: DPM/DA Date: 05/21/2014  
 Data checked by: DPM Date: 5/21/14  
 FileName: MWT0B306



TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B3 06	SAMPLED	11/19/13 MWH
DEPTH	35-36' (35-37.3')	TEST STARTED	04/25/14 DPM
SAMPLE NO.	-	TEST FINISHED	05/04/14 DPM
SOIL DESCR.	Silty Clay	CELL NUMBER	25s
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 3	CONF. PRES. PSF	5760

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	688.2	758.3
Wt. Wet Soil & Pan (g)	704.1	774.1
Wt. Dry Soil & Pan (g)	640.3	640.3
Wt. Lost Moisture (g)	63.8	133.8
Wt. of Pan Only (g)	15.8	15.8
Wt. of Dry Soil (g)	624.5	624.5
Moisture Content %	10.2	21.4
Wet Density PCF	112.2	123.8
Dry Density PCF	101.8	101.9
Init. Diameter (in)	2.478	
Init. Area (sq in)	4.823	
Init. Height (in)	4.846	
Vol. Bef. Consol. (cu ft)	0.01352	
Vol. After Consol. (cu ft)	0.01351	

Notes & Comments:

Data entry by: DPM/DAW Date: 05/21/2014  
Data checked by: DPM Date: 5/21/14  
FileName: MWT0B306



TRIAxIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B3 06  
DEPTH 35-36' (35-37.3')  
SAMPLE NO. -  
SOIL DESCR. Silty Clay  
LOCATION Tailings Impoundment  
TEST TYPE TX/CUpp, Stage 3

SAMPLED 11/19/13 MWH  
TEST STARTED 04/25/14 DPM  
TEST FINISHED 05/04/14 DPM  
CELL NUMBER 25s  
SATURATED TEST Yes  
CONF. PRES. PSF 5760

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT TIME (Min)	Burette Reading (CC)	Vol. Defl. (CC)
0.00	0.0	0.70	0.00
0.25	0.5	1.65	-0.95
0.5	0.7	1.65	-0.95
1	1.0	1.70	-1.00
2	1.4	1.70	-1.00
4	2.0	1.75	-1.05
9	3.0	1.80	-1.10
16	4.0	1.80	-1.10
30	5.5	1.85	-1.15
60	7.7	1.90	-1.20
120	11.0	1.90	-1.20
240	15.5	1.90	-1.20
360	19.0	1.90	-1.20

Initial Height (in) 4.846  
Height Change (in) -0.013  
Ht. After Cons. (in) 4.859  
Initial Area (sq in) 4.823  
Area After Cons. (sq in) 4.804

Init. Vol. (CC) 383.02  
Vol. Change (CC) 1.50  
Cell Exp. (CC) 1.05  
Net Change (CC) 0.45  
Cons. Vol. (CC) 382.57

Data entry by: DPM/DAW Date: 05/21/2014  
Data checked by: *DPM* Date: *5/21/14*  
FileName: MWT0B306





# TRIAxIAL COMPRESSION TEST DATA

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B3 06	SAMPLED	11/19/13 MWH
DEPTH	35-36' (35-37.3')	TEST STARTED	04/25/14 DPM
SAMPLE NO.	-	TEST FINISHED	05/04/14 DPM
SOIL DESCR.	Silty Clay	CELL NUMBER	25s
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUp, Stage 3	CONF. PRES. PSF	5760

Init. Ht. (in)	4.846	Init. Area (sq in)	4.823
Consol. Ht. (in)	4.859	Consol. Area (sq in)	4.804
Back Pres. PSI	48.8	Strain Rate (in/min)	0.001

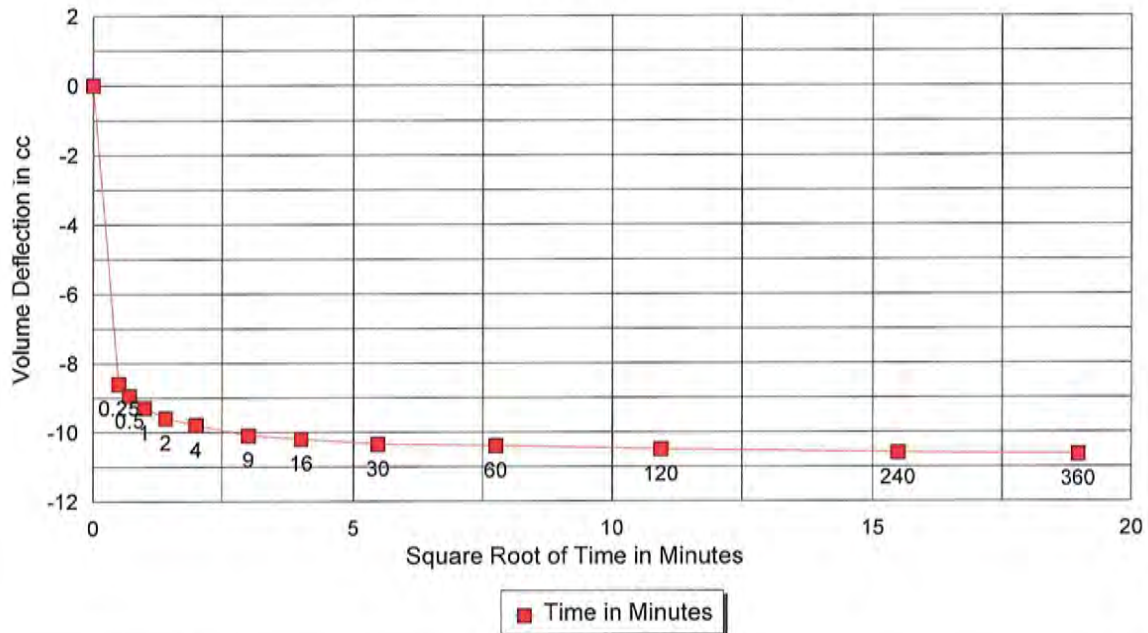
Axial Load Lbs.	Axial Load PSF	Delta Ht. In.	Axial % Strain	Area Final Sq In.	Dev. Stress PSF	Pore Pres. PSI	Delta Pres. PSF	Sigma 3' PSF	Sigma 1' PSF	Prin. Stress Ratio
0.0	0	0.000	0.00	4.804	0	48.8	0	5760	5760	1.00
93.0	2788	0.005	0.10	4.809	2785	53.5	677	5083	7868	1.55
156.0	4676	0.010	0.20	4.814	4667	55.6	979	4781	9448	1.98
240.0	7194	0.014	0.30	4.818	7172	57.6	1267	4493	11665	2.60
270.0	8093	0.019	0.40	4.823	8061	58.1	1339	4421	12482	2.82
291.0	8722	0.024	0.49	4.828	8679	58.6	1411	4349	13028	3.00
309.0	9262	0.029	0.59	4.833	9207	58.9	1454	4306	13513	3.14
324.0	9712	0.034	0.69	4.838	9644	59.1	1483	4277	13921	3.26
333.0	9981	0.038	0.79	4.842	9902	59.3	1512	4248	14150	3.33
342.0	10251	0.043	0.89	4.847	10160	59.4	1526	4234	14394	3.40
351.0	10521	0.048	0.99	4.852	10417	59.4	1526	4234	14651	3.46
363.0	10881	0.058	1.19	4.862	10752	59.2	1498	4262	15014	3.52
381.0	11420	0.072	1.48	4.876	11251	58.8	1440	4320	15571	3.60
411.0	12319	0.106	2.17	4.911	12052	57.4	1238	4522	16573	3.67
441.0	13219	0.139	2.87	4.946	12840	55.9	1022	4738	17577	3.71
474.0	14208	0.173	3.56	4.981	13702	54.3	792	4968	18670	3.76
504.0	15107	0.206	4.25	5.017	14465	52.5	533	5227	19692	3.77
534.0	16006	0.240	4.94	5.054	15216	50.5	245	5515	20731	3.76
567.0	16995	0.274	5.63	5.091	16038	48.4	-58	5818	21856	3.76
600.0	17984	0.308	6.34	5.129	16845	46.4	-346	6106	22951	3.76
630.0	18884	0.342	7.04	5.168	17555	44.3	-648	6408	23963	3.74
663.0	19873	0.376	7.73	5.207	18336	42.1	-965	6725	25061	3.73
693.0	20772	0.410	8.43	5.247	19020	40.1	-1253	7013	26033	3.71
720.0	21581	0.444	9.13	5.287	19610	38.1	-1541	7301	26911	3.69
750.0	22481	0.478	9.83	5.328	20271	36.0	-1843	7603	27874	3.67
774.0	23200	0.512	10.53	5.369	20758	34.1	-2117	7877	28634	3.64
798.0	23919	0.545	11.23	5.412	21234	32.4	-2362	8122	29356	3.61
819.0	24549	0.579	11.92	5.454	21622	30.7	-2606	8366	29988	3.58
834.0	24998	0.613	12.62	5.498	21844	29.0	-2851	8611	30455	3.54
834.0	24998	0.647	13.32	5.542	21669	27.7	-3038	8798	30467	3.46
831.0	24908	0.676	13.92	5.581	21442	27.4	-3082	8842	30284	3.43
822.0	24639	0.705	14.51	5.620	21063	26.9	-3154	8914	29977	3.36

Data entry by: DPM/DAW Date: 05/21/2014  
 Data checked by: DPM Date: 5/21/14  
 FileName: MWT0B306



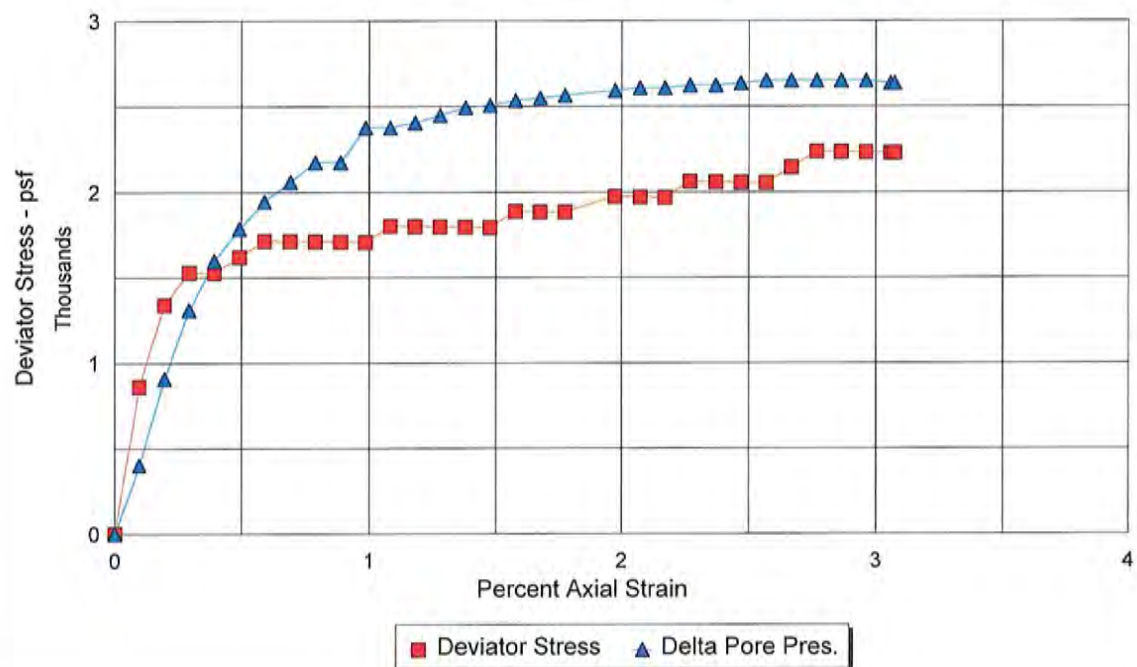
## CONSOLIDATION DATA

TI-B3 06, 35-36' (35-37.3'), -, Stage 1



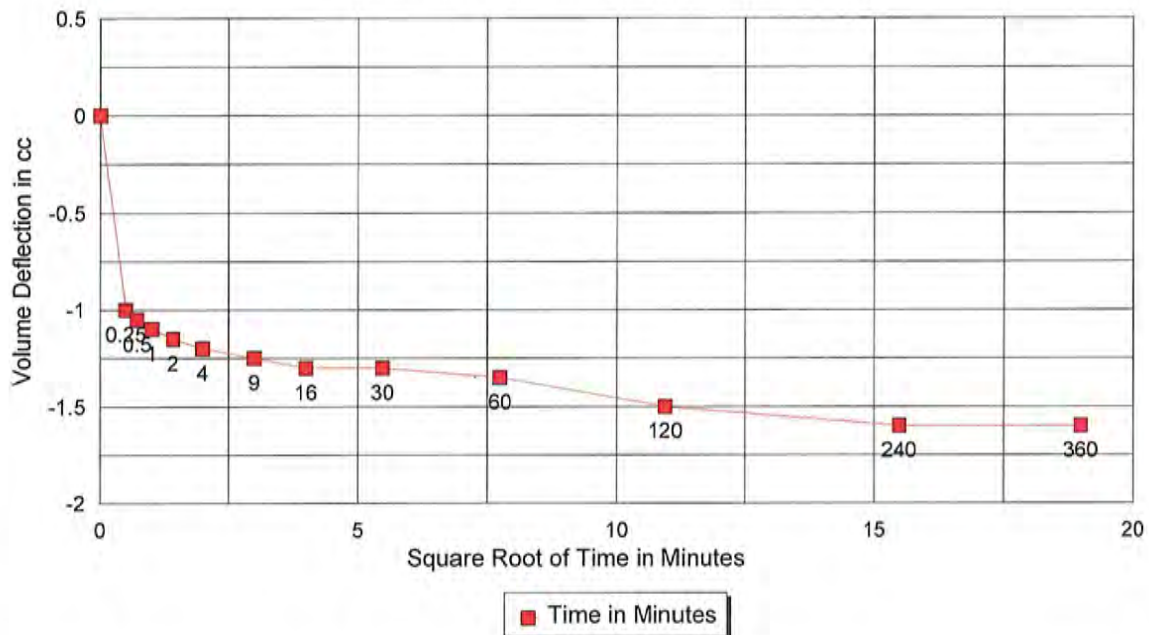
## TRIAXIAL TEST - TX/CUpp

TI-B3 06, 35-36' (35-37.3'), -, Stage 1



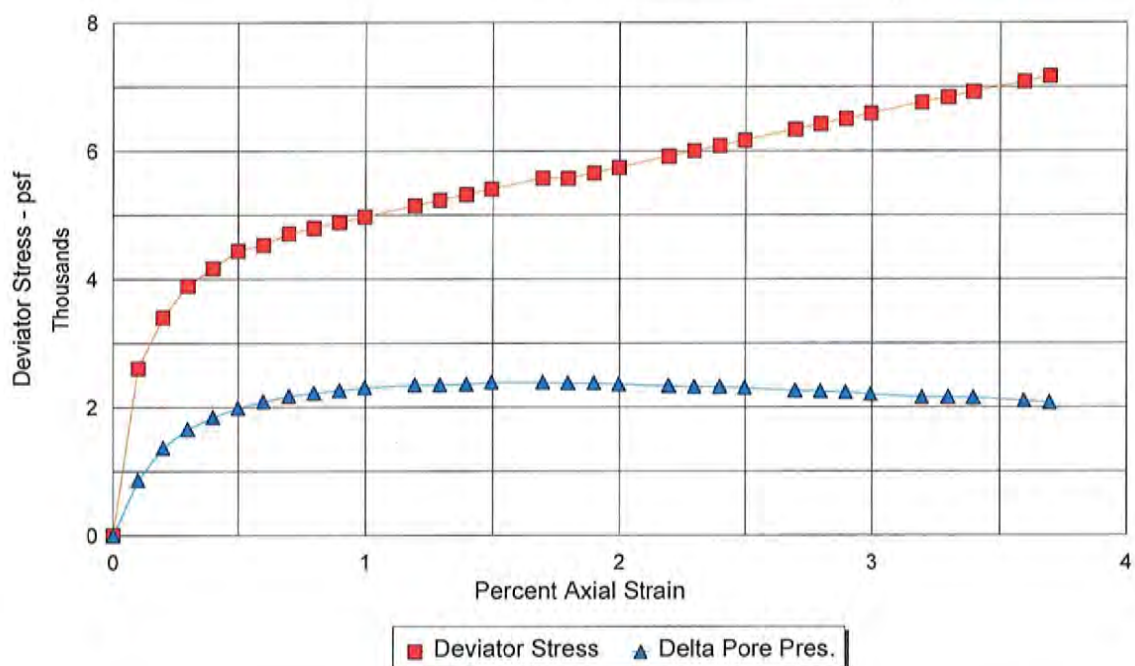
## CONSOLIDATION DATA

TI-B3 06, 35-36' (35-37.3'), -, Stage 2



## TRIAXIAL TEST - TX/CUpp

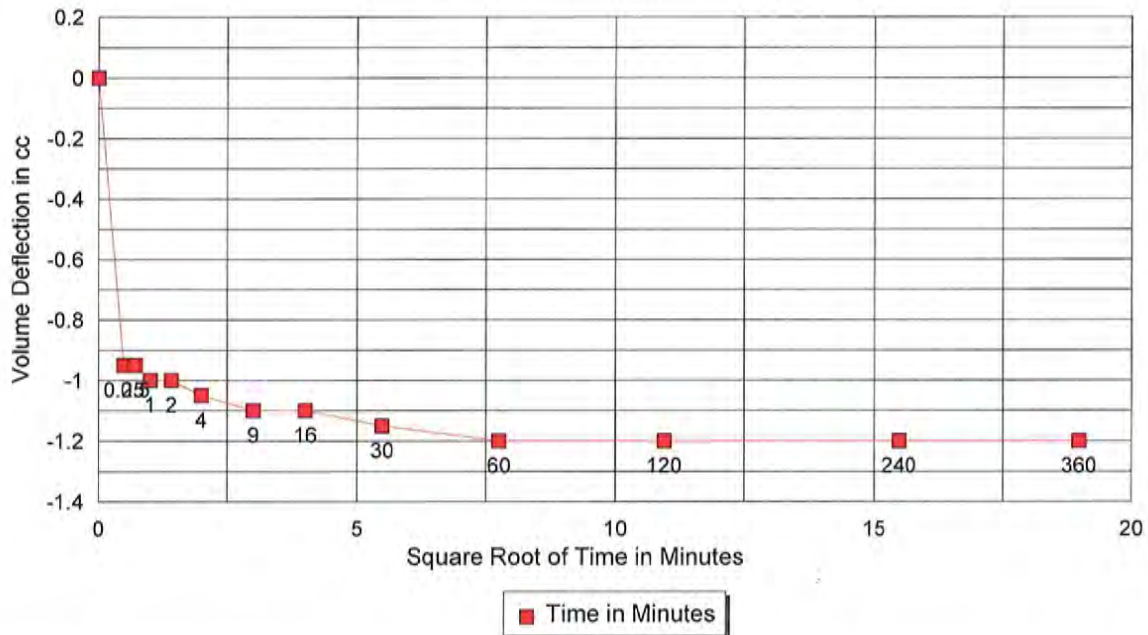
TI-B3 06, 35-36' (35-37.3'), -, Stage 2





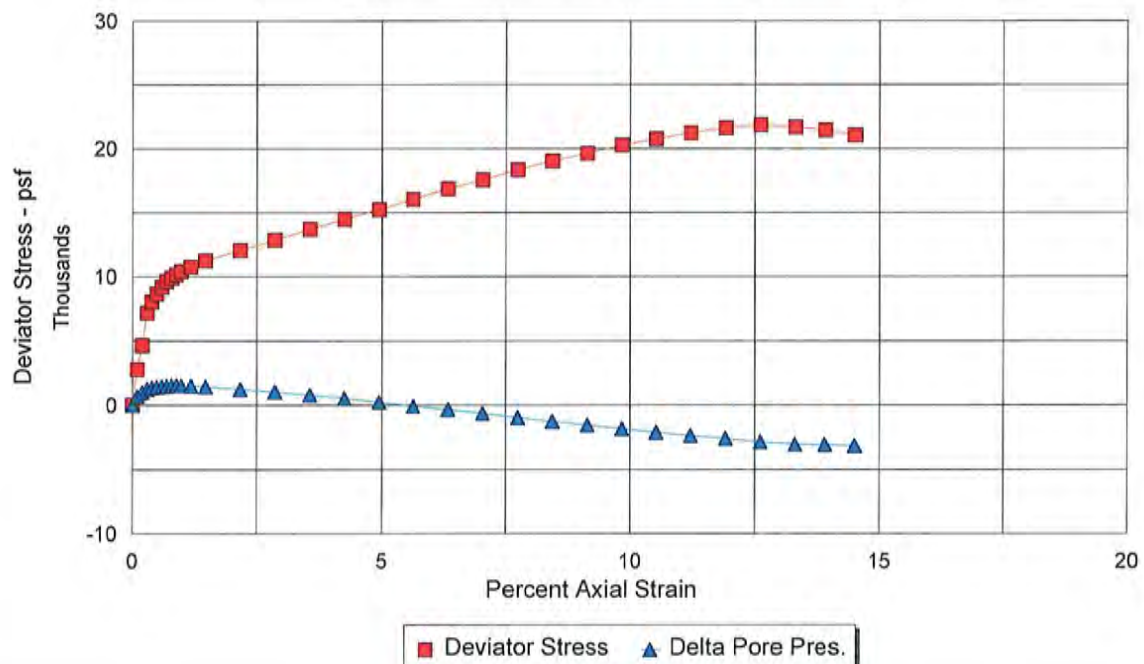
## CONSOLIDATION DATA

TI-B3 06, 35-36' (35-37.3'), -, Stage 3



## TRIAXIAL TEST - TX/CUpp

TI-B3 06, 35-36' (35-37.3'), -, Stage 3





**EFFECTIVE STRESS PATH ANALYSIS TEST DATA**  
**ASTM D4767**

CLIENT MWH  
BORING NO. TI-B3-03  
DEPTH 21.0-22.0' (20-22.4')  
SAMPLE NO. A,B&C  
PROJECT NO. Church Rock  
LOCATION Tailings Impoundment

JOB NO. 2512-77  
SAMPLED 11/19/13 MWH  
SATURATED TEST  
TEST TYPE TX/CUPP  
Peak Points

					p'	q
					PSF	PSF
CONF. PRES. PSF	SAMPLE A	1584	PSF	SAMPLE A	2176	1298
	SAMPLE B	2736	PSF	SAMPLE B	4225	2469
	SAMPLE C	3888	PSF	SAMPLE C	8006	4406

SAMPLE A				SAMPLE B				SAMPLE C			
$\sigma$ 3'	$\sigma$ 1'	p'	q	$\sigma$ 3'	$\sigma$ 1'	p'	q	$\sigma$ 3'	$\sigma$ 1'	p'	q
PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF	PSF
1584	1584	1584	0	2736	2736	2736	0	3888	3888	3888	0
1382	2227	1805	422	2347	4209	3278	931	3269	6395	4832	1563
1210	2429	1819	610	2117	4999	3558	1441	3082	7490	5286	2204
1094	2500	1797	703	1973	5410	3691	1718	2966	8288	5627	2661
1022	2614	1818	796	1930	5642	3786	1856	2909	8684	5796	2887
965	2648	1806	842	1843	5737	3790	1947	2851	8895	5873	3022
936	2805	1870	934	1800	5875	3838	2038	2822	9043	5933	3110
907	2867	1887	980	1771	5935	3853	2082	2794	9190	5992	3198
893	2944	1919	1026	1757	6009	3883	2126	2779	9261	6020	3241
878	3021	1950	1071	1742	5990	3866	2124	2765	9331	6048	3283
878	3112	1995	1117	1742	6078	3910	2168	2765	9415	6090	3325
864	3188	2026	1162	1742	6166	3954	2212	2765	9493	6129	3364
878	3293	2086	1207	1742	6254	3998	2256	2765	9660	6213	3448
864	3369	2117	1253	1742	6341	4042	2299	2765	9646	6205	3441
878	3474	2176	1298	1757	6351	4054	2297	2765	9722	6244	3479
893	3486	2189	1297	1757	6438	4098	2341	2779	9812	6296	3517
907	3498	2202	1295	1757	6525	4141	2384	2808	9984	6396	3588
				1757	6521	4139	2382	2851	10258	6555	3703
				1757	6607	4182	2425	2880	10425	6653	3773
				1757	6694	4225	2469	2938	10620	6779	3841
				1771	6706	4239	2468	2981	10798	6890	3909
								3024	10975	6999	3975
								3082	11164	7123	4041
								3125	11250	7187	4063
								3168	11421	7295	4127
								3211	11591	7401	4190
								3298	11755	7526	4229
								3384	11999	7691	4307
								3456	12140	7798	4342
								3542	12292	7917	4375
								3600	12411	8006	4406
								3658	12447	8052	4395

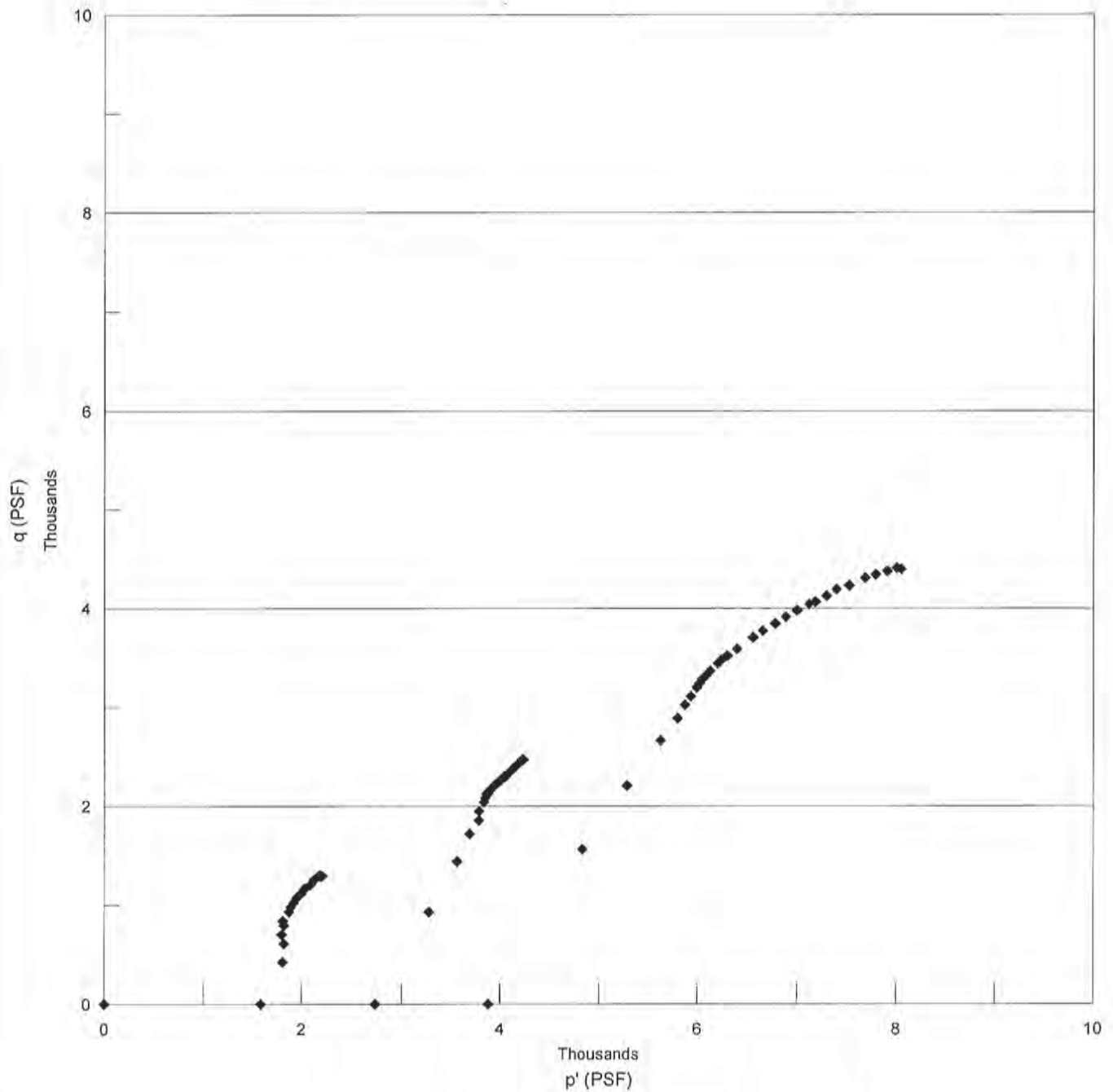
Data entry by: DPM  
Data checked by: KR  
FileName: MWPQB303

Date: 05/27/2014  
Date: 5/27/14



## Effective Stress Path Analysis - $p'$ $q$ Plots

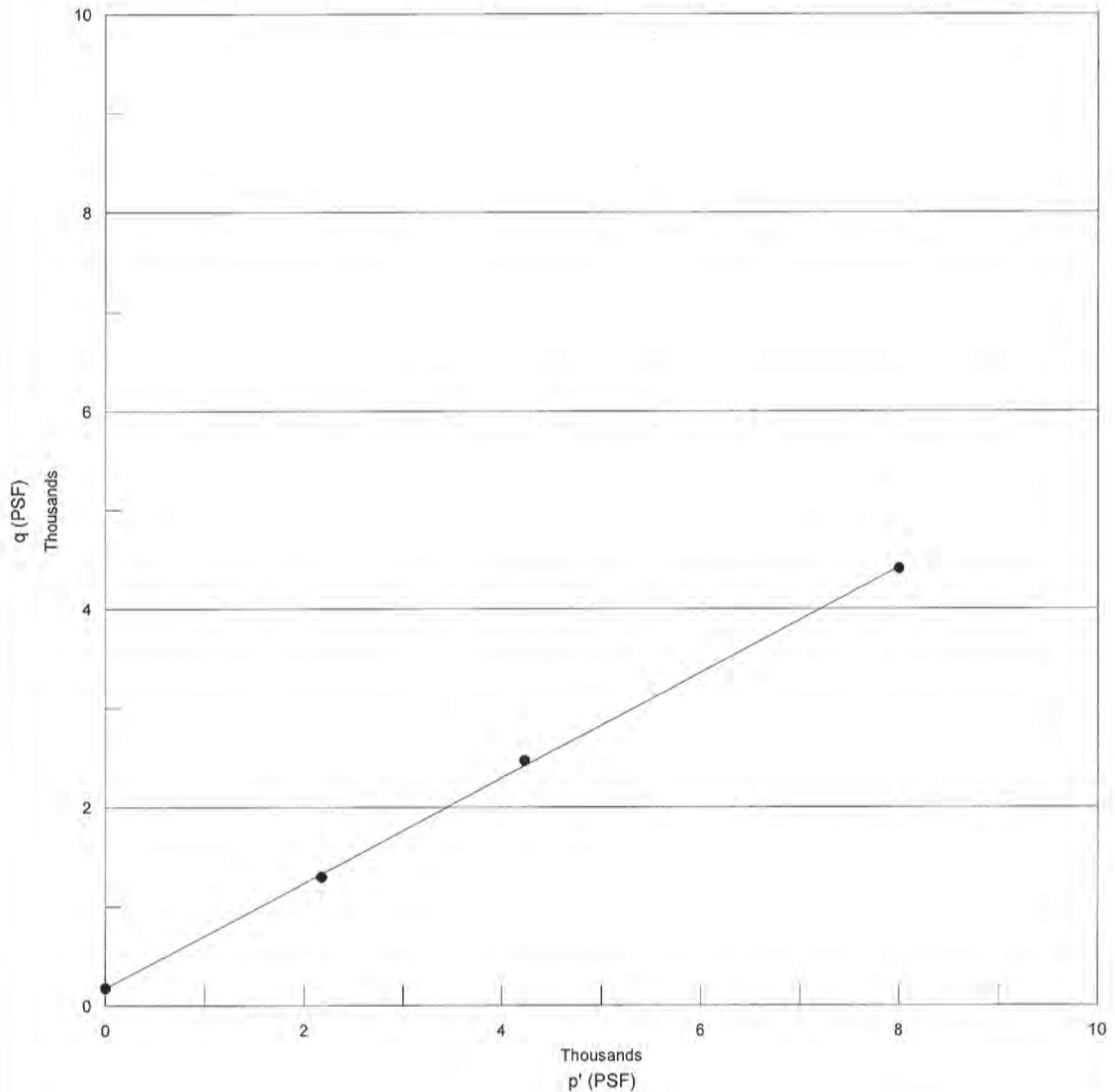
MWH, Tailings Impoundment, Church Rock, TI-B3-03, A, B & C, 21.0-22.0' (20-22.4')



◆ Stress Paths of Samples A, B & C

## Effective Stress Path Analysis - $p'$ - $q$ Regression Plot

MWH, Tailings Impoundment, Church Rock, TI-B3-03, A, B&C, 21.0-22.0' (20-22.4')



● Shear Data

— Best Fit Line

$\psi = 27.9$  degrees

$a = 176.1$  PSF

TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B3-03	SAMPLED	11/19/13 MWH
DEPTH	21.0-22.0' (20-22.4')	TEST STARTED	04/17/14 DPM
SAMPLE NO.	-	TEST FINISHED	04/23/14 DPM
SOIL DESCR.	Silty Clay	CELL NUMBER	25S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 1	CONF. PRES. PSF	1584

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	771.1	808.0
Wt. Wet Soil & Pan (g)	786.8	823.8
Wt. Dry Soil & Pan (g)	698.3	698.3
Wt. Lost Moisture (g)	88.6	125.6
Wt. of Pan Only (g)	15.8	15.8
Wt. of Dry Soil (g)	682.5	682.5
Moisture Content %	13.0	18.4
Wet Density PCF	123.3	128.9
Dry Density PCF	109.1	108.9
Init. Diameter (in)	2.407	
Init. Area (sq in)	4.550	
Init. Height (in)	5.237	
Vol. Bef. Consol. (cu ft)	0.01379	
Vol. After Consol. (cu ft)	0.01382	

Notes & Comments:

Data entry by:            DPM  
Data checked by:             
FileName: MWT0B303

Date: 05/27/2014  
Date: 5/27/14





TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B3-03  
DEPTH 21.0-22.0' (20-22.4')  
SAMPLE NO. -  
SOIL DESCR. Silty Clay  
LOCATION Tailings Impoundment  
TEST TYPE TX/CUp, Stage 1

SAMPLED 11/19/13 MWH  
TEST STARTED 04/17/14 DPM  
TEST FINISHED 04/23/14 DPM  
CELL NUMBER 25S  
SATURATED TEST Yes  
CONF. PRES. PSF 1584

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	2.9	9.3				
50.0	48.0	7.6	8.7	38.1	46.2	8.1	0.81
60.0	58.0	8.0	9.0	47.6	55.9	8.3	0.83
70.0	68.0	10.0	10.7	57.7	66.0	8.3	0.83
80.0		11.2	11.1	67.3	76.9	9.6	0.96

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT TIME (Min)	Burette Reading (CC)	Vol. Defl. (CC)
0.00	0.0	0.80	0.00
0.25	0.5	3.45	-2.65
0.5	0.7	4.10	-3.30
1	1.0	4.70	-3.90
2	1.4	5.05	-4.25
4	2.0	5.30	-4.50
9	3.0	5.45	-4.65
16	4.0	5.55	-4.75
30	5.5	5.70	-4.90
60	7.7	5.80	-5.00
120	11.0	6.00	-5.20
240	15.5	6.10	-5.30
360	19.0	6.10	-5.30

Initial Height (in)	5.237	Init. Vol. (CC)	390.57
Height Change (in)	0.042	Vol. Change (CC)	14.30
Ht. After Cons. (in)	5.195	Cell Exp. (CC)	15.15
Initial Area (sq in)	4.550	Net Change (CC)	-0.85
Area After Cons. (sq in)	4.597	Cons. Vol. (CC)	391.43

Data entry by: DPM  
Data checked by:     
FileName: MWT0B303

Date: 05/27/2014  
Date: 5/27/14



# TRIAXIAL COMPRESSION TEST DATA

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B3-03	SAMPLED	11/19/13 MWH
DEPTH	21.0-22.0' (20-22.4')	TEST STARTED	04/17/14 DPM
SAMPLE NO.	-	TEST FINISHED	04/23/14 DPM
SOIL DESCR.	Silty Clay	CELL NUMBER	25S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 1	CONF. PRES. PSF	1584

Init. Ht. (in)	5.237	Init. Area (sq in)	4.550
Consol. Ht. (in)	5.195	Consol. Area (sq in)	4.597
Back Pres. PSI	68.7	Strain Rate (in/min)	0.006

Axial Load Lbs.	Axial Load PSF	Delta Ht. In.	Axial % Strain	Area Final Sq In.	Dev. Stress PSF	Pore Pres. PSI	Delta Pres. PSF	Sigma 3' PSF	Sigma 1' PSF	Prin. Stress Ratio
0.0	0	0.000	0.00	4.597	0	68.7	0	1584	1584	1.00
27.0	846	0.005	0.10	4.602	845	70.1	202	1382	2227	1.61
39.0	1222	0.010	0.19	4.606	1219	71.3	374	1210	2429	2.01
45.0	1410	0.015	0.29	4.610	1406	72.1	490	1094	2500	2.28
51.0	1598	0.020	0.38	4.615	1591	72.6	562	1022	2614	2.56
54.0	1691	0.025	0.48	4.619	1683	73.0	619	965	2648	2.74
60.0	1879	0.030	0.58	4.624	1869	73.2	648	936	2805	3.00
63.0	1973	0.035	0.68	4.628	1960	73.4	677	907	2867	3.16
66.0	2067	0.040	0.77	4.633	2051	73.5	691	893	2944	3.30
69.0	2161	0.045	0.87	4.637	2143	73.6	706	878	3021	3.44
72.0	2255	0.050	0.96	4.642	2234	73.6	706	878	3112	3.54
75.0	2349	0.055	1.06	4.646	2324	73.7	720	864	3188	3.69
78.0	2443	0.060	1.16	4.651	2415	73.6	706	878	3293	3.75
81.0	2537	0.065	1.25	4.655	2505	73.7	720	864	3369	3.90
84.0	2631	0.070	1.35	4.660	2596	73.6	706	878	3474	3.95
84.0	2631	0.075	1.45	4.665	2593	73.5	691	893	3486	3.90
84.0	2631	0.080	1.54	4.669	2591	73.4	677	907	3498	3.86

Data entry by:     DPM Date:     05/27/2014  
 Data checked by:     Date: 5/27/14  
 FileName: MWT0B303



TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B3-03  
DEPTH 21.0-22.0' (20-22.4')  
SAMPLE NO. -  
SOIL DESCR. Silty Clay  
LOCATION Tailings Impoundment  
TEST TYPE TX/CUpp, Stage 2

SAMPLED 11/19/13 MWH  
TEST STARTED 04/17/14 DPM  
TEST FINISHED 04/23/14 DPM  
CELL NUMBER 25S  
SATURATED TEST Yes  
CONF. PRES. PSF 2736

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	771.1	808.0
Wt. Wet Soil & Pan (g)	786.8	823.8
Wt. Dry Soil & Pan (g)	698.3	698.3
Wt. Lost Moisture (g)	88.6	125.6
Wt. of Pan Only (g)	15.8	15.8
Wt. of Dry Soil (g)	682.5	682.5
Moisture Content %	13.0	18.4
Wet Density PCF	123.0	129.7
Dry Density PCF	108.9	109.6
Init. Diameter (in)	2.438	
Init. Area (sq in)	4.669	
Init. Height (in)	5.115	
Vol. Bef. Consol. (cu ft)	0.01382	
Vol. After Consol. (cu ft)	0.01373	

Notes & Comments:

Data entry by:     DPM  
Data checked by:      
FileName: MWT0B303

Date: 05/27/2014  
Date: 5/27/14



TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B3-03	SAMPLED	11/19/13 MWH
DEPTH	21.0-22.0' (20-22.4')	TEST STARTED	04/17/14 DPM
SAMPLE NO.	-	TEST FINISHED	04/23/14 DPM
SOIL DESCR.	Silty Clay	CELL NUMBER	25S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 2	CONF. PRES. PSF	2736

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT TIME (Min)	Burette Reading (CC)	Vol. Defl. (CC)
0.00	0.0	7.50	0.00
0.25	0.5	8.70	-1.20
0.5	0.7	8.95	-1.45
1	1.0	9.20	-1.70
2	1.4	9.50	-2.00
4	2.0	9.70	-2.20
9	3.0	9.80	-2.30
16	4.0	9.90	-2.40
30	5.5	9.95	-2.45
60	7.7	10.00	-2.50
120	11.0	10.05	-2.55
240	15.5	10.05	-2.55
360	19.0	10.05	-2.55

Initial Height (in)	5.115	Init. Vol. (CC)	391.43
Height Change (in)	-0.002	Vol. Change (CC)	3.60
Ht. After Cons. (in)	5.117	Cell Exp. (CC)	1.05
Initial Area (sq in)	4.669	Net Change (CC)	2.55
Area After Cons. (sq in)	4.637	Cons. Vol. (CC)	388.88

Data entry by: PA DPM  
Data checked by: PA  
FileName: MWT0B303

Date: 05/27/2014  
Date: 5/27/14





# TRIAxIAL COMPRESSION TEST DATA

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B3-03	SAMPLED	11/19/13 MWH
DEPTH	21.0-22.0' (20-22.4')	TEST STARTED	04/17/14 DPM
SAMPLE NO.	-	TEST FINISHED	04/23/14 DPM
SOIL DESCR.	Silty Clay	CELL NUMBER	25S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 2	CONF. PRES. PSF	2736
Init. Ht. (in)	5.115	Init. Area (sq in)	4.669
Consol. Ht. (in)	5.117	Consol. Area (sq in)	4.637
Back Pres. PSI	68.4	Strain Rate (in/min)	0.005

Axial Load Lbs.	Axial Load PSF	Delta Ht. In.	Axial % Strain	Area Final Sq In.	Dev. Stress PSF	Pore Pres. PSI	Delta Pres. PSF	Sigma 3' PSF	Sigma 1' PSF	Prin. Stress Ratio
0.0	0	0.000	0.00	4.637	0	68.4	0	2736	2736	1.00
60.0	1863	0.005	0.10	4.642	1861	71.1	389	2347	4209	1.79
93.0	2888	0.010	0.20	4.646	2882	72.7	619	2117	4999	2.36
111.0	3447	0.015	0.29	4.651	3437	73.7	763	1973	5410	2.74
120.0	3727	0.020	0.39	4.655	3712	74.0	806	1930	5642	2.92
126.0	3913	0.025	0.49	4.660	3894	74.6	893	1843	5737	3.11
132.0	4099	0.030	0.59	4.664	4075	74.9	936	1800	5875	3.26
135.0	4192	0.035	0.69	4.669	4164	75.1	965	1771	5935	3.35
138.0	4286	0.040	0.78	4.674	4252	75.2	979	1757	6009	3.42
138.0	4286	0.045	0.88	4.678	4248	75.3	994	1742	5990	3.44
141.0	4379	0.050	0.98	4.683	4336	75.3	994	1742	6078	3.49
144.0	4472	0.055	1.08	4.687	4424	75.3	994	1742	6166	3.54
147.0	4565	0.060	1.17	4.692	4511	75.3	994	1742	6254	3.59
150.0	4658	0.065	1.27	4.697	4599	75.3	994	1742	6341	3.64
150.0	4658	0.070	1.37	4.701	4594	75.2	979	1757	6351	3.62
153.0	4751	0.075	1.47	4.706	4682	75.2	979	1757	6438	3.66
156.0	4845	0.080	1.57	4.711	4769	75.2	979	1757	6525	3.71
156.0	4845	0.085	1.67	4.716	4764	75.2	979	1757	6521	3.71
159.0	4938	0.090	1.76	4.720	4851	75.2	979	1757	6607	3.76
162.0	5031	0.095	1.86	4.725	4937	75.2	979	1757	6694	3.81
162.0	5031	0.097	1.90	4.727	4935	75.1	965	1771	6706	3.79

Data entry by:     DPM Date:     05/27/2014  
 Data checked by:     Date: 5/27/14  
 FileName: MWT0B303



TRIAxIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT MWH

JOB NO. 2512-77

BORING NO.	TI-B3-03	SAMPLED	11/19/13 MWH
DEPTH	21.0-22.0' (20-22.4')	TEST STARTED	04/17/14 DPM
SAMPLE NO.	-	TEST FINISHED	04/23/14 DPM
SOIL DESCR.	Silty Clay	CELL NUMBER	25S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 3	CONF. PRES. PSF	3888

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	771.1	808.0
Wt. Wet Soil & Pan (g)	786.8	823.8
Wt. Dry Soil & Pan (g)	698.3	698.3
Wt. Lost Moisture (g)	88.6	125.6
Wt. of Pan Only (g)	15.8	15.8
Wt. of Dry Soil (g)	682.5	682.5
Moisture Content %	13.0	18.4
Wet Density PCF	123.8	130.4
Dry Density PCF	109.6	110.1
Init. Diameter (in)	2.453	
Init. Area (sq in)	4.727	
Init. Height (in)	5.020	
Vol. Bef. Consol. (cu ft)	0.01373	
Vol. After Consol. (cu ft)	0.01366	

Notes & Comments:

Data entry by: M DPM  
Data checked by: M  
FileName: MWT0B303

Date: 05/27/2014  
Date: 5/27/14



TRIAXIAL COMPRESSION TEST DATA  
ASTM D 4767

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B3-03	SAMPLED	11/19/13 MWH
DEPTH	21.0-22.0' (20-22.4')	TEST STARTED	04/17/14 DPM
SAMPLE NO.	-	TEST FINISHED	04/23/14 DPM
SOIL DESCR.	Silty Clay	CELL NUMBER	25S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 3	CONF. PRES. PSF	3888

CONSOLIDATION DATA

Elapsed Time (Min)	SQRT TIME (Min)	Burette Reading (CC)	Vol. Defl. (CC)
0.00	0.0	12.00	0.00
0.25	0.5	12.90	-0.90
0.5	0.7	13.05	-1.05
1	1.0	13.25	-1.25
2	1.4	13.40	-1.40
4	2.0	13.60	-1.60
9	3.0	13.80	-1.80
16	4.0	13.90	-1.90
30	5.5	13.90	-1.90
60	7.7	14.00	-2.00
120	11.0	14.00	-2.00
240	15.5	14.00	-2.00
360	19.0	14.00	-2.00

Initial Height (in)	5.020	Init. Vol. (CC)	388.88
Height Change (in)	-0.010	Vol. Change (CC)	3.00
Ht. After Cons. (in)	5.030	Cell Exp. (CC)	1.05
Initial Area (sq in)	4.727	Net Change (CC)	1.95
Area After Cons. (sq in)	4.694	Cons. Vol. (CC)	386.93

Data entry by:     DPM  
Data checked by:      
FileName: MWT0B303

Date:     05/27/2014  
Date: 5/27/14





# TRIAxIAL COMPRESSION TEST DATA

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B3-03	SAMPLED	11/19/13 MWH
DEPTH	21.0-22.0' (20-22.4')	TEST STARTED	04/17/14 DPM
SAMPLE NO.	-	TEST FINISHED	04/23/14 DPM
SOIL DESCR.	Silty Clay	CELL NUMBER	25S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
TEST TYPE	TX/CUpp, Stage 3	CONF. PRES. PSF	3888

Init. Ht. (in)	5.020	Init. Area (sq in)	4.727
Consol. Ht. (in)	5.030	Consol. Area (sq in)	4.694
Back Pres. PSI	68.7	Strain Rate (in/min)	0.003

Axial Load Lbs.	Axial Load PSF	Delta Ht. In.	Axial % Strain	Area Final Sq In.	Dev. Stress PSF	Pore Pres. PSI	Delta Pres. PSF	Sigma 3' PSF	Sigma 1' PSF	Prin. Stress Ratio
0.0	0	0.000	0.00	4.694	0	68.7	0	3888	3888	1.00
102.0	3129	0.005	0.10	4.699	3126	73.0	619	3269	6395	1.96
144.0	4418	0.010	0.20	4.703	4409	74.3	806	3082	7490	2.43
174.0	5338	0.015	0.30	4.708	5322	75.1	922	2966	8288	2.79
189.0	5798	0.020	0.41	4.713	5775	75.5	979	2909	8684	2.99
198.0	6074	0.026	0.51	4.718	6044	75.9	1037	2851	8895	3.12
204.0	6258	0.031	0.61	4.723	6220	76.1	1066	2822	9043	3.20
210.0	6443	0.036	0.71	4.727	6397	76.3	1094	2794	9190	3.29
213.0	6535	0.041	0.81	4.732	6482	76.4	1109	2779	9261	3.33
216.0	6627	0.046	0.91	4.737	6566	76.5	1123	2765	9331	3.37
219.0	6719	0.051	1.01	4.742	6651	76.5	1123	2765	9415	3.41
222.0	6811	0.061	1.22	4.752	6728	76.5	1123	2765	9493	3.43
228.0	6995	0.071	1.42	4.761	6895	76.5	1123	2765	9660	3.49
228.0	6995	0.082	1.62	4.771	6881	76.5	1123	2765	9646	3.49
231.0	7087	0.092	1.83	4.781	6957	76.5	1123	2765	9722	3.52
234.0	7179	0.102	2.03	4.791	7033	76.4	1109	2779	9812	3.53
240.0	7363	0.128	2.54	4.816	7176	76.2	1080	2808	9984	3.56
249.0	7639	0.153	3.04	4.841	7407	75.9	1037	2851	10258	3.60
255.0	7823	0.179	3.55	4.867	7545	75.7	1008	2880	10425	3.62
261.0	8007	0.204	4.06	4.892	7682	75.3	950	2938	10620	3.62
267.0	8191	0.230	4.56	4.918	7817	75.0	907	2981	10798	3.62
273.0	8375	0.255	5.07	4.944	7951	74.7	864	3024	10975	3.63
279.0	8559	0.281	5.58	4.971	8082	74.3	806	3082	11164	3.62
282.0	8651	0.306	6.08	4.998	8125	74.0	763	3125	11250	3.60
288.0	8835	0.332	6.59	5.025	8253	73.7	720	3168	11421	3.61
294.0	9020	0.357	7.10	5.052	8379	73.4	677	3211	11591	3.61
300.0	9204	0.408	8.11	5.108	8457	72.8	590	3298	11755	3.56
309.0	9480	0.459	9.13	5.165	8615	72.2	504	3384	11999	3.55
315.0	9664	0.510	10.14	5.223	8684	71.7	432	3456	12140	3.51
321.0	9848	0.561	11.15	5.283	8749	71.1	346	3542	12292	3.47
327.0	10032	0.612	12.17	5.344	8811	70.7	288	3600	12411	3.45
330.0	10124	0.663	13.18	5.406	8789	70.3	230	3658	12447	3.40

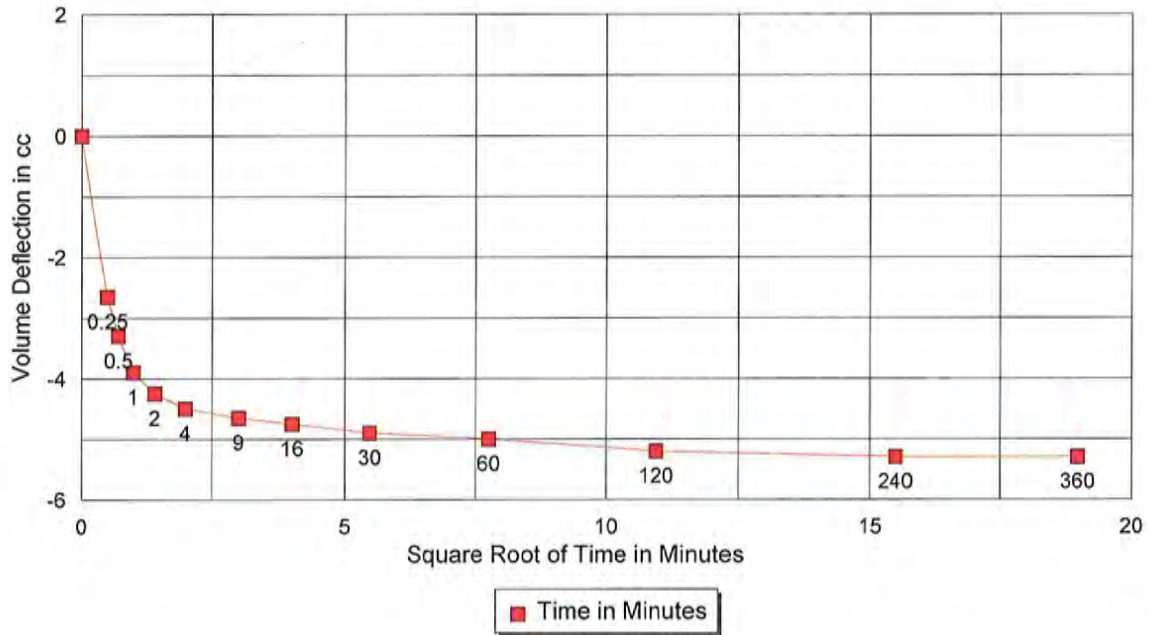
Data entry by:            DPM Date:            05/27/2014  
 Data checked by:            Date:            5/27/14  
 FileName: MWT0B303





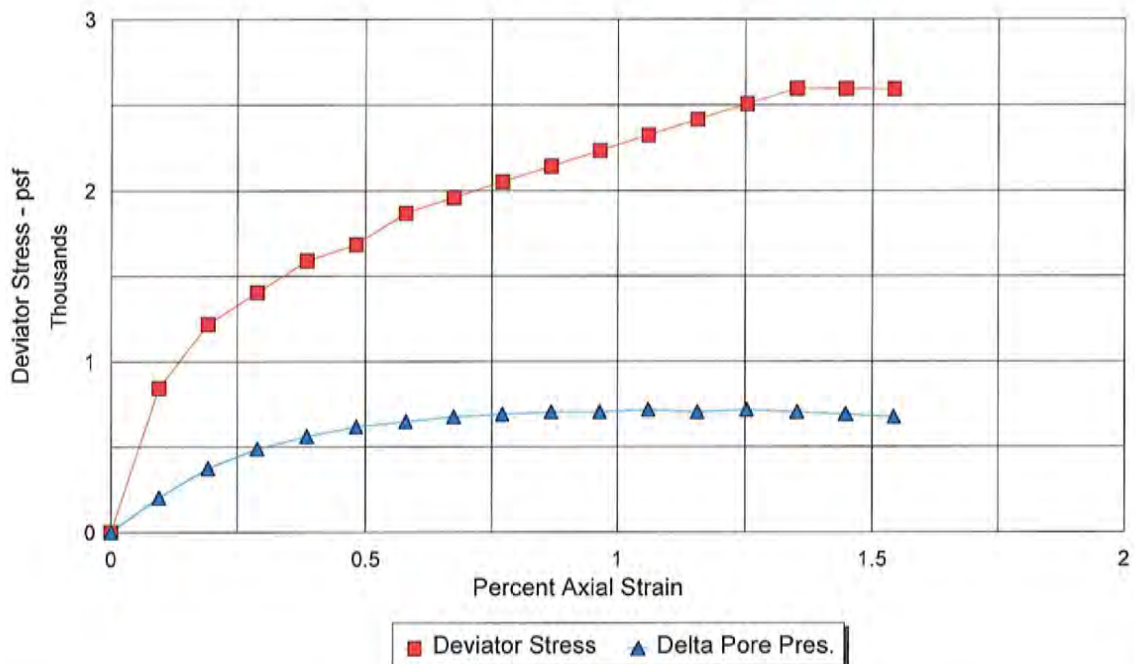
## CONSOLIDATION DATA

TI-B3-03, 21.0-22.0' (20-22.4'), -, Stage 1



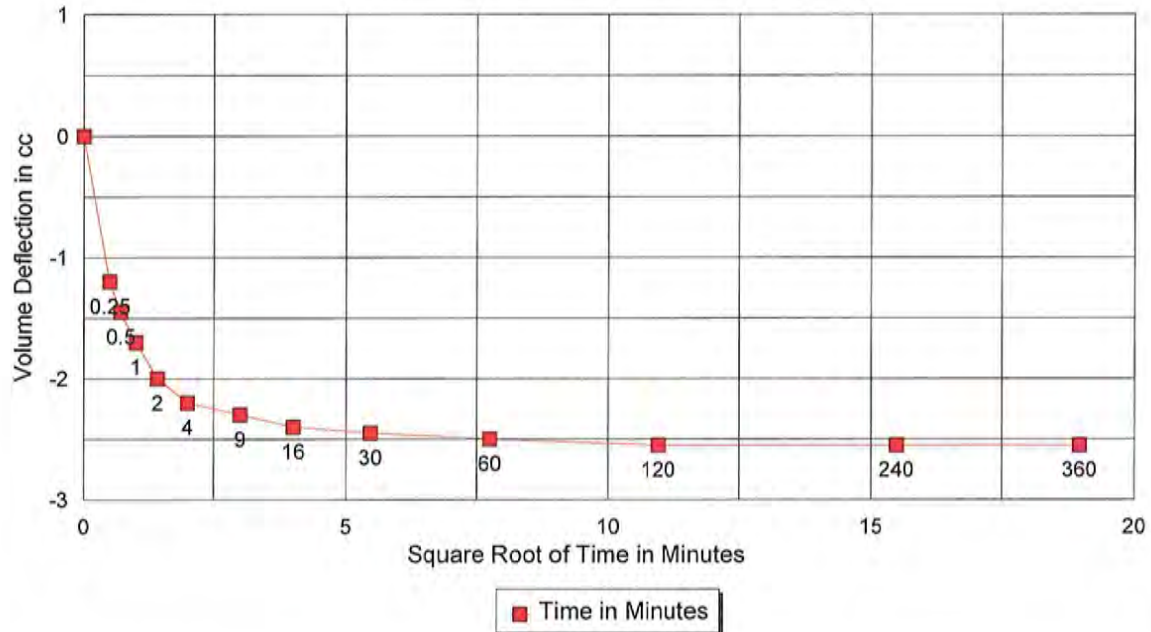
## TRIAXIAL TEST - TX/CUpp

TI-B3-03, 21.0-22.0' (20-22.4'), -, Stage 1



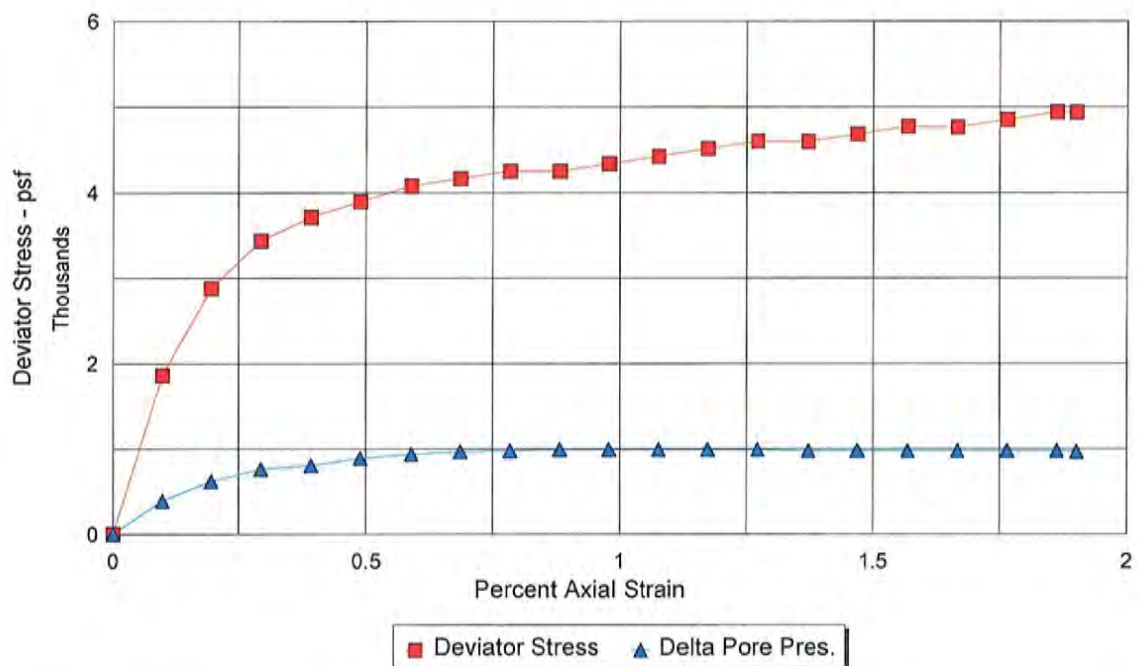
## CONSOLIDATION DATA

TI-B3-03, 21.0-22.0' (20-22.4'), -, Stage 2



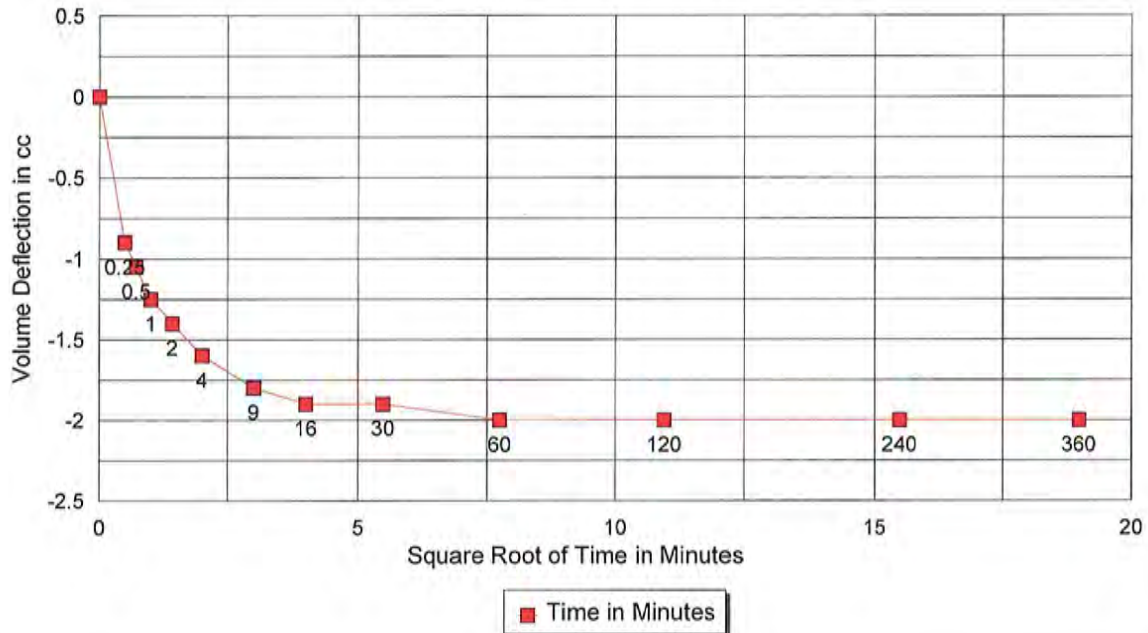
## TRIAXIAL TEST - TX/CUpp

TI-B3-03, 21.0-22.0' (20-22.4'), -, Stage 2



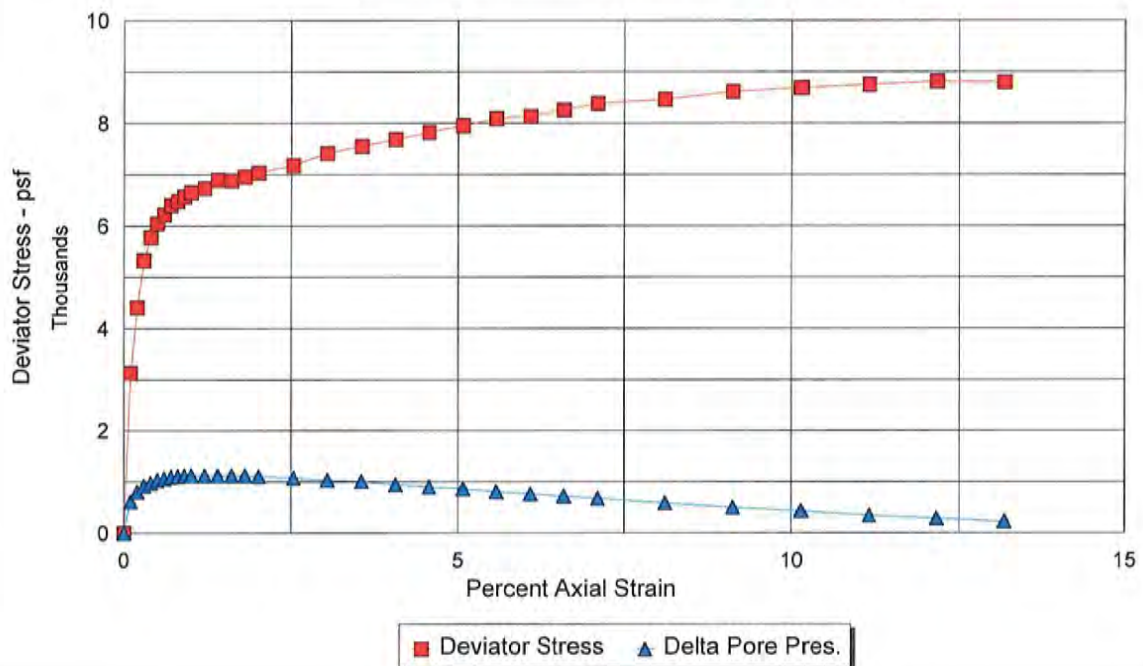
## CONSOLIDATION DATA

TI-B3-03, 21.0-22.0' (20-22.4'), -, Stage 3



## TRIAXIAL TEST - TX/CUpp

TI-B3-03, 21.0-22.0' (20-22.4'), -, Stage 3



PERMEABILITY TEST - BACK PRESSURE CONSTANT HEAD  
ASTM D 5084

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B23-10A  
DEPTH 45.2-45.7'  
SAMPLE NO. -  
SOIL DESCR. Sandstone  
LOCATION Tailings Impoundment  
CONF. PRES. PSF 6192

SAMPLED 12/06/13 MWH  
TEST STARTED 04/10/14 DPM  
TEST FINISHED 04/17/14 DPM  
CELL NUMBER 27S  
SATURATED TEST Yes  
TEST TYPE TX/Pbp/Tap Water

MOISTURE/DENSITY  
DATA

BEFORE  
TEST

AFTER  
TEST

Wt. Soil + Moisture (g)	287.5	298.2
Wt. Wet Soil & Pan (g)	293.9	304.7
Wt. Dry Soil & Pan (g)	259.2	259.2
Wt. Lost Moisture (g)	34.8	45.5
Wt. of Pan Only (g)	6.5	6.5
Wt. of Dry Soil (g)	252.7	252.7
Moisture Content %	13.8	18.0
Wet Density PCF	123.6	129.3
Dry Density PCF	108.7	109.6

Init. Diameter (in)	1.915	(cm)	4.864
Init. Area (sq in)	2.880	(sq cm)	18.583
Init. Height (in)	3.076	(cm)	7.813
Vol. Bef. Consol. (cu ft)	0.00513		
Vol. After Consol. (cu ft)	0.00509		
Porosity %	31.61		
Constant Head (PSI)	2.00	(cm)	140.79

Time	Time	Init.	Final	Head	Permeability
Min	Sec	Burette	Burette	Corr.	k
		CC	CC	CM	cm/sec
340.0	20400	46.8	44.4	15.7	3.8E-007
900.0	54000	44.4	40.5	19.1	2.4E-007
524.0	31440	40.5	38.3	22.5	2.4E-007
890.0	53400	38.3	34.7	25.6	2.4E-007
1440.0	86400	34.7	29.4	30.5	2.3E-007
587.0	35220	29.4	27.2	34.6	2.4E-007

Average Temperature 21.6

Data entry by: DPM Date: 05/23/2014  
Checked by: ka Date: 5/23/14  
FileName: PBCH2310





# TRIAXIAL COMPRESSION TEST DATA

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B23-10A  
 DEPTH 45.2-45.7'  
 SAMPLE NO. -  
 SOIL DESCR. Sandstone  
 LOCATION Tailings Impoundment  
 CONF. PRES. PSF 6192

SAMPLED 12/06/13 MWH  
 TEST STARTED 04/10/14 DPM  
 TEST FINISHED 04/17/14 DPM  
 CELL NUMBER 27S  
 SATURATED TEST Yes  
 TEST TYPE TX/Pbp/Tap Water

## SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	2.5	9.5				
50.0	48.0	11.8	12.9	38.5	47.0	8.5	0.85
60.0	58.0	12.7	13.7	48.1	57.2	9.1	0.91
70.0	68.0	14.7	15.7	58.7	67.8	9.1	0.91
80.0		16.3	16.3	67.4	77.1	9.7	0.97

## CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (CC)
0.00	0.00	16.30	0.00
0.25	0.50	21.90	-5.60
0.5	0.71	22.30	-6.00
1	1.00	22.70	-6.40
2	1.41	23.20	-6.90
4	2.00	23.70	-7.40
9	3.00	24.20	-7.90
16	4.00	24.40	-8.10
30	5.48	24.50	-8.20
60	7.75	24.60	-8.30
120	10.95	24.65	-8.35
240	15.49	24.70	-8.40
360	18.97	24.80	-8.50

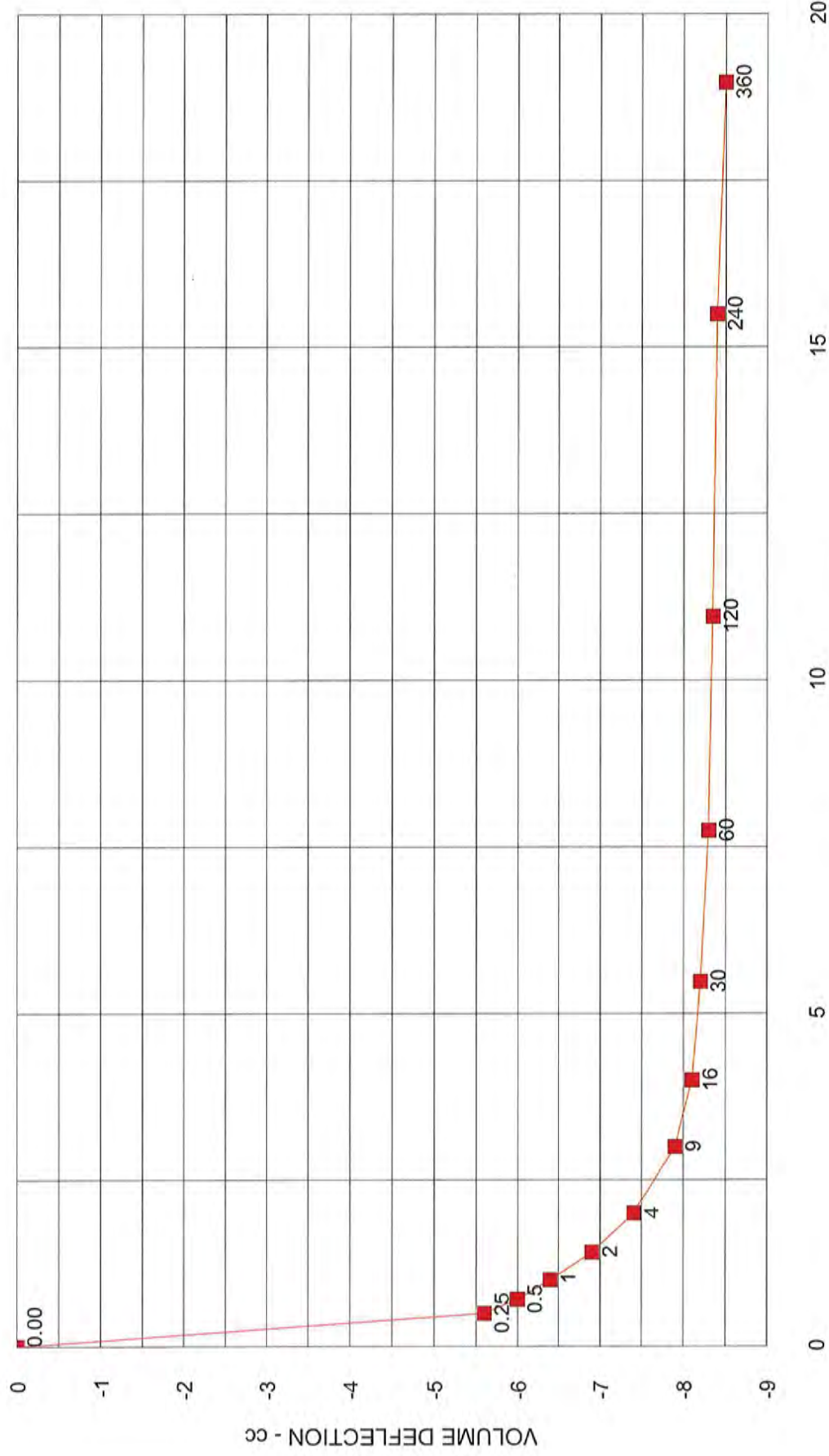
Initial Height (in)	3.076	Init. Vol. (CC)	145.21
Height Change (in)	0.056	Vol. Change (CC)	24.40
Ht. After Cons. (in)	3.020	Cell Exp. (CC)	23.21
Initial Area (sq in)	2.880	Net Change (CC)	1.19
Area After Cons. (sq in)	2.910	Cons. Vol. (CC)	144.02

Data entry by: KE DPM Date: 05/23/2014  
 Checked by: KE Date: 5/23/14  
 FileName: PBCH2310



# CONSOLIDATION DATA

TI-B23-10A, 45.2-45.7', -



TIME - SQUARE ROOT SCALE

■ Time in Minutes

PERMEABILITY TEST - BACK PRESSURE CONSTANT HEAD  
ASTM D 5084

CLIENT MWH

JOB NO. 2512-77

BORING NO.	TI-B23-13A	SAMPLED	12/06/13 MWH
DEPTH	65.5-66.0'	TEST STARTED	03/26/14 DPM
SAMPLE NO.	-	TEST FINISHED	04/20/14 DPM
SOIL DESCR.	Clay Shale	CELL NUMBER	26S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
CONF. PRES. PSF	8928	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	226.3	238.0
Wt. Wet Soil & Pan (g)	232.9	244.6
Wt. Dry Soil & Pan (g)	211.9	211.9
Wt. Lost Moisture (g)	21.0	32.7
Wt. of Pan Only (g)	6.6	6.6
Wt. of Dry Soil (g)	205.3	205.3
Moisture Content %	10.2	15.9
Wet Density PCF	113.5	134.4
Dry Density PCF	103.0	115.9

Init. Diameter (in)	1.912	(cm)	4.856
Init. Area (sq in)	2.871	(sq cm)	18.525
Init. Height (in)	2.645	(cm)	6.718
Vol. Bef. Consol. (cu ft)	0.00439		
Vol. After Consol. (cu ft)	0.00390		
Porosity %	29.56		
Constant Head (PSI)	2.00	(cm)	140.79

Time Min	Time Sec	Init. Burette CC	Final Burette CC	Head Corr. CM	Permeability k cm/sec
660.0	39600	47.8	47.6	13.4	1.3E-08
1564.0	93840	47.4	46.8	14.1	1.8E-08
1500.0	90000	46.8	46.0	14.9	2.2E-08
1500.0	90000	46.0	45.2	15.7	2.4E-08
1440.0	86400	45.2	44.2	16.7	3.2E-08
1453.0	87180	44.2	43.0	17.9	3.8E-08
1440.0	86400	43.0	41.7	19.2	4.2E-08
1440.0	86400	41.7	40.0	20.9	5.5E-08
1440.0	86400	40.0	38.0	22.9	6.6E-08
1440.0	86400	38.0	35.3	25.5	9.2E-08
1440.0	86400	35.3	32.4	28.5	1.0E-07
1440.0	86400	32.4	29.7	31.6	9.7E-08

Average Temperature 22.0

Note: There were multiple horizontal cracks in the sample.

Data entry by:     DPM Date: 05/01/2014  
 Checked by:     Date: 5/23/14  
 FileName: PBCH2313



# TRIAXIAL COMPRESSION TEST DATA

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B23-13A  
 DEPTH 65.5-66.0'  
 SAMPLE NO. -  
 SOIL DESCR. Clay Shale  
 LOCATION Tailings Impoundment  
 CONF. PRES. PSF 8928

SAMPLED 12/06/13 MWH  
 TEST STARTED 03/26/14 DPM  
 TEST FINISHED 04/20/14 DPM  
 CELL NUMBER 26S  
 SATURATED TEST Yes  
 TEST TYPE TX/Pbp/Tap Water

## SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)	Pore Pressure (PSI)	Change	B
		Close Open	Close Open		
40.0	38.0	2.9 13.3			
50.0	48.0	12.5 13.2	38.4 47.3	8.9	0.89
60.0		13.7 14.0	48.0 57.5	9.5	0.95

## CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (CC)
0.00	0.00	0.60	0.00
0.25	0.50	8.00	-7.40
0.5	0.71	8.70	-8.10
1	1.00	9.70	-9.10
2	1.41	10.80	-10.20
4	2.00	12.10	-11.50
9	3.00	14.00	-13.40
16	4.00	15.30	-14.70
30	5.48	16.70	-16.10
60	7.75	18.30	-17.70
120	10.95	19.50	-18.90
240	15.49	20.40	-19.80
360	18.97	20.80	-20.20

Initial Height (in)	2.645	Init. Vol. (CC)	124.47
Height Change (in)	0.239	Vol. Change (CC)	35.80
Ht. After Cons. (in)	2.406	Cell Exp. (CC)	21.91
Initial Area (sq in)	2.871	Net Change (CC)	13.89
Area After Cons. (sq in)	2.804	Cons. Vol. (CC)	110.58

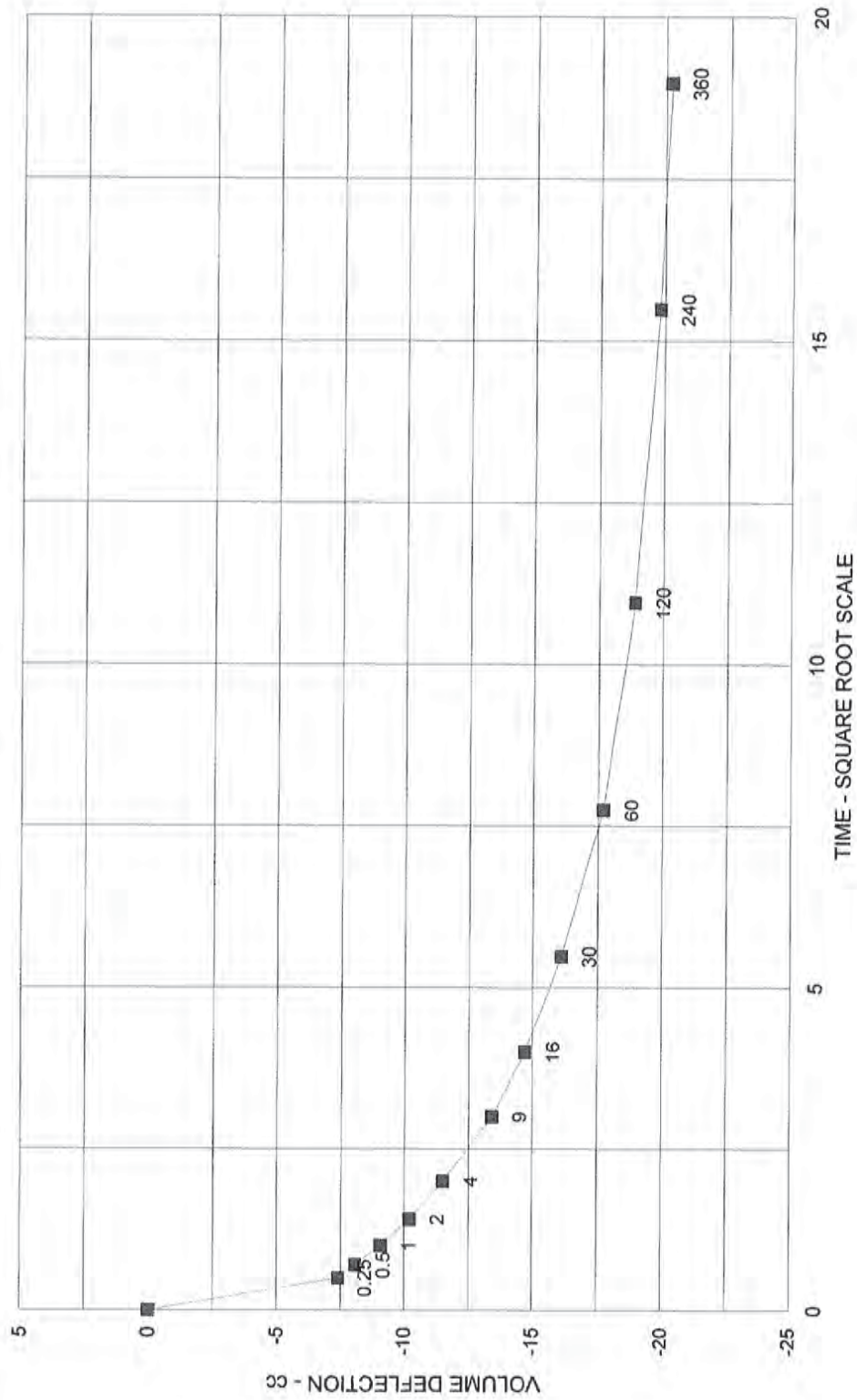
Data entry by: KE DPM Date: 05/01/2014  
 Checked by: KE Date: 5/23/14  
 FileName: PBCH2313





# CONSOLIDATION DATA

TI-B23-13A, 65.5-66.0', -



■ Time in Minutes      CONF. PRES. PSF 8928

PERMEABILITY TEST - BACK PRESSURE CONSTANT HEAD  
ASTM D 5084

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B11-06  
DEPTH 30.5-31.5 (30-31.7')  
SAMPLE NO. -  
SOIL DESCR. Sandy Clay  
LOCATION Tailings Impoundment  
CONF. PRES. PSF 7344

SAMPLED 12/02/13 MWH  
TEST STARTED 03/18/14 DPM  
TEST FINISHED 03/28/14 DPM  
CELL NUMBER 27S  
SATURATED TEST Yes  
TEST TYPE TX/Pbp/Tap Water

MOISTURE/DENSITY  
DATA

BEFORE  
TEST

AFTER  
TEST

Wt. Soil + Moisture (g)	465.5	478.1
Wt. Wet Soil & Pan (g)	481.4	494.0
Wt. Dry Soil & Pan (g)	425.3	425.3
Wt. Lost Moisture (g)	56.1	68.7
Wt. of Pan Only (g)	15.9	15.9
Wt. of Dry Soil (g)	409.4	409.4
Moisture Content %	13.7	16.8
Wet Density PCF	127.8	136.8
Dry Density PCF	112.4	117.2

Init. Diameter (in)	2.405	(cm)	6.109
Init. Area (sq in)	4.543	(sq cm)	29.310
Init. Height (in)	3.054	(cm)	7.757
Vol. Bef. Consol. (cu ft)	0.00803		
Vol. After Consol. (cu ft)	0.00770		
Porosity %	31.48		
Constant Head (PSI)	2.00	(cm)	140.79

Time Min	Time Sec	Init. Burette CC	Final Burette CC	Head Corr. CM	Permeability k cm/sec
360.0	21600	47.5	38.9	18.3	8.7E-07
810.0	48600	47.7	28.2	24.0	9.2E-07
1420.0	85200	47.2	15.9	31.0	8.9E-07
625.0	37500	46.2	31.3	23.2	9.0E-07

Average Temperature 21.4

Data entry by: VR DPM Date: 04/07/2014  
Checked by: VR Date: 4/7/14  
FileName: PBCH1106



# RIAXIAL COMPRESSION TEST DATA

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B11-06  
 DEPTH 30.5-31.5 (30-31.7')  
 SAMPLE NO. -  
 SOIL DESCR. Sandy Clay  
 LOCATION Tailings Impoundment  
 CONF. PRES. PSF 7344

SAMPLED 12/02/13 MWH  
 TEST STARTED 03/18/14 DPM  
 TEST FINISHED 03/28/14 DPM  
 CELL NUMBER 27S  
 SATURATED TEST Yes  
 TEST TYPE TX/Pbp/Tap Water

## SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)	Pore Pressure (PSI)	Change	B
		Close Open	Close Open		
40.0	38.0	3.3	11.7		
50.0	48.0	13.7	14.6	9.0	0.90
60.0		15.3	15.6	9.6	0.96

## CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (CC)
0.00	0.00	1.20	0.00
0.25	0.50	9.10	-7.90
0.5	0.71	10.40	-9.20
1	1.00	11.60	-10.40
2	1.41	12.30	-11.10
4	2.00	12.75	-11.55
9	3.00	13.00	-11.80
16	4.00	13.20	-12.00
30	5.48	13.40	-12.20
60	7.75	13.60	-12.40
120	10.95	13.90	-12.70
240	15.49	14.15	-12.95
360	18.97	14.30	-13.10

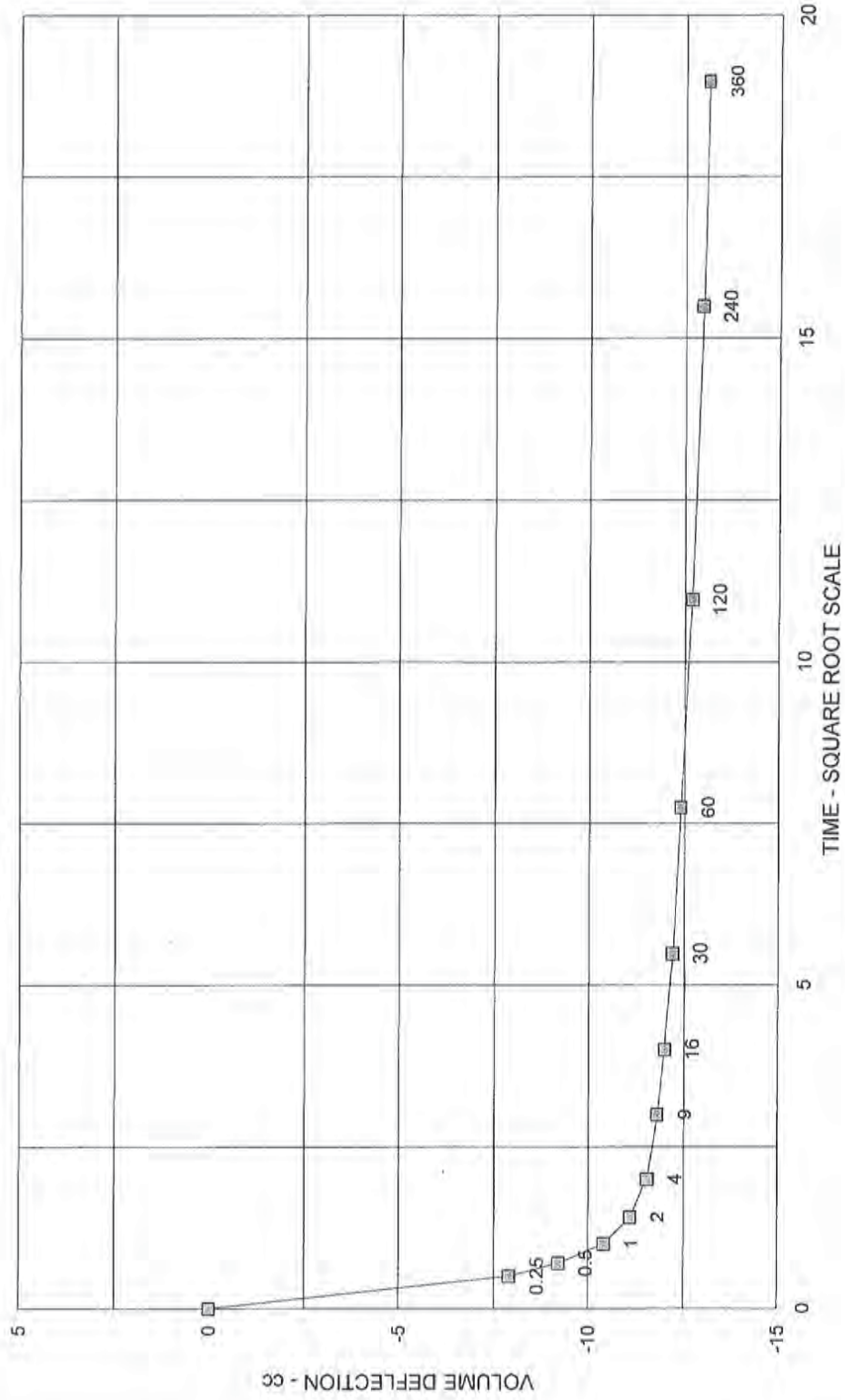
Initial Height (in)	3.054	Init. Vol. (CC)	227.39
Height Change (in)	0.052	Vol. Change (CC)	31.10
Ht. After Cons. (in)	3.002	Cell Exp. (CC)	21.86
Initial Area (sq in)	4.543	Net Change (CC)	9.24
Area After Cons. (sq in)	4.434	Cons. Vol. (CC)	218.15

Data entry by: DPM Date: 04/07/2014  
 Checked by: KL Date: 4/7/14  
 FileName: PBCH1106



# CONSOLIDATION DATA

TI-B11-06, 30.5-31.5 (30-31.7'), -



Time in Minutes CONF. PRES. PSF 7344



PERMEABILITY TEST - BACK PRESSURE CONSTANT HEAD  
ASTM D 5084

CLIENT MWH

JOB NO. 2512-77

BORING NO.	TI-B11-20A	SAMPLED	12/03/13 MWH
DEPTH	100.0-100.2	TEST STARTED	03/06/14 DPM
SAMPLE NO.	-	TEST FINISHED	03/13/14 DPM
SOIL DESCR.	Weathered Sandstone	CELL NUMBER	26S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
CONF. PRES. PSF	16128	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	288.8	289.3
Wt. Wet Soil & Pan (g)	298.0	298.5
Wt. Dry Soil & Pan (g)	247.7	247.7
Wt. Lost Moisture (g)	50.3	50.8
Wt. of Pan Only (g)	9.2	9.2
Wt. of Dry Soil (g)	238.4	238.4
Moisture Content %	21.1	21.3
Wet Density PCF	125.8	123.3
Dry Density PCF	103.9	101.6
Init. Diameter (in)	1.893	(cm) 4.808
Init. Area (sq in)	2.814	(sq cm) 18.159
Init. Height (in)	3.106	(cm) 7.889
Vol. Bef. Consol. (cu ft)	0.00506	
Vol. After Consol. (cu ft)	0.00517	
Porosity %	34.70	
Constant Head (PSI)	2.00	(cm) 140.79

Time	Time	Init.	Final	Head	Permeability
Min	Sec	Burette	Burette	Corr.	k
		CC	CC	CM	cm/sec
60.0	3600	46.0	32.6	22.6	1.3E-05
138.0	8280	47.0	22.0	27.8	1.1E-05
60.0	3600	46.1	33.5	22.0	1.2E-05
61.0	3660	46.0	32.9	22.4	1.3E-05

Average Temperature 22.1

Data entry by: DPM Date: 04/07/2014  
Checked by: KL Date: 4/7/14  
FileName: PBCH1120



# RIAXIAL COMPRESSION TEST DATA

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B11-20A  
 DEPTH 100.0-100.2  
 SAMPLE NO. -  
 SOIL DESCR. Weathered Sandstone  
 LOCATION Tailings Impoundment  
 CONF. PRES. PSF 16128

SAMPLED 12/03/13 MWH  
 TEST STARTED 03/06/14 DPM  
 TEST FINISHED 03/13/14 DPM  
 CELL NUMBER 26S  
 SATURATED TEST Yes  
 TEST TYPE TX/Pbp/Tap Water

## SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)	Pore Pressure (PSI)	Change	B
		Close Open	Close Open		
40.0	38.0	2.2	9.8		
50.0	48.0	10.1	10.9	8.0	0.80
60.0		11.9	12.0	9.6	0.96

## CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (CC)
0.00	0.00	2.60	0.00
0.25	0.50	14.10	-11.50
0.5	0.71	14.20	-11.60
1	1.00	14.30	-11.70
2	1.41	14.40	-11.80
4	2.00	14.50	-11.90
9	3.00	14.65	-12.05
16	4.00	14.75	-12.15
30	5.48	14.85	-12.25
60	7.75	14.95	-12.35
133	11.53	15.10	-12.50
240	15.49	15.20	-12.60
360	18.97	15.30	-12.70

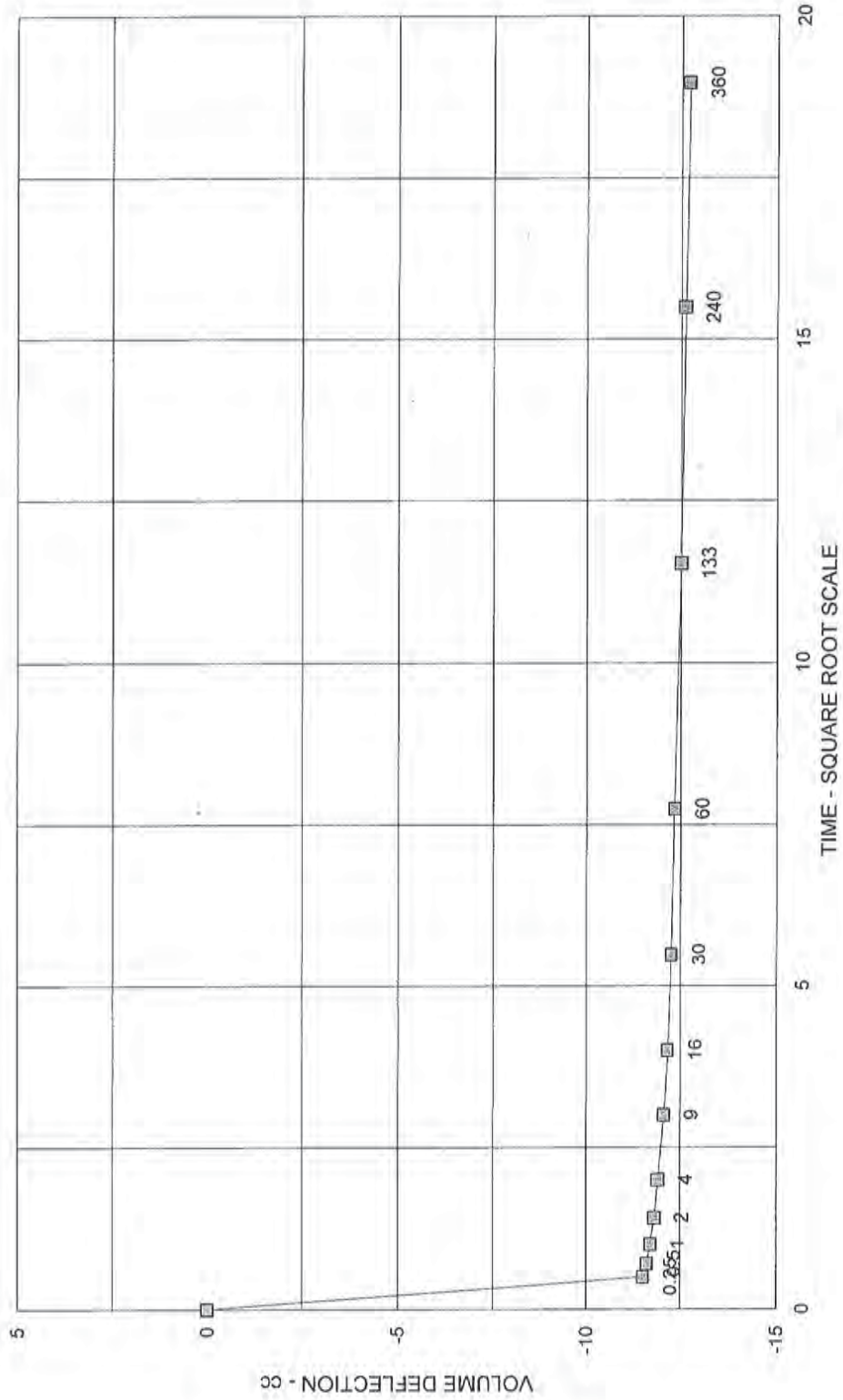
Initial Height (in)	3.106	Init. Vol. (CC)	143.28
Height Change (in)	0.038	Vol. Change (CC)	23.70
Ht. After Cons. (in)	3.068	Cell Exp. (CC)	26.89
Initial Area (sq in)	2.814	Net Change (CC)	-3.19
Area After Cons. (sq in)	2.913	Cons. Vol. (CC)	146.47

Data entry by: KL DPM Date: 04/07/2014  
 Checked by: KL Date: 4/7/14  
 FileName: PBCH1120



# CONSOLIDATION DATA

TI-B11-20A, 100.0-100.2, -



Time in Minutes CONF. PRES. PSF 16128

PERMEABILITY TEST - BACK PRESSURE CONSTANT HEAD  
ASTM D 5084

CLIENT MWH

JOB NO. 2512-77

BORING NO.	TI-B8-02A&B	SAMPLED	12/03/13 MWH
DEPTH	25.5-26.5'	TEST STARTED	03/17/14 DPM
SAMPLE NO.	Composite Remold	TEST FINISHED	03/25/14 DPM
SOIL DESCR.	Sand Tailings & Clayey Silt	CELL NUMBER	26S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
CONF. PRES. PSF	6624	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST	
Wt. Soil + Moisture (g)	249.5	278.1	
Wt. Wet Soil & Pan (g)	256.1	284.7	
Wt. Dry Soil & Pan (g)	230.2	230.2	
Wt. Lost Moisture (g)	25.9	54.5	
Wt. of Pan Only (g)	6.6	6.6	
Wt. of Dry Soil (g)	223.6	223.6	
Moisture Content %	11.6	24.4	
Wet Density PCF	108.0	122.6	
Dry Density PCF	96.8	98.5	
Init. Diameter (in)	1.915	(cm)	4.864
Init. Area (sq in)	2.880	(sq cm)	18.583
Init. Height (in)	3.056	(cm)	7.762
Vol. Bef. Consol. (cu ft)	0.00509		
Vol. After Consol. (cu ft)	0.00500		
Porosity %	38.47		
Constant Head (PSI)	2.00	(cm)	140.79

Time Min	Time Sec	Init. Burette CC	Final Burette CC	Head Corr. CM	Permeability k cm/sec
4.0	240	46.9	23.8	26.9	3.5E-04
4.0	240	47.6	24.1	26.3	3.5E-04
4.0	240	48.6	25.0	25.3	3.5E-04
4.0	240	48.7	24.7	25.4	3.6E-04

Average Temperature 21.0

Data entry by: VR DPM Date: 04/10/2014  
 Checked by: VR Date: 4/11/14  
 FileName: PBCHB802





# RIAXIAL COMPRESSION TEST DATA

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B8-02A&B  
 DEPTH 25.5-26.5'  
 SAMPLE NO. Composite Remold  
 SOIL DESCR. Sand Tailings & Clayey Silt  
 LOCATION Tailings Impoundment  
 CONF. PRES. PSF 6624

SAMPLED 12/03/13 MWH  
 TEST STARTED 03/17/14 DPM  
 TEST FINISHED 03/25/14 DPM  
 CELL NUMBER 26S  
 SATURATED TEST Yes  
 TEST TYPE TX/Pbp/Tap Water

## SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)	Pore Pressure (PSI)	Change	B
		Close Open	Close Open		
40.0	38.0	2.1	11.0		
50.0	48.0	11.6	12.6	38.4	46.5
60.0	58.0	12.8	13.6	48.6	57.8
70.0		13.5	13.6	58.3	67.8
				8.1	0.81
				9.2	0.92
				9.5	0.95

## CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (CC)
0.00	0.00	1.60	0.00
0.25	0.50	9.10	-7.50
0.5	0.71	9.30	-7.70
1	1.00	9.40	-7.80
2	1.41	9.50	-7.90
4	2.00	9.70	-8.10
9	3.00	9.85	-8.25
16	4.00	9.95	-8.35
30	5.48	10.10	-8.50
60	7.75	10.30	-8.70
120	10.95	10.50	-8.90
240	15.49	10.70	-9.10
360	18.97	10.70	-9.10

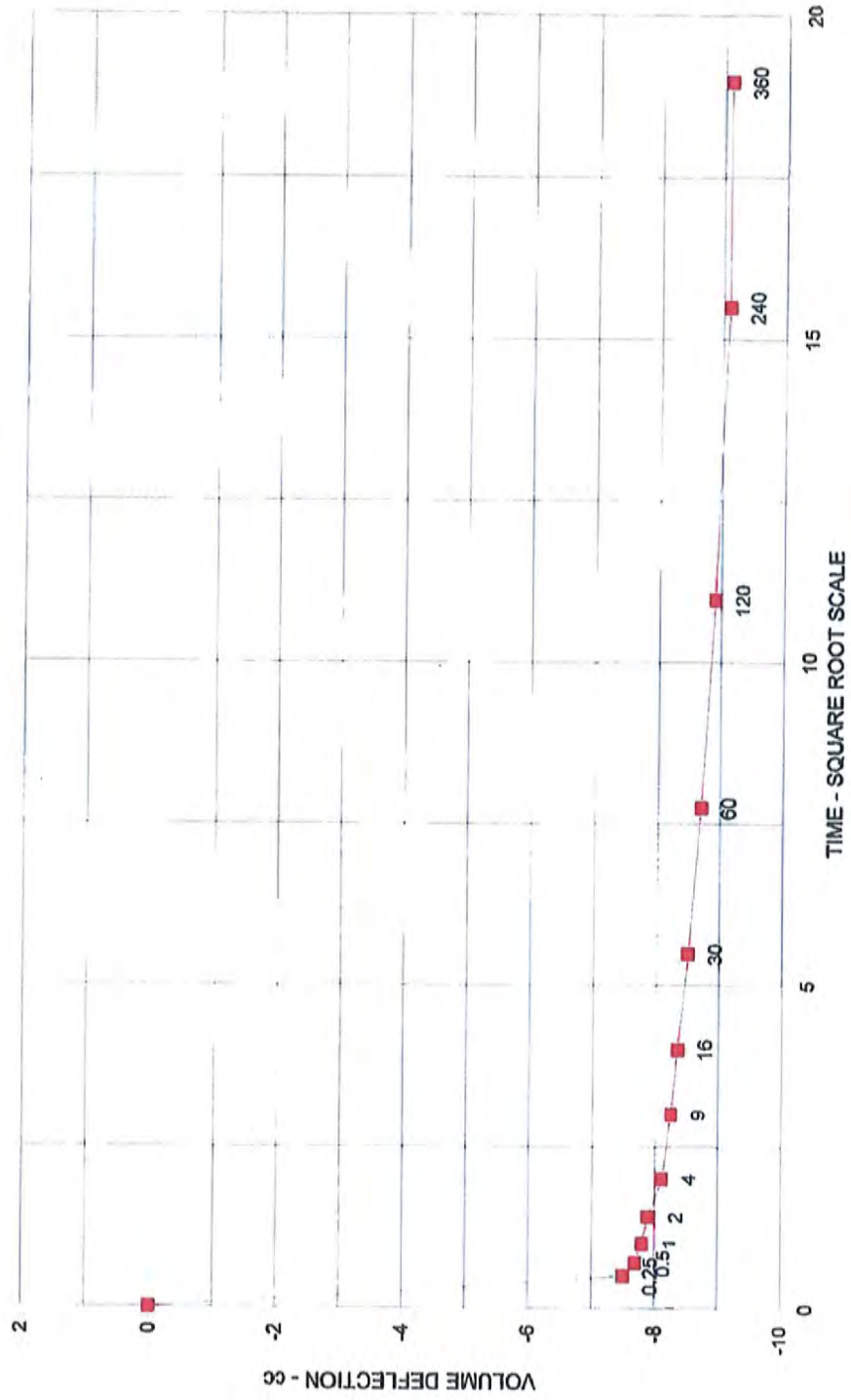
Initial Height (in)	3.056	Init. Vol. (CC)	144.26
Height Change (in)	0.046	Vol. Change (CC)	23.90
Ht. After Cons. (in)	3.010	Cell Exp. (CC)	21.32
Initial Area (sq in)	2.880	Net Change (CC)	2.58
Area After Cons. (sq in)	2.872	Cons. Vol. (CC)	141.68

Data entry by: DPM Date: 04/10/2014  
 Checked by: KE Date: 4/11/14  
 FileName: PBCHB802



# CONSOLIDATION DATA

TI-B8-02A&B, 25.5-26.5', Composite Remold



■ Time in Minutes CONF. PRES. PSF 6624

PERMEABILITY TEST - BACK PRESSURE CONSTANT HEAD  
ASTM D 5084

CLIENT MWH

JOB NO. 2512-77

BORING NO.	TI-B11-03	SAMPLED	12/02/13 MWH
DEPTH	15-16'	TEST STARTED	02/27/14DPM
SAMPLE NO.	-	TEST FINISHED	3/5/14 DPM
SOIL DESCR.	Sand	CELL NUMBER	25S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
CONF. PRES. PSF	5472	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST	
Wt. Soil + Moisture (g)	626.9	673.5	
Wt. Wet Soil & Pan (g)	642.7	689.3	
Wt. Dry Soil & Pan (g)	595.1	595.1	
Wt. Lost Moisture (g)	47.6	94.2	
Wt. of Pan Only (g)	15.8	15.8	
Wt. of Dry Soil (g)	579.3	579.3	
Moisture Content %	8.2	16.3	
Wet Density PCF	119.5	135.6	
Dry Density PCF	110.4	116.6	
Init. Diameter (in)	2.862	(cm)	7.269
Init. Area (sq in)	6.433	(sq cm)	41.507
Init. Height (in)	3.107	(cm)	7.892
Vol. Bef. Consol. (cu ft)	0.01157		
Vol. After Consol. (cu ft)	0.01095		
Porosity %	30.38		
Constant Head (PSI)	2.00	(cm)	140.79

Time Min	Time Sec	Init. Burette CC	Final Burette CC	Head Corr. CM	Permeability k cm/sec
15.0	900	45.0	31.2	23.9	2.4E-05
15.0	900	46.7	33.5	21.7	2.3E-05
15.0	900	44.3	30.5	24.8	2.5E-05
15.0	900	45.6	31.4	23.4	2.5E-05

Average Temperature 20.3

Data entry by: DPM Date: 04/10/2014  
 Checked by: KE Date: 4/11/14  
 FileName: PBCH1103



# RIAXIAL COMPRESSION TEST DATA

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B11-03  
 DEPTH 15-16'  
 SAMPLE NO. -  
 SOIL DESCR. Sand  
 LOCATION Tailings Impoundment  
 CONF. PRES. PSF 5472

SAMPLED 12/02/13 MWH  
 TEST STARTED 02/27/14DPM  
 TEST FINISHED 3/5/14 DPM  
 CELL NUMBER 25S  
 SATURATED TEST Yes  
 TEST TYPE TX/Pbp/Tap Water

## SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)	Pore Pressure (PSI)	Change	B
		Close Open	Close Open		
40.0	38.0	4.4	18.8		
50.0	48.0	19.6	20.8	38.0	46.2
60.0	58.0	21.0	22.0	47.7	56.6
70.0	68.0	21.9	22.8	58.5	67.9
80.0		23.0	23.0	67.8	77.6
				8.2	0.82
				8.9	0.89
				9.4	0.94
				9.8	0.98

## CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (CC)
0.00	0.00	1.20	0.00
0.25	0.50	15.40	-14.20
0.5	0.71	15.90	-14.70
1	1.00	16.40	-15.20
2	1.41	16.80	-15.60
4	2.00	17.10	-15.90
9	3.00	17.45	-16.25
16	4.00	17.70	-16.50
30	5.48	17.80	-16.60
60	7.75	18.00	-16.80
120	10.95	18.20	-17.00
240	15.49	18.40	-17.20
360	18.97	18.50	-17.30

Initial Height (in)	3.107	Init. Vol. (CC)	327.60
Height Change (in)	0.112	Vol. Change (CC)	38.30
Ht. After Cons. (in)	2.995	Cell Exp. (CC)	18.82
Initial Area (sq in)	6.433	Net Change (CC)	17.48
Area After Cons. (sq in)	6.318	Cons. Vol. (CC)	310.13

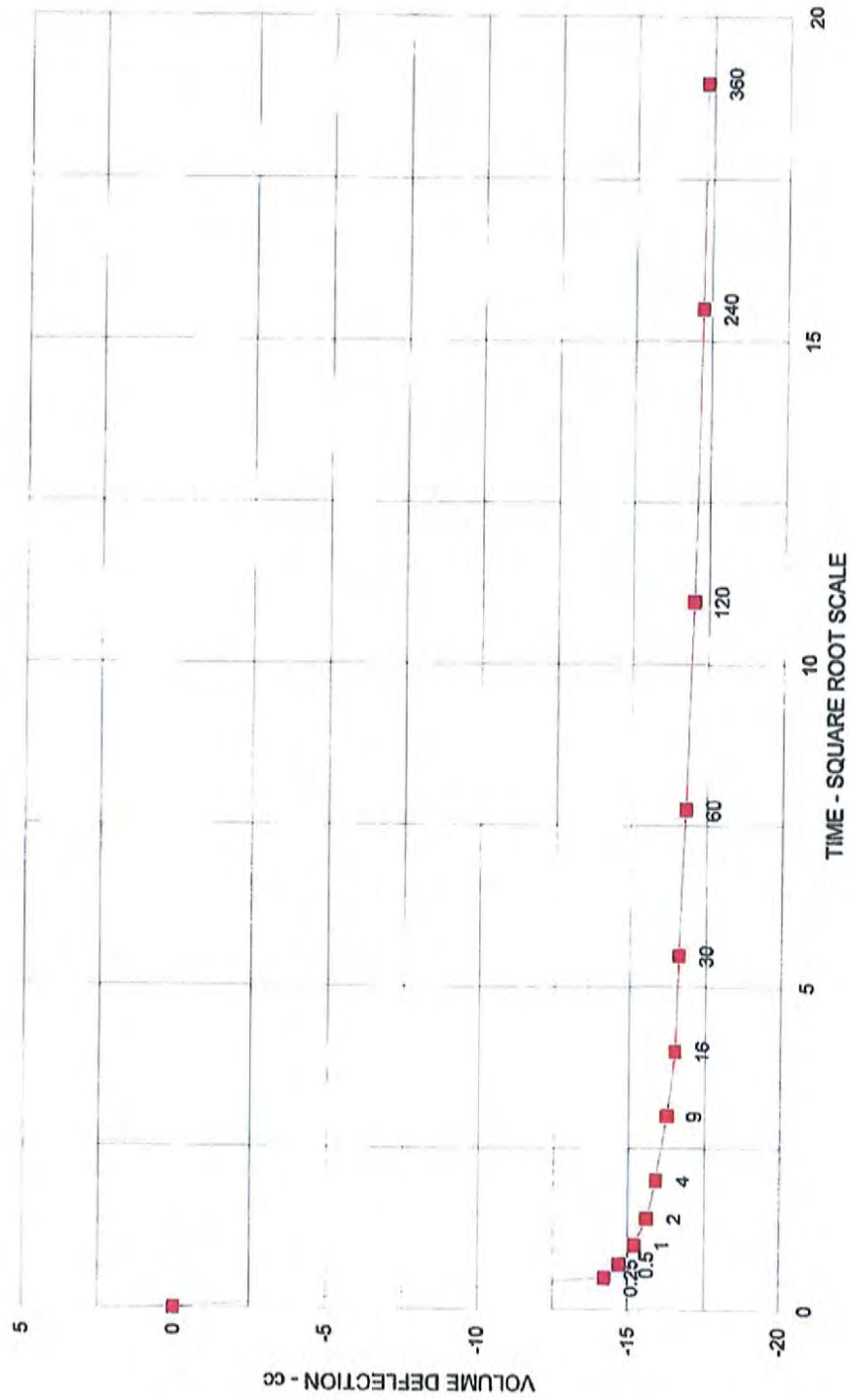
Data entry by: KE DPM Date: 04/10/2014  
 Checked by: KE Date: 4/11/14  
 FileName: PBCH1103





# CONSOLIDATION DATA

TL-B11-03, 15-16', -



■ Time in Minutes      CONF. PRES. PSF 5472

PERMEABILITY TEST - BACK PRESSURE CONSTANT HEAD  
ASTM D 5084

CLIENT	MWH	JOB NO.	2512-77
BORING NO.	TI-B15-05	SAMPLED	12/05/13 MWH
DEPTH	15.5-16.0' (15-17.5')	TEST STARTED	03/19/14 DPM
SAMPLE NO.	-	TEST FINISHED	03/26/14 DPM
SOIL DESCR.	Sand Tailings	CELL NUMBER	25S
LOCATION	Tailings Impoundment	SATURATED TEST	Yes
CONF. PRES. PSF	5472	TEST TYPE	TX/Pbp/Tap Water

MOISTURE/DENSITY DATA	BEFORE TEST	AFTER TEST
Wt. Soil + Moisture (g)	494.4	569.4
Wt. Wet Soil & Pan (g)	510.3	585.2
Wt. Dry Soil & Pan (g)	476.6	476.6
Wt. Lost Moisture (g)	33.6	108.5
Wt. of Pan Only (g)	15.8	15.8
Wt. of Dry Soil (g)	460.8	460.8
Moisture Content %	7.3	23.6
Wet Density PCF	101.2	124.0
Dry Density PCF	94.3	100.4
Init. Diameter (in)	2.837	(cm) 7.206
Init. Area (sq in)	6.321	(sq cm) 40.785
Init. Height (in)	2.944	(cm) 7.478
Vol. Bef. Consol. (cu ft)	0.01077	
Vol. After Consol. (cu ft)	0.01012	
Porosity %	37.86	
Constant Head (PSI)	2.00	(cm) 140.79

Time Min	Time Sec	Init. Burette CC	Final Burette CC	Head Corr. CM	Permeability k cm/sec
1.00	60	46.8	17.1	30.6	8.2E-04
0.75	45	46.6	24.6	26.6	7.8E-04
0.75	45	47.6	25.2	25.7	7.9E-04
0.75	45	47.7	25.9	25.3	7.7E-04
0.75	45	47.0	23.6	26.9	8.3E-04

Note: The facies changed within the requested testing interval. The perm came from the clean Sand portion of the requested interval, and the consol came from the Silty Clayey Sand portion of the requested interval.

Average Temperature 23.0

Data entry by: KR Date: 04/07/2014  
Checked by: KR Date: 4/7/14  
FileName: PBCH1505



# RIAXIAL COMPRESSION TEST DATA

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B15-05  
 DEPTH 15.5-16.0' (15-17.5')  
 SAMPLE NO. -  
 SOIL DESCR. Sand Tailings  
 LOCATION Tailings Impoundment  
 CONF. PRES. PSF 5472

SAMPLED 12/05/13 MWH  
 TEST STARTED 03/19/14 DPM  
 TEST FINISHED 03/26/14 DPM  
 CELL NUMBER 25S  
 SATURATED TEST Yes  
 TEST TYPE TX/Pbp/Tap Water

## SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	5.9	22.8				
50.0	48.0	23.8	24.9	38.8	46.9	8.1	0.81
60.0	58.0	24.8	25.7	48.0	56.9	8.9	0.89
70.0		27.4	27.5	58.3	67.9	9.6	0.96

## CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (CC)
0.00	0.00	1.20	0.00
0.25	0.50	13.40	-12.20
0.5	0.71	13.70	-12.50
1	1.00	13.90	-12.70
2	1.41	14.05	-12.85
4	2.00	14.15	-12.95
9	3.00	14.30	-13.10
16	4.00	14.40	-13.20
30	5.48	14.50	-13.30
60	7.75	14.65	-13.45
120	10.95	14.75	-13.55
240	15.49	14.80	-13.60
360	18.97	14.80	-13.60

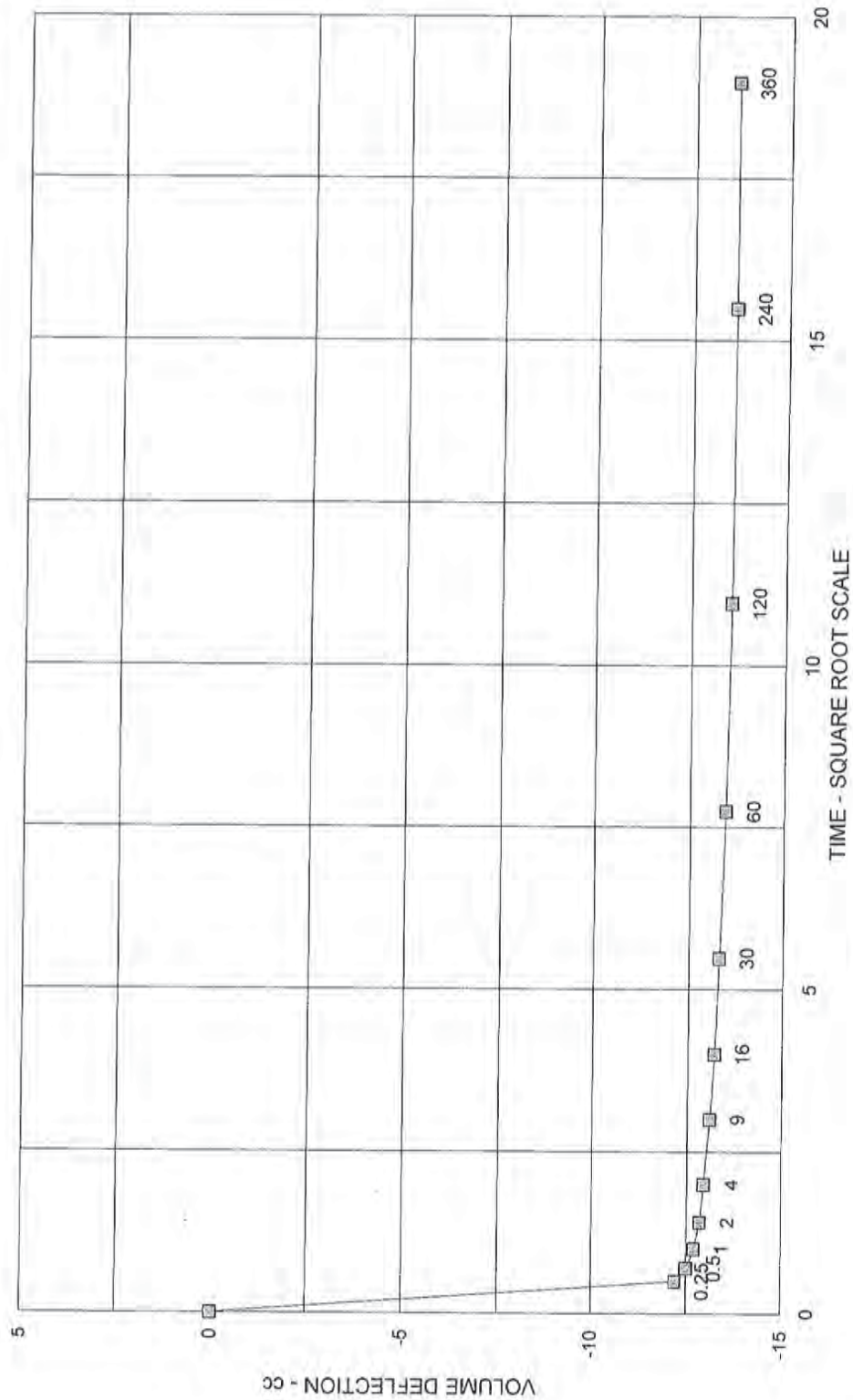
Initial Height (in)	2.944	Init. Vol. (CC)	305.02
Height Change (in)	0.097	Vol. Change (CC)	35.10
Ht. After Cons. (in)	2.847	Cell Exp. (CC)	16.73
Initial Area (sq in)	6.321	Net Change (CC)	18.37
Area After Cons. (sq in)	6.143	Cons. Vol. (CC)	286.65

Data entry by: KR DPM Date: 04/07/2014  
 Checked by: KR Date: 4/7/14  
 FileName: PBCH1505



# CONSOLIDATION DATA

TI-B15-05, 15.5-16.0' (15-17.5'), -



Time in Minutes      CONF. PRES. PSF 5472



PERMEABILITY TEST - BACK PRESSURE CONSTANT HEAD  
ASTM D 5084

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B8-09  
DEPTH 43.5-44.5' (42.5-45.0')  
SAMPLE NO. Remolded  
SOIL DESCR. Clayey Silt  
LOCATION Tailings Impoundment  
CONF. PRES. PSF 8784

SAMPLED 12/04/13 MWH  
TEST STARTED 02/19/14 DPM  
TEST FINISHED 02/26/14 DPM  
CELL NUMBER 25S  
SATURATED TEST Yes  
TEST TYPE TX/Pbp/Tap Water

MOISTURE/DENSITY  
DATA

BEFORE  
TEST

AFTER  
TEST

Wt. Soil + Moisture (g)	379.8	337.3
Wt. Wet Soil & Pan (g)	386.5	344.0
Wt. Dry Soil & Pan (g)	267.5	267.5
Wt. Lost Moisture (g)	119.0	76.5
Wt. of Pan Only (g)	6.7	6.7
Wt. of Dry Soil (g)	260.9	260.9
Moisture Content %	45.6	29.3
Wet Density PCF	107.2	121.2
Dry Density PCF	73.6	93.7

Init. Diameter (in)	2.406	(cm)	6.111
Init. Area (sq in)	4.547	(sq cm)	29.334
Init. Height (in)	2.969	(cm)	7.541
Vol. Bef. Consol. (cu ft)	0.00781		
Vol. After Consol. (cu ft)	0.00613		
Porosity %	44.01		
Constant Head (PSI)	2.00	(cm)	140.79

Time Min	Time Sec	Init. Burette CC	Final Burette CC	Head Corr. CM	Permeability k cm/sec
1500.0	90000	45.8	44.3	16.3	3.4E-08
2880.0	172800	44.3	41.9	18.4	2.9E-08
1440.0	86400	41.9	40.7	20.4	2.9E-08
1440.0	86400	40.7	39.5	21.7	3.0E-08

Note: Could not achieve target density.

Average Temperature 21.1

Data entry by: ve DPM Date: 04/04/2014  
Checked by: ve Date: 4/5/14  
FileName: PBCHB809



# RIAXIAL COMPRESSION TEST DATA

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B8-09  
 DEPTH 43.5-44.5' (42.5-45.0')  
 SAMPLE NO. Remolded  
 SOIL DESCR. Clayey Silt  
 LOCATION Tailings Impoundment  
 CONF. PRES. PSF 8784

SAMPLED 12/04/13 MWH  
 TEST STARTED 02/19/14 DPM  
 TEST FINISHED 02/26/14 DPM  
 CELL NUMBER 25S  
 SATURATED TEST Yes  
 TEST TYPE TX/Pbp/Tap Water

## SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)	Pore Pressure (PSI)	Change	B
		Close Open	Close Open		
40.0	38.0	2.9	17.4		
50.0		20.9	21.0	38.6	48.4
				9.8	0.98

## CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (CC)
0.00	0.00	0.30	0.00
0.25	0.50	7.40	-7.10
0.5	0.71	8.20	-7.90
1	1.00	9.20	-8.90
2	1.41	10.60	-10.30
4	2.00	12.45	-12.15
9	3.00	15.55	-15.25
16	4.00	18.70	-18.40
30	5.48	23.20	-22.90
60	7.75	30.00	-29.70
120	10.95	37.80	-37.50
240	15.49	43.00	-42.70
360	18.97	44.20	-43.90

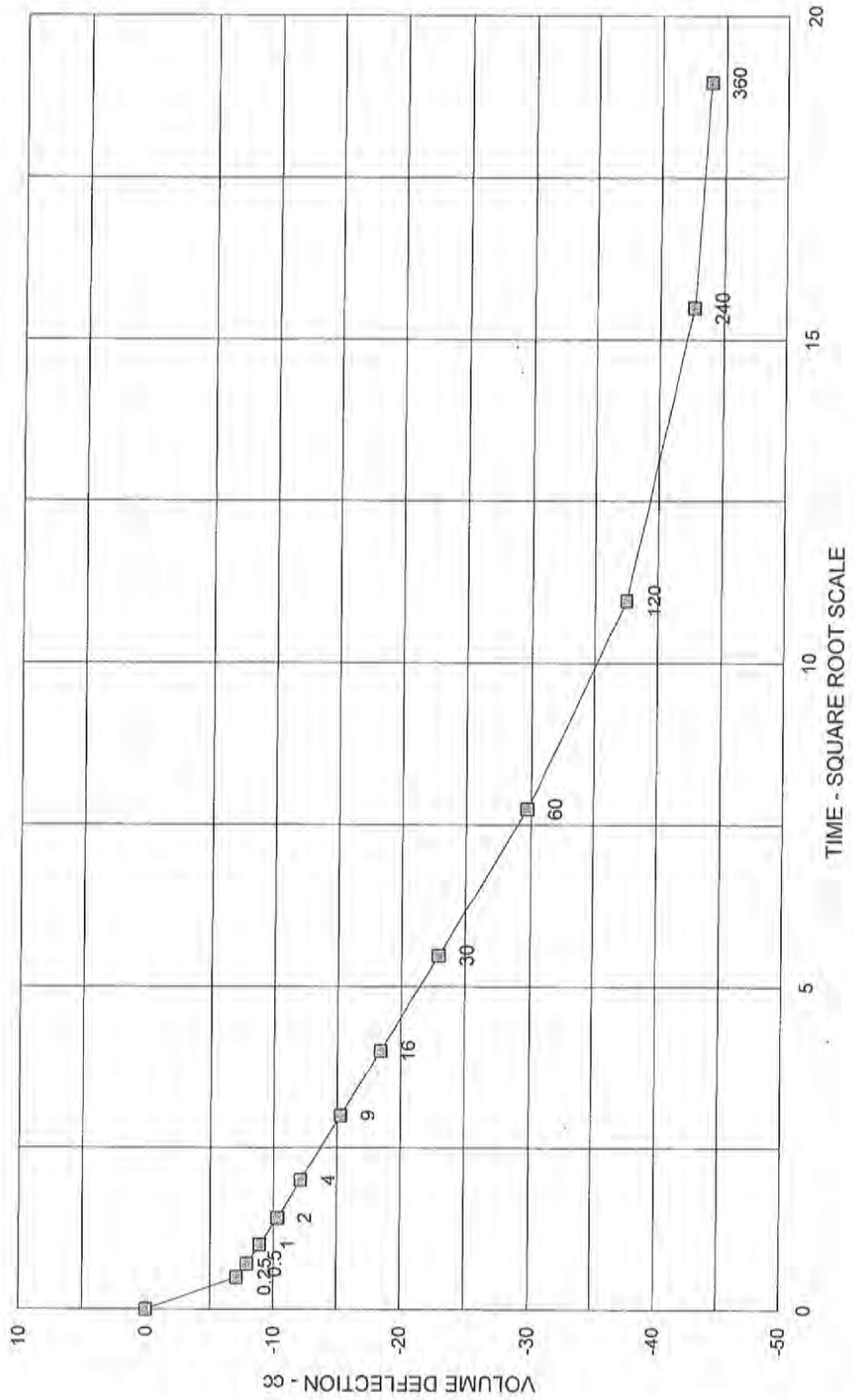
Initial Height (in)	2.969	Init. Vol. (CC)	221.24
Height Change (in)	0.346	Vol. Change (CC)	65.40
Ht. After Cons. (in)	2.623	Cell Exp. (CC)	17.91
Initial Area (sq in)	4.547	Net Change (CC)	47.49
Area After Cons. (sq in)	4.042	Cons. Vol. (CC)	173.75

Data entry by:                      DPM Date: 04/04/2014  
 Checked by:                      Date: 4/5/14  
 FileName: PBCHB809



# CONSOLIDATION DATA

T1-B8-09, 43.5-44.5' (42.5-45.0'), Remolded



Time in Minutes      CONF. PRES. PSF 8784



PERMEABILITY TEST - BACK PRESSURE CONSTANT HEAD  
ASTM D 5084

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B8-08  
DEPTH 41-42' (40-42.5')  
SAMPLE NO. -  
SOIL DESCR. Clayey Silt  
LOCATION Tailings Impoundment  
CONF. PRES. PSF 7632

SAMPLED 12/04/13 MWH  
TEST STARTED 01/21/14 DPM  
TEST FINISHED 2/8/14 DPM  
CELL NUMBER 27S  
SATURATED TEST Yes  
TEST TYPE TX/Pbp/Tap Water

MOISTURE/DENSITY  
DATA

BEFORE  
TEST

AFTER  
TEST

Wt. Soil + Moisture (g)	284.1	284.1
Wt. Wet Soil & Pan (g)	300.0	299.9
Wt. Dry Soil & Pan (g)	244.9	244.9
Wt. Lost Moisture (g)	55.1	55.0
Wt. of Pan Only (g)	15.9	15.9
Wt. of Dry Soil (g)	229.0	229.0
Moisture Content %	24.1	24.0
Wet Density PCF	119.1	125.1
Dry Density PCF	96.0	100.8

Init. Diameter (in)	1.933	(cm)	4.910
Init. Area (sq in)	2.935	(sq cm)	18.934
Init. Height (in)	3.096	(cm)	7.864
Vol. Bef. Consol. (cu ft)	0.00526		
Vol. After Consol. (cu ft)	0.00501		
Porosity %	38.81		
Constant Head (PSI)	2.00	(cm)	140.79

Time Min	Time Sec	Init. Burette CC	Final Burette CC	Head Corr. CM	Permeability k cm/sec
1442.0	86520	47.2	42.9	16.3	1.6E-07
1440.0	86400	44.8	41.0	18.6	1.4E-07
5760.0	345600	48.6	35.0	19.8	1.3E-07
1440.0	86400	35.0	31.8	29.0	1.3E-07
1440.0	86400	31.8	29.0	32.3	1.2E-07
1440.0	86400	29.0	26.4	35.2	1.1E-07
1322.0	79320	46.4	43.1	16.6	1.3E-07

Note: Could not reach 59psi confining pressure due to saturation pressure and air compressor limitations.

Average Temperature 19.2

Data entry by: 112 DPM Date: 04/04/2014  
Checked by: 4/6/14 Date: 4/6/14  
FileName: PBCHB808





# RIAXIAL COMPRESSION TEST DATA

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B8-08  
 DEPTH 41-42' (40-42.5')  
 SAMPLE NO. -  
 SOIL DESCR. Clayey Silt  
 LOCATION Tailings Impoundment  
 CONF. PRES. PSF 7632

SAMPLED 12/04/13 MWH  
 TEST STARTED 01/21/14 DPM  
 TEST FINISHED 2/8/14 DPM  
 CELL NUMBER 27S  
 SATURATED TEST Yes  
 TEST TYPE TX/Pbp/Tap Water

## SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)	Pore Pressure (PSI)	Change	B
		Close Open	Close Open		
40.0	38.0	2.4	11.7		
50.0	48.0	13.0	14.3	38.5	47.3
60.0	58.0	14.3	15.3	48.0	57.1
70.0		15.9	16.0	57.7	67.2
				8.8	0.88
				9.1	0.91
				9.5	0.95

## CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (CC)
0.00	0.00	0.30	0.00
0.25	0.50	7.30	-7.00
0.5	0.71	8.00	-7.70
1	1.00	8.70	-8.40
2	1.41	9.50	-9.20
4	2.00	10.30	-10.00
9	3.00	11.30	-11.00
16	4.00	11.70	-11.40
30	5.48	12.05	-11.75
60	7.75	12.25	-11.95
120	10.95	12.55	-12.25
240	15.49	12.90	-12.60
360	18.97	12.90	-12.60

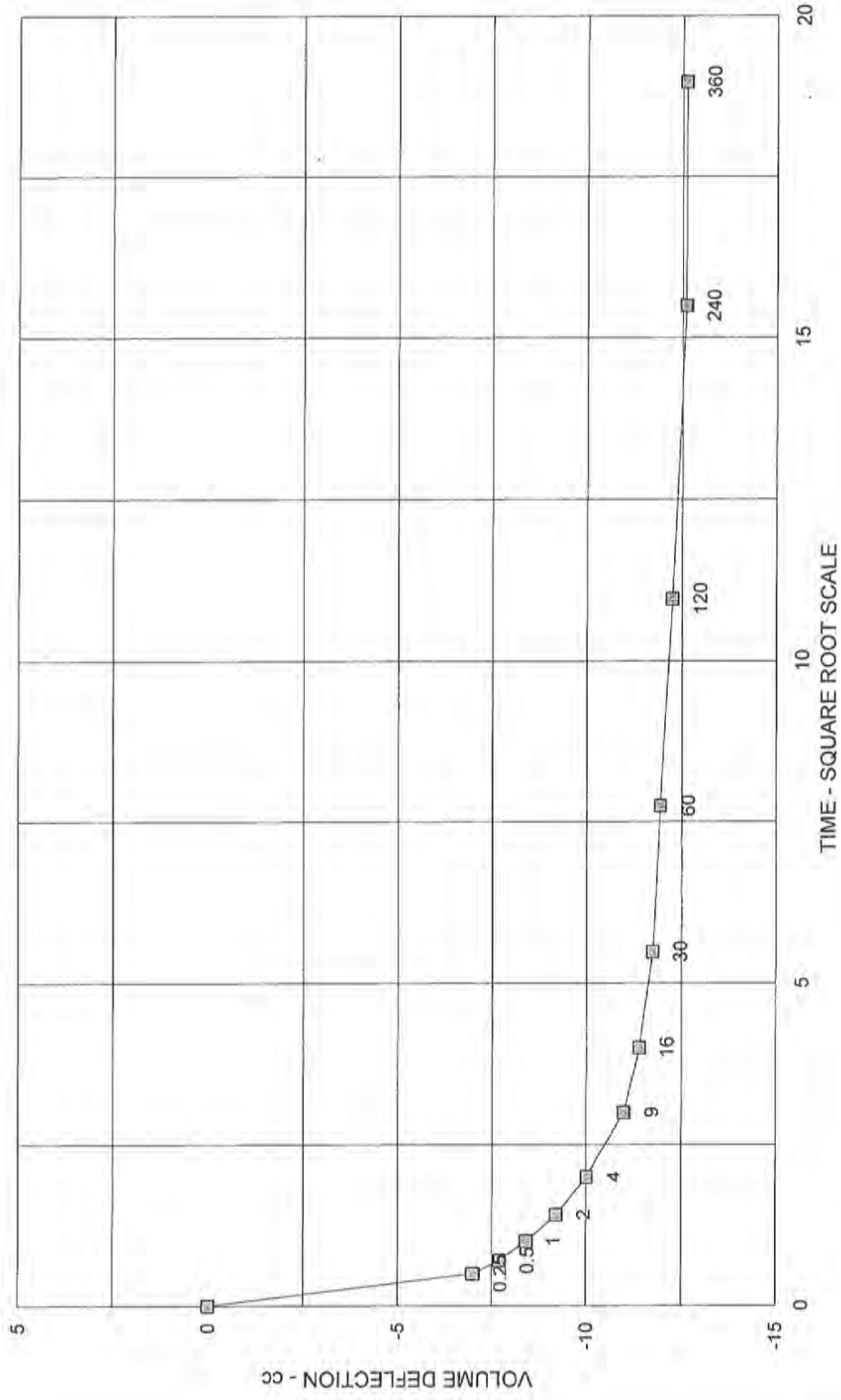
Initial Height (in)	3.096	Init. Vol. (CC)	148.91
Height Change (in)	0.122	Vol. Change (CC)	30.30
Ht. After Cons. (in)	2.974	Cell Exp. (CC)	23.21
Initial Area (sq in)	2.935	Net Change (CC)	7.09
Area After Cons. (sq in)	2.910	Cons. Vol. (CC)	141.83

Data entry by: AK DPM Date: 04/04/2014  
 Checked by: 4/6/14 Date: 4/6/14  
 FileName: PBCHB808



# CONSOLIDATION DATA

TI-B8-08, 41-42' (40-42.5'), -



Time in Minutes      CONF. PRES. PSF 7632

PERMEABILITY TEST - BACK PRESSURE CONSTANT HEAD  
ASTM D 5084

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B8-06  
DEPTH 35-36' (35-37.5')  
SAMPLE NO. -  
SOIL DESCR. Clayey Silt/Sand  
LOCATION Tailings Impoundment  
CONF. PRES. PSF 6192

SAMPLED 12/04/13 MWH  
TEST STARTED 01/22/14 DPM  
TEST FINISHED 01/30/14 DPM  
CELL NUMBER 25S  
SATURATED TEST Yes  
TEST TYPE TX/Pbp/Tap Water

MOISTURE/DENSITY  
DATA

BEFORE  
TEST

AFTER  
TEST

Wt. Soil + Moisture (g)	244.1	265.9
Wt. Wet Soil & Pan (g)	259.9	281.8
Wt. Dry Soil & Pan (g)	225.4	225.4
Wt. Lost Moisture (g)	34.5	56.4
Wt. of Pan Only (g)	15.8	15.8
Wt. of Dry Soil (g)	209.6	209.6
Moisture Content %	16.5	26.9
Wet Density PCF	104.3	125.3
Dry Density PCF	89.6	98.7

Init. Diameter (in)	1.927	(cm)	4.895
Init. Area (sq in)	2.916	(sq cm)	18.817
Init. Height (in)	3.056	(cm)	7.762
Vol. Bef. Consol. (cu ft)	0.00516		
Vol. After Consol. (cu ft)	0.00468		
Porosity %	42.52		
Constant Head (PSI)	2.00	(cm)	140.79

Time Min	Time Sec	Init. Burette CC	Final Burette CC	Head Corr. CM	Permeability k cm/sec
60.0	3600	47.0	18.6	29.6	3.0E-05
60.0	3600	47.4	25.2	25.8	2.3E-05
61.0	3660	46.2	33.6	21.9	1.2E-05
60.0	3600	33.6	26.4	32.7	7.8E-06
60.0	3600	46.1	23.4	27.5	2.3E-05
90.0	5400	45.0	23.4	28.1	1.5E-05
60.0	3600	47.7	27.8	24.3	2.0E-05
60.0	3600	44.2	28.4	25.8	1.6E-05

Average Temperature 19.3

Note: Could not reach the requested confining pressure due to Saturation pressure and air compressor limitations.

Data entry by: DPM Date: 04/04/2014  
Checked by: PR Date: 4/5/14  
FileName: PBBCH8806





# RIAXIAL COMPRESSION TEST DATA

CLIENT MWH

JOB NO. 2512-77

BORING NO. T1-B8-06  
 DEPTH 35-36' (35-37.5')  
 SAMPLE NO. -  
 SOIL DESCR. Clayey Silt/Sand  
 LOCATION Tailings Impoundment  
 CONF. PRES. PSF 6192

SAMPLED 12/04/13 MWH  
 TEST STARTED 01/22/14 DPM  
 TEST FINISHED 01/30/14 DPM  
 CELL NUMBER 25S  
 SATURATED TEST Yes  
 TEST TYPE TX/Pbp/Tap Water

## SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)	Pore Pressure (PSI)	Change	B
		Close Open	Close Open		
40.0	38.0	7.8	17.5		
50.0	48.0	19.5	20.7	38.1	44.8
60.0	58.0	21.3	22.3	48.0	56.1
70.0	68.0	24.1	24.9	58.1	67.4
80.0		25.6	25.7	67.5	77.3
				6.7	0.67
				8.1	0.81
				9.3	0.93
				9.8	0.98

## CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (CC)
0.00	0.00	0.70	0.00
0.25	0.50	8.30	-7.60
0.5	0.71	8.55	-7.85
1	1.00	8.65	-7.95
2	1.41	8.80	-8.10
4	2.00	8.90	-8.20
9	3.00	9.05	-8.35
16	4.00	9.20	-8.50
30	5.48	9.40	-8.70
60	7.75	9.60	-8.90
120	10.95	9.90	-9.20
240	15.49	10.30	-9.60
360	18.97	10.50	-9.80

Initial Height (in)	3.056	Init. Vol. (CC)	146.08
Height Change (in)	0.115	Vol. Change (CC)	33.00
Ht. After Cons. (in)	2.941	Cell Exp. (CC)	19.48
Initial Area (sq in)	2.916	Net Change (CC)	13.52
Area After Cons. (sq in)	2.750	Cons. Vol. (CC)	132.56

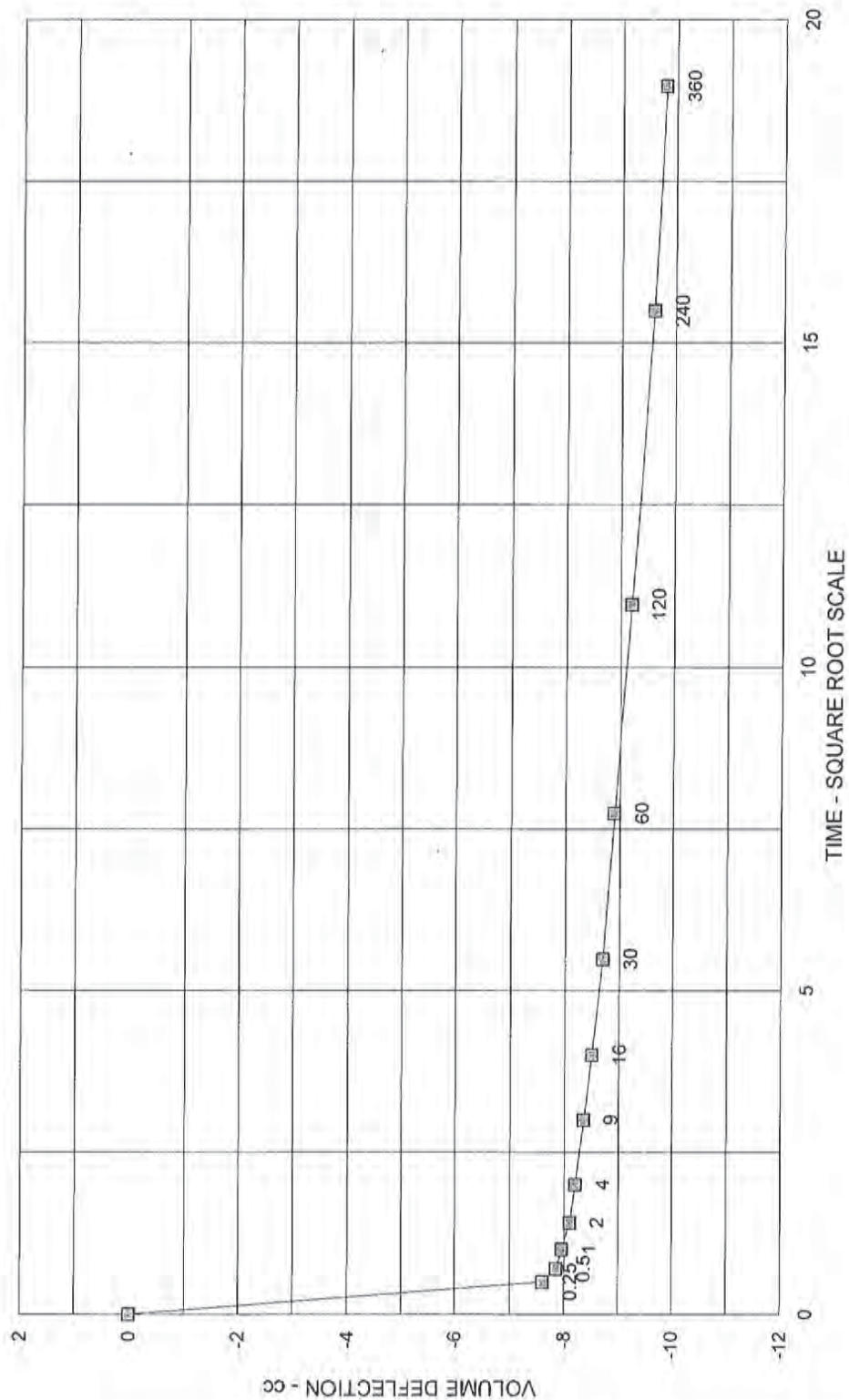
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 Checked by: KL Date: 4/5/14  
 FileName: PBBCHB806





# CONSOLIDATION DATA

TI-B8-06, 35-36' (35-37.5'), -



Time in Minutes CONF. PRES. PSF 6192

PERMEABILITY TEST - BACK PRESSURE CONSTANT HEAD  
ASTM D 5084

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B11-10  
DEPTH 56-57' (55-57')  
SAMPLE NO. -  
SOIL DESCR. Silty Sand  
LOCATION Tailings Impoundment  
CONF. PRES. PSF 10368

SAMPLED 12/02/13 MWH  
TEST STARTED 01/21/14 DPM  
TEST FINISHED 02/08/14 DPM  
CELL NUMBER 26S  
SATURATED TEST Yes  
TEST TYPE TX/Pbp/Tap Water

MOISTURE/DENSITY  
DATA

BEFORE  
TEST

AFTER  
TEST

Wt. Soil + Moisture (g)	499.4	571.9
Wt. Wet Soil & Pan (g)	515.3	587.8
Wt. Dry Soil & Pan (g)	459.8	459.8
Wt. Lost Moisture (g)	55.5	128.0
Wt. of Pan Only (g)	15.9	15.9
Wt. of Dry Soil (g)	443.9	443.9
Moisture Content %	12.5	28.8
Wet Density PCF	99.7	118.6
Dry Density PCF	88.6	92.1

Init. Diameter (in)	2.822	(cm)	7.168
Init. Area (sq in)	6.255	(sq cm)	40.355
Init. Height (in)	3.050	(cm)	7.747
Vol. Bef. Consol. (cu ft)	0.01104		
Vol. After Consol. (cu ft)	0.01063		
Porosity %	42.51		
Constant Head (PSI)	2.00	(cm)	140.79

Time Min	Time Sec	Init. Burette CC	Final Burette CC	Head Corr. CM	Permeability k cm/sec
1.0	60	45.0	24.7	27.4	5.8E-04
1.0	60	48.4	28.8	23.3	5.4E-04
1.0	60	47.9	29.5	23.2	5.1E-04
1.0	60	47.9	27.9	24.1	5.6E-04

Average Temperature 19.4

Data entry by: DPM Date: 04/04/2014  
Checked by: KE Date: 4/6/14  
FileName: PBCH1110



# RIAXIAL COMPRESSION TEST DATA

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B11-10  
 DEPTH 56-57' (55-57')  
 SAMPLE NO. -  
 SOIL DESCR. Silty Sand  
 LOCATION Tailings Impoundment  
 CONF. PRES. PSF 10368

SAMPLED 12/02/13 MWH  
 TEST STARTED 01/21/14 DPM  
 TEST FINISHED 02/08/14 DPM  
 CELL NUMBER 26S  
 SATURATED TEST Yes  
 TEST TYPE TX/Pbp/Tap Water

## SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)	Pore Pressure (PSI)	Change	B
		Close Open	Close Open		
40.0	38.0	4.0 16.9			
50.0	48.0	20.4 21.4	38.8 45.5	6.7	0.67
60.0	58.0	21.7 22.5	47.9 55.7	7.8	0.78
70.0	68.0	23.0 23.8	57.8 66.4	8.6	0.86
80.0		25.2 25.2	68.0 77.8	9.8	0.98

## CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (CC)
0.00	0.00	2.70	0.00
0.25	0.50	14.40	-11.70
0.5	0.71	14.60	-11.90
1	1.00	14.80	-12.10
2	1.41	14.95	-12.25
4	2.00	15.10	-12.40
9	3.00	15.30	-12.60
16	4.00	15.40	-12.70
30	5.48	15.60	-12.90
60	7.75	15.80	-13.10
120	10.95	16.10	-13.40
240	15.49	16.50	-13.80
360	18.97	16.70	-14.00

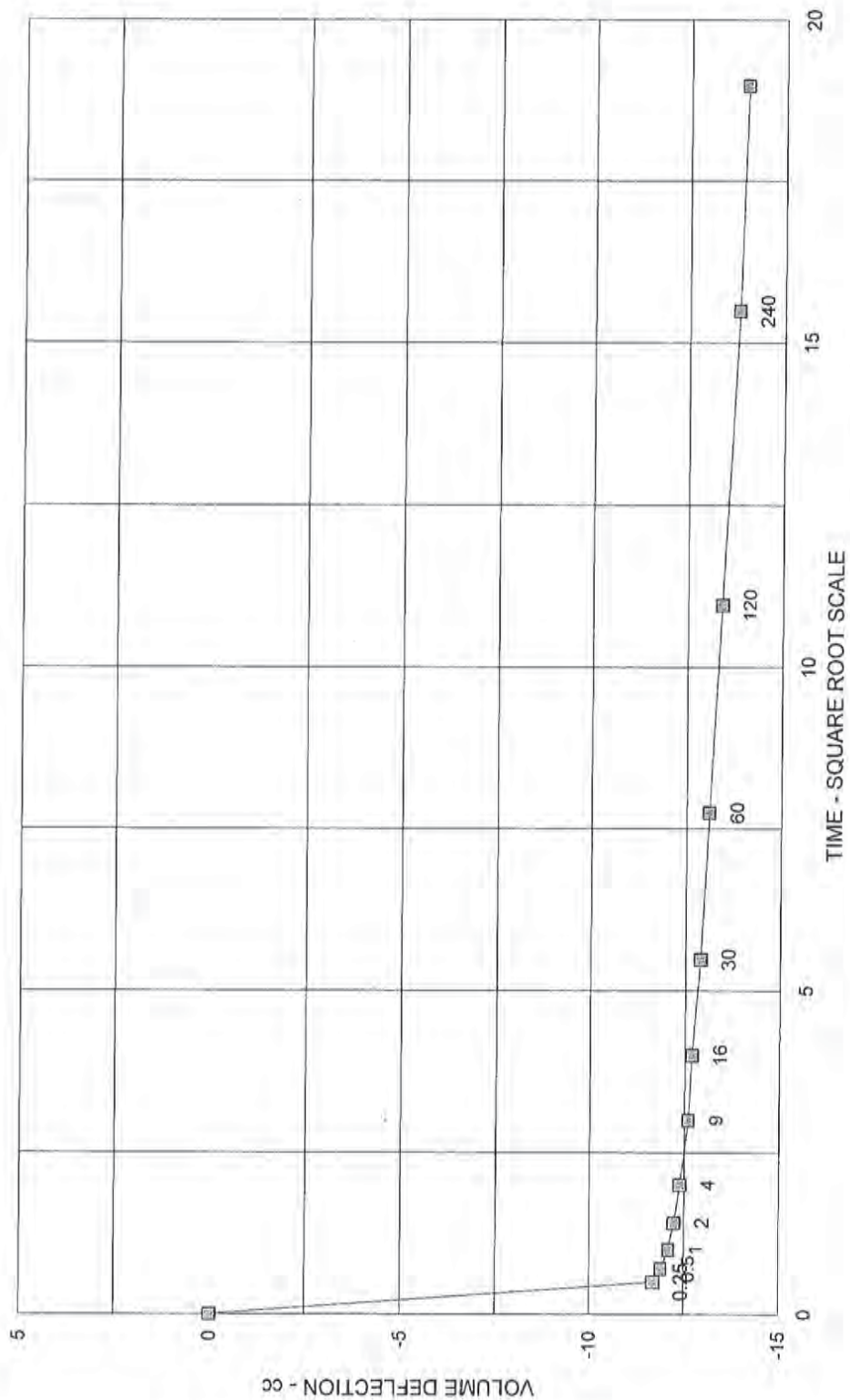
Initial Height (in)	3.050	Init. Vol. (CC)	312.67
Height Change (in)	0.037	Vol. Change (CC)	36.50
Ht. After Cons. (in)	3.013	Cell Exp. (CC)	24.90
Initial Area (sq in)	6.255	Net Change (CC)	11.60
Area After Cons. (sq in)	6.097	Cons. Vol. (CC)	301.07

Data entry by: 142 DPM Date: 9/6/14 04/04/2014  
 Checked by: 142 Date: 9/6/14  
 FileName: PBCH1110



# CONSOLIDATION DATA

TI-B11-10, 56-57' (55-57'), -



Time in Minutes CONF. PRES. PSF 10368



PERMEABILITY TEST - BACK PRESSURE CONSTANT HEAD  
ASTM D 5084

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B11-08  
DEPTH 51.5-52.5' (50-52.5')  
SAMPLE NO. -  
SOIL DESCR. Fine Tailings  
LOCATION Tailings Impoundment  
CONF. PRES. PSF 9648

SAMPLED 12/02/13 MWH  
TEST STARTED 03/05/14 DPM  
TEST FINISHED 03/18/14 DPM  
CELL NUMBER 25S  
SATURATED TEST Yes  
TEST TYPE TX/Pbp/Tap Water

MOISTURE/DENSITY  
DATA

BEFORE  
TEST

AFTER  
TEST

Wt. Soil + Moisture (g)	362.2	334.6
Wt. Wet Soil & Pan (g)	368.7	341.1
Wt. Dry Soil & Pan (g)	225.8	225.8
Wt. Lost Moisture (g)	142.9	115.3
Wt. of Pan Only (g)	6.6	6.6
Wt. of Dry Soil (g)	219.2	219.2
Moisture Content %	65.2	52.6
Wet Density PCF	99.8	111.5
Dry Density PCF	60.4	73.0

Init. Diameter (in)	2.412	(cm)	6.126
Init. Area (sq in)	4.569	(sq cm)	29.481
Init. Height (in)	3.026	(cm)	7.686
Vol. Bef. Consol. (cu ft)	0.00800		
Vol. After Consol. (cu ft)	0.00662		
Porosity %	61.54		
Constant Head (PSI)	2.00	(cm)	140.79

Time Min	Time Sec	Init. Burette CC	Final Burette CC	Head Corr. CM	Permeability k cm/sec
1480.0	88800	45.2	43.3	17.2	4.5E-08
1440.0	86400	43.3	41.8	19.0	3.7E-08
1450.0	87000	41.8	40.6	20.5	3.0E-08
2880.0	172800	40.6	38.5	22.3	2.7E-08
1440.0	86400	38.5	37.3	24.1	3.1E-08

Average Temperature 21.2

Data entry by: KV DPM Date: 04/04/2014  
Checked by: 9/6/14 Date: 9/6/14  
FileName: PBCH1108



# RIAXIAL COMPRESSION TEST DATA

CLIENT MWH

JOB NO. 2512-77

BORING NO. TI-B11-08  
 DEPTH 51.5-52.5' (50-52.5')  
 SAMPLE NO. -  
 SOIL DESCR. Fine Tailings  
 LOCATION Tailings Impoundment  
 CONF. PRES. PSF 9648

SAMPLED 12/02/13 MWH  
 TEST STARTED 03/05/14 DPM  
 TEST FINISHED 03/18/14 DPM  
 CELL NUMBER 25S  
 SATURATED TEST Yes  
 TEST TYPE TX/Pbp/Tap Water

## SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)	Pore Pressure (PSI)	Change	B
		Close Open	Close Open		
40.0	38.0	1.2 9.4			
50.0	48.0	10.3 11.4	38.0 47.1	9.1	0.91
60.0		11.8 12.0	48.2 57.8	9.6	0.96

## CONSOLIDATION DATA

Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (CC)
0.00	0.00	0.60	0.00
0.25	0.50	7.80	-7.20
0.5	0.71	8.50	-7.90
1	1.00	9.60	-9.00
2	1.41	11.00	-10.40
4	2.00	13.00	-12.40
9	3.00	16.30	-15.70
16	4.00	19.50	-18.90
30	5.48	23.70	-23.10
60	7.75	29.50	-28.90
137	11.70	36.70	-36.10
240	15.49	40.50	-39.90
360	18.97	42.30	-41.70

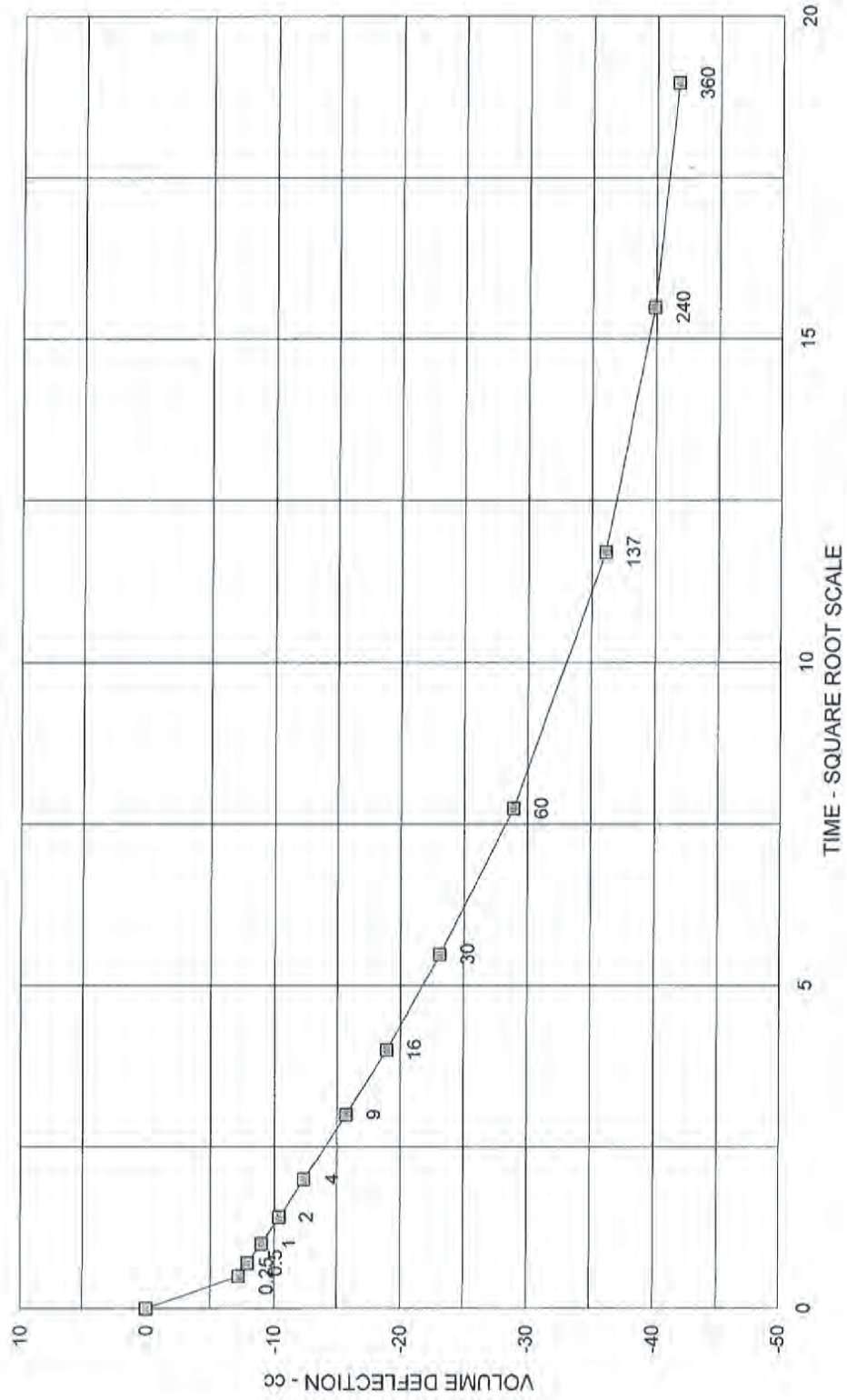
Initial Height (in)	3.026	Init. Vol. (CC)	226.62
Height Change (in)	0.265	Vol. Change (CC)	59.20
Ht. After Cons. (in)	2.761	Cell Exp. (CC)	20.00
Initial Area (sq in)	4.569	Net Change (CC)	39.20
Area After Cons. (sq in)	4.142	Cons. Vol. (CC)	187.42

Data entry by: DPM Date: 04/04/2014  
 Checked by: kr Date: 4/6/14  
 FileName: PBCH1108



# CONSOLIDATION DATA

TI-B11-08, 51.5-52.5' (50-52.5'), -



Time in Minutes CONF. PRES. PSF 9648

Moisture Content Determinations  
ASTM D 2216

CLIENT: MWH JOB NO. 2512-77  
PROJECT Church Rock  
PROJECT NO. --

BORING NO.	CS-5	CS-6	CS-7	CS-8
DEPTH	9-24"	7-24"	0-20"	8-28"
SAMPLE NO.	TI-CS05-04A(9-24")	TI-CS06-04A(7-24")	TI-CS07-02A(0-20")	TI-CS08-04A(8-28")
DATE SAMPLED	11/12/13 MWH	11/13/13 MWH	11/13/13 MWH	11/13/13 MWH
DATE TESTED	11/22/13 CAL	11/22/13 CAL	11/22/13 CAL	11/22/13 CAL
LOCATION	Tailings Impoundment	Tailings Impoundment	Tailings Impoundment	Tailings Impoundment

MOISTURE DETERMINATIONS

Wt. of Wet Soil & Dish (gms)	414.50	391.13	532.93	528.02
Wt. of Dry Soil & Dish (gms)	378.91	352.93	494.69	489.34
Net Loss of Moisture (gms)	35.59	38.20	38.24	38.68
Wt. of Dish (gms)	6.62	6.56	6.55	9.27
Wt. of Dry Soil (gms)	372.29	346.37	488.14	480.07
Moisture Content (%)	9.6	11.0	7.8	8.1

BORING NO.	CS-9
DEPTH	9-26"
SAMPLE NO.	TI-CS09-04A(9-26")
DATE SAMPLED	11/13/13 MWH
DATE TESTED	11/22/13 CAL
LOCATION	Tailings Impoundment

MOISTURE DETERMINATIONS

Wt. of Wet Soil & Dish (gms)	461.42
Wt. of Dry Soil & Dish (gms)	428.77
Net Loss of Moisture (gms)	32.65
Wt. of Dish (gms)	6.57
Wt. of Dry Soil (gms)	422.20
Moisture Content (%)	7.7

Data entry by:  
Checked by:  
File name:

CAL

KP

2512-77-M&D-ASTMD-2216-2937-R0-AS3-P1.xls

Date: 12/3/2013  
Date: 12/5/13





Moisture Content Determinations  
ASTM D 2216

CLIENT:  
PROJECT  
PROJECT NO.

MWH  
Church Rock  
--

JOB NO.

BORING NO.	CS-11	CS-1	CS-4
DEPTH	9-24"	11-24"	10-24"
SAMPLE NO.	TI-CS11-04A(9-24")	TI-CS01-04A(11-24")	TI-CS04-04A(10-24")
DATE SAMPLED	11/13/13 MWH	11/12/13 MWH	11/12/13 MWH
DATE TESTED	12/3/13 CAL	12/4/13 KMR	12/4/13 KMR
LOCATION	Tailings Impoundment	Tailings Impoundment	Tailings Impoundment

MOISTURE DETERMINATIONS

Wt. of Wet Soil & Dish (gms)	241.48	312.07	402.15
Wt. of Dry Soil & Dish (gms)	222.88	286.52	350.83
Net Loss of Moisture (gms)	18.60	25.55	51.32
Wt. of Dish (gms)	6.72	9.23	9.26
Wt. of Dry Soil (gms)	216.16	277.29	341.57
Moisture Content (%)	8.6	9.2	15.0

Data entry by:  
Checked by:  
File name:

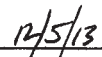
CAL



Date:

12/5/2013

Date:



2512-77-M&D-ASTMD-2216-2937-R0-7.xls

Moisture Content Determinations  
ASTM D 2216

CLIENT:  
PROJECT  
PROJECT NO.

MWH  
Church Rock  
--

JOB NO.  
LOCATION

2512-77  
Tailings Impoundment

BORING NO.	CS-12	CS-2	CS-10
DEPTH	0-14"	10-24"	7-25"
SAMPLE NO.	TI-CS12-02A(0-14")	TI-CS2-04A(10-24")	TI-CS10-04A(7-25")
DATE SAMPLED	11/13/2013	11/12/2013	11/13/2013
DATE TESTED	12/6/2013 KMR	12/10/2013 DPM	12/10/2013 DPM
SOIL DESCRIPTION	--	--	--

MOISTURE DETERMINATIONS

Wt. of Wet Soil & Dish (gms)	244.75	495.60	597.59
Wt. of Dry Soil & Dish (gms)	225.12	445.63	555.15
Net Loss of Moisture (gms)	19.63	49.97	42.44
Wt. of Dish (gms)	9.24	6.58	6.66
Wt. of Dry Soil (gms)	215.88	439.05	548.49
Moisture Content (%)	9.1	11.4	7.7

Data entry by:  
Checked by:  
File name:

KMR

*DPM*

2512-77-M&D-ASTMD-2216-2937-R0-8.xls

Date: 12/11/2013

Date: *12/10/13*



Moisture Content Determinations  
ASTM D 2216

CLIENT:	MWH	JOB NO.	2512-77
PROJECT	Church Rock	LOCATION	Tailings
PROJECT NO.	-		Impoundment

BORING NO.	CS-3
DEPTH	6-24"
SAMPLE NO.	TI-CS03-04A(6-24")
DATE SAMPLED	11/12/13 MWH
DATE TESTED	12/19/13 DPM
SOIL DESCRIPTION	-

MOISTURE DETERMINATIONS

Wt. of Wet Soil & Dish (gms)	1331.96
Wt. of Dry Soil & Dish (gms)	1257.37
Net Loss of Moisture (gms)	74.59
Wt. of Dish (gms)	15.79
Wt. of Dry Soil (gms)	1241.58
Moisture Content (%)	6.0

Data entry by:  
Checked by:  
File name:

DPM  
DPM  
2512-77- M&D-ASTMD-2216-2937-R0-10.xls

Date: 12/20/2013  
Date: 12/20/13



**Atterberg Limits Test**  
ASTM D 4318

Client: MWH  
Job Number: 2512-77  
Project: Church Rock  
Location: Tailings Impoundment  
Project Number: -

Boring Number: CS-1  
Depth: 11-24"  
Sample Number: TI-CS01-04A(11-24")  
Test Date: 12/20/2013  
Technician: MLM  
Sampled Date: 11/12/2013  
Sampled By: MWH  
Method: Method A

**Test Configuration**

Liquid Limits Device: 0860  
Material Size of Fines: #40

**Plastic Limits**

	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	9.611	9.535	10.520
Weight of Dry Soil & Pan (g):	8.503	8.431	9.319
Weight of Water (g):	1.108	1.104	1.201
Weight of Pan (g):	1.135	1.117	1.133
Moisture Content (%):	15.0	15.1	14.7

**Average:** 14.9%

**Standard Deviation:** 0.2%

**Liquid Limits**

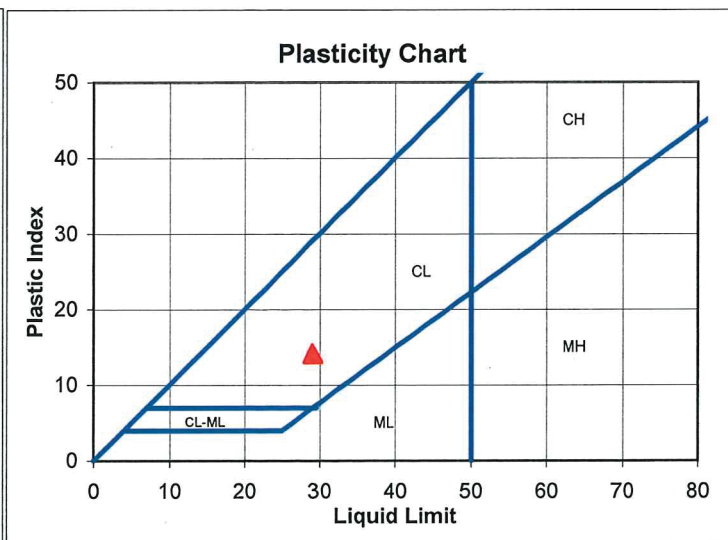
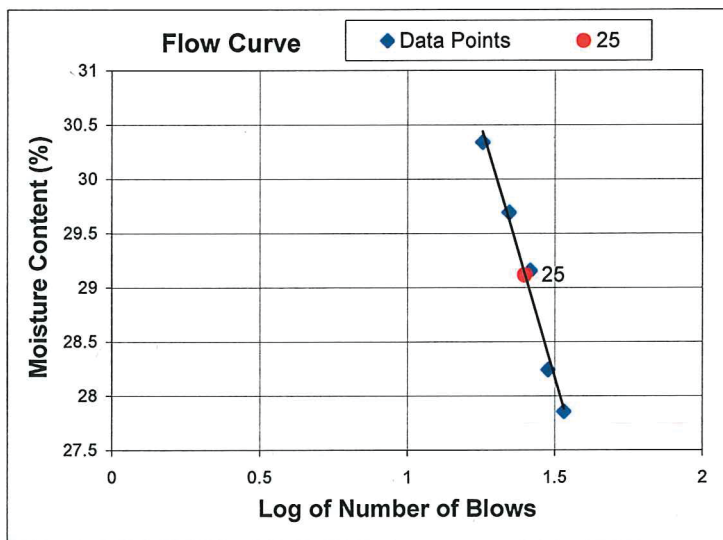
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Number of Blows:	34	30	26	22	18
Weight of Wet Soil & Pan (g):	16.758	16.257	17.649	17.054	16.046
Weight of Dry Soil & Pan (g):	13.357	12.928	13.924	13.416	12.580
Weight of Water (g):	3.401	3.329	3.725	3.638	3.466
Weight of Pan (g):	1.148	1.140	1.147	1.162	1.155
Moisture Content (%):	27.9	28.2	29.2	29.7	30.3

**Plastic Limit:** 15

**Liquid Limit:** 29

**Plastic Index:** 14

**Atterberg Classification** CL



Data Entered By: SKL

Date: 12/27/2013

Data Checked By: MLM

File Name: atterberg-ASTM\_4318-R6\_1.xls

Date: 12/30/13



**Atterberg Limits Test**  
ASTM D 4318

Client: MWH  
Job Number: 2512-77  
Project: Church Rock  
Location: Tailings Impoundment  
Project Number: -

Boring Number: CS-4  
Depth: 10-24"  
Sample Number: TI-CS04-04A(10-24")  
Test Date: 12/20/2013  
Technician: MLM  
Sampled Date: 11/12/2013  
Sampled By: MWH  
Method: Method A

**Test Configuration**

Liquid Limits Device: 0860  
Material Size of Fines: #40

**Plastic Limits**

	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	9.185	9.680	9.404
Weight of Dry Soil & Pan (g):	8.121	8.543	8.311
Weight of Water (g):	1.064	1.137	1.093
Weight of Pan (g):	1.108	1.136	1.133
Moisture Content (%):	15.2	15.4	15.2

**Average: 15.2%**

**Standard Deviation: 0.1%**

**Liquid Limits**

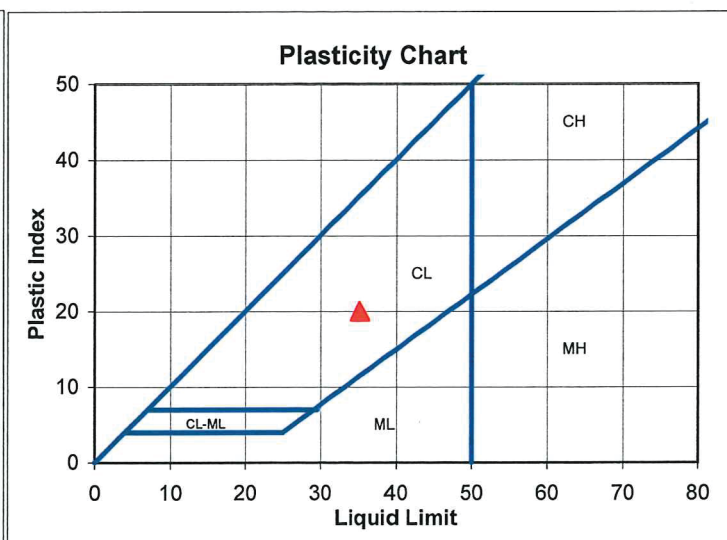
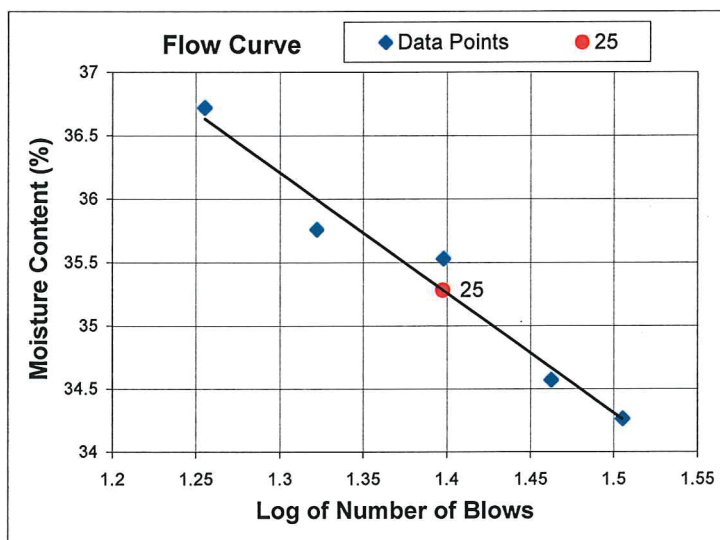
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Number of Blows:	32	29	25	21	18
Weight of Wet Soil & Pan (g):	15.825	16.545	14.944	16.252	14.906
Weight of Dry Soil & Pan (g):	12.081	12.589	11.303	12.263	11.201
Weight of Water (g):	3.744	3.956	3.641	3.989	3.705
Weight of Pan (g):	1.153	1.145	1.054	1.107	1.111
Moisture Content (%):	34.3	34.6	35.5	35.8	36.7

**Plastic Limit: 15**

**Liquid Limit: 35**

**Plastic Index: 20**

**Atterberg Classification** CL



Data Entered By: SKL

Date: 12/27/2013

Data Checked By: MLM

File Name: atterberg-ASTM\_4318-R6\_0.xls

Date: 12/30/13

**Atterberg Limits Test**  
**ASTM D 4318**

Client: MWH  
Job Number: 2512-77  
Project: Church Rock  
Location: Tailings Impoundment  
Project Number:

Boring Number: CS-5  
Depth: 9-24"  
Sample Number: TI-CS05-04A(9-24")  
Test Date: 12/3/2013  
Technician: CAL  
Sampled Date: 11/12/2013  
Sampled By: MWH  
Method: Method A

**Test Configuration**

Liquid Limits Device: 1080  
Material Size of Fines: #40

**Plastic Limits**

	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	8.110	8.158	7.578
Weight of Dry Soil & Pan (g):	7.299	7.357	6.825
Weight of Water (g):	0.811	0.801	0.753
Weight of Pan (g):	0.738	0.763	0.743
Moisture Content (%):	12.4	12.1	12.4

**Average:** 12.3%

**Standard Deviation:** 0.1%

**Liquid Limits**

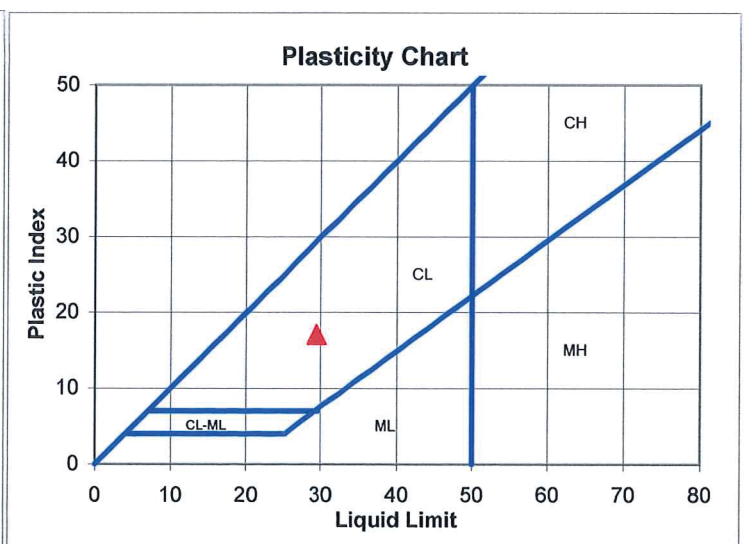
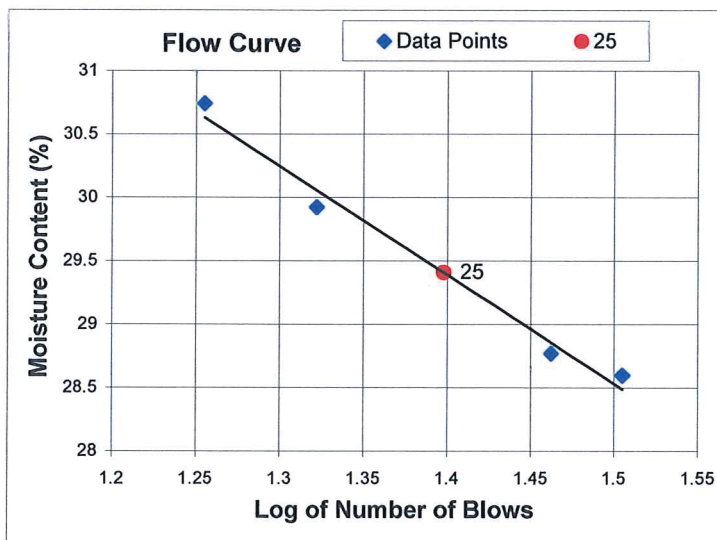
	Sample 1	Sample 2	Sample 3	Sample 4
Number of Blows:	32	29	21	18
Weight of Wet Soil & Pan (g):	11.769	11.305	11.298	9.415
Weight of Dry Soil & Pan (g):	9.315	8.948	8.871	7.382
Weight of Water (g):	2.454	2.357	2.427	2.033
Weight of Pan (g):	0.733	0.755	0.760	0.769
Moisture Content (%):	28.6	28.8	29.9	30.7

**Plastic Limit:** 12

**Liquid Limit:** 29

**Plastic Index:** 17

**Atterberg Classification** CL



Data Entered By: CAL

File Name: atterberg-ASTM\_4318-R6\_4.xls

Date: 12/4/2013

Data Checked By: KR

Date: 12/5/13

**Atterberg Limits Test**  
**ASTM D 4318**

Client: MWH  
Job Number: 2512-77  
Project: Church Rock  
Location: Tailings Impoundment  
Project Number:

Boring Number: CS-6  
Depth: 7-24"  
Sample Number: TI-CS06-04A(7-24")  
Test Date: 12/3/2013  
Technician: CAL  
Sampled Date: 11/13/2013  
Sampled By: MWH  
Method: Method A

**Test Configuration**

Liquid Limits Device: 1080  
Material Size of Fines: #40

**Plastic Limits**

	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	8.088	7.135	7.931
Weight of Dry Soil & Pan (g):	7.293	6.417	7.099
Weight of Water (g):	0.795	0.718	0.832
Weight of Pan (g):	0.766	0.746	0.734
Moisture Content (%):	12.2	12.7	13.1

**Average:** 12.6%

**Standard Deviation:** 0.4%

**Liquid Limits**

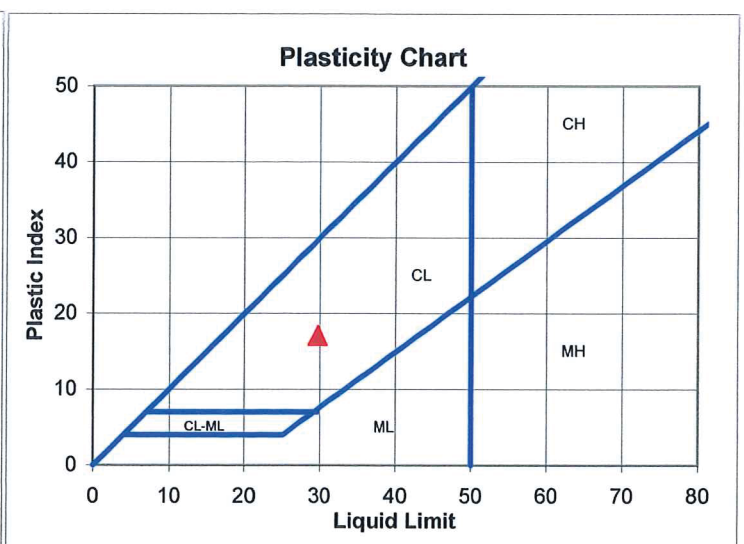
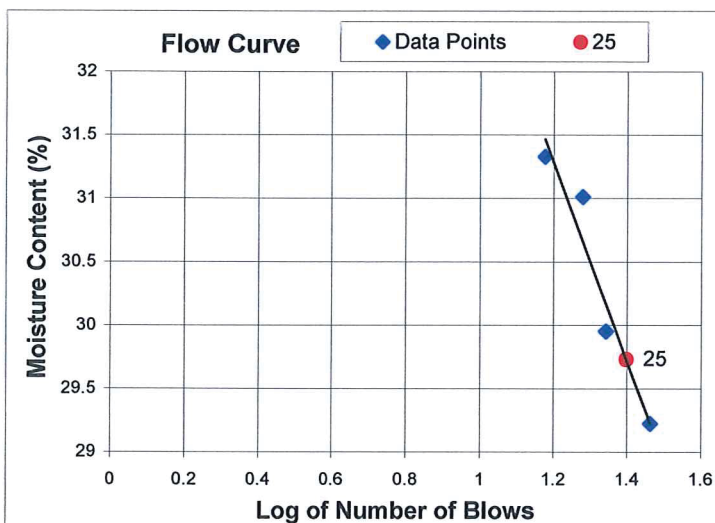
	Sample 1	Sample 2	Sample 3	Sample 4
Number of Blows:	29	22	19	15
Weight of Wet Soil & Pan (g):	11.472	12.036	11.694	10.611
Weight of Dry Soil & Pan (g):	9.043	9.438	9.108	8.261
Weight of Water (g):	2.429	2.598	2.586	2.350
Weight of Pan (g):	0.731	0.764	0.769	0.760
Moisture Content (%):	29.2	30.0	31.0	31.3

**Plastic Limit:** 13

**Liquid Limit:** 30

**Plastic Index:** 17

**Atterberg Classification** CL



Data Entered By: CAL

File Name: atterberg-ASTM\_4318-R6\_5.xls

Date: 12/4/2013

Data Checked By: KR

Date: 12/5/13



**Atterberg Limits Test**  
ASTM D 4318

Client: MWH  
Job Number: 2512-77  
Project: Church Rock  
Location: Tailings Impoundment  
Project Number:

Boring Number: CS-7  
Depth: 0-20"  
Sample Number: TI-CS07-02A(0-20")  
Test Date: 12/2/2013  
Technician: CAL  
Sampled Date: 11/13/2013  
Sampled By: MWH  
Method: Method A

**Test Configuration**

Liquid Limits Device: 1080  
Material Size of Fines: #40

**Plastic Limits**

	Sample 1	Sample 2
Weight of Wet Soil & Pan (g):	6.558	7.430
Weight of Dry Soil & Pan (g):	5.888	6.648
Weight of Water (g):	0.670	0.782
Weight of Pan (g):	0.747	0.738
Moisture Content (%):	13.0	13.2

**Average:** 13.1%

**Standard Deviation:** 0.1%

**Liquid Limits**

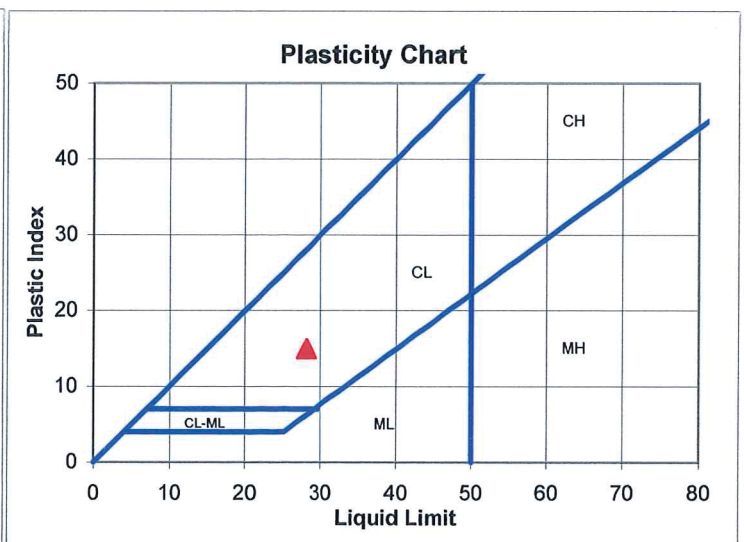
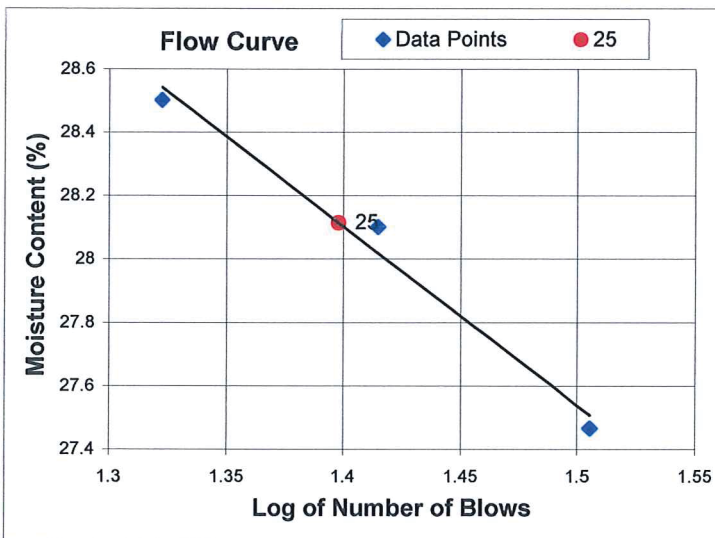
	Sample 1	Sample 2	Sample 3
Number of Blows:	32	21	26
Weight of Wet Soil & Pan (g):	11.095	10.501	13.216
Weight of Dry Soil & Pan (g):	8.870	8.342	10.484
Weight of Water (g):	2.225	2.159	2.732
Weight of Pan (g):	0.769	0.767	0.762
Moisture Content (%):	27.5	28.5	28.1

**Plastic Limit:** 13

**Liquid Limit:** 28

**Plastic Index:** 15

**Atterberg Classification** CL



Data Entered By: KR

File Name: atterberg-ASTM\_4318-R6\_0.xls

Date: 12/3/2013

Data Checked By: CR

Date: 12/3/13



**Atterberg Limits Test**  
**ASTM D 4318**

Client: MWH  
Job Number: 2512-77  
Project: Church Rock  
Location: Tailings Impoundment  
Project Number:

Boring Number: CS-8  
Depth: 8-28"  
Sample Number: TI-CS08-04A(8-28")  
Test Date: 12/2/2013  
Technician: CAL  
Sampled Date: 11/13/2013  
Sampled By: MWH  
Method: Method A

**Test Configuration**

Liquid Limits Device: 1080  
Material Size of Fines: #40

**Plastic Limits**

	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	7.783	6.527	5.558
Weight of Dry Soil & Pan (g):	7.010	5.904	5.035
Weight of Water (g):	0.773	0.623	0.523
Weight of Pan (g):	0.770	0.763	0.732
Moisture Content (%):	12.4	12.1	12.2

**Average:** 12.2%

**Standard Deviation:** 0.1%

**Liquid Limits**

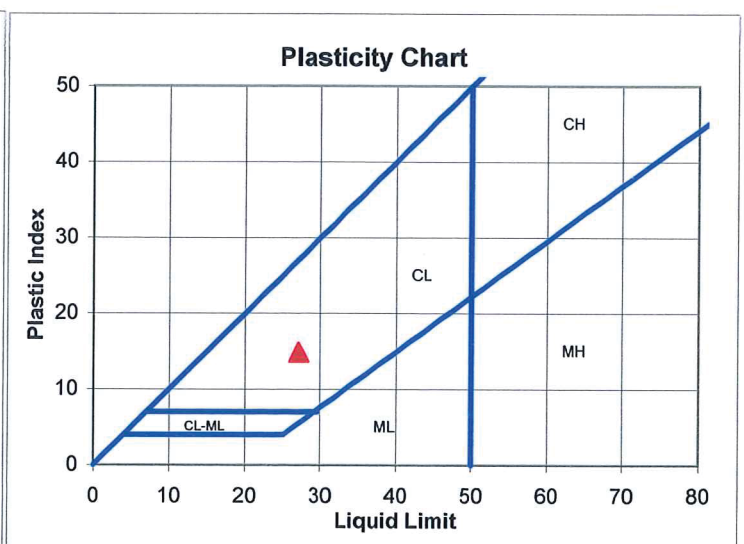
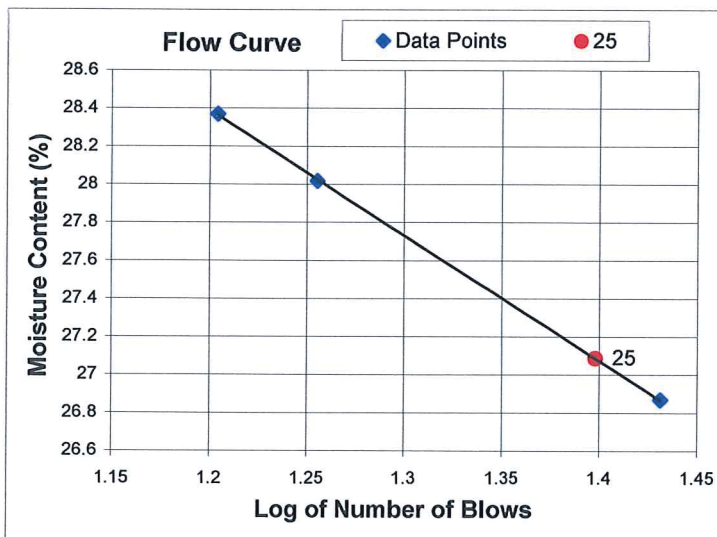
	Sample 1	Sample 2	Sample 3
Number of Blows:	16	18	27
Weight of Wet Soil & Pan (g):	11.528	9.880	9.560
Weight of Dry Soil & Pan (g):	9.147	7.883	7.691
Weight of Water (g):	2.381	1.997	1.869
Weight of Pan (g):	0.754	0.755	0.735
Moisture Content (%):	28.4	28.0	26.9

**Plastic Limit:** 12

**Liquid Limit:** 27

**Plastic Index:** 15

**Atterberg Classification** CL



Data Entered By: KR

File Name: atterberg-ASTM\_4318-R6\_1.xls

Date: 12/3/2013

Data Checked By: CAL

Date: 12/4/13

**Atterberg Limits Test**  
ASTM D 4318

Client: MWH  
Job Number: 2512-77  
Project: Church Rock  
Location: Tailings Impoundment  
Project Number:

Boring Number: CS-9  
Depth: 9-26"  
Sample Number: TI-CS09-04A(9-26")  
Test Date: 12/3/2013  
Technician: CAL  
Sampled Date: 11/13/2013  
Sampled By: MWH  
Method: Method A

**Test Configuration**

Liquid Limits Device: 1080  
Material Size of Fines: #40

**Plastic Limits**

	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	6.448	6.674	6.508
Weight of Dry Soil & Pan (g):	5.800	5.999	5.866
Weight of Water (g):	0.648	0.675	0.642
Weight of Pan (g):	0.744	0.732	0.755
Moisture Content (%):	12.8	12.8	12.6

**Average:** -880.1%

**Standard Deviation:** 27.5%

**Liquid Limits**

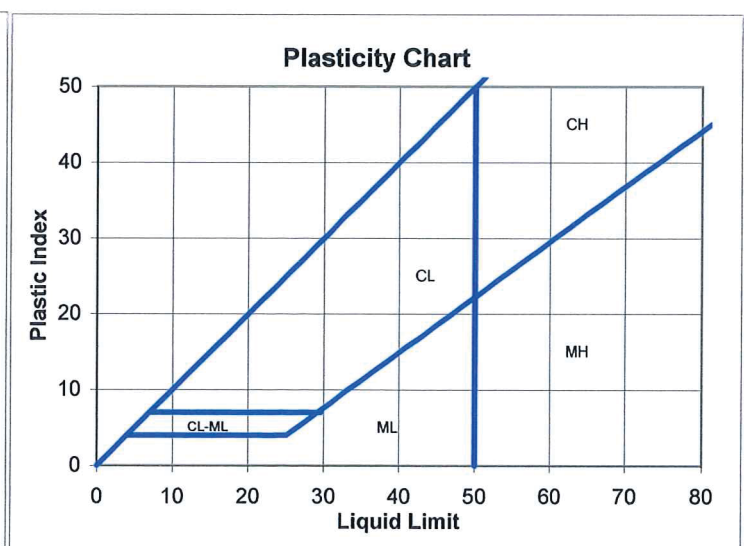
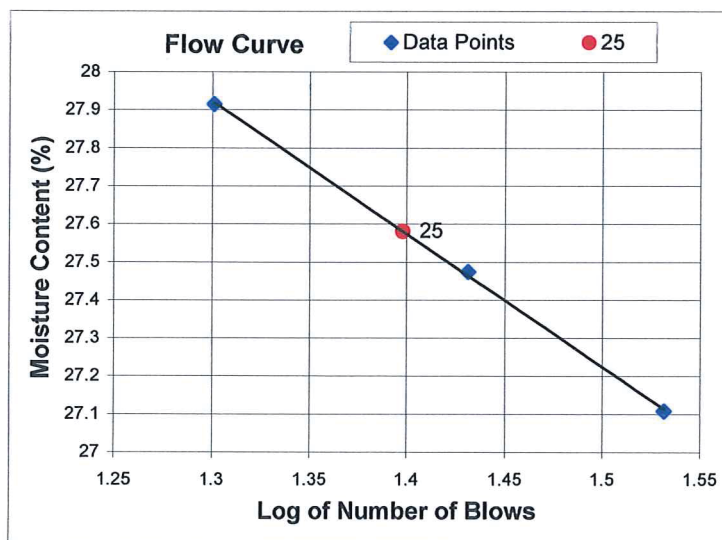
	Sample 1	Sample 2	Sample 3
Number of Blows:	20	27	34
Weight of Wet Soil & Pan (g):	9.990	9.271	11.723
Weight of Dry Soil & Pan (g):	7.974	7.436	9.386
Weight of Water (g):	2.016	1.835	2.337
Weight of Pan (g):	0.752	0.757	0.765
Moisture Content (%):	27.9	27.5	27.1

**Plastic Limit:** -880

**Liquid Limit:** 28

**Plastic Index:** 908

**Atterberg Classification** CL



Data Entered By: KR

File Name: atterberg-ASTM\_4318-R6\_3.xls

Date: 12/4/2013

Data Checked By: CAL

Date: 12/4/13

**Atterberg Limits Test**  
ASTM D 4318

Client: MWH  
Job Number: 2512-77  
Project: Church Rock  
Location: Tailings Impoundment  
Project Number:

Boring Number: CS-3  
Depth: 6-24"  
Sample Number: TI-CS03-04A(6-24")  
Test Date: 12/11/2013  
Technician: KMR  
Sampled Date: 11/12/2013  
Sampled By: MWH  
Method: Method A

**Test Configuration**

Liquid Limits Device: 1080  
Material Size of Fines: #40

**Plastic Limits**

	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	6.623	6.911	6.271
Weight of Dry Soil & Pan (g):	5.911	6.168	5.617
Weight of Water (g):	0.712	0.743	0.654
Weight of Pan (g):	0.735	0.736	0.759
Moisture Content (%):	13.8	13.7	13.5

**Average:** 13.6%

**Standard Deviation:** 0.2%

**Liquid Limits**

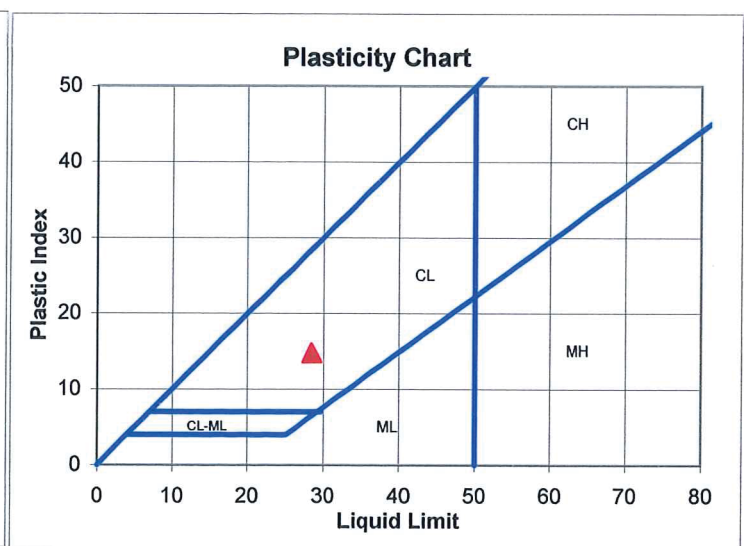
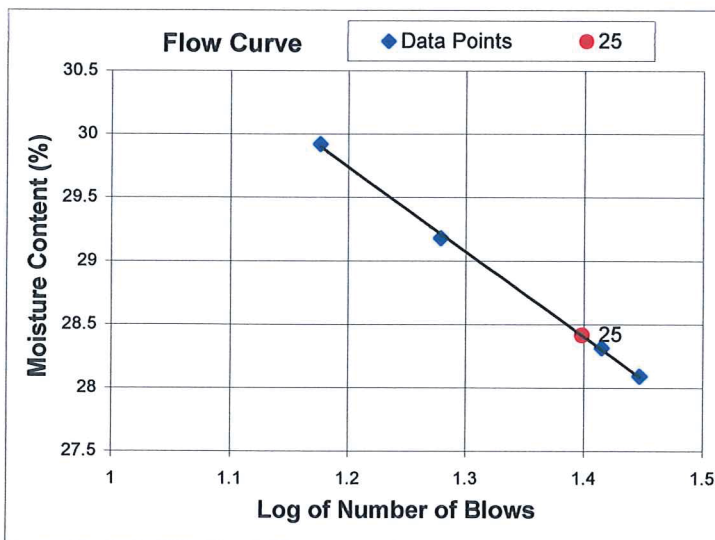
	Sample 1	Sample 2	Sample 3	Sample 4
Number of Blows:	28	26	19	15
Weight of Wet Soil & Pan (g):	11.741	12.307	14.543	12.590
Weight of Dry Soil & Pan (g):	9.334	9.756	11.432	9.870
Weight of Water (g):	2.407	2.551	3.111	2.720
Weight of Pan (g):	0.765	0.746	0.770	0.779
Moisture Content (%):	28.1	28.3	29.2	29.9

**Plastic Limit:** 14

**Liquid Limit:** 28

**Plastic Index:** 15

**Atterberg Classification** CL



Data Entered By: KMR

Date: 12/12/2013

Data Checked By: DPW

File Name: atterberg-ASTM\_4318-R6\_7.xls

Date: 12/13/13



**Atterberg Limits Test**  
ASTM D 4318

Client: MWH  
Job Number: 2512-77  
Project: Church Rock  
Location: Tailings Impoundment  
Project Number:

Boring Number: CS-10  
Depth: 7-25"  
Sample Number: TI-CS10-04A(7-25")  
Test Date: 12/12/2013  
Technician: KMR  
Sampled Date: 11/13/2013  
Sampled By: MWH  
Method: Method A

**Test Configuration**

Liquid Limits Device: 1080  
Material Size of Fines: #40

**Plastic Limits**

	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	5.870	6.032	6.324
Weight of Dry Soil & Pan (g):	5.244	5.397	5.652
Weight of Water (g):	0.626	0.635	0.672
Weight of Pan (g):	0.759	0.771	0.731
Moisture Content (%):	14.0	13.7	13.7

**Average:** 13.8%

**Standard Deviation:** 0.2%

**Liquid Limits**

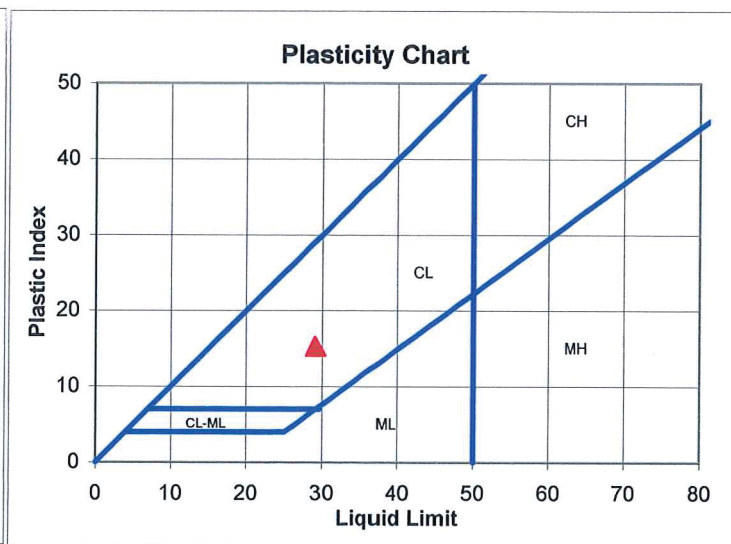
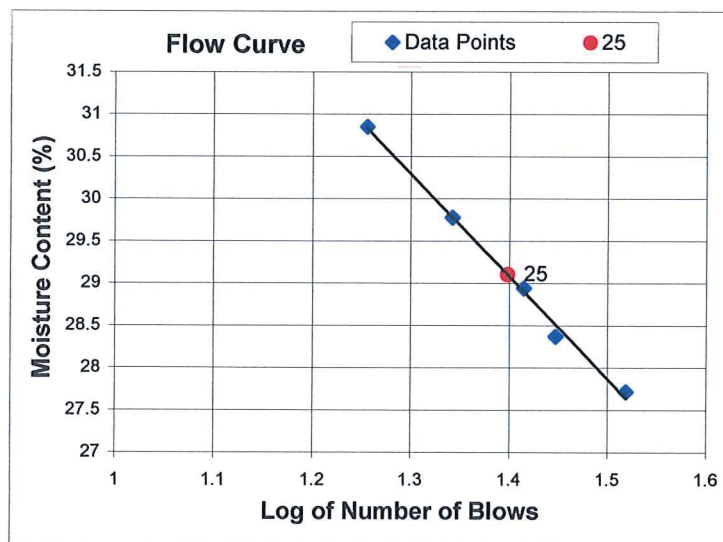
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Number of Blows:	33	28	26	22	18
Weight of Wet Soil & Pan (g):	14.400	15.122	13.908	18.819	15.267
Weight of Dry Soil & Pan (g):	11.441	11.951	10.958	14.677	11.845
Weight of Water (g):	2.959	3.171	2.950	4.142	3.422
Weight of Pan (g):	0.765	0.773	0.764	0.766	0.752
Moisture Content (%):	27.7	28.4	28.9	29.8	30.8

**Plastic Limit:** 14

**Liquid Limit:** 29

**Plastic Index:** 15

**Atterberg Classification** CL



Data Entered By: KMR

Date: 12/13/2013

Data Checked By: *Open*

File Name: atterberg-ASTM\_4318-R6\_9.xls

Date: *12/13/13*



**Atterberg Limits Test**  
**ASTM D 4318**

Client: MWH  
Job Number: 2512-77  
Project: Church Rock  
Location: Tailings Impoundment  
Project Number:

Boring Number: CS-11  
Depth: 9-24"  
Sample Number: TI-CS11-04A(9-24")  
Test Date: 12/5/2013  
Technician: CAL  
Sampled Date: 11/13/2013  
Sampled By: MWH  
Method: Method A

**Test Configuration**

Liquid Limits Device: 1080  
Material Size of Fines: #40

**Plastic Limits**

	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	6.818	7.132	7.445
Weight of Dry Soil & Pan (g):	6.139	6.413	6.699
Weight of Water (g):	0.679	0.719	0.746
Weight of Pan (g):	0.735	0.746	0.768
Moisture Content (%):	12.6	12.7	12.6

**Average:** 12.6%

**Standard Deviation:** 0.1%

**Liquid Limits**

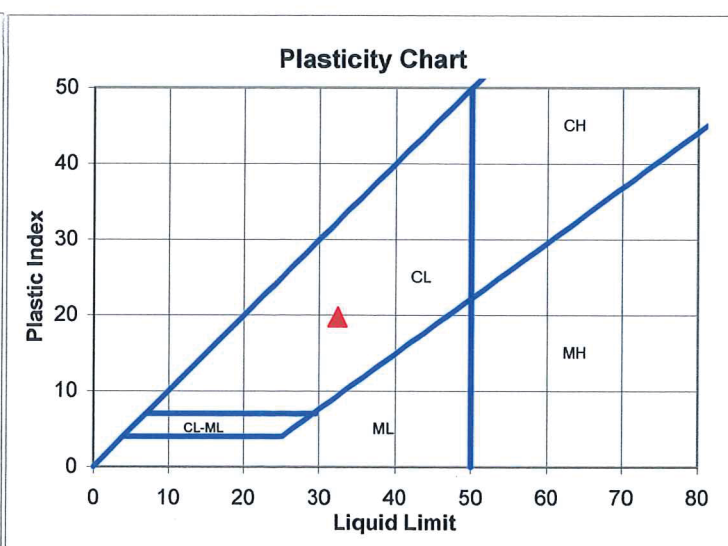
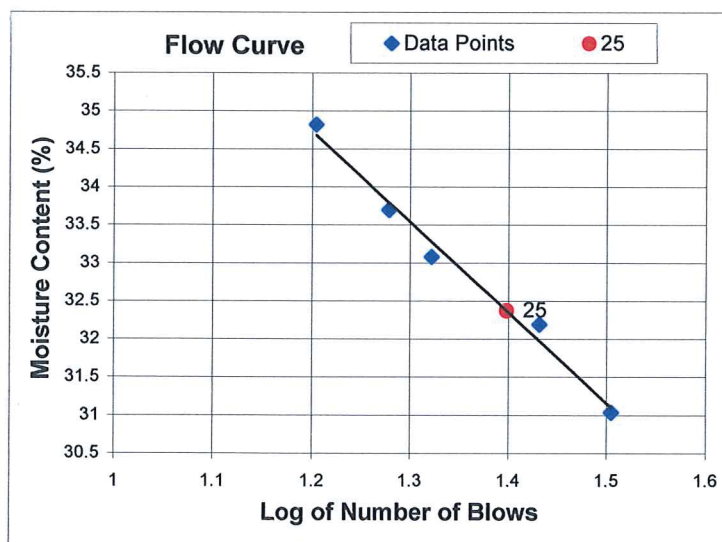
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Number of Blows:	32	27	21	19	16
Weight of Wet Soil & Pan (g):	10.899	10.245	9.851	10.238	8.958
Weight of Dry Soil & Pan (g):	8.501	7.936	7.590	7.843	6.844
Weight of Water (g):	2.398	2.309	2.261	2.395	2.114
Weight of Pan (g):	0.775	0.763	0.755	0.735	0.773
Moisture Content (%):	31.0	32.2	33.1	33.7	34.8

**Plastic Limit:** 13

**Liquid Limit:** 32

**Plastic Index:** 20

**Atterberg Classification** CL



Data Entered By: KMR

Date: 12/9/2013

Data Checked By: SPM

File Name: atterberg-ASTM\_4318-R6\_6.xls

Date: 12/09/13

**Atterberg Limits Test  
ASTM D 4318**

Client: MWH  
Job Number: 2512-77  
Project: Church Rock  
Location: Tailings Impoundment  
Project Number:

Boring Number: CS-12  
Depth: 0-14"  
Sample Number: TI-CS12-02A(0-14")  
Test Date: 12/11/2013  
Technician: KMR  
Sampled Date: 11/13/2013  
Sampled By: MWH  
Method: Method A

**Test Configuration**

Liquid Limits Device: 1080  
Material Size of Fines: #40

**Plastic Limits**

	Sample 1	Sample 2	Sample 3
Weight of Wet Soil & Pan (g):	5.056	5.335	5.968
Weight of Dry Soil & Pan (g):	4.558	4.790	5.354
Weight of Water (g):	0.498	0.545	0.614
Weight of Pan (g):	0.744	0.724	0.733
Moisture Content (%):	13.1	13.4	13.3

**Average:** 13.2%

**Standard Deviation:** 0.2%

**Liquid Limits**

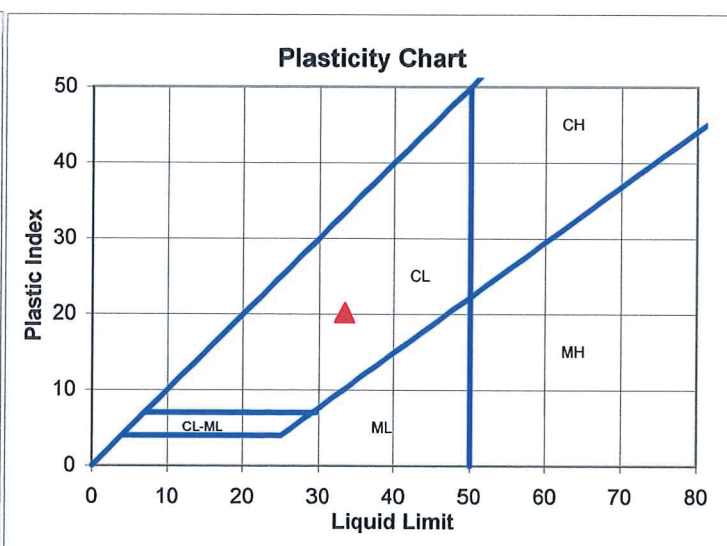
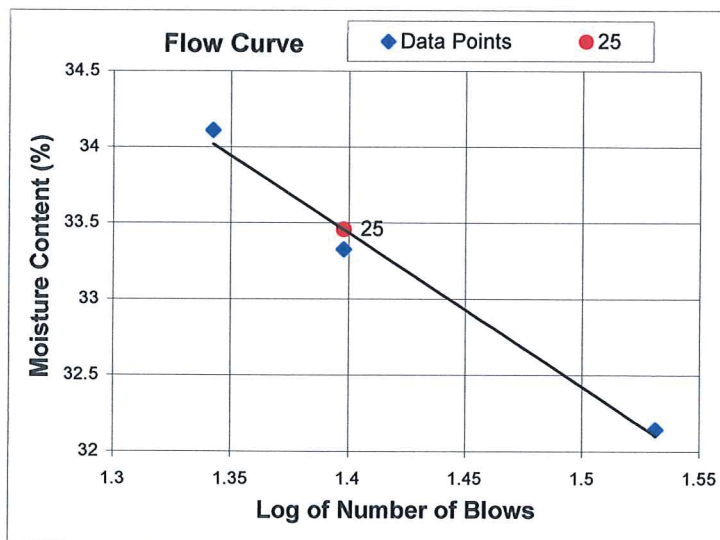
	Sample 1	Sample 2	Sample 3
Number of Blows:	34	25	22
Weight of Wet Soil & Pan (g):	14.697	12.843	15.671
Weight of Dry Soil & Pan (g):	11.301	9.819	11.877
Weight of Water (g):	3.396	3.024	3.794
Weight of Pan (g):	0.736	0.745	0.754
Moisture Content (%):	32.1	33.3	34.1

**Plastic Limit:** 13

**Liquid Limit:** 33

**Plastic Index:** 20

**Atterberg Classification** CL



Data Entered By: KMR

Date: 12/12/2013

Data Checked By: DPM

File Name: atterberg-ASTM\_4318-R6\_8.xls

Date: 12/13/13