TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

Large-scale Slope Erosion Testing (ASTM D 6459-modified)

PAM12 Plus over Sandy Loam

June 2009

Submitted to:
ENCAP, LLC
3921 Algoma Road
Green Bay, WI 54311

Attn: Mr. Jeff Rindfleisch

Submitted by:
TRI/Environmental, Inc.
9063 Bee Caves Road
Austin, TX 78733

C. Joel Sprague
Project Manager

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

June 23, 2009

Mr. Jeff Rindfleisch
ENCAP, LLC
3921 Algoma Road
Green Bay, WI 54311

E-mail: jrindfleisch@encap.net

Subject: Slope Testing of PAM12 Plus over Sandy Loam (Log #2278-01-36)

Dear Mr. Rindfleisch:

This letter report presents the results for large-scale slope erosion tests performed on PAM12 Plus over sandy loam. The application rate was 2000 lb/acre on the slope tests reported herein. Included are data developed for target rainfall intensities from 2 to 6 in/hr (5 to 15 cm/hr). All testing work was performed in general accordance with the ASTM D 6459, *Standard Test Method for Determination of Rolled Erosion Control Product (RECP) Performance in Protecting Hillslopes from Rainfall-Induced Erosion*. The test method was modified, as necessary, to accommodate a non-RECP. Generated results were used to develop the following general cover factor (C-Factor) for the tested material:

$$\textbf{C-Factor}_{\textbf{PAM12Plus@2000lb/acre}} = \mathbf{0.356}$$

$$\textbf{C-Factor}_{\textbf{PAM12Plus@2000lb/acre}} = \mathbf{0.075}$$

Please feel free to call if we can answer any questions or provide any additional information.

Sincerely,

C. Joel Sprague, P.E.
Senior Engineer
Geosynthetics Services Division

Cc: Sam Allen, Jarrett Nelson - TRI

SLOPE TESTING REPORT

PAM12 Plus over Sandy Loam

TESTING EQUIPMENT AND PROCEDURES

Overview of Test and Apparatus

TRI/Environmental, Inc.'s (TRI's) large-scale slope erosion testing facility is located at the Denver Downs Research Farm in Anderson, SC. Testing oversight is provided by C. Joel Sprague, P.E. The large-scale testing is performed in general accordance with ASTM D 6459 modified to accommodate non-RECP materials, on 3:1 slopes using loamy soil test plots measuring 40 ft long x 8 ft wide. The simulated rainfall is produced by ten "rain trees" arranged around the perimeter of the test slope. Each rain tree has four sprinkler heads atop a 15 ft riser pipe. The rainfall system is calibrated prior to testing to determine the number of sprinkler heads and associated pressure settings necessary to achieve target rainfall intensities. The target rainfall intensities are 2, 4, and 6 in/hr and are applied in sequence for 20 minutes each. A target 2000 lb/acre coverage rate of the submitted erosion control product (ECP) was tested. Erosion resistance provided by the tested ECP is obtained by comparing the protected slope results to control (bare soil) results accumulated over time. Tables and graphs of rainfall versus soil loss are generated from the accumulated data.

Erosion Control Product (ECP)

The following index properties were determined from testing the Blanket Replacement Mulch.

Table 1. As-Received ECP Properties

Index Property / Test	Units	06/23/09
Lot number of sampled roll	-	n/a
Target Coverage Rate	lb/acre	2000
Water	%	n/a
Wet Paper	%	n/a
Anionic Polyacrylamide Polymer	%	n/a
Starch	%	n/a

n/a – information not available

Test Soil

The test soil used in the test plots had the following characteristics.

Table 2. TRI-Loam Characteristics

Soil Characteristic	Test Method	Value
% Gravel	ASTM D 422	7
% Sand		60
% Silt		25
% Clay		8
Liquid Limit, %	ASTM D 4318	32
Plasticity Index, %		5
Soil Classification	USDA	Sandy Loam
Soil Classification	USCS	Silty Sand (SM)

Preparation of the Test Slopes

The test slopes undergo a "standard" preparation procedure prior to each slope test. First, any rills or depressions resulting from previous testing are filled in with test soil. The entire test plot is then tilled to a depth not less than four inches. The test slope is then raked to create a slope that is smooth both side-to-side and top-to-bottom. Finally, a steel drum roller is rolled down-and-up the slope 3 times proceeding from one side of the plot to the other. The submitted erosion control product is then installed as directed by the client.

Installation of Erosion Control Product on Test Slopes

As noted, the submitted erosion control product is installed as directed by the client. For the tests reported herein, the erosion control product was hand spread as dry pellets and then pre-wetted with the sprinkler system. Wetting was generally accomplished by spraying for 1 minute. The ECP was then allowed to cure overnight.

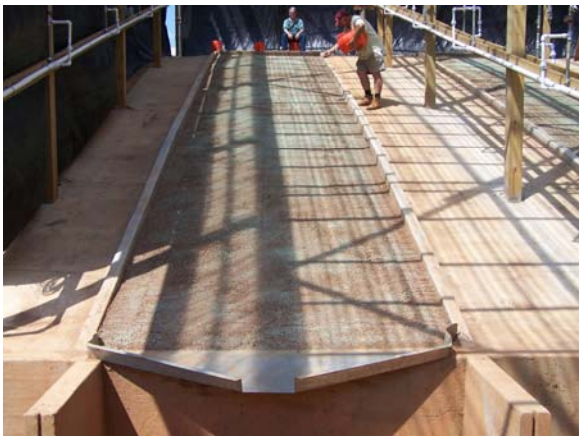


Figure 1a. Typical ECP Application

Figure 1b. Typical Slope Ready to Test

Specific Test Procedure

Soil moisture samples were obtained immediately prior to product application. Immediately prior to testing, rain gauges are placed at the quarter points on the slope. The slope is then

exposed to sequential 20-minute rainfalls having target intensities of 2, 4, and 6 inches per hour. All runoff is collected during the testing. Additionally, periodic sediment concentration grab samples are taken and runoff rate measurements are made. Between rainfall intensities, the rainfall is stopped and rainfall depth is read in the three rain gauges, valves are adjusted to facilitate the subsequent rainfall intensity, and empty collection vessels are positioned to collect subsequent runoff.

After allowing for sediments to settle, water is decanted from the collected runoff. The remaining solids are used to determine "bulk" soil loss. Bulk soil loss is measured by drying all collected sediments to obtain total dry sediment weight collected. Drying is accomplished in a forced air oven at 110°C for a minimum of 24 hours or until all moisture is driven off, whichever is greater. All weighing is done with laboratory scales accurate to ± 0.01 lbs. Additionally, the decanted "dirty" water is weighed and compared to clear water to develop a weight of solids per unit volume of decant to derive an additional amount of "fine" soil loss associated with the non-settleable fraction of solids.

Figure 2. Typical "Raintree" and Slope Setup

Figure 3. Typical Sampling and Collection

Pictures of the eroded slopes are shown in Figures 4 thru 7.

Figure 4. Test Slope #1 –
Upon Test Completion

Figure 6. Test Slope #3 –
Upon Test Completion

Figure 5. Test Slope #2 –
Upon Test Completion

Figure 7. Typical Control Test Slope –
Upon Test Completion

TEST RESULTS

Total soil loss (bulk + fine) and the associated actual rainfall depth measured during the testing are the principle data used to determine the performance of the product tested. This data is entered into a spreadsheet that transforms the rainfall depth into an R-Factor and the total soil loss into soil loss per acre as typically used in the Universal Soil Loss Equation and its derivatives. Graphs of R-factor versus soil loss for both protected and control conditions are shown in Figures 8, 9 and 10. The graphs include a linear regression line fit to the test data to facilitate the determination of the C-factor.

Table 3. Summary Data Table – Protected Slopes

Slope #	Test # (slope # - target intensity)	Rainfall Depth, in	Rainfall Intensity, in/hr	Cummulative R-factor	Soil Loss, lbs/slope	Soil Loss, tons/acre	Cummulative Soil Loss (T/A)
1	1-2	0.733	2.20	**11.30**	0.02	0.00	**0.001**
	1-4	1.433	4.30	**83.93**	8.24	0.56	**0.562**
	1-6	1.967	5.90	**241.07**	233.45	15.90	**16.452**
2	2-2	0.683	2.05	**9.71**	0.03	0.00	**0.002**
	2-4	1.400	4.20	**77.84**	40.18	2.74	**2.737**
	2-6	1.933	5.80	**229.56**	323.51	22.04	**24.757**
3	3-2	0.583	1.75	**6.89**	0.00	0.00	**0.000**
	3-4	1.233	3.70	**58.83**	0.20	0.01	**0.014**
	3-6	1.983	5.95	**213.41**	190.40	12.97	**12.973**

Using the test procedure and data evaluation technique described herein, the C-Factor shown in Table 4 was determined using the following equation:

$$C = m_C / 2.78\ K$$

where m_C = slope of the protected soil loss regression line; and
K = the soil erosivity determined from bare soil testing.
$= m_K / LSCP$
Where m_K = slope of the bare soil loss regression line;
LS = topographic factor = 2.78 for 8 x 40 ft slope;
C = cover factor = 1.0 for bare soil;
P = management practice factor = 1.0 for bare soil.

Table 4. Overall C-Factor

Product	Target Coverage Rate, lb/acre	Rainfall Condition	Limiting R-Factor	C-Factor
PAM12 Plus	2000	2 + 4 + 6 in/hr	< 241	0.356
PAM12 Plus	2000	2 + 4 in/hr	< 84	0.075

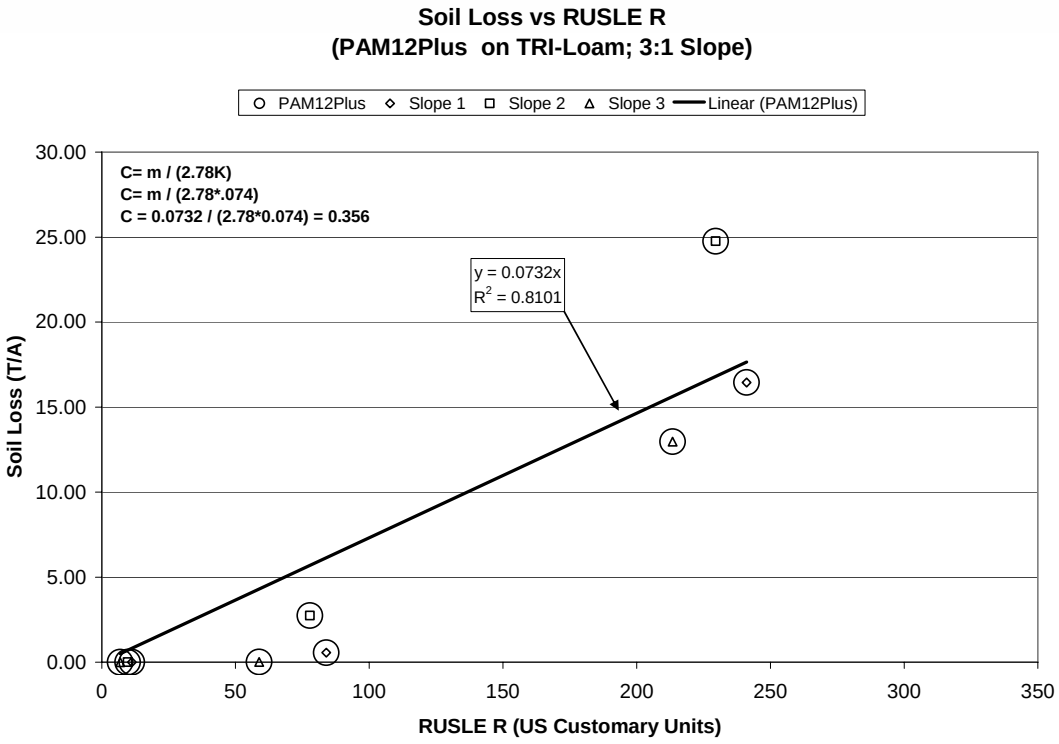


Figure 8. R-Factor vs. Soil Loss – Tested Product / Complete Test

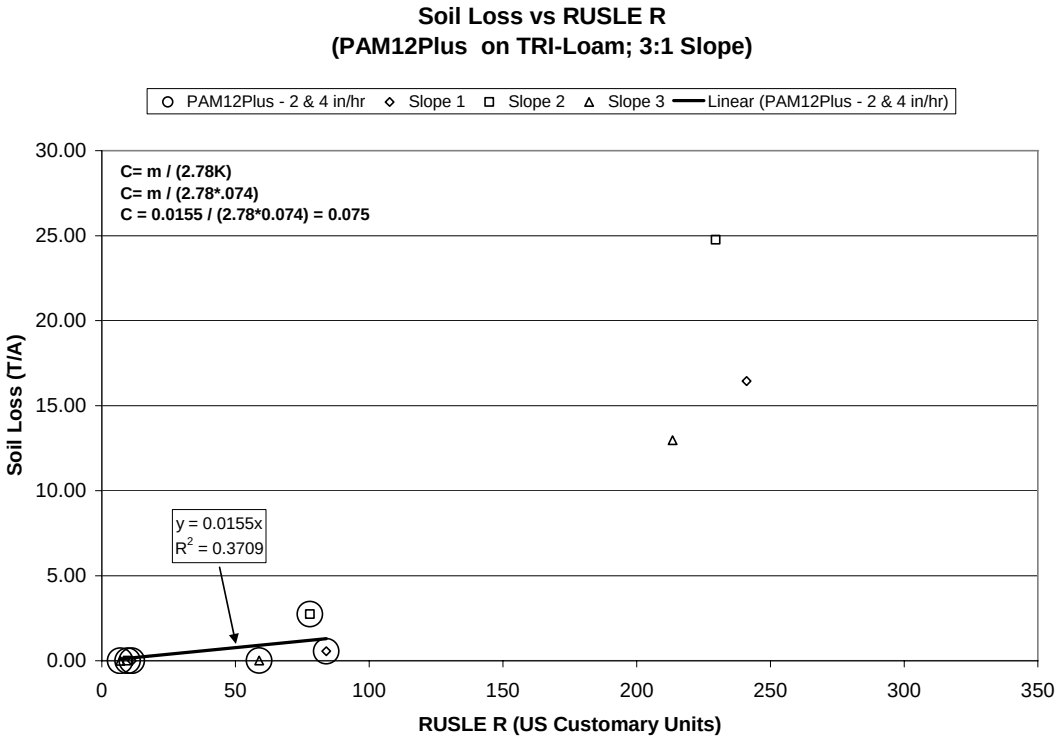


Figure 9. R-Factor vs. Soil Loss – Tested Product / Partial Test

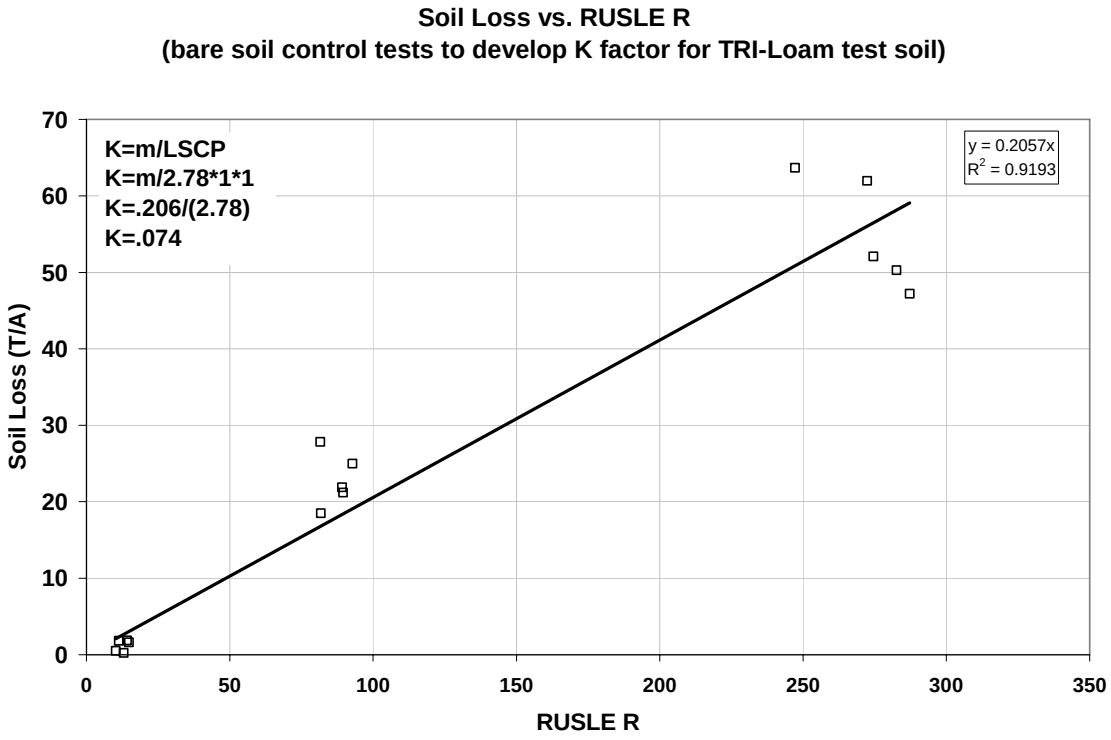


Figure 10. R-Factor vs. Soil Loss – Control Tests

APPENDIX A – RECORDED DATA

Test Record Sheets

Sediment Concentration Data

Runoff Data

Soil Moisture Contents

Soil Loss Tables

DDRF Rainfall Testing

Slope #: 1 | **Target Rain: 2 in/hr**

SLOPE #1

Date: 4-Jun-09 | Start Rain: 9:10 AM | End Rain: 9:30 AM

Sampling interval: 0:03 | End Runoff: 9:30 AM

Rain Time (min): 20.00 | Test Time (min): 20.00

Product: PAM12 Plus | Descr:. 2000 lb/acre dry-applied mulch

Lot #: n/a | Anchors: none | Anchorage: none

TOP OF SLOPE

w_{c1} = 16.9%

(circle "x" for open valves)

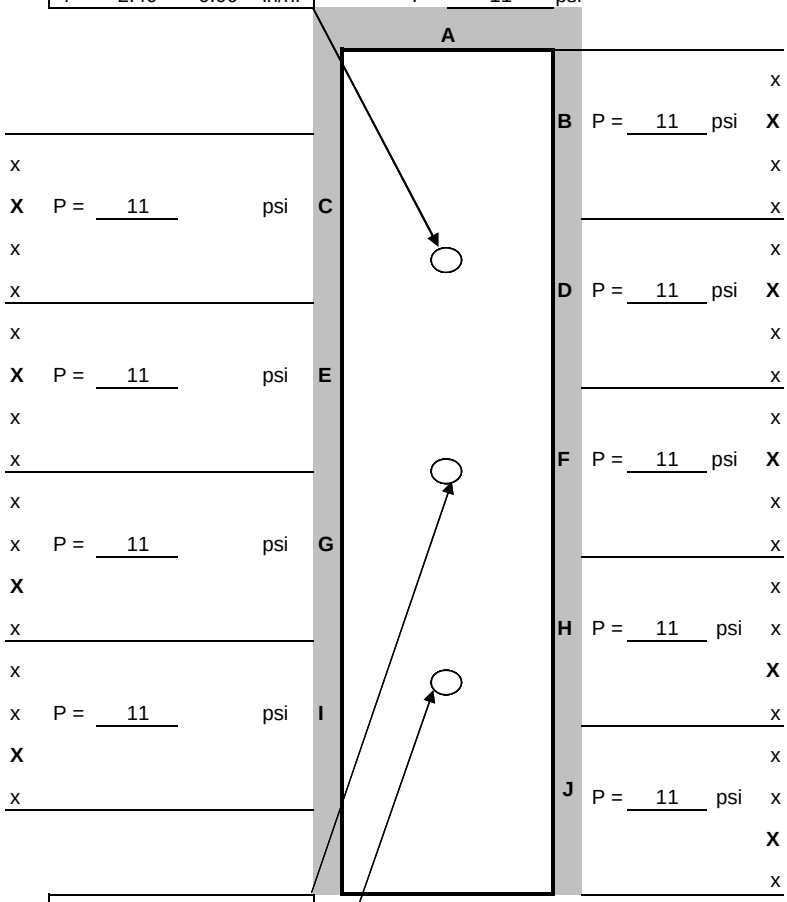
Set valves to 11 psi.

d = 0.8 in

i = 2.40 0.00 in/hr

x **X** x x

P = 11 psi



d = 0.75 in

i = 2.25 0.00 in/hr

w_{c3} = 12.0%

d = 0.65 in

i = 1.95 0.00 in/hr

w_{c2} = 17.1%

Temp. 80 deg

Hum. %

Average Depth: **0.73** **in.**

Avg Rainfall Intensity: **2.20** **in/hr**

Notes:

0 mph breeze from the .

Approx 1 gal collected.

Sediment Concentration Grab Samples Followed by Runoff Rate Measurements

#	Time	
1	9:13	
2	9:16	
3	9:19	
4	9:22	
5	9:25	
6	9:28	
7		
8		
9		
10		
11		
12		
13		
14		
15		
12		
13		
14		
15		

Runoff Rate Measurements

#	Time	Time to Collect 1 gal, sec
1	3	1020
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

DDRF Rainfall Testing

Slope #: 1 | **Target Rain: 4 in/hr**

SLOPE #1

Date: 4-Jun-09 | Start Rain: 9:40 AM | End Rain: 10:00 AM

Sampling interval: 0:02 | End Runoff: 10:05 AM

Rain Time (min): 20.00 | Test Time (min): 25.00

Product: PAM12 Plus | Descr:. 2000 lb/acre dry-applied mulch

Lot #: n/a | Anchors: none | Anchorage: none

TOP OF SLOPE | **Set valves to 11 psi.**

w_{c1} = 16.9%

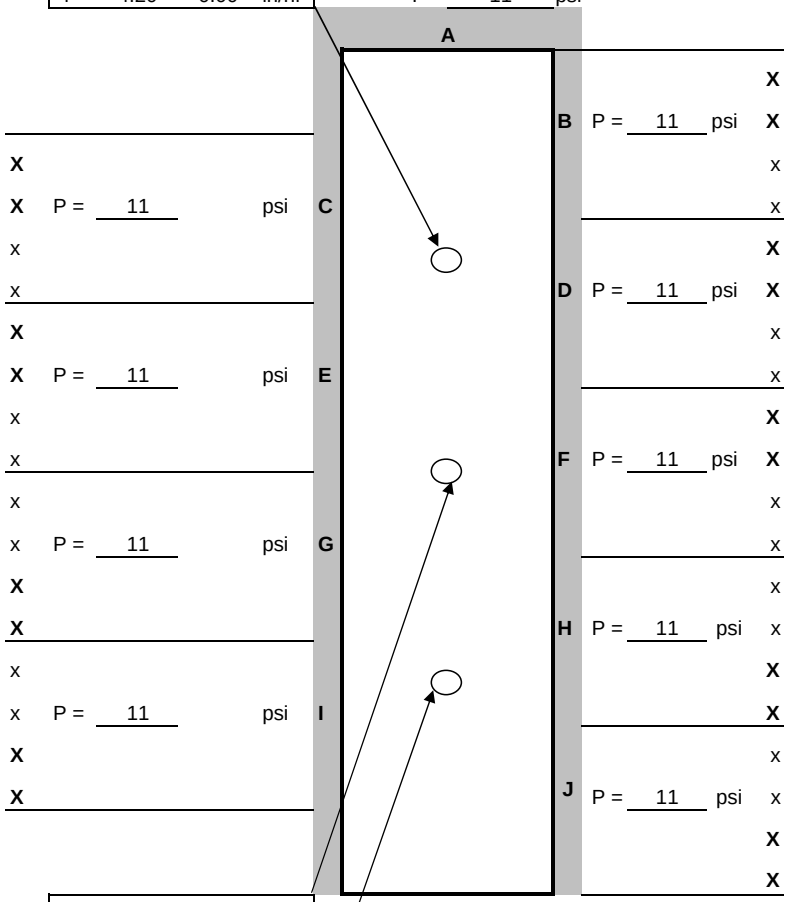
d = 1.4 in

i = 4.20 0.00 in/hr

(circle "x" for open valves)

X X x x

P = 11 psi



X X P = 11 psi C x x

x x

x x D P = 11 psi X x

X X P = 11 psi E x x

x x

x x F P = 11 psi X x

x x P = 11 psi G x x

X X x x

X X H P = 11 psi x X

x x X X

x x P = 11 psi I x X

X X x x

X X J P = 11 psi x X

x X

x X

d = 1.4 in

i = 4.20 0.00 in/hr

w_{c3} = 12.0%

d = 1.50 in

i = 4.50 0.00 in/hr

w_{c2} = 17.1%

Temp. 81 deg

Hum. %

Average Depth: 1.43 in.

Avg Rainfall Intensity: 4.30 in/hr

Sediment Concentration Grab Samples Followed by Runoff Rate Measurements

#	Time	
1	9:42	
2	9:44	
3	9:46	
4	9:48	
5	9:50	
6	9:52	
7	9:54	
8	9:56	
9	9:58	
10	10:00	
11		
12		
13		
14		
15		
12		
13		
14		
15		

Runoff Rate Measurements

#	Time	Time to Collect 1 gal, sec
1	2	367
2	12	142
3	16	46
4	18	25
5	20	15
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
12		
13		
14		
15		

Notes:

0 mph breeze from the SE. Approx 20 gal collected.

DDRF Rainfall Testing

Slope #: 1 | **Target Rain: 6 in/hr**

SLOPE #1

Date: 4-Jun-09 | Start Rain: 10:15 AM | End Rain: 10:35 AM

Sampling interval: 0:02 | End Runoff: 10:40 AM

Rain Time (min): 20.00 | Test Time (min): 25.00

Product: PAM12 Plus | Descr:. 2000 lb/acre dry-applied mulch

Lot #: n/a | Anchors: none | Anchorage: none

TOP OF SLOPE

w_{c1} = 16.9%

(circle "x" for open valves)

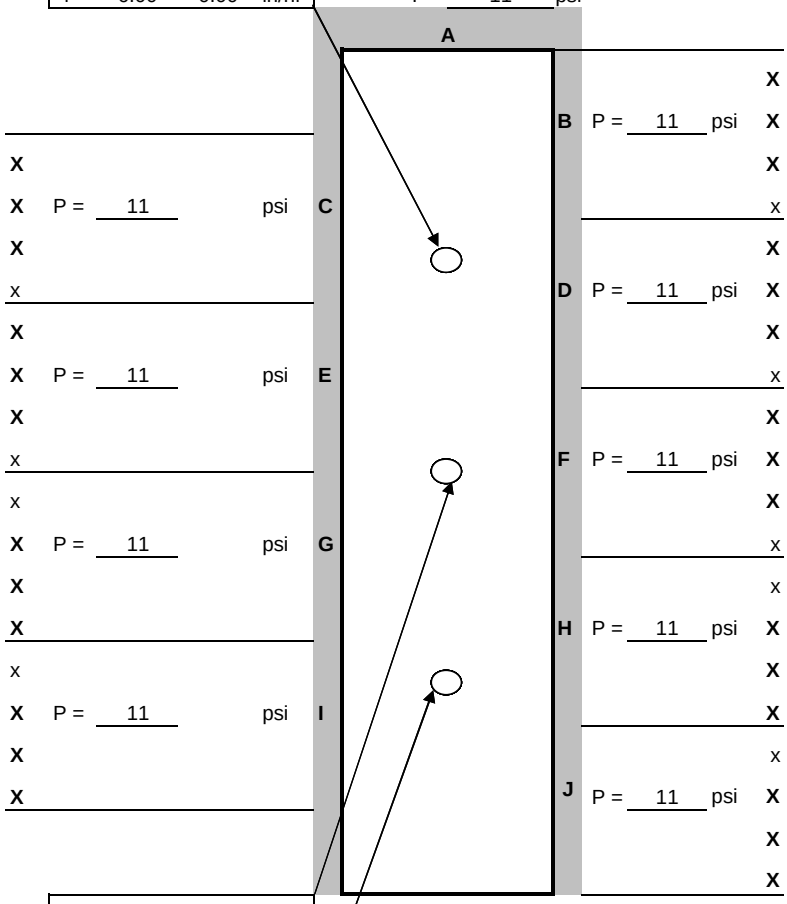
d = 2 in

i = 6.00 0.00 in/hr

X X X x

Set valves to 11 psi.

P = 11 psi



d = 1.95 in

i = 5.85 0.00 in/hr

w_{c3} = 12.0%

d = 1.95 in

i = 5.85 0.00 in/hr

w_{c2} = 17.1%

Temp. 79 deg

Hum. %

Average Depth: 1.97 in.

Avg Rainfall Intensity: 5.90 in/hr

Notes:

0 mph breeze from the .

Approx 285 gal collected.

Sediment Concentration Grab Samples Followed by Runoff Rate Measurements

#	Time	
1	10:17	
2	10:19	
3	10:21	
4	10:23	
5	10:25	
6	10:27	
7	10:29	
8	10:31	
9	10:33	
10	10:35	
11		
12		
13		
14		
15		
12		
13		
14		
15		

Runoff Rate Measurements

#	Time	Time to Collect 1 Gallon, sec
1	2	68
2	4	5
3	6	4
4	8	4
5	10	3.5
6	12	3.5
7	14	3.5
8	16	3.5
9	18	3.5
10	20	3.5
11		
12		
13		
14		
15		

DDRF Rainfall Testing

Slope #: 2 | **Target Rain: 2 in/hr**

SLOPE #2

Date: 4-Jun-09 | Start Rain: 11:00 AM | End Rain: 11:20 AM

Sampling interval: 0:03 | End Runoff: 11:20 AM

Rain Time (min): 20.00 | Test Time (min): 20.00

Product: PAM12 Plus | Descr:. 2000 lb/acre dry-applied mulch

Lot #: n/a | Anchors: none | Anchorage: none

TOP OF SLOPE

w_{c1} = 15.1%

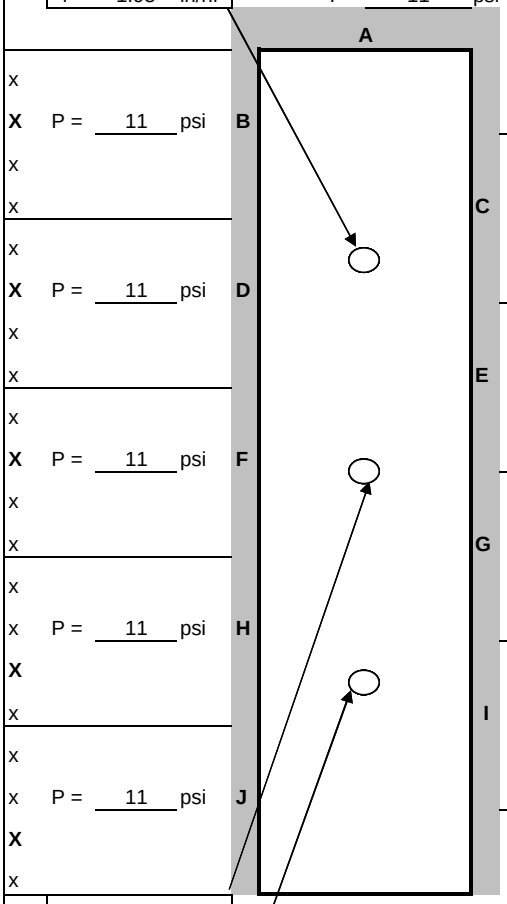
(circle "x" for open valves)

Set valves to 11 psi.

d = 0.65 in
i = 1.95 in/hr

x x **X** x

P = 11 psi



x
X P = 11 psi **B**
x
x

x
X P = 11 psi **D**
x
x

x
X P = 11 psi **F**
x
x

x
X P = 11 psi **H**
X
x

x
X P = 11 psi **J**
X
x

x
C P = 11 psi **X**
x

x
E P = 11 psi **X**
x

x
G P = 11 psi x
X

x
I P = 11 psi x
X

d = 0.75 in
i = 2.25 in/hr

w_{c2} = 13.3%

d = 0.65 in
i = 1.95 in/hr

w_{c3} = 17.2%

Temp. 79 deg

Hum. %

Average Depth: **0.68** **in.**

Avg Rainfall Intensity: **2.05** **in/hr**

Notes:

0 mph breeze from the .
Approx 2 gal collected.

Sediment Concentration Grab Samples Followed by Runoff Rate Measurements

#	Time	
1	11:03	
2	11:06	
3	11:09	
4	11:12	
5	11:15	
6	11:18	
7		
8		
9		
10		
11		
12		
13		
14		
15		
12		
13		
14		
15		

Runoff Rate Measurements

#	Time	Time to Collect 1 Gallon, sec
1	3	660
2	15	300
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
12		
13		
14		
15		

DDRF Rainfall Testing

Slope #: 2 | **Target Rain: 4 in/hr**

SLOPE #2

Date: 4-Jun-09 | Start Rain: 11:30 AM | End Rain: 11:50 AM

Sampling interval: 0:02 | End Runoff: 11:55 AM

Rain Time (min): 20.00 | Test Time (min): 25.00

Product: PAM12 Plus | Descr:. 2000 lb/acre dry-applied mulch

Lot #: n/a | Anchors: none | Anchorage: none

TOP OF SLOPE | **Set valves to 11 psi.**

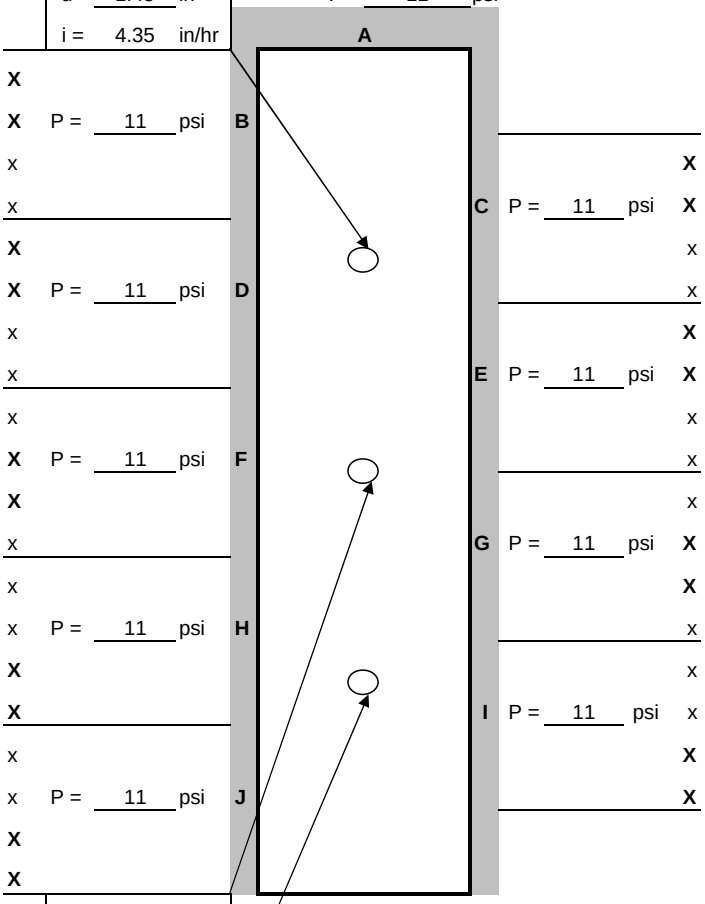
w_{c1} = 15.1%

d = 1.45 in

i = 4.35 in/hr

X X x x

P = 11 psi



d = 1.45 in

i = 4.35 in/hr

w_{c2} = 13.3%

d = 1.30 in

i = 3.90 in/hr

w_{c3} = 17.2%

Temp. 78 deg

Hum. ____ %

Average Depth: 1.40 in.

Avg Rainfall Intensity: 4.20 in/hr

Sediment Concentration Grab Samples Followed by Runoff Rate Measurements

#	Time	
1	11:32	
2	11:34	
3	11:36	
4	11:38	
5	11:40	
6	11:42	
7	11:44	
8	11:46	
9	11:48	
10	11:50	
11		
12		
13		
14		
15		
12		
13		
14		
15		

Runoff Rate Measurements

#	Time	Time to Collect 1 Gallon, sec
1	2	228
2	8	121
3	12	38
4	14	21
5	16	12
6	18	9
7	20	7
8		
9		
10		
11		
12		
13		
14		
15		
12		
13		
14		
15		

Notes:

0 mph breeze from the SE. Approx. 55 gal collected.

DDRF Rainfall Testing

Slope #: 2 | **Target Rain: 6 in/hr**

SLOPE #2

Date: 4-Jun-09 | Start Rain: 12:00 PM | End Rain: 12:20 PM

Sampling interval: 0:02 | End Runoff: 12:25 PM

Rain Time (min): 20.00 | Test Time (min): 25.00

Product: PAM12 Plus | Descr:. 2000 lb/acre dry-applied mulch

Lot #: n/a | Anchors: none | Anchorage: none

TOP OF SLOPE

(circle "x" for open valves)

Set valves to 11 psi.

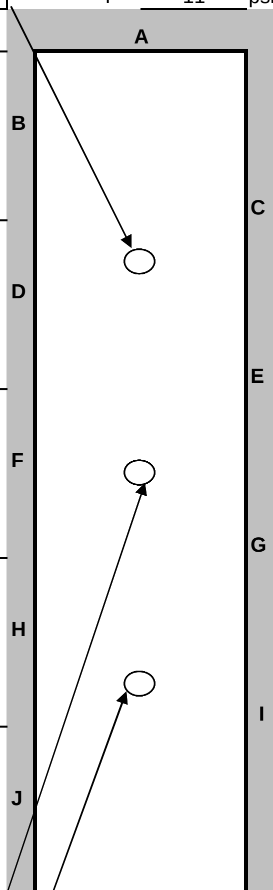
w_{c1} = 15.1%

d = 1.9 in
i = 5.70 in/hr

x X X X

P = 11 psi

A



Valve	Open valves	P (psi)
A	x X X X	11
B	X X X x	11
C	X X X x	11
D	X X X x	11
E	X X X x	11
F	X X X x	11
G	x X X X	11
H	x X X X	11
I	X X X X	11
J	X X X X	11

d = 1.95 in
i = 5.85 in/hr

w_{c2} = 13.3%

d = 1.95 in
i = 5.85 in/hr

w_{c3} = 17.2%

Temp. 80 deg

Hum. ____ %

Average Depth: **1.93** **in.**

Avg Rainfall Intensity: **5.80** **in/hr**

Notes:

0 mph breeze from the SE.
Approx 320 gal collected.

Sediment Concentration Grab Samples Followed by Runoff Rate Measurements

#	Time	
1	12:02	
2	12:04	
3	12:06	
4	12:08	
5	12:10	
6	12:12	
7	12:14	
8	12:16	
9	12:18	
10	12:20	
11		
12		
13		
14		
15		
12		
13		
14		
15		

Runoff Rate Measurements

#	Time	Time to Collect 1 Gallon, sec
1	2	10
2	4	6
3	6	5
4	8	4
5	10	4
6	12	3.5
7	14	3.5
8	16	3.5
9	18	3.5
10	20	3.5
11		
12		
13		
14		
15		
12		
13		
14		
15		

DDRF Rainfall Testing

Slope #: 3 | **Target Rain: 2 in/hr**

SLOPE #3

Date: 4-Jun-09 | Start Rain: 12:30 PM | End Rain: 12:50 PM

Sampling interval: 0:03 | End Runoff: 12:50 PM

Rain Time (min): 20.00 | Test Time (min): 20.00

Product: PAM12 Plus | Descr:. 2000 lb/acre dry-applied mulch

Lot #: n/a | Anchors: none | Anchorage: none

TOP OF SLOPE

w_{c1} = 17.2%

d = 0.7 in

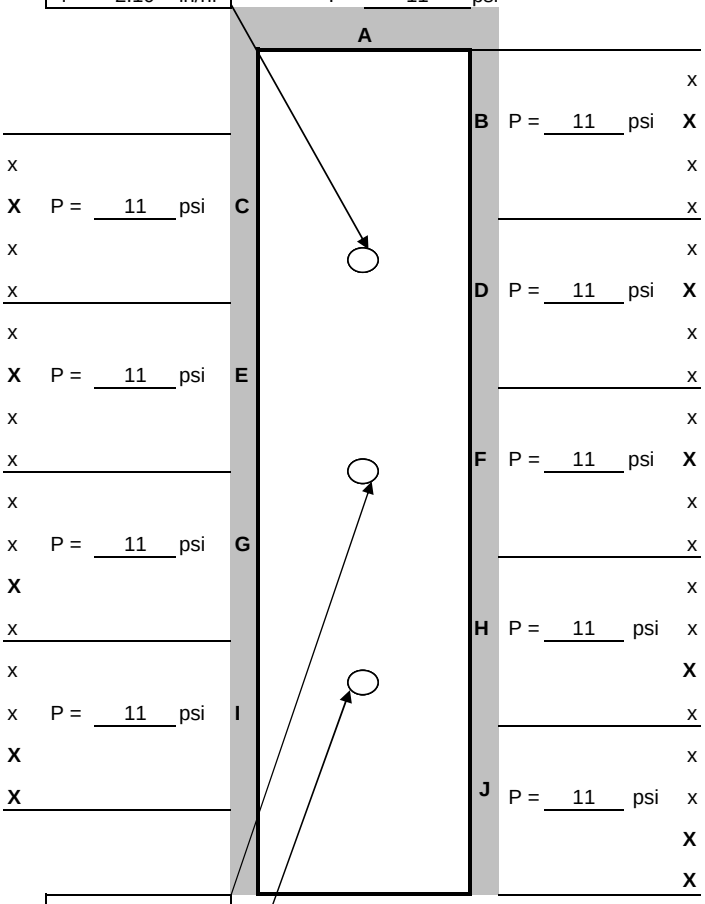
i = 2.10 in/hr

(circle "x" for open valves)

x **X** x x

P = 11 psi

Set valves to 11 psi.



d = 0.55 in

i = 1.65 in/hr *

w_{c3} = 15.5%

d = 0.50 in

i = 1.50 in/hr

w_{c2} = 17.7%

Average Depth: 0.58 in.

Avg Rainfall Intensity: 1.75 in/hr

Temp. 81 deg

Hum. %

Sediment Concentration Grab Samples Followed by Runoff Rate Measurements

#	Time	
1	12:33	
2	12:36	
3	12:39	
4	12:42	
5	12:45	
6	12:48	
7		
8		
9		
10		
11		
12		
13		
14		
15		
12		
13		
14		
15		

Runoff Rate Measurements

#	Time	Time to Collect 1 Gallon, sec
1	3	1020
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

Notes:

0 mph breeze from the SE.

Approx 1 gal collected.

DDRF Rainfall Testing

Slope #: 3 | **Target Rain: 4 in/hr**

SLOPE #3

Date: 4-Jun-09 | Start Rain: 12:55 PM | End Rain: 1:15 PM

Sampling interval: 0:02 | End Runoff: 1:15 PM

Rain Time (min): 20.00 | Test Time (min): 20.00

Product: PAM12 Plus | Descr:. 2000 lb/acre dry-applied mulch

Lot #: n/a | Anchors: none | Anchorage: none

TOP OF SLOPE | **Set valves to 11 psi.**

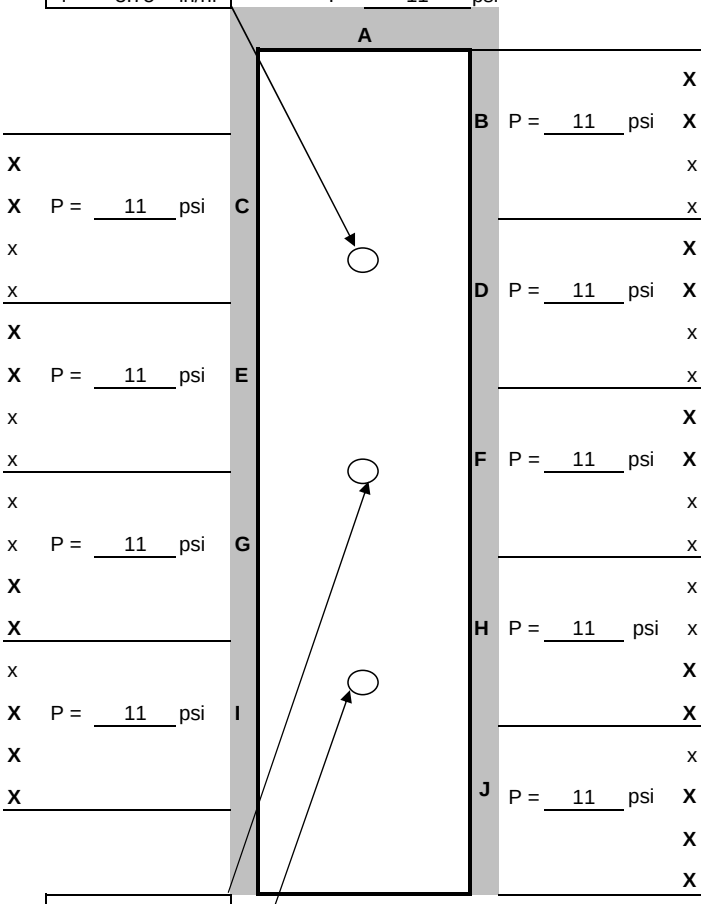
w_{c1} = 17.2%

(circle "x" for open valves)

d = 1.25 in
i = 3.75 in/hr

X X x x

P = 11 psi



d = 1.1 in
i = 3.30 in/hr

w_{c3} = 15.5%

d = 1.35 in
i = 4.05 in/hr

w_{c2} = 17.7%

Temp. 81 deg

Hum. %

Average Depth: 1.23 in.

Avg Rainfall Intensity: 3.70 in/hr

Notes:

0 mph breeze from the .

Approx 3 gal collected.

Sediment Concentration Grab Samples Followed by Runoff Rate Measurements

#	Time	
1	12:57	
2	12:59	
3	13:01	
4	13:03	
5	13:05	
6	13:07	
7	13:09	
8	13:11	
9	13:13	
10	13:15	
11		
12		
13		
14		
15		

Runoff Rate Measurements

#	Time	Time to Collect 1 Gallon, sec
1	2	576
2	12	425
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

DDRF Rainfall Testing

Slope #: 3 | **Target Rain: 6 in/hr**

SLOPE #3

Date: 4-Jun-09 | Start Rain: 1:20 PM | End Rain: 1:40 PM

Sampling interval: 0:02 | End Runoff: 1:45 PM

Rain Time (min): 20.00 | Test Time (min): 25.00

Product: PAM12 Plus | Descr:. 2000 lb/acre dry-applied mulch

Lot #: n/a | Anchors: none | Anchorage: none

TOP OF SLOPE

w_{c1} = 17.2%

d = 2 in

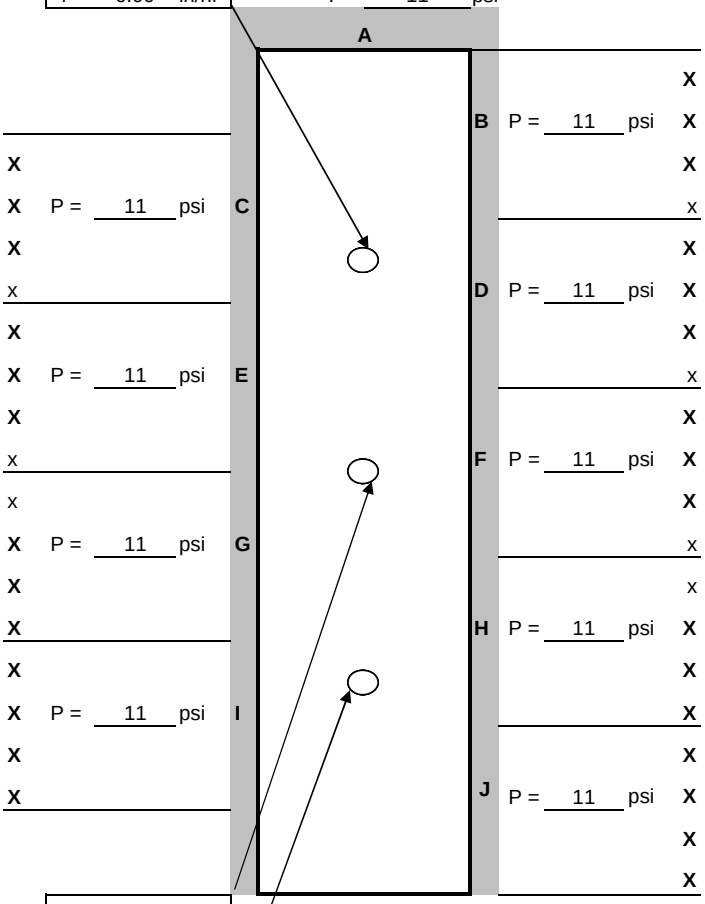
i = 6.00 in/hr

(circle "x" for open valves)

X X X x

P = 11 psi

Set valves to 11 psi.



d = 1.95 in

i = 5.85 in/hr

w_{c3} = 15.5%

d = 2.00 in

i = 6.00 in/hr

w_{c2} = 17.7%

Average Depth: 1.98 in.

Avg Rainfall Intensity: 5.95 in/hr

Temp. 80 deg

Hum. %

Sediment Concentration Grab Samples Followed by Runoff Rate Measurements

#	Time	
1	13:22	
2	13:24	
3	13:26	
4	13:28	
5	13:30	
6	13:32	
7	13:34	
8	13:36	
9	13:38	
10	13:40	
11		
12		
13		
14		
15		
12		
13		
14		
15		

Runoff Rate Measurements

#	Time	Time to Collect 1 Gallon, sec
1	2	35
2	4	28
3	6	6
4	8	5
5	10	4
6	12	4
7	14	4
8	16	3.5
9	18	3.5
10	20	3.5
11		
12		
13		
14		
15		
12		
13		
14		
15		

Notes:

0 mph breeze from the SE. Approx 250 gal collected before test stopped.

WATER CONTENT DETERMINATION

Run #:	1	2	3
Slope No.	SLOPE #1	SLOPE #2	SLOPE #3
Test Date:	4-Jun-09	4-Jun-09	4-Jun-09
Avg Moisture Content:	**15.34%**	**15.22%**	**16.79%**

Location	T-1	T-2	T-3
Wt. Of cup + wet soil, g	84.1	82.3	83.4
Wt. Of cup + dry soil, g	74.9	74.2	74.2
Wt. Of cup, g	20.6	20.6	20.6
Wt. Of dry soil, g	54.3	53.6	53.6
Wt. Of water, g	9.2	8.1	9.2
Water Content, w%	16.9%	15.1%	17.2%

Location	M-1	M-2	M-3
Wt. Of cup + wet soil, g	67.3	75.1	82.3
Wt. Of cup + dry soil, g	62.3	68.7	74
Wt. Of cup, g	20.6	20.6	20.6
Wt. Of dry soil, g	41.7	48.1	53.4
Wt. Of water, g	5	6.4	8.3
Water Content, w%	12.0%	13.3%	15.5%

Location	B-1	B-2	B-3
Wt. Of cup + wet soil, g	73.4	68.2	85.9
Wt. Of cup + dry soil, g	65.7	61.2	76.1
Wt. Of cup, g	20.6	20.6	20.6
Wt. Of dry soil, g	45.1	40.6	55.5
Wt. Of water, g	7.7	7	9.8
Water Content, w%	17.1%	17.2%	17.7%

4-Jun-09

Slope #1

Sample Number	Test Time, minutes	Time per Gallon, sec	Interval Time, min	Total Time, min	Collection Mid-Time, min	Runoff Rate, gal/min	Associated Runoff, gal	Cumulative Runoff, gal	
2.2 in/hr									
2	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	
2-1	3.00	1020	20.00	20.00	11.50	0.06	1.18	1.18	
2-2	0.00	0	0.00	20.00	20.00	0.06	0.00	1.18	
2-3	0.00	0	0.00	20.00	20.00	0.06	0.00	1.18	
2-4	0.00	0	0.00	20.00	20.00	0.06	0.00	1.18	
2-5	0.00	0	0.00	20.00	20.00	0.06	0.00	1.18	
2-6	0.00	0	0.00	20.00	20.00	0.06	0.00	1.18	
2-end	20.00		0.00	20.00			0.00	**1.18**	**Total Collected Runoff (approx)**
4.30 in/hr									
4	0	0	0.00	0.00	0.00	0.00	0.00	0.00	
4-1	2	367	8.12	8.12	5.06	0.16	1.33	1.33	
4-2	12	142	6.25	14.37	13.18	0.42	2.64	3.97	
4-3	16	46	2.40	16.77	16.38	1.30	3.13	7.10	
4-4	18	25	1.65	18.42	18.21	2.40	3.96	11.06	
4-5	20	15	1.83	20.25	20.13	4.00	7.33	18.39	
4-6	0	0	0.00	20.25	25.00	4.00	0.00	18.39	
4-7	0	0	0.00	20.25	25.00	4.00	0.00	18.39	
4-8	0	0	0.00	20.25	25.00	4.00	0.00	18.39	
4-9	0	0	0.00	20.25	25.00	4.00	0.00	18.39	
4-10	0	0	0.00	20.25	25.00	4.00	0.00	18.39	
4-end	25.00		4.75	25.00			0.78	**19.17**	**Total Collected Runoff (approx)**
5.90 in/hr									
6	0	0	0.00	0.00	0.00	0.00	0.00	0.00	
6-1	2	68	3.13	3.13	2.57	0.88	2.76	2.76	
6-2	4	5	0.95	4.08	4.04	12.00	11.40	14.16	
6-3	6	4	1.98	6.07	6.03	15.00	29.75	43.91	
6-4	8	4	2.00	8.07	8.03	15.00	30.00	73.91	
6-5	10	3.5	1.99	10.06	10.03	17.14	34.14	108.06	
6-6	12	3.5	2.00	12.06	12.03	17.14	34.29	142.34	
6-7	14	3.5	2.00	14.06	14.03	17.14	34.29	176.63	
6-8	16	3.5	2.00	16.06	16.03	17.14	34.29	210.91	
6-9	18	3.5	2.00	18.06	18.03	17.14	34.29	245.20	
6-10	20	3.5	2.00	20.06	20.03	17.14	34.29	279.49	
6-end	25.00		4.94	25.00			4.36	**283.85**	**Total Collected Runoff (approx)**

4-Jun-09

Slope #2

Sample Number	Test Time, minutes	Time per Gallon, sec	Interval Time, min	Total Time, min	Collection Mid-Time, min	Runoff Rate, gal/min	Associated Runoff, gal	Cumulative Runoff, gal	
2.05 in/hr									
2	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	
2-1	3.00	660	14.00	14.00	8.50	0.09	1.27	1.27	
2-2	15.00	300	6.00	20.00	17.50	0.20	1.20	2.47	
2-3	0.00	0	0.00	20.00	20.00	0.20	0.00	2.47	
2-4	0.00	0	0.00	20.00	20.00	0.20	0.00	2.47	
2-5	0.00	0	0.00	20.00	20.00	0.20	0.00	2.47	
2-6	0.00	0	0.00	20.00	20.00	0.20	0.00	2.47	
2-end	20.00		0.00	20.00			0.00	**2.47**	**Total Collected Runoff (approx)**
4.20 in/hr									
4	0	0	0.00	0.00	0.00	0.00	0.00	0.00	
4-1	2	228	5.80	5.80	3.90	0.26	1.53	1.53	
4-2	8	121	4.22	10.02	9.01	0.50	2.09	3.62	
4-3	12	38	2.62	12.63	12.32	1.58	4.13	7.75	
4-4	14	21	1.72	14.35	14.18	2.86	4.90	12.65	
4-5	16	12	1.85	16.20	16.10	5.00	9.25	21.90	
4-6	18	9	1.95	18.15	18.08	6.67	13.00	34.90	
4-7	20	7	1.97	20.12	20.06	8.57	16.86	51.76	
4-8	0	0	0.00	20.12	25.00	8.57	0.00	51.76	
4-9	0	0	0.00	20.12	25.00	8.57	0.00	51.76	
4-10	0	0	0.00	20.12	25.00	8.57	0.00	51.76	
4-end	25.00		4.88	25.00			1.29	**53.05**	**Total Collected Runoff (approx)**
5.80 in/hr									
6	0	0	0.00	0.00	0.00	0.00	0.00	0.00	
6-1	2	10	2.17	2.17	2.08	6.00	13.00	13.00	
6-2	4	6	1.93	4.10	4.05	10.00	19.33	32.33	
6-3	6	5	1.98	6.08	6.04	12.00	23.80	56.13	
6-4	8	4	1.98	8.07	8.03	15.00	29.75	85.88	
6-5	10	4	2.00	10.07	10.03	15.00	30.00	115.88	
6-6	12	3.5	1.99	12.06	12.03	17.14	34.14	150.03	
6-7	14	3.5	2.00	14.06	14.03	17.14	34.29	184.31	
6-8	16	3.5	2.00	16.06	16.03	17.14	34.29	218.60	
6-9	18	3.5	2.00	18.06	18.03	17.14	34.29	252.88	
6-10	20	3.5	2.00	20.06	20.03	17.14	34.29	287.17	
6-end	25.00		4.94	25.00			29.65	**316.82**	**Total Collected Runoff (approx)**

4-Jun-09

Slope #3

Sample Number	Test Time, minutes	Time per Gallon, sec	Interval Time, min	Total Time, min	Collection Mid-Time, min	Runoff Rate, gal/min	Associated Runoff, gal	Cumulative Runoff, gal	
1.75 in/hr									
2	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	
2-1	3.00	1020	20.00	20.00	11.50	0.06	1.18	1.18	
2-2	0.00	0	0.00	20.00	20.00	0.06	0.00	1.18	
2-3	0.00	0	0.00	20.00	20.00	0.06	0.00	1.18	
2-4	0.00	0	0.00	20.00	20.00	0.06	0.00	1.18	
2-5	0.00	0	0.00	20.00	20.00	0.06	0.00	1.18	
2-6	0.00	0	0.00	20.00	20.00	0.06	0.00	1.18	
2-end	20.00		0.00	20.00			0.00	**1.18**	**Total Collected Runoff (approx)**
3.70 in/hr									
4	0	0	0.00	0.00	0.00	0.00	0.00	0.00	
4-1	2	576	11.60	11.60	6.80	0.10	1.21	1.21	
4-2	12	425	7.48	19.08	15.54	0.14	1.06	2.26	
4-3	0	0	0.00	19.08	20.00	0.14	0.00	2.26	
4-4	0	0	0.00	19.08	20.00	0.14	0.00	2.26	
4-5	0	0	0.00	19.08	20.00	0.14	0.00	2.26	
4-6	0	0	0.00	19.08	20.00	0.14	0.00	2.26	
4-7	0	0	0.00	19.08	20.00	0.14	0.00	2.26	
4-8	0	0	0.00	19.08	20.00	0.14	0.00	2.26	
4-9	0	0	0.00	19.08	20.00	0.14	0.00	2.26	
4-10	0	0	0.00	19.08	20.00	0.14	0.00	2.26	
4-end	20.00		0.92	20.00			0.10	**2.36**	**Total Collected Runoff (approx)**
5.95 in/hr									
6	0	0	0.00	0.00	0.00	0.00	0.00	0.00	
6-1	2	35	2.58	2.58	2.29	1.71	4.43	4.43	
6-2	4	28	1.88	4.47	4.23	2.14	4.04	8.46	
6-3	6	6	1.63	6.10	6.05	10.00	16.33	24.80	
6-4	8	5	1.98	8.08	8.04	12.00	23.80	48.60	
6-5	10	4	1.98	10.07	10.03	15.00	29.75	78.35	
6-6	12	4	2.00	12.07	12.03	15.00	30.00	108.35	
6-7	14	4	2.00	14.07	14.03	15.00	30.00	138.35	
6-8	16	3.5	1.99	16.06	16.03	17.14	34.14	172.49	
6-9	18	3.5	2.00	18.06	18.03	17.14	34.29	206.78	
6-10	20	3.5	2.00	20.06	20.03	17.14	34.29	241.06	
6-end	25.00		4.94	25.00			8.47	**249.53**	**Total Collected Runoff (approx)**

Slope #1 - Sediment Concentration

	Sample Number	Test Time, minutes	Total Weight, g	Decanted Weight, g	Dry Weight, g	Bottle Weight, g	Dry Sediment Weight, mg	Total Collected Water Wt., g	Total Collected Volume of Water, l	Sediment Concentration, mg/l	Runoff Sampling Time	Time to Collect 1 gal	Associated Runoff, gal	Associated Sediment Conc, mg/l	Associated Solids Loss, lbs
2.2 in/hr	avg														
4-Jun-09	2-1	3.00	159.60		33.20	32.90	300.00	126.40	0.13	2373.42	3.00	1020	1.18	1631.44	0.02
	2-2	6.00	157.90		33.20	32.90	300.00	124.70	0.12	2405.77	0.00	0	0.00		0.00
	2-3	9.00	140.80		33.10	32.90	200.00	107.70	0.11	1857.01	0.00	0	0.00		0.00
	2-4	12.00	139.30		32.90	32.90	0.00	106.40	0.11	0.00	0.00	0	0.00		0.00
	2-5	15.00	184.70		33.10	32.90	200.00	151.60	0.15	1319.26	0.00	0	0.00		0.00
	2-6	18.00	142.20		33.10	32.90	200.00	109.10	0.11	1833.18	0.00	0	0.00		0.00
									AVG =	**1631.44**	20.00	0	0.00		0.00
4.30 in/hr	avg												**Total Solids Lost:**		**0.02**
4-Jun-09	4-1	2.00	278.4		33.60	32.90	700.00	244.80	0.24	2859.48	2.00	367	1.33	1715.08	0.02
	4-2	4.00	272.2		33.20	32.90	300.00	239.00	0.24	1255.23	12.00	142	2.64	19842.77	0.44
	4-3	6.00	286.3		33.30	32.90	400.00	253.00	0.25	1581.03	16.00	46	3.13	39682.54	1.04
	4-4	8.00	279.4		33.20	32.90	300.00	246.20	0.25	1218.52	18.00	25	3.96	43832.43	1.45
	4-5	10.00	274.1		33.30	32.90	400.00	240.80	0.24	1661.13	20.00	15	7.33	88829.07	5.43
	4-6	12.00	273.1		33.00	32.90	100.00	240.10	0.24	416.49	0.00	0	0.00		0.00
	4-7	14.00	300.2		43.00	32.90	10100.00	257.20	0.26	39269.05	0.00	0	0.00		0.00
	4-8	16.00	308		43.40	32.90	10500.00	264.60	0.26	39682.54	0.00	0	0.00		0.00
	4-9	18.00	302		44.20	32.90	11300.00	257.80	0.26	43832.43	0.00	0	0.00		0.00
	4-10	20.00	194.7		46.10	32.90	13200.00	148.60	0.15	88829.07	0.00	0	0.00		0.00
									AVG =	**22060.50**	25.00	0	0.78		0.00
5.90 in/hr	avg												**Total Solids Lost:**		**8.38**
4-Jun-09	6-1	2.00	288.1		33.20	32.90	300.00	254.90	0.25	1176.93	2.00	68.00	2.76	1176.93	0.03
	6-2	4.00	354.1		47.80	32.90	14900.00	306.30	0.31	48645.12	4.00	5.00	11.40	48645.12	4.63
	6-3	6.00	362.6		52.10	32.90	19200.00	310.50	0.31	61835.75	6.00	4.00	29.75	61835.75	15.35
	6-4	8.00	329		54.60	32.90	21700.00	274.40	0.27	79081.63	8.00	4.00	30.00	79081.63	19.79
	6-5	10.00	346.7		57.80	32.90	24900.00	288.90	0.29	86188.99	10.00	3.50	34.14	86188.99	24.55
	6-6	12.00	343.4		62.60	32.90	29700.00	280.80	0.28	105769.23	12.00	3.50	34.29	105769.23	30.26
	6-7	14.00	361.5		62.50	32.90	29600.00	299.00	0.30	98996.66	14.00	3.50	34.29	98996.66	28.32
	6-8	16.00	356.1		65.40	32.90	32500.00	290.70	0.29	111799.11	16.00	3.50	34.29	111799.11	31.98
	6-9	18.00	357.9		66.50	32.90	33600.00	291.40	0.29	115305.42	18.00	3.50	34.29	115305.42	32.98
	6-10	20.00	332.6		70.40	32.90	37500.00	262.20	0.26	143020.59	20.00	3.50	34.29	143020.59	40.91
									AVG =	**85181.94**	25.00	0.00	4.36	143020.59	5.20
														Total Solids Lost:	**234.00**

Slope #2 - Sediment Concentration

	Sample Number	Test Time, minutes	Total Weight, g	Decanted Weight, g	Dry Weight, g	Bottle Weight, g	Dry Sediment Weight, mg	Total Collected Water Wt., g	Total Collected Volume of Water, l	Sediment Concentration, mg/l	Runoff Sampling Time	Time to Collect 1 gal	Associated Runoff, gal	Associated Sediment Conc, mg/l	Associated Solids Loss, lbs
2.05 in/hr	avg														
4-Jun-09	2-1	3.00	254.8		33.10	32.90	200.00	221.70	0.22	902.12	3.00	660	1.27	780.70	0.01
	2-2	6.00	237.9		33.10	32.90	200.00	204.80	0.20	976.56	15.00	300	1.20	1247.26	0.01
	2-3	9.00	278.3		33.00	32.90	100.00	245.30	0.25	407.66	0.00	0	0.00		0.00
	2-4	12.00	272.2		33.10	32.90	200.00	239.10	0.24	836.47	0.00	0	0.00		0.00
	2-5	15.00	268.4		33.20	32.90	300.00	235.20	0.24	1275.51	0.00	0	0.00		0.00
	2-6	18.00	279.3		33.20	32.90	300.00	246.10	0.25	1219.02	0.00	0	0.00		0.00
									AVG =	**936.22**	20.00	0	0.00		0.00
4.20 in/hr	avg												**Total Solids Lost:**		**0.02**
4-Jun-09	4-1	2.00	299.2		33.60	32.90	700.00	265.60	0.27	2635.54	2.00	228	1.53	1752.23	0.02
	4-2	4.00	296.5		33.40	32.90	500.00	263.10	0.26	1900.42	8.00	121	2.09	1015.47	0.02
	4-3	6.00	310.6		33.10	32.90	200.00	277.50	0.28	720.72	12.00	38	4.13	3063.31	0.11
	4-4	8.00	331.1		33.20	32.90	300.00	297.90	0.30	1007.05	14.00	21	4.90	18394.06	0.75
	4-5	10.00	326.2		33.20	32.90	300.00	293.00	0.29	1023.89	16.00	12	9.25	95688.35	7.38
	4-6	12.00	327.6		33.80	32.90	900.00	293.80	0.29	3063.31	18.00	9	13.00	119957.54	13.01
	4-7	14.00	320.8		38.10	32.90	5200.00	282.70	0.28	18394.06	20.00	7	16.86	113708.82	15.99
	4-8	16.00	322.6		58.20	32.90	25300.00	264.40	0.26	95688.35	0.00	0	0.00		0.00
	4-9	18.00	349.4		66.80	32.90	33900.00	282.60	0.28	119957.54	0.00	0	0.00		0.00
	4-10	20.00	347.3		65.00	32.90	32100.00	282.30	0.28	113708.82	0.00	0	0.00		0.00
									AVG =	**35809.97**	25.00	0	1.29	113708.82	1.22
5.80 in/hr	avg												**Total Solids Lost:**		**38.51**
4-Jun-09	6-1	2.00	322.6		53.00	32.90	20100.00	269.60	0.27	74554.90	2.00	10.00	13.00	74554.90	8.09
	6-2	4.00	326.9		56.50	32.90	23600.00	270.40	0.27	87278.11	4.00	6.00	19.33	87278.11	14.08
	6-3	6.00	321.9		56.40	32.90	23500.00	265.50	0.27	88512.24	6.00	5.00	23.80	88512.24	17.58
	6-4	8.00	328.3		57.90	32.90	25000.00	270.40	0.27	92455.62	8.00	4.00	29.75	92455.62	22.95
	6-5	10.00	336.6		60.10	32.90	27200.00	276.50	0.28	98372.51	10.00	4.00	30.00	98372.51	24.62
	6-6	12.00	315.6		62.90	32.90	30000.00	252.70	0.25	118717.85	12.00	3.50	34.14	118717.85	33.82
	6-7	14.00	315.5		65.20	32.90	32300.00	250.30	0.25	129045.15	14.00	3.50	34.29	129045.15	36.91
	6-8	16.00	321.6		67.50	32.90	34600.00	254.10	0.25	136166.86	16.00	3.50	34.29	136166.86	38.95
	6-9	18.00	309.3		70.50	32.90	37600.00	238.80	0.24	157453.94	18.00	3.50	34.29	157453.94	45.04
	6-10	20.00	312.9		70.60	32.90	37700.00	242.30	0.24	155592.24	20.00	3.50	34.29	155592.24	44.51
									AVG =	**113814.94**	25.00	0.00	29.65	155592.24	38.49
													Total Solids Lost:		**325.04**

Slope #3 - Sediment Concentration

	Sample Number	Test Time, minutes	Total Weight, g	Decanted Weight, g	Dry Weight, g	Bottle Weight, g	Dry Sediment Weight, mg	Total Collected Water Wt., g	Total Collected Volume of Water, l	Sediment Concentration, mg/l	Runoff Sampling Time	Time to Collect 1 gal	Associated Runoff, gal	Associated Sediment Conc, mg/l	Associated Solids Loss, lbs
1.75 in/hr	avg														
4-Jun-09	2-1	3.00	179.7		32.90	32.90	0.00	146.80	0.15	0.00	3.00	1020.00	1.18	0.00	0.00
	2-2	6.00	203.2		32.90	32.90	0.00	170.30	0.17	0.00	0.00	0.00	0.00	0.00	0.00
	2-3	9.00	192.5		32.90	32.90	0.00	159.60	0.16	0.00	0.00	0.00	0.00	0.00	0.00
	2-4	12.00	191.4		32.90	32.90	0.00	158.50	0.16	0.00	0.00	0.00	0.00	0.00	0.00
	2-5	15.00	205.8		32.90	32.90	0.00	172.90	0.17	0.00	0.00	0.00	0.00	0.00	0.00
	2-6	18.00	190.5		32.90	32.90	0.00	157.60	0.16	0.00	0.00	0.00	0.00		0.00
									AVG =	**0.00**	20.00	0.00	0.00		0.00
3.70 in/hr	avg												**Total Solids Lost:**		**0.00**
4-Jun-09	4-1	2.00	279.4		32.90	32.90	0.00	246.50	0.25	0.00	2.00	576.00	1.21	0.00	0.00
	4-2	4.00	253.8		32.90	32.90	0.00	220.90	0.22	0.00	12.00	425.00	1.06	18623.33	0.16
	4-3	6.00	248.4		32.90	32.90	0.00	215.50	0.22	0.00	0.00	0.00	0.00	0.00	0.00
	4-4	8.00	244.8		32.90	32.90	0.00	211.90	0.21	0.00	0.00	0.00	0.00	0.00	0.00
	4-5	10.00	254.8		32.90	32.90	0.00	221.90	0.22	0.00	0.00	0.00	0.00	4310.34	0.00
	4-6	12.00	265.9		33.90	32.90	1000.00	232.00	0.23	4310.34	0.00	0.00	0.00	12376.24	0.00
	4-7	14.00	278.3		35.90	32.90	3000.00	242.40	0.24	12376.24	0.00	0.00	0.00	15631.11	0.00
	4-8	16.00	292.8		36.90	32.90	4000.00	255.90	0.26	15631.11	0.00	0.00	0.00	22805.02	0.00
	4-9	18.00	302		38.90	32.90	6000.00	263.10	0.26	22805.02	0.00	0.00	0.00	37993.92	0.00
	4-10	20.00	306.1		42.90	32.90	10000.00	263.20	0.26	37993.92	0.00	0.00	0.00		0.00
									AVG =	**9311.66**	20.00	0.00	0.10	37993.92	0.03
5.95 in/hr	avg												**Total Solids Lost:**		**0.19**
4-Jun-09	6-1	2.00	273.7		32.90	32.90	0.00	240.80	0.24	0.00	2.00	35.00	4.43	0.00	0.00
	6-2	4.00	331.7		43.40	32.90	10500.00	288.30	0.29	36420.40	4.00	28.00	4.04	36420.40	1.23
	6-3	6.00	360.1		49.60	32.90	16700.00	310.50	0.31	53784.22	6.00	6.00	16.33	53784.22	7.33
	6-4	8.00	363.6		51.70	32.90	18800.00	311.90	0.31	60275.73	8.00	5.00	23.80	60275.73	11.97
	6-5	10.00	353.5		53.60	32.90	20700.00	299.90	0.30	69023.01	10.00	4.00	29.75	69023.01	17.13
	6-6	12.00	355.1		56.40	32.90	23500.00	298.70	0.30	78674.26	12.00	4.00	30.00	78674.26	19.69
	6-7	14.00	365.7		58.6	32.90	25700.00	307.10	0.31	83686.10	14.00	4.00	30.00	83686.10	20.95
	6-8	16.00	359.5		62.5	32.90	29600.00	297.00	0.30	99663.30	16.00	3.50	34.14	99663.30	28.39
	6-9	18.00	345		66.40	32.90	33500.00	278.60	0.28	120244.08	18.00	3.50	34.29	120244.08	34.40
	6-10	20.00	331.5		72.30	32.90	39400.00	259.20	0.26	152006.17	20.00	3.50	34.29	152006.17	43.48
									AVG =	**75377.73**	25.00	0.00	8.47	75377.73	5.33
													Total Solids Lost:		**189.89**

RUN #1 - Sediment Weights

Total Dry Sediments: 0.02

2 in/hr	Collected	Typ. TSS in Decanted Collected Runoff, lb/gal
Wt. Of pan + dry soil, lb	0.52	
Wt. Of pan, lb	0.5	
Wt. Of dry soil, lb	0.02	0.0016
		Collected Sediments, gal
		1.2
Dry Collected Sediments, lbs	0.02	0.00

Total Dry Sediments: 8.24

4 in/hr	Collected	Typ. TSS in Decanted Collected Runoff, lb/gal
Wt. Of pan + dry soil, lb	8.71	
Wt. Of pan, lb	0.5	
Wt. Of dry soil, lb	8.21	0.0016
		Collected Sediments, gal
		19.2
Dry Collected Sediments, lbs	8.21	0.03

Total Dry Sediments: 233.45

6 in/hr	Collected	Typ. TSS in Decanted Collected Runoff, lb/gal
Wt. Of pan + dry soil, lb	251	
Wt. Of pan, lb	18	
Wt. Of dry soil, lb	233	0.0016
		Collected Sediments, gal
		283.8
Dry Collected Sediments, lbs	233.00	0.45

RUN #2 - Sediment Weights

Total Dry Sediments:	**0.03**	
2 in/hr	Collected	Typ. TSS in Decanted Collected Runoff, lb/gal
Wt. Of pan + dry soil, lb	0.53	
Wt. Of pan, lb	0.5	
Wt. Of dry soil, lb	0.03	0.0016
		Collected Sediments, gal
		2.5
Dry Collected Sediments, lbs	0.03	0.00

Total Dry Sediments:	**40.18**	
4 in/hr	Collected	Typ. TSS in Decanted Collected Runoff, lb/gal
Wt. Of pan + dry soil, lb	42.1	
Wt. Of pan, lb	2	
Wt. Of dry soil, lb	40.1	0.0016
		Collected Sediments, gal
		53.0
Dry Collected Sediments, lbs	40.10	0.08

Total Dry Sediments:	**323.51**	
6 in/hr	Collected	Typ. TSS in Decanted Collected Runoff, lb/gal
Wt. Of pan + dry soil, lb	341	
Wt. Of pan, lb	18	
Wt. Of dry soil, lb	323	0.0016
		Collected Sediments, gal
		316.8
Dry Collected Sediments, lbs	323.00	0.51

RUN #3 - Sediment Weights

Total Dry Sediments: 0.00

2 in/hr	Collected	Typ. TSS in Decanted Collected Runoff, lb/gal
Wt. Of pan + dry soil, lb	0.5	
Wt. Of pan, lb	0.5	
Wt. Of dry soil, lb	0	0.0016
Wt. Of water, lb		Collected Sediments, gal
		1.2
Dry Collected Sediments, lbs	0.00	0.00

Total Dry Sediments: 0.20

4 in/hr	Collected	Typ. TSS in Decanted Collected Runoff, lb/gal
Wt. Of pan + dry soil, lb	0.7	
Wt. Of pan, lb	0.5	
Wt. Of dry soil, lb	0.2	0.0016
		Collected Sediments, gal
		2.4
Dry Collected Sediments, lbs	0.20	0.00

Total Dry Sediments: 190.40

6 in/hr	Collected	Typ. TSS in Decanted Collected Runoff, lb/gal
Wt. Of pan + dry soil, lb	201	
Wt. Of pan, lb	11	
Wt. Of dry soil, lb	190	0.0016
		Collected Sediments, gal
		249.5
Dry Collected Sediments, lbs	190.00	0.40

APPENDIX B – TEST SOIL

Test Soil Grain Size Distribution Curve

Compaction Curves

QORE
PROPERTY SCIENCES

PARTICLE- SIZE DISTRIBUTION TEST REPORT

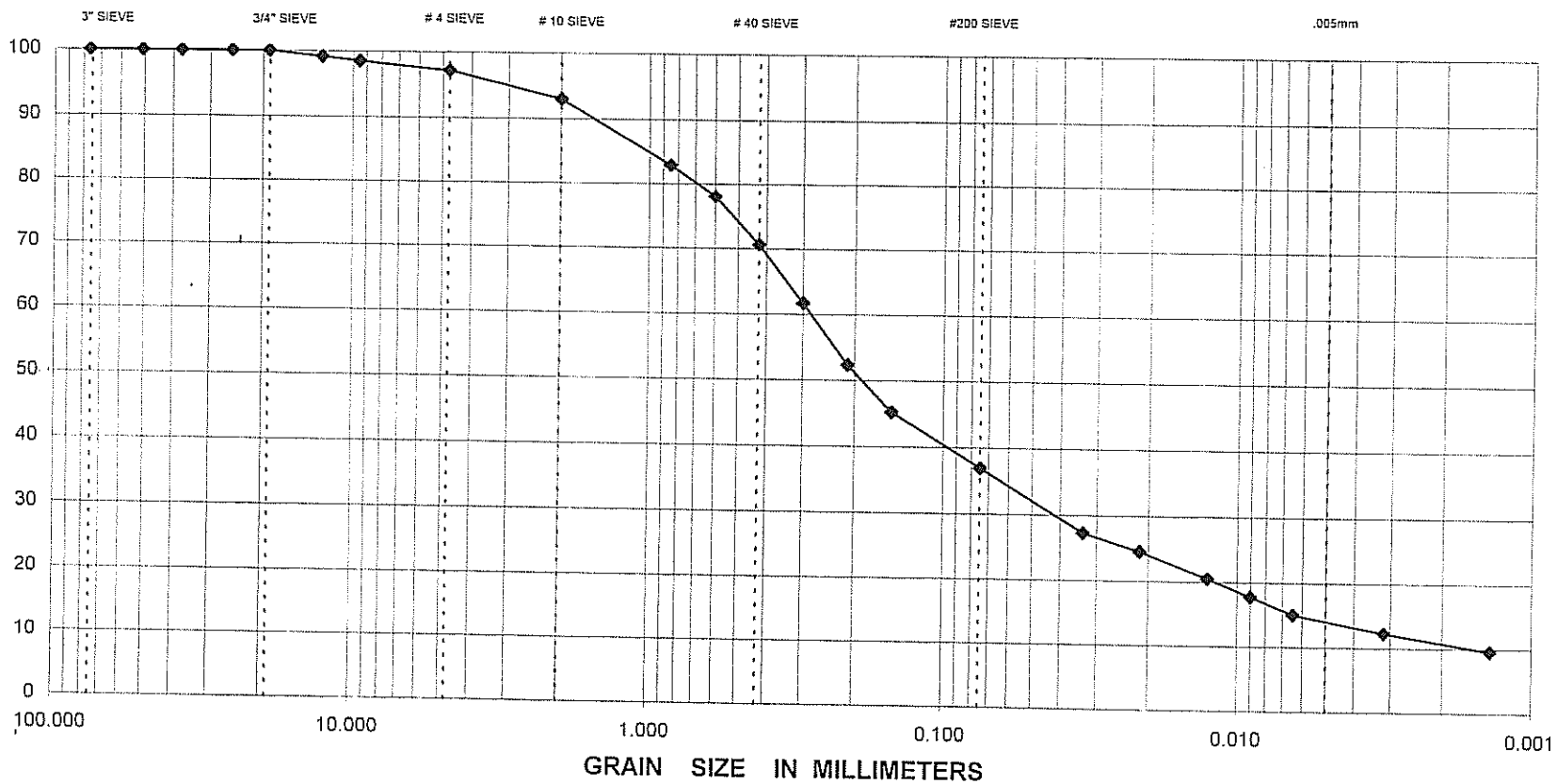
SIEVE AND HYDROMETER ASTM D422

REV1,9/17/03

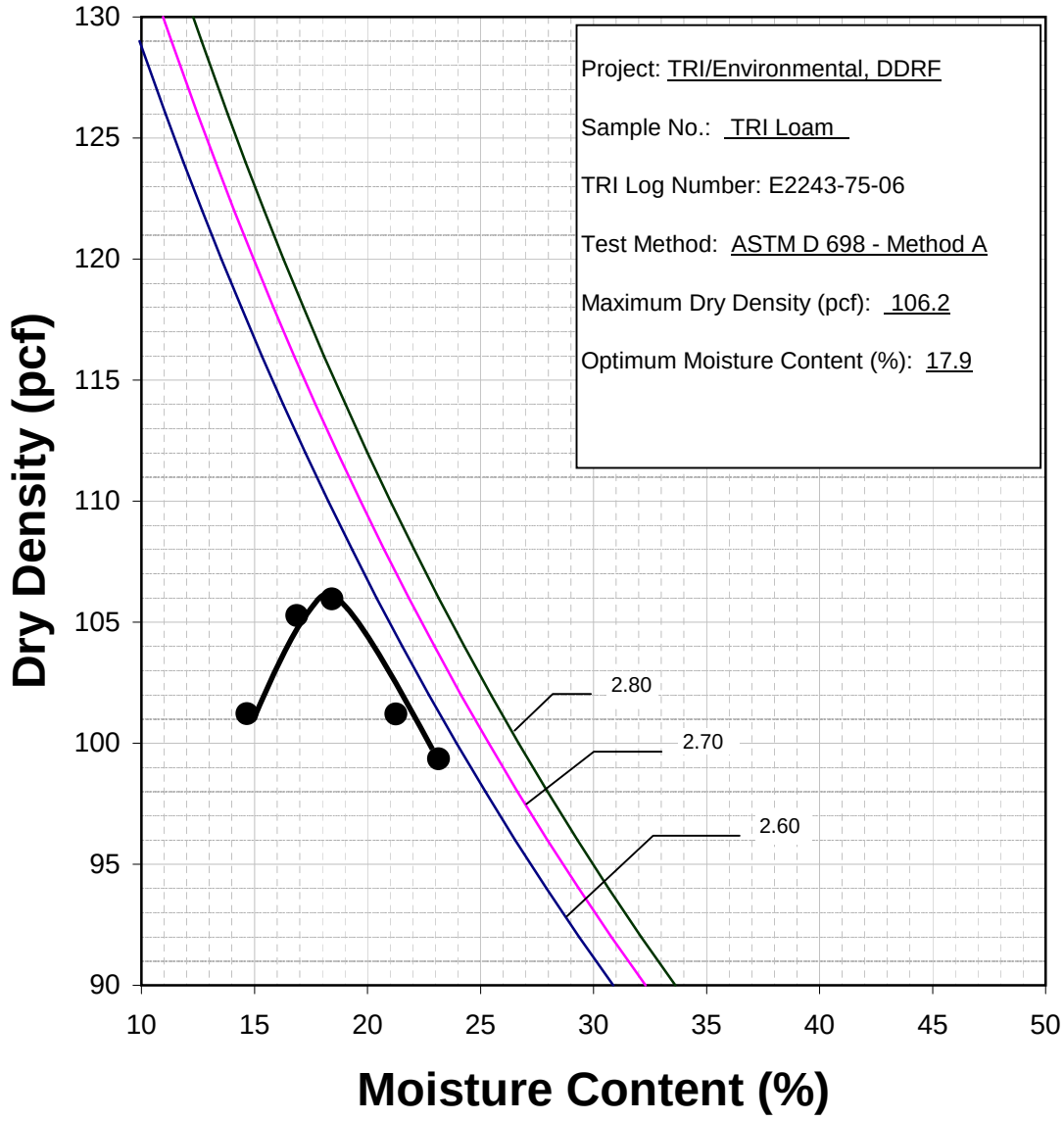
AAR GAI AASHTO R18

JOB NAME :	Sprague & Sprague - General Laboratory Testing						
JOB NO. :	7752	REPORT NO. :	118471	DATE :	8/6/07	REVIEWED BY :	EWW
BORING / PIT NO. :	-	DEPTH / ELEV. :	-	SAMPLE NO. :	1	SAMPLE TYPE :	Bulk
SAMPLE LOCATION :							
SOIL DESCRIPTION :	Brown Silty Fine to Medium Sand					SP. GRAVITY, Gs :	2.63
LIQUID LIMIT, % :	34	PLASTICITY INDEX , % :	9	MOISTURE , % :	-	FINES , % :	36.9
D10 , MM :	0.0015	D30 , MM :	0.042	D60 , MM :	0.28	COEFF. OF CURVATURE , C_C :	4.2
CLASSIFICATION		UNIFIED :	SM	AASHTO :	-	COEFF. OF UNIFORMITY , C_U :	186.7

GRAVEL		SAND			FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY



Proctor Compaction Test



John M. Allen, E.I.T 10/12/2008
Quality Review/Date

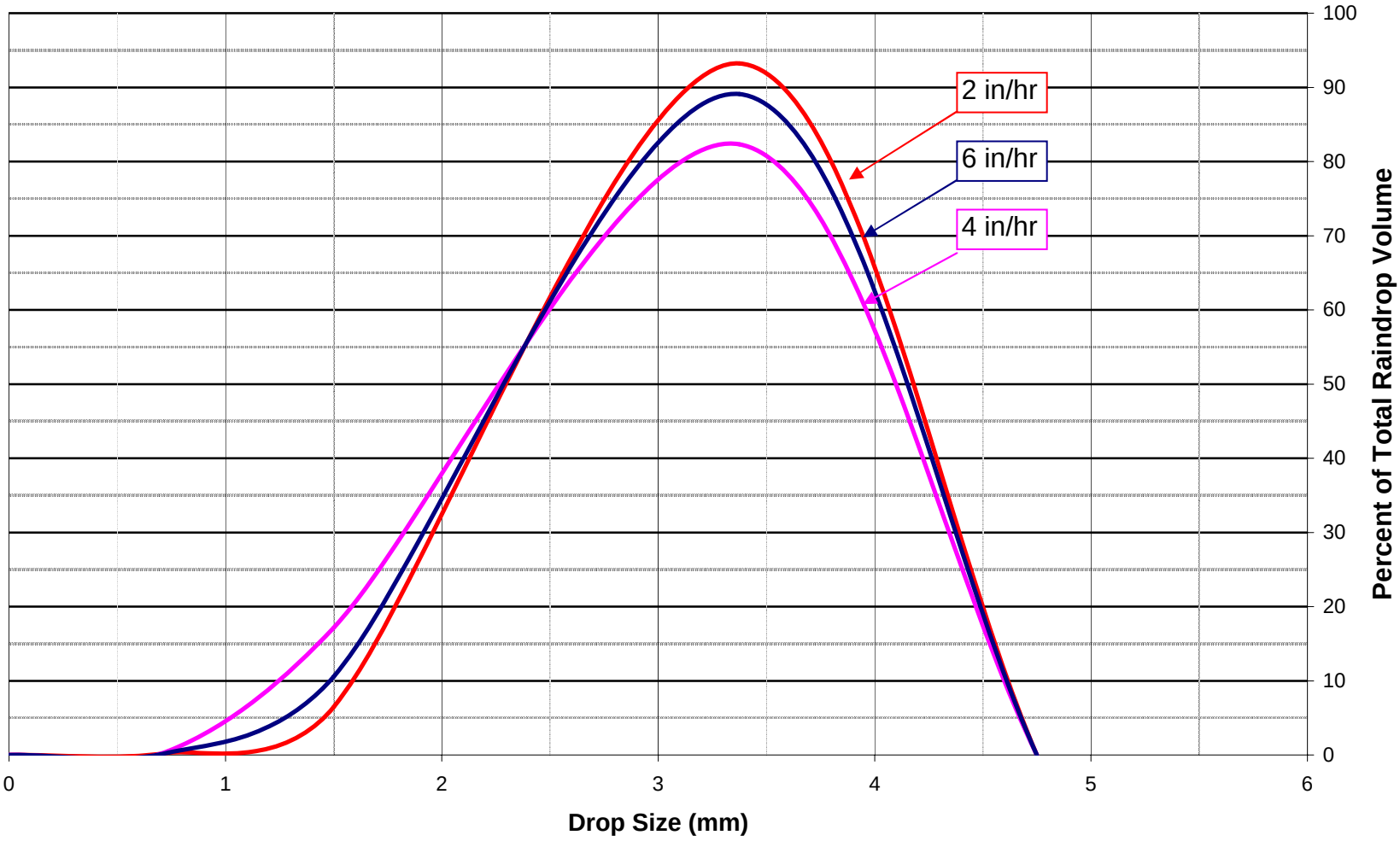
APPENDIX C – RAINFALL DATA

Raindrop Size Distribution

Rainfall Calibration

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

Raindrop Size Distribution - DDRF



DDRF

Rainfall Calibration

Main Pump System

Date: 1-Oct-08 Start Time: 6:30 AM End Time: 6:40 AM

Test Time: 10.00 min. (circle "x" for open valves)

TOP OF SLOPE

X **X** x x

P = 9 psi

A

	d = 0.35 in i = 2.10 in/hr	**1**	**2**	d = 0.35 in **B** i = 2.10 in/hr	**X** P = 9 psi **X**
x **X** P = 9 psi	d = 0.35 in i = 2.10 in/hr **C**	**3**	**4**	d = 0.35 in i = 2.10 in/hr	x x
x x	d = 0.4 in i = 2.40 in/hr	**5**	**6**	d = 0.4 in **D** i = 2.40 in/hr	x P = 9 psi **X**
x **X** P = 9 psi	d = 0.35 in i = 2.10 in/hr **E**	**7**	**8**	d = 0.35 in i = 2.10 in/hr	x x
x x	d = 0.4 in i = 2.40 in/hr	**9**	**10**	d = 0.4 in **F** i = 2.40 in/hr	x P = 9 psi x
x x P = 9 psi	d = 0.35 in i = 2.10 in/hr **G**	**11**	**12**	d = 0.35 in i = 2.10 in/hr	**X** x
X x	d = 0.4 in i = 2.40 in/hr	**13**	**14**	d = 0.4 in **H** i = 2.40 in/hr	x P = 9 psi x
x x P = 9 psi	d = 0.35 in i = 2.10 in/hr **I**	**15**	**16**	d = 0.35 in i = 2.10 in/hr	**X** x
X **X**	d = 0.35 in i = 2.10 in/hr	**17**	**18**	d = 0.35 in **J** i = 2.10 in/hr	x P = 9 psi x
	d = 0.35 in i = 2.10 in/hr	**19**	**20**	d = 0.35 in i = 2.10 in/hr	**X** **X**

Average Wind: 0 mph

Average Depth: 0.365 in.

Average Rainfall Intensity: 2.19 in/hr

Christiansen Uniformity Coefficient: 94

DDRF

Rainfall Calibration

Main Pump System

Date: 1-Oct-08 Start Time: 6:50 AM End Time: 7:00 AM

Test Time: 10.00 min. (circle "x" for open valves)

TOP OF SLOPE

X X X x

P = 9 psi

A

	d = 0.65 in i = 3.90 in/hr	**1**	**2**	d = 0.65 in **B** i = 3.90 in/hr	**X** P = 9 psi **X**
X **X** P = 9 psi	d = 0.65 in i = 3.90 in/hr **C**	**3**	**4**	d = 0.6 in i = 3.60 in/hr	**X** x
x x	d = 0.7 in i = 4.20 in/hr	**5**	**6**	d = 0.7 in **D** i = 4.20 in/hr	**X** P = 9 psi **X**
X **X** P = 9 psi	d = 0.7 in i = 4.20 in/hr **E**	**7**	**8**	d = 0.7 in i = 4.20 in/hr	x x
x x	d = 0.75 in i = 4.50 in/hr	**9**	**10**	d = 0.7 in **F** i = 4.20 in/hr	x P = 9 psi **X**
x **X** P = 9 psi	d = 0.7 in i = 4.20 in/hr **G**	**11**	**12**	d = 0.7 in i = 4.20 in/hr	**X** x
X x	d = 0.7 in i = 4.20 in/hr	**13**	**14**	d = 0.7 in **H** i = 4.20 in/hr	x P = 9 psi x
x **X** P = 9 psi	d = 0.7 in i = 4.20 in/hr **I**	**15**	**16**	d = 0.7 in i = 4.20 in/hr	**X** **X**
X **X**	d = 0.7 in i = 4.20 in/hr	**17**	**18**	d = 0.65 in **J** i = 3.90 in/hr	x P = 9 psi **X**
	d = 0.65 in i = 3.90 in/hr	**19**	**20**	d = 0.65 in i = 3.90 in/hr	**X** **X**

Average Wind: 0 mph

Average Depth: 0.6825 in.

Average Rainfall Intensity: 4.095 in/hr

Christiansen Uniformity Coefficient: 96

DDRF

Rainfall Calibration

Main Pump System

Date: 1-Oct-08 Start Time: 7:10 AM End Time: 7:20 AM

Test Time: 10.00 min. (bold "X" for open valves)

TOP OF SLOPE

X X X X

P = 9 psi

A

		d = 0.95 in i = 5.70 in/hr		**1**	**2**	d = 0.95 in **B** i = 5.70 in/hr	**X** P = 9 psi **X**
X		d = 1.05 in		**3**	**4**	d = 0.9 in	**X**
X	P = 9 psi	i = 6.30 in/hr	**C**			i = 5.40 in/hr	**X**
X		d = 1 in		**5**	**6**	d = 0.95 in	**X**
x		i = 6.00 in/hr				**D** i = 5.70 in/hr	P = 9 psi **X**
X		d = 1.15 in		**7**	**8**	d = 1 in	**X**
X	P = 9 psi	i = 6.90 in/hr	**E**			i = 6.00 in/hr	x
X		d = 1.1 in		**9**	**10**	d = 1.05 in	**X**
x		i = 6.60 in/hr				**F** i = 6.30 in/hr	P = 9 psi **X**
x		d = 1.1 in		**11**	**12**	d = 1.05 in	**X**
X	P = 9 psi	i = 6.60 in/hr	**G**			i = 6.30 in/hr	x
X		d = 1.15 in		**13**	**14**	d = 0.95 in	x
X		i = 6.90 in/hr				**H** i = 5.70 in/hr	P = 9 psi **X**
X		d = 1.05 in		**15**	**16**	d = 0.9 in	**X**
X	P = 9 psi	i = 6.30 in/hr	**I**			i = 5.40 in/hr	**X**
X		d = 1.1 in		**17**	**18**	d = 0.9 in	**X**
X		i = 6.60 in/hr				**J** i = 5.40 in/hr	P = 9 psi **X**
		d = 1.05 in		**19**	**20**	d = 0.85 in	**X**
		i = 6.30 in/hr				i = 5.10 in/hr	**X**

Average Wind: 0 mph

Average Depth: 1.01 in.

Average Rainfall Intensity: 6.06 in/hr

Christiansen Uniformity Coefficient: 93

APPENDIX D – LABORATORY QUALIFICATIONS

Testing Expertise

TRI/Environmental (TRI) is a leading, accredited geosynthetic, plastic pipe, and erosion and sediment control product testing laboratory. TRI's large-scale erosion and sediment control testing facility in the upstate of South Carolina at the Denver Downs Research Farm (DDRF) expands on our industry-leading index and bench-scale erosion and sediment control testing capabilities. The full-scale erosion control testing facility is initially focused on the following full-scale erosion and sediment control performance tests:

- ASTM D 6459: Determination of Rolled Erosion Control Product (RECP) Performance in Protecting Hillslopes from Rainfall-Induced Erosion;
- ASTM D 6460: Determination of Rolled Erosion Control Product (RECP) Performance in Protecting Earthen Channels from Stormwater-Induced Erosion;
- ASTM D 7208: Determination of Temporary Ditch Check Performance in Protecting Earthen Channels from Stormwater-Induced Erosion.

Technical Oversight

Joel Sprague, P.E., TRI's Senior Engineer provides technical oversight of all of TRI's erosion and sediment control testing and can be contacted at:

Mr. C. Joel Sprague, Senior Engineer
PO Box 9192, Greenville, SC 29604
Ph: 864/242-2220; Fax 864/242-3107; cjoelsprague@cs.com

Mr. Sprague has been involved with the design of erosion and sediment control systems and the research, development, and application of erosion and sediment control products/materials for many years. He was the lead consultant in the development of bench-scale testing procedures for the Erosion Control Technology Council. Mr. Sprague has authored numerous technical papers on his research and is readily available to assist clients with their research and testing needs.

Operations Management

Sam Allen, TRI's Division Vice President provides operational management of all TRI laboratories and can be contacted at:

Mr. Sam Allen, Vice President & Program Manager
9063 Bee Caves Road
Austin, TX 78733
Ph: 512/263-2101; Fax: 512/263-2558; sallen@tri-env.com

Mr. Allen pioneered the laboratory index testing of rolled erosion control products (RECPs) and has been actively involved in the development and standardization of testing protocol and apparatus for more than 10 years. He set up and oversees TRI's erosion and sediment control testing laboratories. His oversight responsibilities include test coordination, reporting, and failure resolution associated with the National Transportation Product Evaluation Program (NTPEP) for RECPs.