

Large-Scale Channel Erosion Testing (ASTM D 6460 modified)

of

Flexamat Channel Lining over Sandy Loam

February 2009

Submitted to: Motz Enterprises, Inc. 9415 Montgomery Rd, Ste H Cincinnati, Ohio 45242

Attn: Mr. Jim Motz

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

C. Joel Sprague Project Manager

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February 23, 2009

Mr. Jim Motz

Motz Enterprises, Inc. 9415 Montgomery Rd, Ste H Cincinnati, Ohio 45241

E-mail: mmotz@flexamat.com

Subject: Channel Testing of Flexamat over Sandy Loam (Log #2278-01-34)

Dear Mr. Motz:

This letter report presents the results for large-scale channel erosion tests performed on Flexamat channel lining over Sandy loam. Included are data developed for target hydraulic shears ranging from 4 to 16 psf (0.2 to 0.8 kPa). All testing work was performed in general accordance with the ASTM D 6460, *Standard Test Method for Determination of Rolled Erosion Control Product (RECP) Performance in Protecting Earthen Channels from Stormwater-Induced Erosion,* except, the permissible shear was projected rather than interpolated. Generated results were used to develop the following permissible or limiting shear (τ_{limit}) and limiting velocity (V_{limit}) for the tested material:

 $\tau_{\text{limit FLEXAMAT(std)}} = 24 + \text{psf}$ $V_{\text{limit FLEXAMAT(std)}} = 19 + \text{ft/sec}$

TRI is pleased to present this *final* report. 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



CHANNEL TESTING REPORT

FLEXAMAT over Sandy loam

TESTING EQUIPMENT AND PROCEDURES

Overview of Test and Apparatus

TRI/Environmental, Inc.'s (TRI's) large-scale channel 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 was performed in a rectangular flume having a 30% slope using a loamy soil test section. The concentrated flow is produced by gravity from an adjacent pond. Four sequential, increasing flows are applied to each test section for 30 minutes each to achieve a range of hydraulic shear stresses in order to define the permissible, or limiting, shear stress, τ_{limit} , which is the shear stress necessary to cause an average of 0.5 inch of soil loss over the entire channel bottom. Testing is performed in accordance with ASTM D 6460 protocol, except the permissible shear was projected rather than interpolated. Tables and graphs of shear versus soil loss are generated from the accumulated data.

Erosion Control Product

The following index properties were determined from testing the FLEXAMAT Erosion Control Matting.

Index Property / Test	Units	Values
Flexamat Product	style	Flex-a-mat Standard
Block size	(length x width)	6.5 in x 5.5 in
Block weight	lbs	3.0
Block Ground Cover	%	75
Reinforcing Grid	style	Fornit 30/30
Underlayment	style	Fortrac 3D-30
Straw coverage rate	oz/sy	12 oz/sy

Table 1. Tested FLEXAMAT Index Properties

Test Soil

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



Soil Characteristic	Test Method	Value
% Gravel		7
% Sand	ASTM D 422	60
% Silt	ASTIVI D 422	25
% Clay		8
Liquid Limit, %	— ASTM D 4318	32
Plasticity Index, %	ASTIVI D 4510	5
Soil Classification	USDA	Sandy Loam
Soil Classification	USCS	Silty Sand (SM)

Table 2. TRI-Loam Characteristics

Preparation of the Test Channels

The test channels undergo a "standard" preparation procedure prior to each test. First, any rills or depressions resulting from previous testing are filled in with test soil. The entire test channel is then tilled to a depth not less than four inches. The test channel is then raked and formed to create a channel bottom that is level side-to-side and at a smooth 30% slope top-to-bottom. Finally, a vibrating plate compactor is run over the channel to achieve 90% standard Proctor compaction. The submitted erosion control product is then installed as directed by the client.

Installation of Erosion Control Product in Test Channel

As noted, the submitted erosion control product is installed as directed by the client. For the tests reported herein, the erosion control product was installed as follows:

- Straw placed uniformly on soil surface;
- Underlayment matting placed overtop the straw;
- o FLEXAMAT unrolled over the straw/matting.

Note that anchorage was provided at the top of the flume.

Specific Test Procedure

Immediately prior to testing, the black plastic is removed from the test channel and initial soil surface elevation readings are made at predetermined cross-sections. The channel is then exposed to sequential 30-minute flows having typical target hydraulic shear stresses of 4, 8, 12, and 16 psf. During the testing, flow depth and corresponding flow velocity measurements are taken at the predetermined cross-section locations. Between flow events, the flow is stopped and soil surface elevation measurements are made to facilitate calculation of soil loss. Flows are then increased to achieve the subsequent shear target in an attempt to create more than 0.5 inches of soil loss. $\frac{1}{2}$ -inch of soil loss was not accomplished prior to reaching maximum flow capacity. Pictures of channel testing are shown in Figures 1 thru 8.



FLEXAMAT over Sandy loam - Channel Erosion Testing February 23, 2009 Page 5



Figure 1. Rectangular Channel Setup



Figure 2. Gravity Flow to Flume



Figure 3. Channel Flow Velocity Measurement (typical)



Figure 4. Low Flow in Channel



Figure 5. Medium Flow in Channel



Figure 6. High Flow in Channel





Figure 7. Rect. Channel After High Flow

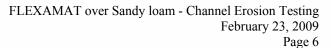




Figure 8. Channel After Matting Removed (no apparent soil surface disruption)

TEST RESULTS

Average soil loss and the associated hydraulic shear calculated from flow and depth measurements made 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 flow depth and velocity into an hydraulic shear stress and the soil loss measurements into and average Clopper Soil Loss Index (CSLI). A graph of shear versus soil loss for the protected condition is shown in Figure 9. The associated velocities are plotted in Figure 10. The graphs include a polynomial regression line fit to the test data to facilitate a projection of the limiting shear stress, τ_{limit} , and limiting velocity, V_{limit} , since $\frac{1}{2}$ -inch of soil loss was not achieved during testing.

Test # (run # - target shear)	Flow depth (in)	Flow velocity (fps)	Flow (cfs)	Manning's roughness, n	Max Bed Shear Stress (psf)	CSLI (in)	Cumm. CSLI (in)
R1-4	3.79	6.56	4.13	0.058	5.82	-0.06	-0.06
R1-8	5.07	8.88	7.48	0.052	7.79	-0.05	-0.11
R1-12	6.99	11.06	12.87	0.051	10.74	-0.07	-0.18
R1-16	11.03	14.88	27.30	0.052	16.95	-0.11	-0.29
R2-4	3.61	6.38	3.82	0.058	5.55	-0.04	-0.04
R2-8	5.21	8.69	7.53	0.054	8.00	-0.05	-0.09
R2-12	7.10	10.81	12.77	0.053	10.92	-0.05	-0.14
R2-16	10.80	14.56	26.19	0.052	16.60	-0.11	-0.25
R3-4	3.53	6.31	3.70	0.057	5.42	-0.04	-0.04
R3-8	5.31	8.56	7.58	0.055	8.17	-0.07	-0.11
R3-12	6.88	10.63	12.17	0.053	10.57	-0.07	-0.17
R3-16	10.88	14.88	26.95	0.051	16.71	-0.13	-0.30

 Table 3. Summary Data Table – Protected Test Reach



Using the test procedure and data evaluation technique described herein, the limiting shear stress shown in Table 4 was determined using the following equation:

$$\tau_{\text{limit}} = \gamma \text{ d } S$$

where: τ_{limit} , = limiting shear stress;

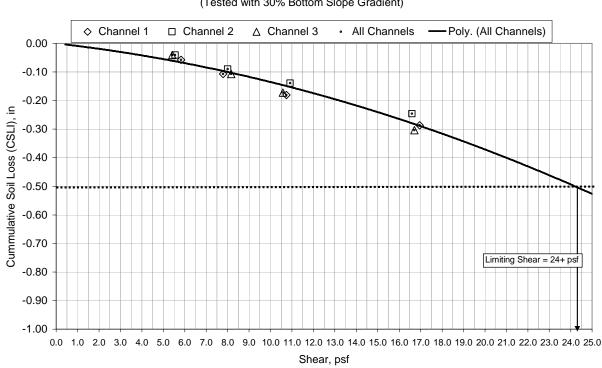
 γ = unit weight of water, 62.4pcf;

d = depth of water, ft

S = channel slope, 0.30

Table 4. Overall C-Factor

Product	Limiting Shear, T _{limit}	Limiting Velocity, V _{limit}
FLEXAMAT - standard	24+ psf	19+ ft/sec

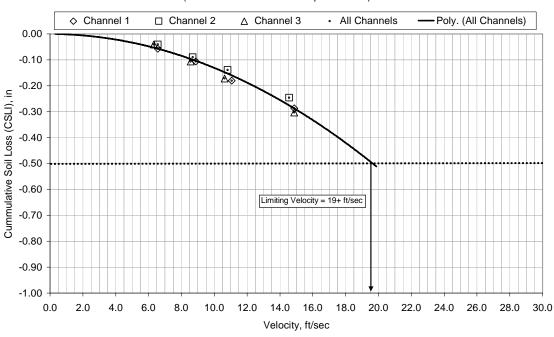


Limiting Shear via ASTM D 6460 FLEXAMAT (Tested with 30% Bottom Slope Gradient)

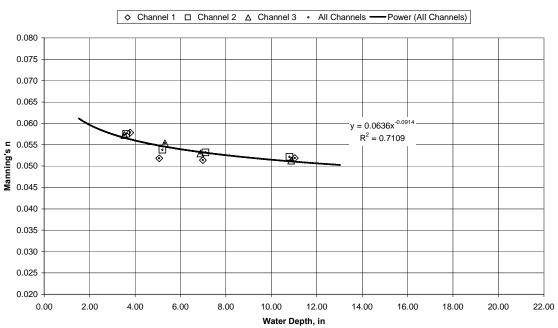
Figure 11. Shear Stress vs. Soil Loss – Tested Product



Limiting Velocity via ASTM D 6460 FLEXAMAT (Tested with 30% Bottom Slope Gradient)







Manning's n vs. Water Depth FLEXAMAT (Tested with 30% Bottom Slope Gradient)

Figure 13. Roughness vs. Flow Depth – Tested Product



CONCLUSIONS

Rectangular (vertical wall) channel (flume) tests were performed in accordance with ASTM D 6460 using sandy loam soil protected with FLEXAMAT. Testing in a rectangular (vertical wall) channel was conducted to achieve increasing shear levels in an attempt to cause at least 0.5-inch of soil loss. In this testing, 0.5-inches of soil loss was not achieved before reaching the maximum available flows (i.e. shear stress and velocity). Figure 11 shows the maximum bottom shear stress and associated soil loss from each flow event along with a projection of the shear stress at which 0.5 inches of accumulated soil loss would be expected to occur. This projection shows an allowable shear stress for the standard FLEXAMAT system to be over 24 psf.



APPENDIX A – RECORDED DATA

Test Record Sheets

	CHANNEL 1 - SHEA	R STRESS 1	Date:	2/14/09		Start Time:	12:00 PM	End Time:	12:30 PM	
	CHANNEL 1 - SHEA	AR STRESS I	Soil:	Loam	Target	Shear (psf):	6.00	Slope:	30%	
40	ft long flume	20 ft test section			F	lexamat Pe	rmanent Cha	nnel Lining I	Mat	
	rpms	2 ft wide flume					т	EST DATA		
	1 2 FLOW	3	Outlet Weir	1	2	3	-			
			Water Depth, in		12.00					
	r width (ft) = $\frac{4}{1000}$		Water Velocity, ft/s		3.00					
0	ft A B		Flow Rate, cfs	0.00	12.00	0.00				
			Cross-section 1	A	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, c
		-	inal Surface Elev, cm	28.5	26.5	28		6		38.0
		l o ero	ded Surface Elev, cm	28	26.5	28	Vavg (fps) =	6.00	Bed Max Shear Stress	
			Soil Loss / Gain, cm	-0.5	0	0	navg =	0.067	(psf)	Water Depth (in
	4		Clopper Soil Loss, cm	-0.5	0	0	Flow (cfs) =	4.13	6.35	4.13
2	ft		0		-	oss/Gain, in	-0.07		Avg Clopper Soil Loss, in	-0.07
		Talada	Cross-section 2	A	B	C	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, c 39.0
		-	inal Surface Elev, cm ded Surface Elev, cm	28.5 28.5	28 28	30.5 30	Vavg (fps) =	6 6.00		39.0
		10 810	Soil Loss / Gain, cm	0	0	-0.5	navg (ips) =	0.065	Bed Max Shear Stress (psf)	Water Depth (in
			Clopper Soil Loss, cm	0	0	-0.5	Flow (cfs) =	4.00	6.15	4.00
4	ft) i i i	Slopper Son Loss, cm			oss/Gain, in	-0.07	4.00	Avg Clopper Soil Loss, in	-0.07
			Cross-section 3	A	B	C	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, c
		To orig	inal Surface Elev, cm	30	30	31	v @ 0.20	6.5	V @ 0.00	40.0
		-	ded Surface Elev, cm	30	30	31	Vavg (fps) =	6.50	D 111 01	+0.0
		10 810	Soil Loss / Gain, cm	0	0	0	navg (ips) =	0.058	Bed Max Shear Stress (psf)	Water Depth (in
		(Clopper Soil Loss, cm	0	0	0	Flow (cfs) =	4.12	5.85	3.81
6	ft			v		oss/Gain, in	0.00		Avg Clopper Soil Loss, in	0.00
			Cross-section 4	А	В	C	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, c
		To orig	inal Surface Elev, cm	32	31	32.5		6.5	. 0 0.00	41.5
		-	ded Surface Elev, cm	32	31	32	Vavg (fps) =	6.50	Red May Charas Ota	
			Soil Loss / Gain, cm	0	0	-0.5	navg =	0.059	Bed Max Shear Stress (psf)	Water Depth (in
		(Clopper Soil Loss, cm	0	0	-0.5	Flow (cfs) =	4.19	5.95	3.87
8	ft			Av	g Bottom L	oss/Gain, in	-0.07		Avg Clopper Soil Loss, in	-0.07
			Cross-section 5	А	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, c
		To orig	inal Surface Elev, cm	33	31	32.5		6.5		41.5
		To ero	ded Surface Elev, cm	33	31	32	Vavg (fps) =	6.50	Bed Max Shear Stress	
			Soil Loss / Gain, cm	0	0	-0.5	navg =	0.058	(psf)	Water Depth (in
		(Clopper Soil Loss, cm	0	0	-0.5	Flow (cfs) =	4.05	5.75	3.74
10	ft			Av	g Bottom L	oss/Gain, in	-0.07		Avg Clopper Soil Loss, in	-0.07
			Cross-section 6	А	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, cr
		To orig	inal Surface Elev, cm	34	31	32		7		41.5
		To ero	ded Surface Elev, cm	34	31	32	Vavg (fps) =	7.00	Bed Max Shear Stress	
			Soil Loss / Gain, cm	0	0	0	navg =	0.052	(psf)	Water Depth (in)
		(Clopper Soil Loss, cm	0	0	0	Flow (cfs) =	4.21	5.55	3.61
12	ft			Av	g Bottom L	oss/Gain, in	0.00		Avg Clopper Soil Loss, in	0.00
			Cross-section 7	А	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, c
		To orig	inal Surface Elev, cm	36	35	34.5		7		44.0
		To ero	ded Surface Elev, cm	35.5	34.5	34.5	Vavg (fps) =	7.00	Bed Max Shear Stress	
			Soil Loss / Gain, cm	-0.5	-0.5	0	navg =	0.052	(psf)	Water Depth (in
		(Clopper Soil Loss, cm	-0.5	-0.5	0	Flow (cfs) =	4.21	5.55	3.61
14	ft			Av	g Bottom L	oss/Gain, in	-0.13		Avg Clopper Soil Loss, in	-0.13
			Cross-section 8	А	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, c
			inal Surface Elev, cm	35	34	35		7		43.5
		To ero	ded Surface Elev, cm	35	33.5	35	Vavg (fps) =	7.00	Bed Max Shear Stress	
			Soil Loss / Gain, cm	0	-0.5	0	navg =	0.052	(psf)	Water Depth (in
			Clopper Soil Loss, cm	0	-0.5	0	Flow (cfs) =	4.13	5.45	3.54
	H I ()				-				Avg Clopper Soil Loss, in	-0.07
16						oss/Gain, in	-0.07			
16			Cross-section 9	А	В	С	-0.07 V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, c
16		To orig	inal Surface Elev, cm	A 35	B 35	C 36	V @ 0.2d	7.5		
16	R .	To orig	inal Surface Elev, cm ded Surface Elev, cm	A 35 35	B 35 35	C 36 36	V @ 0.2d Vavg (fps) =	7.5 7.50	Bed Max Shear Stress	To Water Surf, c 44.0
16		To orig To ero	inal Surface Elev, cm ded Surface Elev, cm Soil Loss / Gain, cm	A 35 35 0	B 35 35 0	C 36 36 0	V @ 0.2d Vavg (fps) = navg =	7.5 7.50 0.047	Bed Max Shear Stress (psf)	To Water Surf, c 44.0 Water Depth (ir
		To orig To ero	inal Surface Elev, cm ded Surface Elev, cm	A 35 35 0 0	B 35 35 0 0	C 36 36 0 0	V @ 0.2d Vavg (fps) = navg = Flow (cfs) =	7.5 7.50	Bed Max Shear Stress (psf) 5.24	To Water Surf, c 44.0 Water Depth (ir 3.41
16		To orig To ero	inal Surface Elev, cm ded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm	A 35 35 0 0 Av	B 35 0 0 g Bottom L	C 36 36 0 0 0 0 0 0 0 0 0 0 0 0	V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00	7.5 7.50 0.047 4.27	Bed Max Shear Stress (psf) 5.24 Avg Clopper Soil Loss, in	To Water Surf, c 44.0 Water Depth (ir 3.41 0.00
		To orig To ero	inal Surface Elev, cm ded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 10	A 35 35 0 0 Av A	B 35 0 0 g Bottom L B	C 36 36 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	V @ 0.2d Vavg (fps) = navg = Flow (cfs) =	7.5 7.50 0.047 4.27 V @ 0.6d	Bed Max Shear Stress (psf) 5.24	To Water Surf, c 44.0 Water Depth (ir 3.41 0.00 To Water Surf, c
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		To orig To ero (To orig	inal Surface Elev, cm ded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 10 inal Surface Elev, cm ded Surface Elev, cm	A 35 0 0 Av A 34 34	B 35 0 0 g Bottom L B 32 32	C 36 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) =	7.5 7.50 0.047 4.27 V @ 0.6d 7.5 7.50	Bed Max Shear Stress (psf) 5.24 Avg Clopper Soil Loss, in V @ 0.8d Bed Max Shear Stress	To Water Surf, c 44.0 Water Depth (ir 3.41 0.00 To Water Surf, c 42.0
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18	ft	To orig To ero To orig To ero (To orig To orig	inal Surface Elev, cm ded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 10 inal Surface Elev, cm ded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 11 inal Surface Elev, cm	A 35 35 0 Av A 34 34 0 0 0 Av A 31.5	B 35 35 0 2 32 32 32 0 0 0 3 8 0 0 0 3 9 8 0 0 0 3 0 3 0 3 0 0 3 0 0 3 0 0 3 0 0 3 0 0 3 2 0 3 2 0 3 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	C 36 36 0 0 0 0 0 0 0 5 35 34.5 -0.5 -0.5 -0.5 0 0 5 0 5 5 0 5 5 34.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0	V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d	7.5 7.50 0.047 4.27 V @ 0.6d 7.5 0.046 4.18 V @ 0.6d 7.5	Bed Max Shear Stress (psf) 5.24 Avg Clopper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 Avg Clopper Soil Loss, in V @ 0.8d	To Water Surf, of 44.0 Water Depth (ii 3.41 0.00 To Water Surf, of 42.0 Water Depth (ii 3.35 -0.07
18	ft	To orig To ero To orig To ero (To orig To orig	inal Surface Elev, cm ded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 10 inal Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 11 inal Surface Elev, cm ded Surface Elev, cm	A 35 35 0 0 Av A 34 34 0 0 0 Av 31.5 31.5	B 35 0 0 g Bottom L B 32 0 0 0 g Bottom L B 30 30 30	C 36 36 0 0 0 0 0 0 0 0 5 34,5 -0.5 -0.5 -0.5 -0.5 31,31 31	V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) =	7.5 7.50 0.047 4.27 ∨ @ 0.6d 7.5 7.50 0.046 4.18 ∨ @ 0.6d 7.5 7.50	Bed Max Shear Stress (psf) 5.24 Avg Clopper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 Avg Clopper Soil Loss, in V @ 0.8d Bed Max Shear Stress	To Water Surf, 6 44.0 Water Depth (ii 3.41 0.00 To Water Surf, 6 42.0 Water Depth (ii 3.35 -0.07 To Water Surf, 6 39.0
18	ft	To orig To ero (To orig To ero (To orig To ero	inal Surface Elev, cm ded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 10 inal Surface Elev, cm ded Surface Elev, cm Clopper Soil Loss, cm Cross-section 11 inal Surface Elev, cm ded Surface Elev, cm Soil Loss / Gain, cm	A 35 35 0 0 Av A 34 34 0 0 0 Av A 31.5 31.5 0	B 35 0 0 g Bottom L B 32 32 0 0 0 g Bottom L B 30 30 30 0 0	C 36 36 0 0 0 0 0 0 0 0 35 34.5 -0.5 -0.5 -0.5 0 0 31 31 0	V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = navg =	7.5 7.50 0.047 4.27 ∨ @ 0.6d 7.5 7.50 0.046 4.18 ∨ @ 0.6d 7.5 7.50 0.045	Bed Max Shear Stress (psf) 5.24 Avg Clopper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 Avg Clopper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf)	To Water Surf, c 44.0 Water Depth (ir 3.41 0.00 To Water Surf, c 42.0 Water Depth (ir 3.35 -0.07 To Water Surf, c 39.0 Water Depth (ir
18	ft	To orig To ero (To orig To ero (To orig To ero	inal Surface Elev, cm ded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 10 inal Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 11 inal Surface Elev, cm ded Surface Elev, cm	A 35 35 0 0 Av A 34 34 34 0 0 0 Av A 31.5 31.5 0 0	B 35 0 0 g Bottom L B 32 32 0 0 0 g Bottom L B 30 30 30 0 0 0	C 36 36 0 0 0 0 0 0 35 34.5 -0.5 -0.5 -0.5 0 0 0 31 31 0 0 0 0 0 0 0 0 0 0 0 0 0	V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = how (cfs) = navg = Flow (cfs) = Navg = Flow (cfs) =	7.5 7.50 0.047 4.27 ∨ @ 0.6d 7.5 7.50 0.046 4.18 ∨ @ 0.6d 7.5 7.50	Bed Max Shear Stress (psf) 5.24 Avg Clopper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 Avg Clopper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.94	To Water Surf, c 44.0 Water Depth (ir 3.41 0.00 To Water Surf, c 42.0 Water Depth (ir 3.35 -0.07 To Water Surf, c 39.0 Water Depth (ir 3.22
18	ft	To orig To ero (To orig To ero (To orig To ero	inal Surface Elev, cm ded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 10 inal Surface Elev, cm ded Surface Elev, cm Clopper Soil Loss, cm Cross-section 11 inal Surface Elev, cm ded Surface Elev, cm Soil Loss / Gain, cm	A 35 35 0 0 Av A 34 34 34 0 0 0 Av A 31.5 31.5 0 0	B 35 0 0 g Bottom L B 32 32 0 0 0 g Bottom L B 30 30 30 0 0 0	C 36 36 0 0 0 0 0 0 0 0 35 34.5 -0.5 -0.5 -0.5 0 0 31 31 0	V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.2d	7.5 7.50 0.047 4.27 V @ 0.6d 7.5 7.50 0.046 4.18 V @ 0.6d 7.5 7.50 0.045 4.02	Bed Max Shear Stress (psf) 5.24 Avg Clopper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 Avg Clopper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf)	To Water Surf, c 44.0 Water Depth (ir 3.41 0.00 To Water Surf, c 42.0 Water Depth (ir 3.35 -0.07 To Water Surf, c 39.0 Water Depth (ir

CHAP	NNEL 1 - SHEAR STRESS 2	Date:	2/14/09		Start Time:	1:00 PM	End Time:	1:30 PM	
		Soil:	Loam		Shear (psf):	10.00	Slope:		
	g flume 20 ft test sectio			F	lexamat Pe	ermanent Cha	-	Mat	
1500 rpms			<u> </u>			Т	EST DATA		
	1 2 3 FLOW	Inlet Weir	1	2	3				
Weir widtl		Water Depth, in Water Velocity, ft/s		15.00 4.50					
0 ft	A B C	Flow Rate, cfs	0.00	22.50	0.00				
U N		Cross-section 1	A	В	C	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, cm
	To c	original Surface Elev, cm	28	26.5	28		8		42.0
		eroded Surface Elev, cm	28	26	28	Vavg (fps) =	8.00	Bed Max Shear Stress	
		Soil Loss / Gain, cm	0	-0.5	0	navg =	0.062	(psf)	Water Depth (in)
		Clopper Soil Loss, cm	0	-0.5	0	Flow (cfs) =	7.70	8.87	5.77
2 ft			Avg	g Bottom Lo	oss/Gain, in	-0.07		Avg Clopper Soil Loss, in	-0.07
		Cross-section 2	A	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, cm
		original Surface Elev, cm	28.5	28	30		8.5		42.0
	Toe	eroded Surface Elev, cm	28	28	30	Vavg (fps) =	8.50	Bed Max Shear Stress	
		Soil Loss / Gain, cm	-0.5	0	0	navg =	0.055	(psf)	Water Depth (in)
4 ft		Clopper Soil Loss, cm	-0.5 Ave	g Bottom Lo		Flow (cfs) = -0.07	7.44	8.07 Avg Clopper Soil Loss, in	-0.07
		Cross-section 3	A	B	C	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, cm
	To c	original Surface Elev, cm	30	30	31	100.20	9	1 0 0.00	43.0
		eroded Surface Elev, cm	30	30	31	Vavg (fps) =	9.00	Bed Max Shear Stress	
		Soil Loss / Gain, cm	0	0	0	navg =	0.050	(psf)	Water Depth (in)
		Clopper Soil Loss, cm	0	0	0	Flow (cfs) =	7.48	7.66	4.99
6 ft			Avç	g Bottom Lo	oss/Gain, in	0.00		Avg Clopper Soil Loss, in	0.00
		Cross-section 4	A	В	с	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, cm
		original Surface Elev, cm	32	31	32		9		44.0
	Το ε	eroded Surface Elev, cm	32	30.5	32	Vavg (fps) =	9.00	Bed Max Shear Stress	
		Soil Loss / Gain, cm	0	-0.5	0	navg =	0.050	(psf)	Water Depth (in)
8 ft		Clopper Soil Loss, cm	0	-0.5 g Bottom Lo	0	Flow (cfs) = -0.07	7.38	7.56 Avg Clopper Soil Loss, in	4.92 -0.07
0 11		Cross-section 5	A	BOILDIN LC	C	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, cm
	To c	original Surface Elev, cm	33	31	32	V & 0.20	9	V @ 0.00	44.5
		eroded Surface Elev, cm	33	31	32	Vavg (fps) =	9.00	Bed Max Shear Stress	
		Soil Loss / Gain, cm	0	0	0	navg =	0.050	(psf)	Water Depth (in)
		Clopper Soil Loss, cm	0	0	0	Flow (cfs) =	7.38	7.56	4.92
10 ft			Avg	g Bottom Lo	oss/Gain, in	0.00		Avg Clopper Soil Loss, in	0.00
		Cross-section 6	A	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, cm
		original Surface Elev, cm	34	31	32		9		45.0
	Το ε	eroded Surface Elev, cm	34	31	32	Vavg (fps) =	9.00	Bed Max Shear Stress	
		Soil Loss / Gain, cm	0	0	0	navg =	0.050	(psf)	Water Depth (in)
12 ft		Clopper Soil Loss, cm	0	0 g Bottom Lo	0	Flow (cfs) = 0.00	7.48	7.66 Avg Clopper Soil Loss, in	4.99 0.00
12 11		Cross-section 7	A	B	C	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, cm
	To c	priginal Surface Elev, cm	35.5	34.5	34.5	V @ 0.20	9	V @ 0.00	47.0
		eroded Surface Elev, cm	34.5	34	34.5	Vavg (fps) =	9.00	Bed Max Shear Stress	
		Soil Loss / Gain, cm	-1	-0.5	0	navg =	0.050	(psf)	Water Depth (in)
		Clopper Soil Loss, cm	-1	-0.5	0	Flow (cfs) =	7.48	7.66	4.99
14 ft			Avç	g Bottom Lo	oss/Gain, in	-0.20		Avg Clopper Soil Loss, in	-0.20
		Cross-section 8	A	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, cm
		original Surface Elev, cm	35	33.5	35		9.5		46.5
	Το ε	eroded Surface Elev, cm	35	33.5	35	Vavg (fps) =	9.50	Bed Max Shear Stress	
		Soil Loss / Gain, cm	0	0	0	navg =	0.046	(psf)	Water Depth (in)
16.6		Clopper Soil Loss, cm	0	0 g Bottom Lo	0	Flow (cfs) = 0.00	7.48	7.26	4.72 0.00
16 ft		Cross-section 9	AVQ	B	C	V @ 0.2d	V @ 0.6d	Avg Clopper Soil Loss, in V @ 0.8d	To Water Surf, cm
	To c	original Surface Elev, cm	35	35	36	V & 0.20	9.5	V @ 0.00	47.5
		eroded Surface Elev, cm	35	35	36	Vavg (fps) =	9.50	Bed Max Shear Stress	
		Soil Loss / Gain, cm	0	0	0	navg =	0.046	(psf)	Water Depth (in)
		Clopper Soil Loss, cm	0	0	0	Flow (cfs) =	7.58	7.36	4.79
18 ft			Avg	g Bottom Lo	oss/Gain, in	0.00		Avg Clopper Soil Loss, in	0.00
	I	Cross-section 10	A	В	с	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, cm
		original Surface Elev, cm	34	32	34.5		10		45.0
	Το ε	eroded Surface Elev, cm	34	32	34.5	Vavg (fps) =	10.00	Bed Max Shear Stress	
		Soil Loss / Gain, cm	0	0	0	navg =	0.042	(psf)	Water Depth (in)
20 ft		Clopper Soil Loss, cm	0	0 g Bottom Lo	0	Flow (cfs) =	7.55	6.96 Avg Clopper Soil Loss in	4.53
2υ π		Cross softian 44		-	1		V @ 0.6d	Avg Clopper Soil Loss, in	0.00 To Water Surf. cn
	To a	Cross-section 11 original Surface Elev, cm	A 31.5	B 30	C 31	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, cn 42.0
		eroded Surface Elev, cm	31.5	30	31	Vavg (fps) =	10.00		42.U
	10 6	Soil Loss / Gain, cm	-0.5	0	0	navg =	0.042	Bed Max Shear Stress (psf)	Water Depth (in)
		22 2000 / Ouri, offi		0	0	Flow (cfs) =	7.44	6.86	4.46
		Clopper Soil Loss. cm	-0.5						
		Clopper Soil Loss, cm	-0.5 Avç	g Bottom Lo	•			Avg Clopper Soil Loss, in	
	_	Clopper Soil Loss, cm Soil Loss / Gain, in		•	oss/Gain, in	-0.07			

CHANNEL 1 - SHE	AR STRESS 3	Date:	2/14/09	-	Start Time:	2:00 PM	End Time:	2:30 PM	
		Soil:	Loam	Target	Shear (psf):		Slope:	30%	
40 ft long flume	20 ft test section 2 ft wide flume	<u> </u>			Flexamat I	Permanent Cl		g Mat	
rpms 1 2	2 If wide fume	Inlet Weir	1	2	3	<u>т</u>	EST DATA		
FLOV		Water Depth, in	I	2 19.00	3				
Weir width (ft) = 4		ater Velocity, ft/s		6.00					
0 ft A B	c	Flow Rate, cfs	0.00	38.00	0.00				
		Cross-section 1	A	B	C	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, o
		Surface Elev, cm	28	26	28	100.20	10.5	1 0 0.00	46.0
	-	Surface Elev, cm	28	26	28	Vavg (fps) =	10.50		10.0
		Loss / Gain, cm	0	0	0	navg =	0.056	Bed Max Shear Stress (psf)	Water Depth (ir
	Clopp	er Soil Loss, cm	0	0	0	Flow (cfs) =	12.86	11.29	7.35
2 ft			Av	g Bottom L	.oss/Gain, in	0.00		Avg Clopper Soil Loss, in	0.00
	c	Cross-section 2	А	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, o
	To original S	urface Elev, cm	28	28	30		10.5		47.5
	To eroded S	urface Elev, cm	28	28	30	Vavg (fps) =	10.50	Bed Max Shear Stress	
	Soil	Loss / Gain, cm	0	0	0	navg =	0.056	(psf)	Water Depth (i
	Clopp	er Soil Loss, cm	0	0	0	Flow (cfs) =	12.98	11.39	7.41
4 ft			Av	g Bottom L	.oss/Gain, in	0.00		Avg Clopper Soil Loss, in	0.00
		Cross-section 3	Α	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, o
	1	surface Elev, cm	30	30	31		11		48.0
		Surface Elev, cm	30	29	31	Vavg (fps) =	11.00	Bed Max Shear Stress	
		Loss / Gain, cm	0	-1	0	navg =	0.052	(psf)	Water Depth (in
0.4	Clopp	er Soil Loss, cm	0	-1	0	Flow (cfs) =	12.99	10.89	7.09
6 ft	<u> </u>			Ĩ	.oss/Gain, in		NGT	Avg Clopper Soil Loss, in	-0.13 Ta Watan Quaf
		Cross-section 4	A	B	C	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf,
	-	Surface Elev, cm	32	30.5	32	Vouc (frank	11		49.0
	1	Surface Elev, cm Loss / Gain, cm	32 0	29.5 -1	32	Vavg (fps) =	11.00 0.052	Bed Max Shear Stress (psf)	Water Depth (i
		er Soil Loss, cm	0	-1	0	navg = Flow (cfs) =	12.87	(psi) 10.79	7.02
8 ft	Cioppi	er Soli Loss, cm			_oss/Gain, in		12.07	Avg Clopper Soil Loss, in	-0.13
		Cross-section 5	A	B	C	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, o
		Surface Elev, cm	33	31	32	V & 0.24	11	V & 0.00	49.5
	, v	Surface Elev, cm	33	30.5	32	Vavg (fps) =	11.00	-	40.0
		Loss / Gain, cm	0	-0.5	0	navg =	0.051	Bed Max Shear Stress (psf)	Water Depth (in
		er Soil Loss, cm	0	-0.5	0	Flow (cfs) =	12.75	10.69	6.96
10 ft		,,	-		_oss/Gain, in	1		Avg Clopper Soil Loss, in	-0.07
		Cross-section 6	A	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, o
		Surface Elev, cm	34	31	32		11.5		49.5
	To eroded S	urface Elev, cm	34	31	32	Vavg (fps) =	11.50	Bed Max Shear Stress	
	Soil	Loss / Gain, cm	0	0	0	navg =	0.048	(psf)	Water Depth (in
	Clopp	er Soil Loss, cm	0	0	0	Flow (cfs) =	12.95	10.39	6.76
12 ft			Av	g Bottom L	oss/Gain, in	0.00		Avg Clopper Soil Loss, in	0.00
		Cross-section 7	Α	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, o
	To original S	urface Elev, cm	34.5	34	34.5		11.5		50.5
	To eroded S	urface Elev, cm	34	33.5	34	Vavg (fps) =	11.50	Bed Max Shear Stress	
		Loss / Gain, cm	-0.5	-0.5	-0.5	navg =	0.047	(psf)	Water Depth (i
	Clopp	er Soil Loss, cm	-0.5	-0.5	-0.5	Flow (cfs) =	12.58	10.08	6.56
14 ft				1	.oss/Gain, in			Avg Clopper Soil Loss, in	-0.20
		Cross-section 8	A	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf,
		Surface Elev, cm	35	33.5	35	., ., .	11.5		51.5
		Surface Elev, cm	35	33	35	Vavg (fps) =	11.50	Bed Max Shear Stress	Motor D. H.
		Loss / Gain, cm	0	-0.5	0	navg =	0.048	(psf)	Water Depth (i
16 ft	Ciopp	er Soil Loss, cm	0 Δv	-0.5 a Bottom I	0 .oss/Gain, in	Flow (cfs) = -0.07	12.95	10.39 Avg Clopper Soil Loss, in	6.76 -0.07
10 11		Cross-section 9	AV	g Bottom L B	C	-0.07 V @ 0.2d	V @ 0.6d	V @ 0.8d	-0.07 To Water Surf,
		Surface Elev, cm	35	35	36	v 🙂 0.2u	11.5	v 🙂 v.du	51.5
	1	Surface Elev, cm	35	34	36	Vavg (fps) =	11.50	D 111 01	01.0
		Loss / Gain, cm	0	-1	0	navg =	0.047	Bed Max Shear Stress (psf)	Water Depth (i
		er Soil Loss, cm	0	-1	0	Flow (cfs) =	12.45	9.98	6.50
18 ft		-,			.oss/Gain, in	-0.13		Avg Clopper Soil Loss, in	-0.13
	Cr	oss-section 10	А	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf,
	To original S	Surface Elev, cm	34	32	34.5		11.5		50.0
	re enginare		34	31.5	34.5	Vavg (fps) =	11.50	Bed Max Shear Stress	
	To eroded S	surface Elev, cm			0	navg =	0.047	(psf)	Water Depth (i
	To eroded S	Loss / Gain, cm	0	-0.5	0				
	To eroded S Soil		0	-0.5 -0.5	0	Flow (cfs) =	12.58	10.08	6.56
20 ft	To eroded S Soil	Loss / Gain, cm	0	-0.5		Flow (cfs) =	12.58	10.08 Avg Clopper Soil Loss, in	6.56 -0.07
20 ft	To eroded S Soil Clopp	Loss / Gain, cm	0	-0.5	0	Flow (cfs) =	12.58 V @ 0.6d		-0.07
20 ft	To eroded S Soil Clopp	Loss / Gain, cm er Soil Loss, cm	0 Av	-0.5 g Bottom L	0 .oss/Gain, in	Flow (cfs) = -0.07		Avg Clopper Soil Loss, in	-0.07
20 ft	To eroded S Soil Clopp 	Loss / Gain, cm er Soil Loss, cm ross-section 11	0 Av	-0.5 g Bottom L B	0 Loss/Gain, in C	Flow (cfs) = -0.07	V @ 0.6d	Avg Clopper Soil Loss, in	-0.07 To Water Surf,
_20 ft	To eroded S Soil Clopp 	Loss / Gain, cm er Soil Loss, cm ross-section 11 surface Elev, cm	0 Av A 31	-0.5 g Bottom L B 30	0 _oss/Gain, in C 31	Flow (cfs) = -0.07 V @ 0.2d	V @ 0.6d 11.5	Avg Clopper Soil Loss, in V @ 0.8d	-0.07 To Water Surf, 47.0 Water Depth (i
_20 ft	To eroded S Soil Cloppe <u>Cr</u> To original S To eroded S Soil	Loss / Gain, cm er Soil Loss, cm ross-section 11 surface Elev, cm surface Elev, cm	0 Av 31 30.5 -0.5 -0.5	-0.5 g Bottom L B 30 29.5 -0.5 -0.5	0 .oss/Gain, in C 31 30.5 -0.5 -0.5	Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) =	V @ 0.6d 11.5 11.50	Avg Clopper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 10.18	-0.07 To Water Surf, 47.0 Water Depth (i 6.63
20 ft	To eroded S Soil Clopp 	Loss / Gain, cm er Soil Loss, cm ross-section 11 surface Elev, cm iurface Elev, cm Loss / Gain, cm	0 Av 31 30.5 -0.5 -0.5	-0.5 g Bottom L B 30 29.5 -0.5 -0.5	0 .oss/Gain, in C 31 30.5 -0.5	Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.20	V @ 0.6d 11.5 11.50 0.048 12.70	Avg Clopper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf)	-0.07 To Water Surf, 47.0 Water Depth (i

1 To original Surface Eliv. on 280 (Lass. / Cala. on 0 28 28 28 28 14	CHANNEL	1 - SHEAR STRESS 4	Date:	2/14/09		Start Time:	3:00 PM	End Time:	3:30 PM	-
Image: The stand st			Soil:	Loam	Target					
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FLOW Wave Work (No.1), No.1 No.2 No.	·		Inlet Weir	1	2	3		LOT DATA		
0.1 A C Processedim A 0.0 Provide										
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To ended Surias Rev. on October Sail Loss, on Cloper Sail Loss, on October Sail Loss, o							V @ 0.2d		V @ 0.8d	To Water Surf, cm
Sol Loss / Gan. om 0 0 -1 meg.m. 00.10000000000000000000000000000000000) (57.0
2 n Corport Sol Loss, on Ang Solution More Share, file, or Ang Solution Share, file, or Ang Solution Share, file, or Ang Solution Share, file, or Ang Solution More Share, file, or Ang Solution More Share, file, or Ang Solution More Share, file, or Ang Cores-Solution Share, file, or Ang Cores-Solution Share, file, or Ang Cores-Solution More Share, file, or Ang Cores-Solution Share, file, or Ang Coresolution Share, file, or Ang Cores-Solution Share, fi				-						Water Depth (in)
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4 n To original Surface Elev. on 28 27.2	2 ft			Av	g Bottom L	oss/Gain, in	-0.13		1	
1 To encode divince Elvo, on 28 27.5 29.5 Vang (fts) 94.00 0.001 Water (Clopper Sol Loss, on 0 -0.5 -0.5 Floe (cfs) 28.23 17.55 17.5 4 1 Cross-section 3 A B C V 0 0.24 V 0 0.04 V 0 28.23 17.55<			Cross-section 2	Α	В	с	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, cm
4 It Sol Las/, Cah., on 0 -0.5 -0.5 -0.000		°		-						58.0
4 ft Copper Sol Las, m 0 0.5 Fiber (cb) 92.33 17.25 11 4 ft Avg Distance Sea, m 0.3 Avg Distance Sea, m 0.3 Vera 0.61 V										Water Depth (in)
4 ft							-			11.68
10 ft To originis Surface Eirer, cm 30 23 31 14.5 Eventsol 14.5 Water L 6 ft To ecoded Surface Eirer, cm 30 235 40.5 Flow (cls) 20.65 (gii) 6 ft Cooper Soli Los, cm 0 -0.5 Flow (cls) 20.66 17.14 16 7 to original Surface Eirer, cm 32 32 Via 0.24 Via 0.	4 ft								1	
6 ft To ended Suttace Eier, or 30 28.5 30.5 Varg (1p) 14.50 End Max Shair Shees Water (1p) 6 ft			Cross-section 3	А	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, cm
6 ft Soil Loss (a, cm 0 -0.5 -0.5 Port (ds) -26.3 LOS -0.63 Vig (ds)		To original S	Surface Elev, cm	30	29	31		14.5		58.0
6 ft -0.5 Flow (ds)- 28.96 17.14 17.14 6 ft -0.95 Flow (ds)- 28.96 17.14 17.14 1 - Avg Datumes Elive, m 3.2 28.5 20 V @ 0.84 V @ 0.84 10 Verse 7 original Suntation Elive, m 31.5 29 32 Verg (ds)- 14.5 0 15.5 0 16.54 0 16.54 0 16.54 0 16.54 0 15.5 15.5 15.5 15.5 15.5 15.5 15.5 15.5 15.5 15.5 15.5										Water David (
6 ft Avg Datom.Loss/Gain. -0.3. Avg Clopper Gai Loss. -0.4 Cross-section 4 A 8 C V @ 0.2d V									1	Water Depth (in) 11.15
Image: constraint of the	6 ft	Ciopp	51 0011 LUSS, CIII					20.90		
Image: Solid Loss / Gain, or Solid Loss / Gain, or Copper Solid Loss, or To original Surface Elev, or Solid Loss / Gain, or Copper Solid Loss, or Copper			Cross-section 4		Ŭ	1		V @ 0.6d	1	To Water Surf, cm
Soil Loss / Gain, cm -0.5 -0.5 0 Finding Dot (Ms. Primal strings Water (L 8 ft -0.5 -0.5 0 Finding -0.75 <td< td=""><th></th><th>To original S</th><td>Surface Elev, cm</td><td>32</td><td>29.5</td><td>32</td><td></td><td>14.5</td><td></td><td>60.0</td></td<>		To original S	Surface Elev, cm	32	29.5	32		14.5		60.0
8 ft Clopper Soil Loss, cm -0.5 0 Flow (ds) = 27.75 17.65 11.76 8 ft Cross-section 5 A B C V @ 0.24 V @ 0.64 To viginal Surface Elve, cm 33 30.5 32 V @ 0.24 V @ 0.64 To viginal Surface Elve, cm 10 ft Cross-section 5 A B C V @ 0.24 V @ 0.64 Water Elve, cm 10 ft Cross-section 6 A B C V @ 0.24 V @ 0.64 V @ 0.64 Flow (ds) = 25.00 16.54 4 10 ft Cross-section 6 A B C V @ 0.24 V @ 0.04 V @ 0.84 Flow (ds) = 25.00 16.54 5 12 ft Cross-section 7 A B C V @ 0.24 V @ 0.04 V @ 0.84 Flow (ds) = 27.25 16.23 10.1 12 ft Cross-section 7 A B C V @ 0.24 V @ 0.04 V @ 0.84 Flow (ds) = 27.25 16.33 1			, .						Bed Max Shear Stress	
8 ft Arg Bottom Loss/Gain, in 0.13 Ang Copper Soil Loss, in -2 10 ft Cross-section 5 A 6 C V @ 0.24 V @ 0.24 V @ 0.26 V									1	Water Depth (in)
Image: Cross-section 5 A B C V @ 0.2d V	8 ft	Clopp	er Soil Loss, cm					27.75		-0.13
To original Surface Elev, cm 33 30.5 32 Varg (lps)= 15. Ead Max Shear Stress Water I 10 ft Sal Loss, Cm 0 -0.5 0 Prove (cfs)= 2.8.0 16.5.4 11 10 ft Clopper Soil Loss, cm 0 -0.5 0 Prove (cfs)= 2.8.0 16.5.4 10 10 ft Cross-section 6 A 8 C V.9.0.2d V.9.0.2	0 1		Cross-section 5			1		V @ 0.6d		To Water Surf, cm
Soil Loss / Gain, cm 0 -0.5 0 marge 0.050 Bed Max Shad Surfae Water L 10 ft Clopper Soil Loss, cm 0 -0.5 0 Flow (cfs) 2.80 1.6.5.4 1.11 10 ft Cross-section 6 A B C.9 0.060 V.@.0.60 V.@.0.60 V.@.0.80 To way Clopper Soil Loss, in -0.5 10 ft To original Surface Elev, cm 3.3.5 3.1 3.2 Varg (fg)= 1.5.5 Bed Max Shear Stress Water L 12 ft Clopper Soil Loss, cm -0.5 0 0 Row 2 0.048 Water L 1.5.5 12 ft Clopper Soil Loss, cm -0.5 0 0 Row 2 1.6.3		To original S	Surface Elev, cm	33	30.5	32		15		59.0
10 ft Clopper Soil Loss, cm 0 -0.5 0 Flow (cfs) = 28.90 18.54 10 10 ft Cross-section 6 A B C V @ 0.2d V @ 0.6d V @ 0.6d V @ 0.7d Arg Clopper Soil Loss, in -0.07 10 ft To original Surface Elev, cm 34. 31 32 Varg (fps) = 15.5 Bed Max Shear Stress 12 ft Soil Loss, cm -0.5 0 0 Flow (cfs) = 27.29 16.23 11 12 ft Cross-section 7 A B C V @ 0.6d		To eroded S	Surface Elev, cm	33	30	32	Vavg (fps) =	15.00	Bed Max Shear Stress	
10 h Avg Bottom Loss/Gain, In -0.07 Avg Clopper Soil Loss, in -0.07 To ariginal Surface Elev, cm 34 31 32 15.5 5 To ariginal Surface Elev, cm 33.5 31 32 Vag (bp) = 15.5 Soil Loss / Gain, cm -0.5 0 0 navg = 0.048 (pf) 12 h Copper Soil Loss, cm -0.5 0 0 navg = 0.048 (pf) 4/d 20 12 h Copper Soil Loss, cm -0.5 0 0 Flow (ds) 27.29 16.23 10 12 h Copper Soil Loss, cm -0.5 0 0 Flow (ds) 27.29 16.23 10 70 12 h Copper Soil Loss, cm -0.4 10 Flow (ds) 26.95 16.03 11 14 h Copper Soil Loss, cm -1 0 Flow (ds) 26.95 16.03 10 70 14 h Copper Soil Loss, cm -0.5 0 0 Flow (ds) 26.95									1	Water Depth (in)
Cross-section 6 A B C V @ 0.2d V @ 0.6d V @ 0.8d fo Water To original Surface Elev, cm 34 31 32 15.5 50 Bed Max Shear Stress Water C Soil Loss / Gain, cm -0.5 0 0 navg = 0.048 (pst) Water C 12 ft Clopper Soil Loss, cm -0.5 0 0 Flow (cfs) = 27.29 16.23 nt 12 ft Cross-section 7 A B C V @ 0.2d V @ 0.8d V @ 0.8d To water Stress To original Surface Elev, cm 34 32.5 34 15.5 66 Max Shear Stress Soil Loss / Gain, cm 0 -1 0 navg = 0.048 (pst) Water C Clopper Soil Loss, cm 0 -1 0 navg = 0.048 V @ 0.8d	10 ft	Clopp	er Soil Loss, cm					26.90		-0.07
To original Surface Elev, cm 34 31 32 Varg (tps) = 15.5 Bed Max Shear Stress Water C 12 ft Soil Loss / Gain, cm -0.5 0 0 nang = 0.048 Bed Max Shear Stress (gs) Water C 12 ft Clopper Soil Loss, cm -0.5 0 0 Flow (cts) = 27.29 VIE (cts) = 12.3 11 12 ft Cross-section 7 A B C V @ 0.64 V @ 0.84 To varge lock (cts) = 27.29 VIE (cts) = 12.5 6 To original Surface Elev, cm 34 33.5 34 Varge (tps) = 15.5 6 6 To original Surface Elev, cm 34 32.5 34 Varge (tps) = 15.5 6 6 7 0 -1 0 nange = 0.048 (cts) / 4 4/8 0.048 (cts) / 4 4/8 0.048 0 0 15.5 6 7 0 0 -1 0 nange = 0.048 (cts) / 4	10 11		Cross-section 6		-			V @ 0.6d		To Water Surf, cm
Soil Loss / Gain, cm -0.5 0 0 navg = 0.048 bid wink all subses (psh) Water I (psh) 12 ft Clopper Soil Loss, cm -0.5 0 0 For v(ds) 27.29 16.23 10 12 ft Cross-section 7 A B C V @ 0.2d V @ 0.6d V @ 0.2d V @ 0.6d V @ 0.8d To water I 12 ft To original Surface Elev, cm 34 33.5 34 15.5 Bed Max Shear Stress Soil Loss / Gain, m -0.07 Avg Botom Loss/Gain, in -0.07										59.0
12 ft Clopper Soil Loss, on original Surface Elev, on Soil Loss / Gain, on Clopper Soil Loss, on 14 ft -0.5 0 0 Flow (ds) = 27.29 16.23 11 14 ft To original Surface Elev, on Soil Loss / Gain, on Clopper Soil Loss, on Clopper Soi		To eroded S	Surface Elev, cm	33.5	31	32	Vavg (fps) =	15.50	Bed Max Shear Stress	
12 ht Avg Bottom Loss/Gain, in -0.07 Avg Clopper Soil Loss, in -0.07 To original Surface Elev, cm 34 33.5 34 V @ 0.6d V @ 0.8d To Wate To original Surface Elev, cm 34 33.5 34 Varg (fps) = 15.5 Bed Max Shear Stress Kear Stress 6 Soil Loss / Gain, cm 0 -1 0 navg = 0.048 Bed Max Shear Stress (ps) Water L Clopper Soil Loss, cm 0 -1 0 navg = 0.048 (ps) 0.0 -0.0 To original Surface Elev, cm 35.5 33 35 Varg (fps) = 15.5 6 6 To original Surface Elev, cm 35.5 0 0 navg = 0.048 (ps) Water L Clopper Soil Loss, cm -0.5 0 0 navg = 0.048 (ps) Water L To original Surface Elev, cm 35 34 36 15.5 6 6 To original Surface Elev, cm S5 34							-		1	Water Depth (in)
Image: Conservention To original Surface Elev, cm 34 33.5 34 15.5 0 66 To original Surface Elev, cm 34 33.5 34 Vagg (fps) = 15.50 Bed Max Shear Stress 66 Soil Loss / Gain, cm 0 -1 0 navg = 0.048 (ps) Water II 14 ft Corper Soil Loss, cm 0 -1 0 navg = 0.048 (ps) Water II 16 ft Cross-section 8 A B C V @ 0.6d V @ 0.8d To wate 16 ft To original Surface Elev, cm 35 33 35 Vag (fps) = 15.5 66 To original Surface Elev, cm 34.5 33 35 Vag (fps) = 15.5 66 To original Surface Elev, cm 35 0 0 Flow (cfs) = 26.78 15.93 11 16 ft Cross-section 9 A B C V @ 0.6d V @ 0.8d To wate 16 ft Cross-section 9 A B <th>12.6</th> <th>Clopp</th> <td>er Soil Loss, cm</td> <td></td> <td></td> <td></td> <td></td> <td>27.29</td> <td></td> <td>-0.07</td>	12.6	Clopp	er Soil Loss, cm					27.29		-0.07
To original Surface Elev, cm 34 33.5 34 Vavg (fps) = 15.5 Bed Max Shear Stress Water I 14 ft Clopper Soil Loss, cm 0 -1 0 narg = 0.048 (ps) Water II 14 ft Avg Bottom Loss/Gain, in 0.13 Avg Clopper Soil Loss, in -0.0 14 ft Cross-section 8 A B C V @ 0.6d V @ 0.6d V @ 0.8d To original Surface Elev, cm 35.3 35 Vavg (fps) = 15.5 Bed Max Shear Stress Soil Loss, in -0.0 -0.13 Avg Clopper Soil Loss, in -0.0 16 ft Cross-section 9 A B C V @ 0.2d V @ 0.6d V @ 0.8d Fo water II 16 ft Clopper Soil Loss, cm -0.5 0 0 narg = 0.048 (ps) Water II 16 ft Cross-section 9 A B C V @ 0.2d V @ 0.6d V @ 0.8d To original Surface Elev, cm 35 34 36 15.5 Bed Max Shear Stress Soil Loss / Gai	12 11		Cross-section 7			1		V @ 0.6d	1	To Water Surf, cm
Soil Loss / Gain, cm 0 -1 0 navg = 0.048 (c)st) Water IC 14 ft Clopper Soil Loss, cm 0 -1 0 Flow (cfs) = 26.95 16.03 11 14 ft Avg Bottom Loss/Gain, in -0.13 Avg Clopper Soil Loss, in -0.04 14 ft Cross-section 8 A B C V @ 0.6d V @ 0.8d Nwater IC 16 ft To original Surface Elev, cm 34.5 33 35 Varg (tps) = 15.5 66 16 ft Clopper Soil Loss, cm -0.5 0 0 navg = 0.048 (psi) Water IC 16 ft Clopper Soil Loss, cm -0.5 0 0 navg = 0.048 (psi) Water IC 16 ft Cross-section 9 A B C V @ 0.6d V @ 0.8d To water IC 16 ft Cross-section 9 A B C V @ 0.6d V @ 0.8d V @ 0.8d Fow V@ 0.8d Fow V@ 0.8d Fow V@ 0.8d Fow V				34	33.5	34				60.0
Image: Copper Soil Loss, on the image:		To eroded S	Surface Elev, cm	34	32.5	34	Vavg (fps) =	15.50	Bed Max Shear Stress	
14 ft Avg Bottom Loss/Gain, in -0.13 Avg Clopper Soil Loss, in -0.00 To driginal Surface Elev, cn 35 33 36 15.5 66 To eroded Surface Elev, cn 35.5 33 35 Vag (fps) = 15.5 Bed Max Shear Stress Soil Loss / Gain, cn -0.5 0 0 nawg = 0.048 (ps) Water D 16 ft Cross-section 9 A B C V @ 0.6d V @ 0.8d To water D 16 ft Cross-section 9 A B C V @ 0.6d V @ 0.8d To water D 16 ft Cross-section 9 A B C V @ 0.6d V @ 0.8d To water D 16 ft Cross-section 9 A B C V @ 0.6d V @ 0.8d To water D 16 ft Cross-section 10 A B C V @ 0.6d V @ 0.8d To water D 18 ft Cross-section 10 A B C V @ 0.2d V @ 0.6d V @ 0.8d V @ 0										Water Depth (in)
Image: Cross-section 8 A B C V @ 0.2d V @ 0.6d V @ 0.8d To Water To original Surface Elev, cm 35 33 35 415.5 66 To eroded Surface Elev, cm 34.5 33 35 Varg (fps) = 15.5.0 Bed Max Shear Stress Water II 16 ft Cross-section 9 A B C V @ 0.6d V @ 0.6d V @ 0.8d To water II 16 ft Cross-section 9 A B C V @ 0.6d V @ 0.6d V @ 0.8d To water II 16 ft Cross-section 9 A B C V @ 0.6d V @ 0.6d V @ 0.8d To water II 16 ft Cross-section 9 A B C V @ 0.6d V @ 0.8d To water II 16 ft To original Surface Elev, cm 35 34 36 15.5 66 To eroded Surface Elev, cm 35 34 35 Varg (fps) = 15.5 68d Max Shear Stress Water II Avg Bottom Loss/Gain, in -0.13 Avg	14.4	Clopp	er Soil Loss, cm					26.95	1	10.43
To original Surface Elev, cm 35 33 35 15.5 Bed Max Shear Stress (psf) Water D Water D 16 ft -0.5 0 0 navg = 0.048 (psf) Water D 16 ft -0.5 0 0 Flow (cfs) = 26.78 15.93 10 16 ft -0.5 0 0 Flow (cfs) = 26.78 15.93 10 16 ft -0.5 0 0 Flow (cfs) = 26.78 15.93 10 16 ft -0.5 0 0 Flow (cfs) = 26.78 15.93 10 16 ft -0.5 0 0 -1 navg = 0.048 V @ 0.8d To wate 16 ft -0.5 34 35 Vavg (fps) = 15.5 -0 6 10 original Surface Elev, cm 35 34 35 Vavg (fps) = 15.50 Water D 18 ft -0 -0.1 Flow (cfs) = 26.78 15.93 10 18 ft	14 11		cross-section 8			1		V @ 0.6d		-0.13 To Water Surf, cn
Soil Loss / Gain, cm -0.5 0 0 navg = 0.048 bed Max Direl Outes Water D 16 ft Clopper Soil Loss, cm -0.5 0 0 Flow (cfs) = 26.78 15.93 10 Avg Bottom Loss/Gain, in -0.07 Avg Clopper Soil Loss, in -0 To original Surface Elev, cm 35 34 36 15.5 6 To eroded Surface Elev, cm 35 34 36 15.5 6 Soil Loss / Gain, cm 0 0 -1 navg = 0.048 (psf) Water D Clopper Soil Loss, cm 0 0 -1 navg = 0.048 (psf) Water D Clopper Soil Loss, cm 0 0 -1 Flow (cfs) = 26.78 15.93 10 18 ft Cross-section 10 A B C V @ 0.2d V @ 0.6d V @ 0.8d fo Water D 20 ft Croper Soil Loss, cm 0 -0.5 -0.5 navg = 0.048 (psf) Water							100.20		10000	60.5
Soil Loss / Gain, cm -0.5 0 0 navg = 0.048 (psf) Water D 16 ft Clopper Soil Loss, cm -0.5 0 0 Flow (ds) = 26.78 15.93 11 16 ft Arg Bottom Loss/Gain, in -0.07 Avg Clopper Soil Loss, in -0 16 ft Cross-section 9 A B C V @ 0.2d V @ 0.6d V @ 0.8d To vater 17 o original Surface Elev, cm 35 34 36 15.5 66 To eroded Surface Elev, cm 35 34 35 Vavg (fps) = 15.50 Bed Max Shear Stress Water D 18 ft Clopper Soil Loss, cm 0 0 -1 navg = 0.048 V @ 0.8d							Vavg (fps) =		Bed Max Shear Stress	
16 ft Arg Bottom Loss/Gain, in -0.07 Arg Clopper Soil Loss, in -0.07 To original Surface Elev, cm 35 34 36 15.5 66 To original Surface Elev, cm 35 34 36 15.5 66 To eroded Surface Elev, cm 35 34 35 Vavg (fps) = 15.5 66 Soil Loss / Gain, cm 0 0 -1 navg = 0.048 (psf) Water D Clopper Soil Loss, cm 0 0 -1 navg = 0.048 (psf) Water D 18 ft Cross-section 10 A B C V @ 0.6d V @ 0.8d To water D 10 original Surface Elev, cm 34 31.5 34.5 15.5 5 5 To eroded Surface Elev, cm 34 31 34 Vavg (fps) = 15.50 Bed Max Shear Stress Water D 20 ft Cross-section 11 A B C V @ 0.6d V @ 0.8d 10 Avg Bottom Loss/Gain, in -0.13				-0.5			navg =		(psf)	Water Depth (in)
Image: Cross-section 9 A B C V @ 0.2d V @ 0.6d V @ 0.8d To Water To Vater To original Surface Elev, cm To original Surface Elev, cm 35 34 36 15.5 66 To eroded Surface Elev, cm 35 34 35 Vavg (fps) = 15.50 Bed Max Shear Stress Water If Soil Loss / Gain, cm 0 0 -1 navg = 0.048 (psf) Water If 18 ft Cross-section 10 A B C V @ 0.6d V @ 0.8d To vater Stress 18 ft Cross-section 10 A B C V @ 0.6d V @ 0.8d To vater Stress 10 original Surface Elev, cm 34 31.5 34.5 15.5 5 To eroded Surface Elev, cm 34 31 34 Vavg (fps) = 15.00 Bed Max Shear Stress Water If 20 ft Cross-section 11 A B C V @ 0.6d V @ 0.8d To vater Stress 20 ft Cross-section 11 A B	10.4	Clopp	er Soil Loss, cm					26.78	1	10.37
To original Surface Elev, cm 35 34 36 15.5 66 To eroded Surface Elev, cm 35 34 35 Vavg (fps) = 15.50 Bed Max Shear Stress Water II Soil Loss / Gain, cm 0 0 -1 navg = 0.048 (psf) Water II 18 ft Avg Bottom Loss/Gain, in -0.13 Avg Clopper Soil Loss, in -0 18 ft Avg Bottom Loss/Gain, in -0.13 Avg Clopper Soil Loss, in -0 18 ft Avg Bottom Loss/Gain, in -0.13 Avg Clopper Soil Loss, in -0 18 ft Cross-section 10 A B C V @ 0.6d V @ 0.8d To vate To original Surface Elev, cm 34 31.5 34.5 15.5 5 5 To eroded Surface Elev, cm 34 31 34 Vavg (fps) = 15.50 Bed Max Shear Stress (psf) Water II 20 ft Avg Bottom L	1011		cross-section 9		-			ba n @ V		-0.07 To Water Surf, cm
To eroded Surface Elev, cm 35 34 35 Vavg (tps) = 15.50 Bed Max Shear Stress (psf) Water II 18 ft Clopper Soil Loss, cm 0 0 -1 navg = 0.048 Water II 18 ft Avg Bottom Loss/Gain, in Clopper Soil Loss, cm 0 0 -1 Flow (cfs) = 26.78 15.93 100 18 ft Avg Bottom Loss/Gain, in -0.03 Avg Clopper Soil Loss, in -0.048 -0.048 V @ 0.6d V @ 0.8d To vate 10 original Surface Elev, cm 34 31.5 34.5 15.5 5 10 eroded Surface Elev, cm 34 31 34 Vavg (fps) = 15.50 10 eroded Surface Elev, cm 34 31 34 Vavg (fps) = 15.50 10 eroded Surface Elev, cm 30 -0.5 -0.5 navg = 0.048 (psf) Water II 20 ft Avg Bottom Loss/Gain, in -0.13 Avg Clopper Soil Loss, in -0.0 20 ft Cross-section 11 A B C V @ 0.6d V @ 0.							V & 0.24		V @ 0.00	61.0
Soil Loss / Gain, cm 0 0 -1 navg = 0.048 (psf) Water D 18 ft Clopper Soil Loss, cm 0 0 -1 Flow (cfs) = 26.78 15.93 10 18 ft Avg Bottom Loss/Gain, in -0.13 Avg Clopper Soil Loss, in -0 18 ft Cross-section 10 A B C V @ 0.2d V @ 0.6d V @ 0.8d To Water D 10 original Surface Elev, cm 34 31.5 34.5 15.5 5 5 10 eroded Surface Elev, cm 34 31 34 Vavg (fps) = 15.50 Bed Max Shear Stress Water D 20 ft Cross-section 11 A B C V @ 0.6d V @ 0.8d To water D 20 ft Cross-section 11 A B C V @ 0.6d V @ 0.8d To water D 20 ft Cross-section 11 A B C V @ 0.6d V @ 0.8d To water D 10 original Surface Elev, cm 30.5 29.5 30.5							Vavg (fps) =		Bed Max Shear Stress	
18 ft Avg Bottom Loss/Gain, in -0.13 Avg Clopper Soil Loss, in -0.0 18 ft Image: Cross-section 10 A B C V @ 0.2d V @ 0.6d V @ 0.8d To wate 10 original Surface Elev, cm 34 31.5 34.5 15.5 5 5 10 original Surface Elev, cm 34 31 34 Vavg ((ps) = 15.50 Bed Max Shear Stress Water D 20 ft Soil Loss / Gain, cm 0 -0.5 -0.5 navg = 0.048 (psf) Water D 20 ft Cross-section 11 A B C V @ 0.6d V @ 0.8d To wate 20 ft Cross-section 11 A B C V @ 0.6d V @ 0.8d To wate To original Surface Elev, cm 30.5 29.5 30.5 16 5 To original Surface Elev, cm 30.5 29.5 30.5 16 5 To original Surface Elev, cm 30.5 29.5 30.5 16		Soil	Loss / Gain, cm	0	0	-1	navg =	0.048		Water Depth (in)
Image: Construction 10 A B C V @ 0.6d V @ 0.8d To Water To Water To original Surface Elev, cm To original Surface Elev, cm 34 31.5 34.5 15.5 55 To eroded Surface Elev, cm 34 31 34 Vavg (fps) = 15.5 55 Soil Loss / Gain, cm 0 -0.5 -0.5 navg = 0.048 Bed Max Shear Stress (psf) Water II 20 ft Avg Bottom Loss/Gain, in -0.13 Avg Clopper Soil Loss, in -00 Cross-section 11 A B C V @ 0.6d V @ 0.8d To Water II To original Surface Elev, cm 30.5 29.5 30.5 16 55 To eroded Surface Elev, cm 30.5 29.5 30 Vavg (fps) = 16.00 Bed Max Shear Stress Water II Soil Loss / Gain, cm -0.5 0 -0.5 navg = 0.045 V @ 0.6d V @ 0.8d To Water II To eroded Surface Elev, cm 30.5 29.5 30 Vavg (fps) = 16.00	10 4	Clopp	er Soil Loss, cm					26.78		10.37
To original Surface Elev, on To eroded Surface Elev, on 20 ft To original Surface Elev, on Soil Loss / Gain, on Clopper Soil Loss, on 34 31.5 34.5 15.5 55 20 ft To original Surface Elev, on Clopper Soil Loss, on Clopper Soil Loss, on 0 -0.5 -0.5 navg = 0.048 Bed Max Shear Stress (psf) Water ID 20 ft Avg Bottom Loss/Gain, in Clopper Soil Loss, on 0 -0.5 -0.5 Flow (cfs) = 26.95 16.03 100 20 ft Avg Bottom Loss/Gain, in Clopper Soil Loss, on 0 -0.5 29.5 30.5 V@ 0.6d V @ 0.8d To water Display To original Surface Elev, on To eroded Surface Elev, on Soil Loss / Gain, on Clopper Soil Loss, on 30.5 29.5 30.5 16.0 Bed Max Shear Stress (psf) Water Display Soil Loss / Gain, on Clopper Soil Loss, on -0.5 0 -0.5 navg = 0.045 (psf) Water Display	IOIL		ross-section 10					V @ 0.6d		-0.13 To Water Surf, cn
Image: Construction of the construction of										59.5
20 ft Soil Loss / Gain, cm Clopper Soil Loss, cm 0 -0.5 -0.5 navg = 0.048 (psf) Water D 20 ft Clopper Soil Loss, cm 0 -0.5 -0.5 Flow (cfs) = 26.95 16.03 10 Avg Bottom Loss/Gain, in Avg Bottom Loss/Gain, in -0.13 -0.13 Avg Clopper Soil Loss, in Avg Clopper Soil Loss, in -0.5 -0.5 9.0.48 V @ 0.6d V @ 0.8d To viginal Surface Elev, cm To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm 30.5 29.5 30.5 In Soil Loss / Gain, cm Clopper Soil Loss, cm Max Shear Stress (psf) Water D 4 Vg Bottom Loss/Gain, in Clopper Soil Loss, cm -0.5 0 -0.5 Flow (cfs) = 26.95 15.53 10				34			Vavg (fps) =		Bed Max Shear Stress	
Cross-section 11 A B C V @ 0.2d V @ 0.6d V @ 0.8d To Wate To original Surface Elev, or original Surface Elev, or Soil Loss / Gain, or Clopper Soil Loss, or 30.5 29.5 30.5 16 5 Output 30.5 29.5 30.5 16 5 5 Soil Loss / Gain, or Clopper Soil Loss, or -0.5 0 -0.5 16.00 Bed Max Shear Stress (psf) Water D Avg Bottom Loss/Gain, in Avg Bottom Loss/Gain, in -0.13 Avg Clopper Soil Loss, in -0.5		1							(psf)	Water Depth (in)
Cross-section 11 A B C V @ 0.6d V @ 0.8d To Wate To original Surface Elev, cm 30.5 29.5 30.5 16 5 To eroded Surface Elev, cm 30 29.5 30 Vavg (tps) = 16.00 Bed Max Shear Stress Water D Soil Loss / Gain, cm -0.5 0 -0.5 Flow (cfs) = 26.95 15.53 10 Clopper Soil Loss, cm -0.5 0 -0.5 Flow (cfs) = 26.95 15.53 10	20.4	Clopp	er Soil Loss, cm		•			26.95		10.43
To original Surface Elev, cm 30.5 29.5 30.5 16 5 To eroded Surface Elev, cm 30 29.5 30 Vavg (fps) = 16.00 Bed Max Shear Stress Water ID Soil Loss / Gain, cm -0.5 0 -0.5 navg = 0.045 (psf) Water ID Clopper Soil Loss, cm -0.5 0 -0.5 Flow (cfs) = 26.95 15.53 10 Avg Bottom Loss/Gain, in -0.13 Avg Clopper Soil Loss, in -0.5 -0.5 -0.5 -0.5 -0.5 10 -0.5 -0.5 10 -0.5 -0.5 10 -0.5 -0.5 10 -0.5 -0.5 -0.5 10 -0.5 -0.5 10 -0.5	∠0 ft		OSS-Section 11			1		V @ 0 ed		-0.13 To Water Surf, cn
To eroded Surface Elev, cm 30 29.5 30 Vavg (tps) = 16.00 Bed Max Shear Stress (pst) Water I Soil Loss / Gain, cm -0.5 0 -0.5 navg = 0.045 (pst) Water II Clopper Soil Loss, cm -0.5 0 -0.5 Flow (cfs) = 26.95 15.53 10 Avg Bottom Loss/Gain, in -0.13 Avg Clopper Soil Loss, in -0.5 -0.5 -0.5 -0.5 -0.5 10 -0.5 -0.5 -0.5 10 -0.5 -0.5 10 -0.5							v @ U.ZU		v @ U.OU	55.5
Soil Loss / Gain, cm -0.5 0 -0.5 navg = 0.045 Desk (hear of the arbitrary of the arbi		-					Vavg (fps) =		Bed Max Shear Stress	
Avg Bottom Loss/Gain, in -0.13 Avg Clopper Soil Loss, in -0		Soil	Loss / Gain, cm	-0.5	0	-0.5		0.045		Water Depth (in)
		Clopp	er Soil Loss, cm					26.95	1	10.10
Son Loss / Gain, in -0.07 -0.13 -0.14 AVg Bottom Loss/Gain per Cross-Section = -0.11								ang/Calman		
Clopper Soil Loss, in 0.07 0.13 -0.14 Avg Clopper Soil Loss per Cross-Section = -0.11							-	-		

2 - 1	
	Start Tir

CHANNEL 2	- SHEAR STRESS 1	Date:	2/14/09	_	Start Time:	12:00 PM	End Time:	12:30 PM	•
40 ft long flume	20 th test section	Soil:	Loam		Shear (psf):	6.00	Slope:	30%	
900 rpms	20 ft test section 2 ft wide flume			FIE	examat Perma	anent Channel Lir	DATA		
1	2 3	Outlet Weir	1	2	3	1231			
	FLOW	Water Depth, in		12.00	-				
Weir width (ft) = 4	L .	Water Velocity, ft/s		3.00					
0 ft A	B C	Flow Rate, cfs	0.00	12.00	0.00				
		Cross-section 1	А	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf,
		To original Surface Elev, cm	31	31	31		6		41.0
		To eroded Surface Elev, cm	31	31	30.5	Vavg (fps) =	6.00	Bed Max Shear	
		Soil Loss / Gain, cm	0	0	-0.5	navg =	0.065	Stress (psf)	Water Depth (i
		Clopper Soil Loss, cm	0	0	-0.5	Flow (cfs) =	4.00	6.15	4.00
2 ft					Loss/Gain, in	-0.07		opper Soil Loss, in	-0.07
		Cross-section 2	A	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf,
	1	To original Surface Elev, cm	31 31	30 30	31 31		6		40.5
		To eroded Surface Elev, cm Soil Loss / Gain, cm	0	0	0	Vavg (fps) = navg =	6.00 0.064	Bed Max Shear Stress (psf)	Water Depth (
		Clopper Soil Loss, cm	0	0	0	Flow (cfs) =	3.87	5.95	3.87
4 ft				-	Loss/Gain, in	0.00		opper Soil Loss, in	0.00
		Cross-section 3	A	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf,
		To original Surface Elev, cm	31	30	32		6		40.5
		To eroded Surface Elev, cm	30.5	30	32	Vavg (fps) =	6.00	Bed Max Shear	
		Soil Loss / Gain, cm	-0.5	0	0	navg =	0.063	Stress (psf)	Water Depth (
		Clopper Soil Loss, cm	-0.5	0	0	Flow (cfs) =	3.81	5.85	3.81
6 ft				25.5	_oss/Gain, in	-0.07	Avg Cl	opper Soil Loss, in	-0.07
		Cross-section 4	А	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf,
		To original Surface Elev, cm	33	32	33		6.5		41.5
		To eroded Surface Elev, cm	32.5	32	33	Vavg (fps) =	6.50	Bed Max Shear	
		Soil Loss / Gain, cm	-0.5	0	0	navg =	0.056	Stress (psf)	Water Depth
		Clopper Soil Loss, cm	-0.5	0	0	Flow (cfs) =	3.84	5.45	3.54
8 ft		One of the f	•		Loss/Gain, in	-0.07		opper Soil Loss, in	-0.07
		Cross-section 5 To original Surface Elev, cm	A 32	B 32	C 33	V @ 0.2d	V @ 0.6d 6.5	V @ 0.8d	To Water Surf. 41.0
		To eroded Surface Elev, cm	32	32	32.5	Vavg (fps) =	6.50		41.0
		Soil Loss / Gain, cm	0	0	-0.5	navg =	0.055	Bed Max Shear Stress (psf)	Water Depth
		00ii 2033 / Oaiii, Ciii							
		Clopper Soil Loss, cm							
10 ft		Clopper Soil Loss, cm	0	0	-0.5 -0.5 Loss/Gain, in	Flow (cfs) = -0.07	3.77	5.34	3.48
10 ft		Clopper Soil Loss, cm Cross-section 6		0	-0.5	Flow (cfs) =	3.77		3.48
10 ft			0	0 Avg Bottom	-0.5 Loss/Gain, in	Flow (cfs) = -0.07	3.77 Avg Cl	5.34 opper Soil Loss, in	3.48 -0.07
10 ft	1 1	Cross-section 6	0 A	0 Avg Bottom B	-0.5 Loss/Gain, in C	Flow (cfs) = -0.07	3.77 Avg Cl V @ 0.6d	5.34 opper Soil Loss, in	3.48 -0.07 To Water Surf
10 ft	1 1	Cross-section 6 To original Surface Elev, cm	0 A 32.5	0 Avg Bottom B 32	-0.5 Loss/Gain, in C 33	Flow (cfs) = -0.07 V @ 0.2d	3.77 Avg Cl V @ 0.6d 6.5	5.34 opper Soil Loss, in V @ 0.8d	3.48 -0.07 To Water Surf, 41.0
	1 1	Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm	0 A 32.5 32.5	0 Avg Bottom B 32 32 0 0	-0.5 Loss/Gain, in C 33 33 0 0 0	Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) =	3.77 Avg Cl V @ 0.6d 6.5 6.50 0.053 3.63	5.34 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14	3.48 -0.07 To Water Surf, 41.0 Water Depth 3.35
10 ft	1 1	Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm	0 A 32.5 32.5 0 0	0 Avg Bottom B 32 32 0 0 0 Avg Bottom	-0.5 Loss/Gain, in C 33 33 0 0 Loss/Gain, in	Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00	3.77 Avg Cl V @ 0.6d 6.5 6.50 0.053 3.63 Avg Cl	5.34 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 opper Soil Loss, in	3.48 -0.07 To Water Surf, 41.0 Water Depth 3.35 0.00
		Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7	0 A 32.5 32.5 0 0 A	0 Avg Bottom B 32 32 0 0 Avg Bottom B	-0.5 Loss/Gain, in C 33 33 0 0 Loss/Gain, in C	Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) =	3.77 Avg Cl V @ 0.6d 6.5 6.50 0.053 3.63 Avg Cl V @ 0.6d	5.34 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14	3.48 -0.07 To Water Surf 41.0 Water Depth 3.35 0.00 To Water Surf
		Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm	0 A 32.5 32.5 0 0 0 A 33	0 Avg Bottom B 32 32 0 0 Avg Bottom B 32	-0.5 Loss/Gain, in C 33 33 0 0 Loss/Gain, in C 32.5	Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d	3.77 Avg Cl V @ 0.6d 6.5 6.50 0.053 3.63 Avg Cl V @ 0.6d 6.5	5.34 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 opper Soil Loss, in	3.48 -0.07 To Water Suff 41.0 Water Depth 3.35 0.00
		Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm To eroded Surface Elev, cm	0 A 32.5 32.5 0 0 0 0 A 33 33	0 Avg Bottom B 32 32 0 0 Avg Bottom B 32 31.5	-0.5 Loss/Gain, in C 33 33 0 Loss/Gain, in C 32.5 32.5	Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) =	3.77 Avg Cl V @ 0.6d 6.5 6.50 0.053 3.63 Avg Cl V @ 0.6d 6.5 6.50	5.34 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 opper Soil Loss, in V @ 0.8d Bed Max Shear	3.48 -0.07 To Water Surf 41.0 Water Depth 3.35 0.00 To Water Surf 41.0
		Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm	0 A 32.5 32.5 0 0 0 A 33 33 0	0 Avg Bottom B 32 0 0 Avg Bottom B 32 31.5 -0.5	-0.5 Loss/Gain, in C 33 33 0 Loss/Gain, in C 32.5 32.5 0	Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = navg =	3.77 Avg Cl V @ 0.6d 6.5 6.50 0.053 3.63 Avg Cl V @ 0.6d 6.5 6.50 0.054	5.34 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf)	3.48 -0.07 To Water Surf, 41.0 Water Depth 3.35 0.00 To Water Surf, 41.0 Water Depth
12 ft		Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm To eroded Surface Elev, cm	0 A 32.5 32.5 0 0 0 0 A 33 33	0 Avg Bottom B 32 32 0 0 Avg Bottom B 32 31.5 -0.5 -0.5	-0.5 Loss/Gain, in C 33 33 0 0 Loss/Gain, in C 32.5 32.5 0 0	Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = navg = Flow (cfs) =	3.77 Avg Cl V @ 0.6d 6.5 6.50 0.053 3.63 Avg Cl V @ 0.6d 6.5 6.50 0.054 3.70	5.34 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.24	3.48 -0.07 To Water Surf 41.0 Water Depth 3.35 0.00 To Water Surf 41.0 Water Depth 3.41
		Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm	0 A 32.5 32.5 0 0 0 A 33 33 0 0 0	0 Avg Bottom B 32 32 0 0 Avg Bottom B 32 31.5 -0.5 -0.5 Avg Bottom	-0.5 Loss/Gain, in C 33 33 0 0 Loss/Gain, in C 32.5 32.5 0 0 Loss/Gain, in	Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07	3.77 Avg Cl V @ 0.6d 6.5 6.50 0.053 3.63 Avg Cl V @ 0.6d 6.5 6.50 0.054 3.70 Avg Cl	5.34 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.24 opper Soil Loss, in	3.48 -0.07 To Water Surf 41.0 Water Depth 3.35 0.00 To Water Surf 41.0 Water Depth 3.41 -0.07
12 ft		Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm	0 A 32.5 32.5 0 0 0 A 33 33 0	0 Avg Bottom B 32 0 0 Avg Bottom B 32 31.5 -0.5 -0.5 Avg Bottom B	-0.5 Loss/Gain, in C 33 33 0 0 Loss/Gain, in 32.5 32.5 0 0 Loss/Gain, in C	Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = navg = Flow (cfs) =	3.77 Avg Cl V @ 0.6d 6.5 6.50 0.053 3.63 Avg Cl V @ 0.6d 6.5 6.50 0.054 3.70	5.34 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.24	3.48 -0.07 To Water Surf, 41.0 Water Depth 3.35 0.00 To Water Surf, 41.0 Water Depth 3.41 -0.07
12 ft		Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm	0 A 32.5 32.5 0 0 A 33 33 0 0 0 A	0 Avg Bottom B 32 32 0 0 Avg Bottom B 32 31.5 -0.5 -0.5 Avg Bottom	-0.5 Loss/Gain, in C 33 33 0 0 Loss/Gain, in C 32.5 32.5 0 0 Loss/Gain, in	Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07	3.77 Avg Cl V @ 0.6d 6.5 6.50 0.053 3.63 Avg Cl V @ 0.6d 6.5 6.50 0.054 3.70 Avg Cl V @ 0.6d	5.34 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.24 opper Soil Loss, in V @ 0.8d	3.48 -0.07 To Water Surf 41.0 Water Depth 3.35 0.00 To Water Surf 41.0 Water Depth 3.41 -0.07 To Water Surf
12 ft		Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 8 To original Surface Elev, cm	0 A 32.5 32.5 0 0 A 33 33 0 0 0 0 A 33	0 Avg Bottom B 32 0 0 Avg Bottom B 32 31.5 -0.5 -0.5 Avg Bottom B 32 31.5 -0.5	-0.5 Loss/Gain, in C 33 33 0 0 Loss/Gain, in C 32.5 0 0 0 Loss/Gain, in C 32 32 5 32.5 0 0 0 0 Loss/Gain, in	Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d	3.77 Avg Cl V @ 0.6d 6.5 6.50 0.053 3.63 Avg Cl V @ 0.6d 6.5 6.50 0.054 3.70 Avg Cl 0.054 3.70 Avg Cl 0.054 3.70	5.34 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.24 opper Soil Loss, in	3.48 -0.07 To Water Surf 41.0 Water Depth 3.35 0.00 To Water Surf 41.0 Water Depth 3.41 -0.07 To Water Surf 41.0
12 ft		Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 8 To original Surface Elev, cm To eroded Surface Elev, cm	0 A 32.5 32.5 0 0 A 33 33 0 0 0 0 A 33 33 33 33 33 33 33	0 Avg Bottom B 32 0 0 Avg Bottom B 31.5 -0.5 -0.5 Avg Bottom B 32 31.5 -0.5 -0.5 Avg Bottom B 32 32 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5	-0.5 Loss/Gain, in C 33 33 0 0 Loss/Gain, in C 32.5 32.5 0 0 0 Loss/Gain, in C 32 32 32	Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d	3.77 Avg Cl V @ 0.6d 6.5 6.50 0.053 3.63 Avg Cl V @ 0.6d 6.5 6.50 0.054 3.70 Avg Cl 0.054 3.70 V @ 0.6d 7 7.00	5.34 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.24 opper Soil Loss, in V @ 0.8d Bed Max Shear	3.48 -0.07 To Water Surf 41.0 Water Depth 3.35 0.00 To Water Surf 41.0 Water Depth 3.41 -0.07 To Water Surf 41.0
12 ft		Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 8 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Cross-section 8 To original Surface Elev, cm Soil Loss / Gain, cm	0 A 32.5 32.5 0 0 A 33 33 0 0 0 A 33 33 0 0 0 0	0 Avg Bottom B 32 0 0 Avg Bottom B 32 31.5 -0.5 Avg Bottom B 32 31.5 -0.5 Avg Bottom B 32 32 0 0 0 0	-0.5 Loss/Gain, in C 33 33 0 0 Loss/Gain, in C 32.5 32.5 0 0 Loss/Gain, in C 32 32 32 32 32 32 32 0	Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg =	3.77 Avg Cl V @ 0.6d 6.5 6.50 0.053 3.63 Avg Cl V @ 0.6d 6.5 6.50 0.054 3.70 Avg Cl V @ 0.6d 7 7.00 0.050 3.98	5.34 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.24 opper Soil Loss, in V @ 0.8d	3.48 -0.07 To Water Surf 41.0 Water Depth 3.35 0.00 To Water Surf 41.0 Water Depth 3.41 -0.07 To Water Surf 41.0
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12 ft 14 ft 16 ft		Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 8 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 9 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 9 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 10 To original Surface Elev, cm	0 A 32.5 32.5 0 0 A A 33 33 0 0 0 7 A 33 33 0 0 0 7 A 32 32 0 0 0 7 A 30	0 Avg Bottom B 32 0 0 Avg Bottom B 32 31.5 -0.5 -0.5 Avg Bottom B 32 31.5 -0.5 Avg Bottom B 32 32 0 0 Avg Bottom B 32 31.5 -0.5 -0.5 Avg Bottom B 32 32 -0.5 -0.5 -0.5 Avg Bottom B 32 -0.5	-0.5 Loss/Gain, in C 33 33 0 0 Loss/Gain, in C 32.5 32.5 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 0 Loss/Gain, in C 32 32 32 0 0 0 Loss/Gain, in C 32 32 32 0 0 0 Loss/Gain, in C 32 32 32 0 0 0 Loss/Gain, in C 32 32 32 0 0 0 Loss/Gain, in C 32 32 32 0 0 0 Loss/Gain, in C 32 32 32 0 0 0 Loss/Gain, in C 32 32 0 0 0 Loss/Gain, in C 32 32 0 0 0 Loss/Gain, in C 32 32 0 0 0 Loss/Gain, in C 32 32 0 0 0 Loss/Gain, in C 32 32 0 0 0 Loss/Gain, in C 32 32 32 0 0 0 Loss/Gain, in C 32 32 0 0 0 Loss/Gain, in C 32 32 32 0 0 0 Loss/Gain, in C 32 32 32 0 0 0 Loss/Gain, in C 32 32 32 32 32 32 0 0 0 Loss/Gain, in C 32 32 32 32 0 0 0 Loss/Gain, in C 32 32 32 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Flow (cfs) = -0.07 V @ 0.2d Navg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d	3.77 Avg Cl V @ 0.6d 6.5 6.50 0.053 3.63 Avg Cl V @ 0.6d 6.5 6.50 0.054 3.70 Avg Cl V @ 0.6d 7 7.00 0.050 3.98 Avg Cl V @ 0.6d 7 7.00 0.050 3.98 Avg Cl V @ 0.6d 7 7.00 0.050 3.98 Avg Cl V @ 0.6d 7 7 7.00 0.050 3.98 Avg Cl V @ 0.6d 7 7 7 0 0.050 3.98 Avg Cl V @ 0.6d 7 7 7 0 0.050 3.98 Avg Cl V @ 0.6d 7 7 7 0 0.050 3.98 Avg Cl 7 7 7 0 0.050 3.98 7 7 7 0 0.050 3.90 0.050 0.050 3.90 0.05	5.34 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.24 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.24 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.24 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 opper Soil Loss, in V @ 0.8d	3.48 -0.07 To Water Surf, 41.0 Water Depth 3.35 0.00 To Water Surf, 41.0 Water Depth 3.41 -0.07 To Water Surf, 41.0 Water Depth 3.41 0.00 To Water Surf, 40.0
12 ft 14 ft 16 ft		Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 8 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 9 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 9 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 10 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 10 To original Surface Elev, cm	0 A 32.5 32.5 0 0 A 33 33 0 0 0 0 A 33 33 0 0 0 0 A 33 33 0 0 0 0	0 Avg Bottom B 32 0 0 Avg Bottom B 32 31.5 -0.5 Avg Bottom B 32 31.5 -0.5 Avg Bottom B 32 32 0 0 Avg Bottom B 32 32.5 -0.5 Avg Bottom B 32 32 0 0 Avg Bottom B 32 32 0 0 Avg Bottom B 32 32 0 0 0 0 0 0 0 0 0 0 0 0 0	-0.5 Loss/Gain, in C 33 33 0 0 Loss/Gain, in C 32.5 32.5 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 0 Loss/Gain, in C 32 32 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Flow (cfs) = -0.07 V @ 0.2d Navg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d V @ 0.2d V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d	3.77 Avg Cl V @ 0.6d 6.5 6.50 0.053 3.63 Avg Cl V @ 0.6d 6.5 6.50 0.054 3.70 Avg Cl V @ 0.6d 7 7.00 0.050 3.98 Avg Cl V @ 0.6d 7 7.00 0.050 3.99 Avg Cl V @ 0.6d 7 7.00 0.050 3.90 Avg Cl V @ 0.6d 7 7.00	5.34 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.24 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.24 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 opper Soil Loss, in V @ 0.8d Bed Max Shear	3.48 -0.07 To Water Surf, 41.0 Water Depth 3.35 0.00 To Water Surf, 41.0 Water Depth 3.41 -0.07 To Water Surf, 41.0 Water Depth 3.41 0.00 To Water Surf, 40.0 Water Depth 3.35 -0.07 To Water Surf, 3.85
12 ft 14 ft 16 ft		Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 8 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 9 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 9 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 10 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 10 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Clopper Soil Lo	0 A 32.5 32.5 0 0 A 33 33 0 0 0 0 A 33 33 0 0 0 0 A 33 33 0 0 0 0	0 Avg Bottom B 32 0 0 Avg Bottom B 32 31.5 -0.5 -0.5 Avg Bottom B 32 32 0 0 Avg Bottom B 32 -0.5 -0.5 Avg Bottom B 31 30.5 -0.5 -0.5 Avg Bottom B 31 30.5 -0.5 Avg Bottom B 31 30.5 -0.5 Avg Bottom B 31 30 30 -0.5 -	-0.5 Loss/Gain, in C 33 33 0 0 Loss/Gain, in C 32.5 32.5 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 0 Loss/Gain, in C 32 32 0 0 0 0 Loss/Gain, in C 32 32 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Flow (cfs) = -0.07 V @ 0.2d Navg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d V @ 0.2d V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d	3.77 Avg Cl V @ 0.6d 6.5 6.50 0.053 3.63 Avg Cl V @ 0.6d 6.5 6.50 0.054 3.70 Avg Cl V @ 0.6d 7 7.00 0.050 3.98 Avg Cl V @ 0.6d 7 7.00 0.050 3.90 Avg Cl V @ 0.6d 7 7.00 0.050 3.90 Avg Cl	5.34 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.24 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.24 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 opper Soil Loss, in V @ 0.8d	3.48 -0.07 To Water Surf, 41.0 Water Depth 3.35 0.00 To Water Surf, 41.0 Water Depth 3.41 -0.07 To Water Surf, 41.0 Water Depth 3.41 0.00 To Water Surf, 40.0 To Water Depth 3.35 -0.07 To Water Surf, 3.85
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12 ft		Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm To original Surface Elev, cm To eroded Surface Elev, cm Clopper Soil Loss, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm Clopper Soil Loss, cm	0 A 32.5 32.5 0 0 A 33 33 0 0 0 0 A 33 33 0 0 0 0 0 A 32 32 0 0 0 0 0 A 30 30 0 0 0 0 A A 30 30 0 0 0	0 Avg Bottom B 32 0 0 Avg Bottom B 32 31.5 -0.5 Avg Bottom B 32 32 0 0 0 Avg Bottom B 32 32 0 0 Avg Bottom B 31 30.5 -0.5 -0.5 Avg Bottom B 31 30.5 -0.5 Avg Bottom B 31 30.5 -0.5 -0.5 Avg Bottom B 31 30 0 0 Avg Bottom B 31 30 -0.5	-0.5 Loss/Gain, in C 33 33 0 0 Loss/Gain, in C 32.5 32.5 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C	Flow (cfs) = -0.07 V @ 0.2d Navg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d	3.77 Avg Cl V @ 0.6d 6.5 6.50 0.053 3.63 Avg Cl 0.054 3.70 Avg Cl V @ 0.6d 7 7.00 0.050 3.98 Avg Cl V @ 0.6d 7 7.00 0.050 3.90 Avg Cl V @ 0.6d 7 7.00 0.050 3.90 Avg Cl V @ 0.6d 7 7.00 0.050 3.90 Avg Cl V @ 0.6d	5.34 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.24 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.24 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 opper Soil Loss, in V @ 0.8d Destination of the stress (psf) 5.14 opper Soil Loss, in V @ 0.8d Destination of the stress (psf) 5.14 opper Soil Loss, in V @ 0.8d Destination of the stress (psf) 5.14 opper Soil Loss, in V @ 0.8d Destination of the stress (psf) 5.14 opper Soil Loss, in V @ 0.8d	3.48 -0.07 To Water Surf 3.35 0.00 To Water Surf 41.0 Water Depth 3.41 -0.07 To Water Surf 41.0 Water Depth 3.41 0.00 To Water Surf 40.0 To Water Surf 3.35 -0.07 To Water Surf 3.85 -0.07 To Water Surf 3.85 -0.07 To Water Depth 3.35 -0.07
12 ft		Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm Clopper Soil Loss, cm Clopper Soil Los	0 A 32.5 32.5 0 0 A 33 33 0 0 0 0 A 33 33 0 0 0 0 0 0	0 Avg Bottom B 32 0 0 Avg Bottom B 32 31.5 -0.5 Avg Bottom B 32 31.5 -0.5 Avg Bottom B 32 32 0 0 Avg Bottom B 31 30.5 -0.5 Avg Bottom B 31 30.5 -0.5 Avg Bottom B 31 30.5 -0.5 Avg Bottom B 31 30 0 Avg Bottom B 31 30 -0.5 -0.	-0.5 Loss/Gain, in C 33 33 0 0 Loss/Gain, in C 32.5 32.5 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 33 30 0 0 Loss/Gain, in C 33 30 0 0 Loss/Gain, in C 33 30 0 0 Loss/Gain, in C 33 30 0 0 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1	Flow (cfs) = -0.07 V @ 0.2d Navg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d	3.77 Avg Cl V @ 0.6d 6.5 6.50 0.053 3.63 Avg Cl V @ 0.6d 6.5 6.50 0.054 3.70 Avg Cl V @ 0.6d 7 7.00 0.050 3.98 Avg Cl V @ 0.6d 7 7.00 0.050 3.90 Avg Cl V @ 0.6d 7 7.00 0.050 3.90 0.050 3.90 0.050 0.	5.34 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.24 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.24 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 opper Soil Loss, in	3.48 -0.07 To Water Surf, 3.35 0.00 To Water Surf, 41.0 To Water Surf, 3.41 -0.07 To Water Depth 3.41 -0.07 To Water Surf, 41.0 Water Depth 3.41 0.00 To Water Surf, 3.41 0.00 To Water Surf, 3.35 -0.07 To Water Surf, 3.85 -0.07 To Water Depth 3.35 -0.00 To Water Depth 3.35
12 ft		Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 8 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Corper Soil Loss, cm Clopper Soil Loss,	0 A 32.5 32.5 0 0 A 33 33 0 0 0 A 33 33 0 0 0 0 A 33 33 0 0 0 0	0 Avg Bottom B 32 0 0 Avg Bottom B 32 31.5 -0.5 Avg Bottom B 32 31.5 -0.5 Avg Bottom B 32 32 0 0 0 Avg Bottom B 31 30.5 -0.5 Avg Bottom B 31 30.5 -0.5 Avg Bottom B 31 30.5 -0.5 Avg Bottom B 31 30 0 0 Avg Bottom B 31 31 31 31 32 32 32 32 32 32 32 32 32 32	-0.5 Loss/Gain, in C 33 33 0 0 Loss/Gain, in C 32.5 32.5 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 32 0 0 Loss/Gain, in C 32 32 32 0 0 Loss/Gain, in C 32 32 32 0 0 Loss/Gain, in C 32 32 32 0 0 Loss/Gain, in C 32 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 32 32 32 0 0 Loss/Gain, in C 32 32 32 0 0 Loss/Gain, in C 32 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 32 0 0 Loss/Gain, in C 32 32 30 1 0 Loss/Gain, in C 33 30 1 0 1 0 1 1 30 30 30 1 30 1 30	Flow (cfs) = -0.07 V @ 0.2d Navg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d V @ 0.2d Vavg (fps) = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = Navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = Navg = Flow (cfs) = -0.07 V @ 0.2d	3.77 Avg Cl V @ 0.6d 6.5 6.50 0.053 3.63 Avg Cl V @ 0.6d 6.5 6.50 0.054 3.70 Avg Cl V @ 0.6d 7 7.00 0.050 3.98 Avg Cl V @ 0.6d 7 7.00 0.050 3.90 Avg Cl 7 7.00 0.050 3.90 Avg Cl 7 7.00 0.050 3.90 Avg Cl 7 7.00 0.050 3.90 Avg Cl 7 7.00 0.050 3.90 Avg Cl 7 7.00 0.050 3.90 Avg Cl 7 7.00 0.050 3.90 Avg Cl 7 7.5 7.50	5.34 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.24 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.24 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 opper Soil Loss, in V @ 0.8d Bed Max Shear	3.48 -0.07 To Water Surf 3.35 0.00 To Water Surf 3.41 -0.07 To Water Depth 3.41 -0.07 To Water Surf 41.0 Water Depth 3.41 0.00 To Water Surf 40.0 To Water Surf 3.35 -0.07 To Water Surf 3.85 -0.07 To Water Surf 3.85 -0.07 To Water Surf 3.85 -0.00 To Water Surf 3.85 -0.00 To Water Surf 3.35 -0.00 To Water Surf 3.35 -0.00
12 ft		Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 8 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 9 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Clopper Soil Loss, cm To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm To original Surface Elev, cm To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Clopper Soil Loss, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Clopper Soil Loss, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Clopper Soil Loss, cm Clopper Soil Loss, cm Clopper Soil Loss, cm Soil Loss / Gain, cm Clopper Soil Loss,	0 A 32.5 32.5 0 0 A 33 33 0 0 0 7 A 33 33 0 0 0 7 A 33 33 0 0 0 0 7 A 30 30 0 0 0 7 A 30 30 0 0 0 0 7 7 7 7 7 7 7 7 7 7 7 7 7	0 Avg Bottom B 32 0 0 Avg Bottom B 32 31.5 -0.5 -0.5 -0.5 Avg Bottom B 32 32 31.5 -0.5 -0.5 Avg Bottom B 31 30.5 -0.5 -0.5 Avg Bottom B 31 30.5 -0.5 -0.5 Avg Bottom B 31 30.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -	-0.5 Loss/Gain, in C 33 33 0 0 Loss/Gain, in C 32.5 32.5 0 0 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 32 32 0 0 0 Loss/Gain, in C 32 32 0 0 0 Loss/Gain, in C 32 32 0 0 0 Loss/Gain, in C 32 32 0 0 0 Loss/Gain, in C 32 32 0 0 0 Loss/Gain, in C 32 32 32 0 0 0 Loss/Gain, in C 32 32 32 32 32 32 32 32 32 32 32 32 32	Flow (cfs) = -0.07 V @ 0.2d Navg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.00 V @ 0.2d	3.77 Avg Cl V @ 0.6d 6.5 6.50 0.053 3.63 Avg Cl V @ 0.6d 6.5 6.50 0.054 3.70 V @ 0.6d 7 7.00 0.050 3.98 Avg Cl V @ 0.6d 7 7.00 0.050 3.98 V @ 0.6d 7 7.00 0.050 3.98 V @ 0.6d 7 7.00 0.050 3.90 Avg Cl V @ 0.6d 7 7.00 0.050 3.98 Avg Cl V @ 0.6d 7 7.00 0.050 3.90 Avg Cl 7 7.00 0.050 3.90 Avg Cl 4.050 3.90 Avg Cl 4.050 3.90 Avg Cl 4.050 3.90 Avg Cl 4.10 4.10	5.34 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.24 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.24 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 5.14 opper Soil Loss, in V @ 0.8d Bed Max Shear	3.48 -0.07 To Water Surf 3.35 0.00 To Water Surf 3.41 -0.07 To Water Depth 3.41 -0.07 To Water Surf 4.1.0 Water Depth 3.41 0.00 To Water Surf 3.35 -0.07 To Water Surf 3.85 -0.07 To Water Depth 3.35 -0.07 To Water Surf 3.8.5 Water Depth 3.35 0.00 To Water Surf 3.35 0.00 To Water Surf 3.35 0.00

2 - 2	

CHANNEL 2 -	SHEAR STRESS 2	Date:	2/14/09	_	Start Time:	1:00 PM	End Time:	1:30 PM	-
		Soil:	Loam		Shear (psf):	10.00	Slope:	30%	
40 ft long flume	20 ft test section			Fle	examat Perma	nent Channel Lin	-		
rpms 1	2 ft wide flume 2 3	Inlet Weir	1	2	3	TEST	DATA		
	FLOW	Water Depth, in		15.00	3				
Weir width (ft) = 4		Water Velocity, ft/s		4.50					
0 ft A	в. С	Flow Rate, cfs	0.00	22.50	0.00				
		Cross-section 1	А	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, cr
		To original Surface Elev, cm	31	31	30.5		8		45.0
		To eroded Surface Elev, cm	31	31	30.5	Vavg (fps) =	8.00	Bed Max Shear	
		Soil Loss / Gain, cm	0	0	0	navg =	0.061	Stress (psf)	Water Depth (in
		Clopper Soil Loss, cm	0	0	0	Flow (cfs) =	7.44	8.57	5.58
2 ft				Ŭ	Loss/Gain, in	0.00		lopper Soil Loss, in	
		Cross-section 2	A	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, o
		To original Surface Elev, cm To eroded Surface Elev, cm	31 31	30 30	31 31) (aug (fag)	8.5		44.0
		Soil Loss / Gain, cm	0	0	0	Vavg (fps) = navg =	8.50 0.055	Bed Max Shear Stress (psf)	Water Depth (ir
		Clopper Soil Loss, cm	0	0	0	Flow (cfs) =	7.44	8.07	5.25
4 ft				-	Loss/Gain, in	0.00		opper Soil Loss, in	0.00
		Cross-section 3	А	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, c
		To original Surface Elev, cm	30.5	30	32		8.5		44.0
		To eroded Surface Elev, cm	30.5	30	31.5	Vavg (fps) =	8.50	Bed Max Shear	
		Soil Loss / Gain, cm	0	0	-0.5	navg =	0.055	Stress (psf)	Water Depth (ir
		Clopper Soil Loss, cm	0	0	-0.5	Flow (cfs) =	7.44	8.07	5.25
6 ft					Loss/Gain, in	-0.07		lopper Soil Loss, in	-0.07
	<u> </u>	Cross-section 4	A	В	C	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, o
		To original Surface Elev, cm To eroded Surface Elev, cm	32.5 32.5	32	33 32.5	Vova (foc) -	8.5 8.50		45.5
		Soil Loss / Gain, cm	0	0	-0.5	Vavg (fps) = navg =	0.055	Bed Max Shear Stress (psf)	Water Depth (ir
		Clopper Soil Loss, cm	0	0	-0.5	Flow (cfs) =	7.34	7.97	5.18
8 ft					Loss/Gain, in	-0.07		lopper Soil Loss, in	-0.07
		Cross-section 5	А	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, o
		To original Surface Elev, cm	32	32	32.5		9		45.0
		To eroded Surface Elev, cm	32	32	32	Vavg (fps) =	9.00	Bed Max Shear	
		-	32 0	32 0	32 -0.5	Vavg (fps) = navg =	9.00 0.051	Bed Max Shear Stress (psf)	Water Depth (ir
		To eroded Surface Elev, cm		0	-0.5 -0.5	navg = Flow (cfs) =	0.051 7.68	Stress (psf) 7.87	Water Depth (in 5.12
10 ft		To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm	0	0 0 Avg Bottom	-0.5 -0.5 Loss/Gain, in	navg = Flow (cfs) = -0.07	0.051 7.68 Avg Cl	Stress (psf) 7.87 opper Soil Loss, in	5.12 -0.07
10 ft		To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 6	0 0 A	0 0 Avg Bottom B	-0.5 -0.5 Loss/Gain, in C	navg = Flow (cfs) =	0.051 7.68 Avg Cl V @ 0.6d	Stress (psf) 7.87	5.12 -0.07 To Water Surf, c
10 ft		To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 6 To original Surface Elev, cm	0 0 A 32.5	0 0 Avg Bottom B 32	-0.5 -0.5 Loss/Gain, in C 33	navg = Flow (cfs) = -0.07 V @ 0.2d	0.051 7.68 Avg Cl V @ 0.6d 9	Stress (psf) 7.87 lopper Soil Loss, in V @ 0.8d	5.12 -0.07
10 ft		To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm	0 0 A 32.5 32.5	0 0 Avg Bottom B 32 32	-0.5 -0.5 Loss/Gain, in C 33 33	navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) =	0.051 7.68 Avg Cl V @ 0.6d 9 9.00	Stress (psf) 7.87 opper Soil Loss, in V @ 0.8d Bed Max Shear	5.12 -0.07 To Water Surf, c 45.5
10 ft		To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm	0 0 A 32.5	0 0 Avg Bottom B 32	-0.5 -0.5 Loss/Gain, in C 33	navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg =	0.051 7.68 Avg Cl V @ 0.6d 9	Stress (psf) 7.87 lopper Soil Loss, in V @ 0.8d	5.12 -0.07 To Water Surf, c
10 ft		To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm	0 0 A 32.5 32.5 0	0 Avg Bottom B 32 32 0 0	-0.5 -0.5 Loss/Gain, in C 33 33 0	navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) =	0.051 7.68 Avg Cl V @ 0.6d 9 9.00 0.051 7.68	Stress (psf) 7.87 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf)	5.12 -0.07 To Water Surf, o 45.5 Water Depth (in
		To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm	0 0 A 32.5 32.5 0	0 Avg Bottom B 32 32 0 0	-0.5 -0.5 Loss/Gain, in C 33 33 0 0 0	navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) =	0.051 7.68 Avg Cl V @ 0.6d 9 9.00 0.051 7.68	Stress (psf) 7.87 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.87	5.12 -0.07 To Water Surf, c 45.5 Water Depth (ir 5.12 0.00
		To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm	0 0 A 32.5 32.5 0 0	0 0 Avg Bottom B 32 32 0 0 Avg Bottom	-0.5 -0.5 Loss/Gain, in C 33 33 0 0 Loss/Gain, in	navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00	0.051 7.68 Avg Cl V @ 0.6d 9 9.00 0.051 7.68 Avg Cl	Stress (psf) 7.87 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.87 opper Soil Loss, in	5.12 -0.07 To Water Surf, c 45.5 Water Depth (ir 5.12 0.00
		To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7	0 0 A 32.5 32.5 0 0 A	0 0 Avg Bottom B 32 32 0 0 Avg Bottom B	-0.5 -0.5 Loss/Gain, in C 33 33 0 0 Loss/Gain, in C	navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00	0.051 7.68 V @ 0.6d 9 9.00 0.051 7.68 Avg Cl V @ 0.6d	Stress (psf) 7.87 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.87 opper Soil Loss, in	5.12 -0.07 To Water Surf, c 45.5 Water Depth (ir 5.12 0.00 To Water Surf, c
		To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm	0 0 32.5 32.5 0 0 0 A 33 33 0	0 0 Avg Bottom B 32 32 0 0 Avg Bottom B 31.5 31 -0.5	-0.5 -0.5 Loss/Gain, in C 33 33 0 0 Loss/Gain, in C 32.5 32 -0.5	navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d	0.051 7.68 Avg Cl V @ 0.6d 9 9.00 0.051 7.68 Avg Cl V @ 0.6d 9	Stress (psf) 7.87 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.87 opper Soil Loss, in V @ 0.8d	5.12 -0.07 To Water Surf, c 45.5 Water Depth (ir 5.12 0.00 To Water Surf, c
12 ft		To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 6 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm To eroded Surface Elev, cm	0 0 32.5 32.5 0 0 0 A 33 33	0 0 Avg Bottom B 32 32 0 0 Avg Bottom B 31.5 31 -0.5 -0.5	-0.5 -0.5 Loss/Gain, in C 33 33 0 0 0 Loss/Gain, in C 32.5 32 -0.5 -0.5	navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Flow (cfs) =	0.051 7.68 Avg Cl 9 9.00 0.051 7.68 Avg Cl V @ 0.6d 9 9.00 0.051 7.68	Stress (psf) 7.87 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.87 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.87	5.12 -0.07 To Water Surf, c 45.5 Water Depth (in 5.12 0.00 To Water Surf, c 45.0 Water Depth (in 5.12
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12 ft 14 ft 16 ft 18 ft		To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 8 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 9 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 9 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 10 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Corpor Soil Loss, cm Soil Loss / Gain, cm Clopper Soil Loss, cm	0 0 0 32.5 32.5 0 0 A 33 33 33 0 0 0 0 A 33 32.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0	0 0 Avg Bottom B 32 32 0 0 Avg Bottom B 31.5 31 -0.5 Avg Bottom B 32 32 0 0 0 Avg Bottom B 32 32 0 0 Avg Bottom B 30.5 30.5 0 0 Avg Bottom B 30.5 30.5 0 0 Avg Bottom B 30.5 30.5 0 0 Avg Bottom B 30.5 30.5 0 0 Avg Bottom B 30.5 30.5 0 0 Avg Bottom B 30.5 0 0 Avg Bottom B 30.5 0 0 Avg Bottom B 30.5 0 0 0 Avg Bottom B 30.5 0 0 0 Avg Bottom B 30.5 0 0 0 Avg Bottom B 30.5 0 0 0 Avg Bottom B 30.5 0 0 0 0 Avg Bottom B 30.5 0 0 0 Avg Bottom B 30.5 0 0 0 0 Avg Bottom B 30.5 0 0 0 0 0 0 0 0 0 0 0 0 0	-0.5 -0.5 Loss/Gain, in C 33 33 0 0 0 Loss/Gain, in C 32 -0.5 -0.5 Loss/Gain, in C 32 32 -0.5 -0.5 Loss/Gain, in C 32 32 -0.5 Loss/Gain, in C 32 -0.5 Loss/Gain, in C 32 -0.5 Loss/Gain, in C 32 -0.5 -0.5 Loss/Gain, in C 32 -0.5 -0.5 -0.5 Loss/Gain, in C 32 -0.5 -0.5 Loss/Gain, in C -0.5 -0.5 Loss/Gain, in C -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5	navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.00 V @ 0.2d	0.051 7.68 Avg Cl V @ 0.6d 9 9.00 0.051 7.68 Avg Cl V @ 0.6d 9 9.00 0.051 7.68 Avg Cl V @ 0.6d 9 9.00 0.051 7.58 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.69 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.79 Avg Cl V @ 0.6d 10	Stress (psf) 7.87 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.87 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.76 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.76 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.46 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.46 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.56 opper Soil Loss, in	5.12 -0.07 To Water Surf, 1 45.5 Water Depth (i 5.12 0.00 To Water Surf, 1 45.0 Water Depth (i 5.12 -0.13 To Water Surf, 1 45.0 Water Depth (i 45.0 -0.07 To Water Surf, 1 43.5 Water Depth (i 4.86 -0.13 To Water Surf, 1 42.5 Water Depth (i 4.92 0.00 To Water Surf, 1 42.5
12 ft 14 ft 16 ft 18 ft		To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Clopper Soil Loss, cm Clopper Soil Loss, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm	0 0 0 32.5 32.5 0 0 A 33 33 0 0 0 0 A 33 32.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0	0 0 0 Avg Bottom B 32 0 0 Avg Bottom B 31.5 31 -0.5 -0.5 Avg Bottom B 32 32 0 0 Avg Bottom B 32. 32 0 0 Avg Bottom B 30.5 30.5 30.5 30.5 30.5 30.5 30.5 30.5	-0.5 -0.5 -0.5 Loss/Gain, in C 33 0 0 0 Loss/Gain, in C 32.5 -0.5 Loss/Gain, in C 32 32 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = Navg (fps) = navg = Flow (cfs) = navg = Flow (cfs) = navg = Flow (cfs) =	0.051 7.68 Avg Cl V @ 0.6d 9 9.00 0.051 7.68 V @ 0.6d 9 9.00 0.051 7.68 Avg Cl V @ 0.6d 9 9.00 0.051 7.58 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.69 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.69 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.79 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.79 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.79 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.79 Avg Cl 0.047 7.79 Avg Cl 0.047 7.79 0.047 7.79 0.047 7.79 0.047 7.79 0.047 7.79 0.047 7.79 0.047 7.79 0.047 7.69 0.047 7.79 0.047 7.79 0.047 7.79 0.047 7.79 0.047 7.79 0.047 0.047 7.69 0.047 7.79 0.047 7.79 0.047 0.045	Stress (psf) 7.87 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.87 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.87 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.76 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.46 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.46 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.46 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.46 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.46 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.56 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.46	5.12 -0.07 To Water Surf, 6 45.5 Water Depth (ii 5.12 0.00 To Water Surf, 6 45.0 Water Depth (ii 5.12 -0.13 To Water Depth (ii 5.05 -0.07 To Water Surf, 6 43.5 Water Depth (ii 4.86 -0.13 To Water Surf, 6 4.92 0.00 To Water Surf, 6 4.92 0.00 To Water Surf, 6 4.92 0.00
12 ft 14 ft 16 ft 18 ft		To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 8 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 9 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Clopper Soil Loss, cm To eroded Surface Elev, cm To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Clopper Soil Loss, cm To eroded Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 10 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Clopper Soil Loss, cm	0 0 0 32.5 32.5 0 0 A 33 33 0 0 0 0 A 33 32.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0	0 0 0 Avg Bottom B 32 0 0 Avg Bottom B 31.5 31 -0.5 -0.5 Avg Bottom B 32 32 0 0 Avg Bottom B 32. 32 0 0 Avg Bottom B 30.5 30.5 30.5 30.5 30.5 30.5 30.5 30.5	-0.5 -0.5 -0.5 Loss/Gain, in C 33 0 0 0 Loss/Gain, in C 32 -0.5 -0.5 Loss/Gain, in C 32 32 0 0 0 0 Loss/Gain, in C 32 31.5 -0.5 Loss/Gain, in C 32 31.5 -0.5 Loss/Gain, in C 32 31.5 -0.5 Loss/Gain, in C 32 31.5 -0.5 Loss/Gain, in C 32 31.5 -0.5 Loss/Gain, in C 32 31.5 -0.5 Loss/Gain, in C 32 31.5 -0.5 Loss/Gain, in C 32 31.5 -0.5 Loss/Gain, in C 32 31.5 -0.5 Loss/Gain, in C 33 -0.5 Loss/Gain, in C 30 -0.5 Loss/Gain, in C 30 -0.5 Loss/Gain, in C 30 -0.5 Loss/Gain, in C 30 -0.5 Loss/Gain, in C 30 -0.5 Loss/Gain, in C 30 -0.5 Loss/Gain, in C 30 -0.5 Loss/Gain, in C -0.5 Loss/Gain, in C	navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = navg =	0.051 7.68 Avg Cl V @ 0.6d 9 9.00 0.051 7.68 V @ 0.6d 9 9.00 0.051 7.68 Avg Cl V @ 0.6d 9 9.00 0.051 7.58 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.69 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.69 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.79 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.68 0.047 7.69 0.047 7.79 0.047 7.79 0.047 7.79 0.047 7.79 0.047 7.79 0.047 0.047 7.79 0.047 0.047 7.79 0.047 0.045 0.045 0.047 0.045 0.047 0.047 0.045 0.047 0.045 0.047 0.045 0.047 0.045 0.047 0.045 0.047 0.045 0.047 0.045 0.047 0.045 0.047 0.045 0.047 0.045 0.047 0.045 0.047 0.045 0.047 0.045 0.047 0.045 0.047 0.045 0.047 0.045 0.047 0.045 0.047 0.045 0.047 0.045 0.047 0.047 0.047 0.047 0.047 0.045 0.047 0.04	Stress (psf) 7.87 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.87 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.87 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.76 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.46 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.56 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.46 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.46 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.46 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.46 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.46 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.46 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.46 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.46 opper Soil Loss, in	5.12 -0.07 To Water Surf, 1 45.5 Water Depth (i 5.12 0.00 To Water Surf, 1 45.0 Water Depth (i 5.12 -0.13 To Water Depth (i 5.05 -0.07 To Water Surf, 1 43.5 Water Depth (i 4.86 -0.13 To Water Surf, 1 4.92 0.00 To Water Surf, 1 4.92 0.00 To Water Surf, 1 4.92 0.00 To Water Surf, 1 4.92 0.00

CHANNEL 2 - S	SHEAR STRESS 3	Date:	2/14/09	_ Target	Start Time: Shear (psf):	2:00 PM 14.00	End Time: Slope:	2:30 PM 30%	-
40 ft long flume	20 ft test section	Soil:	Loam			anent Channel Lin		30%	
rpms	2 ft wide flume			1.6	skamat i erm		DATA		
	2 3	Inlet Weir	1	2	3				
FL	ow	Water Depth, in		19.00					
Weir width (ft) = 4		Water Velocity, ft/s		6.00					
0 ft A B	<u>с</u>	Flow Rate, cfs	0.00	38.00	0.00				
	[Cross-section 1	А	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, o
		To original Surface Elev, cm	31	31	30.5		10		50.5
		To eroded Surface Elev, cm	31	31	30	Vavg (fps) =	10.00	Bed Max Shear	
		Soil Loss / Gain, cm	0	0	-0.5	navg =	0.061	Stress (psf)	Water Depth (i
		Clopper Soil Loss, cm	0	0	-0.5	Flow (cfs) =	13.01	12.00	7.81
2 ft	— — — — — — — — — — — — — — — — — — —	0 1 0			Loss/Gain, in	-0.07		opper Soil Loss, in	-0.07
	— —	Cross-section 2	A	B 30	C 21	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf,
		To original Surface Elev, cm To eroded Surface Elev, cm	31 31	30	31 31	Vavg (fps) =	10.5 10.50		49.5
		Soil Loss / Gain, cm	0	0	0	navg =	0.056	Bed Max Shear Stress (psf)	Water Depth (i
		Clopper Soil Loss, cm	0	0	0	Flow (cfs) =	12.98	11.39	7.41
4 ft					Loss/Gain, in	0.00		opper Soil Loss, in	0.00
		Cross-section 3	A	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf,
		To original Surface Elev, cm	30.5	30	31.5		10.5		49.5
		To eroded Surface Elev, cm	30	30	31.5	Vavg (fps) =	10.50	Bed Max Shear	
		Soil Loss / Gain, cm	-0.5	0	0	navg =	0.057	Stress (psf)	Water Depth (i
		Clopper Soil Loss, cm	-0.5	0	0	Flow (cfs) =	13.09	11.50	7.48
6 ft	<u> </u>			Avg Bottom	Loss/Gain, in	-0.07	Avg Cl	opper Soil Loss, in	-0.07
	 	Cross-section 4	A	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf,
		To original Surface Elev, cm	32.5	32	32.5		11		50.0
		To eroded Surface Elev, cm	32	32	32	Vavg (fps) =	11.00	Bed Max Shear	
		Soil Loss / Gain, cm	-0.5	0	-0.5	navg =	0.052	Stress (psf)	Water Depth (i
0.4		Clopper Soil Loss, cm	-0.5	0	-0.5	Flow (cfs) =	12.99	10.89	7.09
8 ft		Cross section 5	•	Avg Bottom B	Loss/Gain, in C	-0.13 V @ 0.2d	Avg Ci V @ 0.6d	opper Soil Loss, in V @ 0.8d	-0.13 To Water Surf,
		Cross-section 5 To original Surface Elev, cm	A 32	32	32	v @ 0.20	11	v @ 0.80	49.5
		To eroded Surface Elev, cm	32	32	32	Vavg (fps) =	11.00		49.5
		Soil Loss / Gain, cm	0	0	0	navg =	0.051	Bed Max Shear Stress (psf)	Water Depth (i
		Clopper Soil Loss, cm	0	0	0	Flow (cfs) =	12.63	10.59	6.89
10 ft				-	Loss/Gain, in	0.00		lopper Soil Loss, in	0.00
		Cross-section 6	A	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, o
		To original Surface Elev, cm	32.5	32	33		11		50.0
		To eroded Surface Elev, cm	32	32	33	Vavg (fps) =	11.00	Bed Max Shear	
		Soil Loss / Gain, cm	-0.5	0	0	navg =	0.051	Stress (psf)	Water Depth (i
		Clopper Soil Loss, cm	-0.5	0	0	Flow (cfs) =	12.75	10.69	6.96
12 ft				Avg Bottom	Loss/Gain, in	-0.07	Avg Cl	opper Soil Loss, in	-0.07
		Cross-section 7	A	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf,
		To original Surface Elev, cm	33	31	32		11		49.5
		To eroded Surface Elev, cm	33	31	32	Vavg (fps) =	11.00	Bed Max Shear	
		Soil Loss / Gain, cm	0	0	0	navg =	0.051	Stress (psf)	Water Depth (i
		Clopper Soil Loss, cm	0	0	0	Flow (cfs) =	12.63	10.59	6.89
14 ft	— I —	Cross section of	A		Loss/Gain, in	0.00		opper Soil Loss, in	0.00
		Cross-section 8 To original Surface Elev, cm	A 32.5	B 32	C 32	V @ 0.2d	V @ 0.6d 11.5	V @ 0.8d	To Water Surf, 48.0
		To eroded Surface Elev, cm	32.5	32	32	Vavg (fps) =	11.50		40.0
		Soil Loss / Gain, cm	-0.5	0	0	navg =	0.046	Bed Max Shear Stress (psf)	Water Depth (i
		Clopper Soil Loss, cm	-0.5	0	0	Flow (cfs) =	12.07	9.68	6.30
16 ft				-	Loss/Gain, in	-0.07		opper Soil Loss, in	-0.07
		Cross-section 9	А	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf,
		To original Surface Elev, cm	31.5	30.5	31.5		11.5		48.0
		To eroded Surface Elev, cm	31	30.5	31.5	Vavg (fps) =	11.50	Bed Max Shear	
		Soil Loss / Gain, cm	-0.5	0	0	navg =	0.048	Stress (psf)	Water Depth (
		Clopper Soil Loss, cm	-0.5	0	0	Flow (cfs) =	12.83	10.29	6.69
18 ft	— I —			-	Loss/Gain, in	-0.07		opper Soil Loss, in	-0.07
		Cross-section 10	A	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf,
		To original Surface Elev, cm	30	30	30		11.5		47.0
		To eroded Surface Elev, cm	30	30	30	Vavg (fps) =	11.50	Bed Max Shear	
		Soil Loss / Gain, cm	0	0	0	navg =	0.048	Stress (psf)	Water Depth (i
20.4		Clopper Soil Loss, cm	0	0 Aug Dattam		Flow (cfs) =	12.83	10.29	6.69
20 ft	· · · · · · · · · · · · · · · · · · ·				Loss/Gain, in	0.00		opper Soil Loss, in	0.00
		Cross-section 11	A	B	C	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf,
		To original Surface Elev, cm	30	31	31		11.5		47.5
		To eroded Surface Elev, cm Soil Loss / Gain, cm	30 0	31 0	30.5	Vavg (fps) =	11.50	Bed Max Shear	Mater Desti
					-0.5	navg =	0.048	Stress (psf)	Water Depth (i
							12.02		6 60
		Clopper Soil Loss, cm	0	0	-0.5 Loss/Gain, in	Flow (cfs) = -0.07	12.83 Avg Cl	10.29 lopper Soil Loss, in	6.69 -0.07

	HEAR STRESS 4	Date: Soil:	2/14/09 Loam	_ Target	Start Time: Shear (psf):	4:00 PM 18.00	End Time: Slope:		
ft long flume	20 ft test section	301.	Loam			anent Channel Lin			
rpms	2 ft wide flume	·				TEST	-		
1 2		Inlet Weir	1	2	3				
FL		Water Depth, in		18.00					
Weir width (ft) = 4	C = 0.00	Water Velocity, ft/s		4.50				-	
Oft A B	<u> </u>	Flow Rate, cfs	0.00	27.00	0.00				
	— —	Cross-section 1	A	B	C	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, cm
		To original Surface Elev, cm	31	31	30		14		60.0
		To eroded Surface Elev, cm Soil Loss / Gain, cm	30.5 -0.5	31 0	30 0	Vavg (fps) =	14.00 0.057	Bed Max Shear	Motor Dopth (in)
		Clopper Soil Loss, cm	-0.5	0	0	navg = Flow (cfs) =	27.10	Stress (psf) 17.85	Water Depth (in) 11.61
2 ft		Clopper Soli Loss, chi	-0.5	1	Loss/Gain, in	-0.07		lopper Soil Loss, in	-0.07
		Cross-section 2	A	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, cm
		To original Surface Elev, cm	31	30	31		14		59.0
		To eroded Surface Elev, cm	30.5	30	30.5	Vavg (fps) =	14.00	Bed Max Shear	
		Soil Loss / Gain, cm	-0.5	0	-0.5	navg =	0.056	Stress (psf)	Water Depth (in)
		Clopper Soil Loss, cm	-0.5	0	-0.5	Flow (cfs) =	26.33	17.34	11.29
4 ft				Avg Bottom	Loss/Gain, in	-0.13	Avg C	lopper Soil Loss, in	-0.13
		Cross-section 3	Α	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, cm
		To original Surface Elev, cm	30	30	31.5		14.5		57.5
		To eroded Surface Elev, cm	29	29.5	31	Vavg (fps) =	14.50	Bed Max Shear	
		Soil Loss / Gain, cm	-1	-0.5	-0.5	navg =	0.053	Stress (psf)	Water Depth (in)
6.4		Clopper Soil Loss, cm	-1	-0.5	-0.5 Loss/Gain, in	Flow (cfs) =	26.32	16.74	10.89
6 ft	— — —	Cross-section 4	A	Avg Bottom B	Loss/Gain, in C	-0.26 V @ 0.2d	Avg C V @ 0.6d	lopper Soil Loss, in V @ 0.8d	-0.26 To Water Surf, cm
		To original Surface Elev, cm	A 32	32	32	v @ U.20	V @ 0.6d 14.5	v @ U.80	59.5
		To eroded Surface Elev, cm	32	32	32	Vavg (fps) =	14.50	-	59.0
		Soil Loss / Gain, cm	0	0	0	navg =	0.052	Bed Max Shear Stress (psf)	Water Depth (in)
		Clopper Soil Loss, cm	0	0	0	Flow (cfs) =	26.16	16.64	10.83
8 ft				-	Loss/Gain, in	0.00		lopper Soil Loss, in	0.00
		Cross-section 5	А	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, cm
		To original Surface Elev, cm	32	32	32		14.5		59.0
		To eroded Surface Elev, cm	32	31.5	32	Vavg (fps) =	14.50	Bed Max Shear	
		Soil Loss / Gain, cm	0	-0.5	0	navg =	0.052	Stress (psf)	Water Depth (in)
		Clopper Soil Loss, cm	0	-0.5	0	Flow (cfs) =	25.85	16.44	10.70
10 ft				Avg Bottom	Loss/Gain, in	-0.07		lopper Soil Loss, in	-0.07
	I —	Cross-section 6	A	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, cm
		To original Surface Elev, cm	32	32	33		15		58.0
		To eroded Surface Elev, cm	32	31.5	32	Vavg (fps) =	15.00	Bed Max Shear	
		Soil Loss / Gain, cm	0	-0.5 -0.5	-1 -1	navg =	0.049	Stress (psf)	Water Depth (in)
12 ft		Clopper Soil Loss, cm	0		Loss/Gain, in	Flow (cfs) = -0.20	25.75 Ava C	15.83 lopper Soil Loss, in	10.30 -0.20
12.11		Cross-section 7	A	B	C	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, cm
		To original Surface Elev, cm	33	31	32	V O VILU	15	1 0 0.00	58.5
		To eroded Surface Elev, cm	32	31	32	Vavg (fps) =	15.00	Dad May Ohana	
		Soil Loss / Gain, cm	-1	0	0	navg =	0.050	Bed Max Shear Stress (psf)	Water Depth (in)
		Clopper Soil Loss, cm	-1	0	0	Flow (cfs) =	26.41	16.23	10.56
14 ft				Avg Bottom	Loss/Gain, in	-0.13	Avg C	lopper Soil Loss, in	-0.13
		Cross-section 8	А	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, cm
		To original Surface Elev, cm	32	32	32		15	L	58.0
		To eroded Surface Elev, cm	32	32	32	Vavg (fps) =	15.00	Bed Max Shear	
		Soil Loss / Gain, cm	0	0	0	navg =	0.049	Stress (psf)	Water Depth (in)
		Clopper Soil Loss, cm	0	0	0	Flow (cfs) =	25.59	15.73	10.24
16 ft					Loss/Gain, in	0.00		lopper Soil Loss, in	0.00
		Cross-section 9	A	B 20.5	C 21.5	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, cm
		To original Surface Elev, cm	31	30.5	31.5	Vour (fres)	15.5		56.5
		To eroded Surface Elev, cm	31 0	30.5 0	-0.5	Vavg (fps) =	15.50 0.047	Bed Max Shear Stress (psf)	Water Depth (in)
		Soil Loss / Coin am	0	1	-0.5	navg = Flow (cfs) =	26.10	15.53	Water Depth (in) 10.10
		Soil Loss / Gain, cm Clopper Soil Loss, cm	0	0	0.0			lopper Soil Loss, in	-0.07
18 ft		Soil Loss / Gain, cm Clopper Soil Loss, cm	0	0 Avg Bottom	Loss/Gain, in	-0.07	AVa C		
18 ft		Clopper Soil Loss, cm	0 A	1	r i i i i i i i i i i i i i i i i i i i			V @ 0.8d	To Water Surf. cm
18 ft				Avg Bottom	Loss/Gain, in C 30	-0.07 V @ 0.2d	V @ 0.6d 15.5	V @ 0.8d	To Water Surf, cm 55.5
18 ft		Clopper Soil Loss, cm Cross-section 10	A	Avg Bottom B	С		V @ 0.6d		
18 ft		Clopper Soil Loss, cm Cross-section 10 To original Surface Elev, cm	A 30	Avg Bottom B 30	C 30	V @ 0.2d	V @ 0.6d 15.5	V @ 0.8d Bed Max Shear Stress (psf)	
18 ft		Clopper Soil Loss, cm Cross-section 10 To original Surface Elev, cm To eroded Surface Elev, cm	A 30 29	Avg Bottom B 30 30	C 30 30	V @ 0.2d Vavg (fps) =	V @ 0.6d 15.5 15.50	Bed Max Shear	55.5
18 ft		Clopper Soil Loss, cm Cross-section 10 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm	A 30 29 -1	Avg Bottom B 30 30 0 0	C 30 30 0	V @ 0.2d Vavg (fps) = navg =	V @ 0.6d 15.5 15.50 0.047 26.27	Bed Max Shear Stress (psf)	55.5 Water Depth (in)
		Clopper Soil Loss, cm Cross-section 10 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm	A 30 29 -1	Avg Bottom B 30 30 0 0	C 30 30 0 0	V @ 0.2d Vavg (fps) = navg = Flow (cfs) =	V @ 0.6d 15.5 15.50 0.047 26.27	Bed Max Shear Stress (psf) 15.63	55.5 Water Depth (in) 10.17
		Clopper Soil Loss, cm Cross-section 10 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm	A 30 29 -1 -1	Avg Bottom B 30 30 0 0 Avg Bottom	C 30 30 0 0 Loss/Gain, in	V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13	V @ 0.6d 15.5 15.50 0.047 26.27 Avg C	Bed Max Shear Stress (psf) 15.63 lopper Soil Loss, in	55.5 Water Depth (in) 10.17 -0.13
		Clopper Soil Loss, cm Cross-section 10 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 11 To original Surface Elev, cm To eroded Surface Elev, cm	A 30 29 -1 -1 A	Avg Bottom B 30 0 0 Avg Bottom B 31 31	C 30 30 0 Loss/Gain, in C	V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13	V @ 0.6d 15.5 15.50 0.047 26.27 Avg C V @ 0.6d 15.5 15.50	Bed Max Shear Stress (psf) 15.63 lopper Soil Loss, in	55.5 Water Depth (in) 10.17 -0.13 To Water Surf, cm 56.0
		Clopper Soil Loss, cm Cross-section 10 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 11 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm	A 30 29 -1 -1 -1 A 30 30 0	Avg Bottom B 30 0 0 Avg Bottom B 31 31 0	C 30 0 0 Loss/Gain, in C 30.5 30.5 0	V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg =	V @ 0.6d 15.5 0.047 26.27 Avg C V @ 0.6d 15.5 15.50 0.047	Bed Max Shear Stress (psf) 15.63 lopper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf)	55.5 Water Depth (in) 10.17 -0.13 To Water Surf, cm 56.0 Water Depth (in)
		Clopper Soil Loss, cm Cross-section 10 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 11 To original Surface Elev, cm To eroded Surface Elev, cm	A 30 29 -1 -1 -1 A 30 30	Avg Bottom B 30 0 0 Avg Bottom B 31 31 0 0	C 30 0 Loss/Gain, in C 30.5 30.5 0 0	V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) =	V @ 0.6d 15.5 0.047 26.27 Avg C V @ 0.6d 15.5 15.50 0.047 25.94	Bed Max Shear Stress (psf) 15.63 lopper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 15.43	55.5 Water Depth (in) 10.17 -0.13 To Water Surf, cm 56.0 Water Depth (in) 10.04
		Clopper Soil Loss, cm Cross-section 10 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 11 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm	A 30 29 -1 -1 -1 A 30 30 0	Avg Bottom B 30 0 0 Avg Bottom B 31 31 0 0	C 30 0 0 Loss/Gain, in C 30.5 30.5 0	V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg =	V @ 0.6d 15.5 15.50 0.047 26.27 Avg C V @ 0.6d 15.5 15.50 0.047 25.94 Avg C	Bed Max Shear Stress (psf) 15.63 lopper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 15.43 lopper Soil Loss, in	55.5 Water Depth (in) 10.17 -0.13 To Water Surf, cm 56.0 Water Depth (in)

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CHANNEL 3 -	SHEAR STRESS 1	Date:	2/14/09	- 	Start Time:	12:00 PM	End Time:	12:30 PM	
40 ft long flume	20 ft test section	Soil:	Loam		Shear (psf):	6.00 anent Channel Lin	Slope:	30%	
rpms	2 ft wide flume			FIE	examat Perma		DATA		
 1	2 3	Outlet Weir	1	2	3				
F	LOW	Water Depth, in		12.00					
Weir width (ft) = 4		Water Velocity, ft/s		3.50					
0 ft A	вс	Flow Rate, cfs	0.00	14.00	0.00				
		Cross-section 1	A	B	C	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, o
		To original Surface Elev, cm To eroded Surface Elev, cm	28 28	28	28 27.5		6		38.0
		Soil Loss / Gain, cm	0	28	-0.5	Vavg (fps) = navg =	6.00 0.065	Bed Max Shear Stress (psf)	Water Depth (ii
		Clopper Soil Loss, cm	0	0	-0.5	Flow (cfs) =	4.00	6.15	4.00
2 ft				1	Loss/Gain, in	-0.07		opper Soil Loss, in	-0.07
		Cross-section 2	А	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, o
		To original Surface Elev, cm	30	30	30		6		39.5
		To eroded Surface Elev, cm	30	30	30	Vavg (fps) =	6.00	Bed Max Shear	
		Soil Loss / Gain, cm	0	0	0	navg =	0.062	Stress (psf)	Water Depth (in
		Clopper Soil Loss, cm	0	0	0	Flow (cfs) =	3.74	5.75	3.74
4 ft		0 (1)			Loss/Gain, in	0.00		opper Soil Loss, in	0.00
		Cross-section 3 To original Surface Elev, cm	A 30	В 29	C 30	V @ 0.2d	V @ 0.6d 6	V @ 0.8d	To Water Surf, o 39.0
		To eroded Surface Elev, cm	30	29	29.5	Vavg (fps) =	6.00	Deduce:	39.0
		Soil Loss / Gain, cm	0	0	-0.5	navg =	0.062	Bed Max Shear Stress (psf)	Water Depth (in
		Clopper Soil Loss, cm	0	0	-0.5	Flow (cfs) =	3.74	5.75	3.74
6 ft				25.5	oss/Gain, in	-0.07	Avg Cl	opper Soil Loss, in	-0.07
		Cross-section 4	А	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, o
		To original Surface Elev, cm	28	28	29		6		38.0
		To eroded Surface Elev, cm	28	28	29	Vavg (fps) =	6.00	Bed Max Shear	
		Soil Loss / Gain, cm	0	0	0	navg =	0.063	Stress (psf)	Water Depth (ii
8 ft		Clopper Soil Loss, cm	0	0 Avg Bottom	0 Loss/Gain, in	Flow (cfs) = 0.00	3.81	5.85 opper Soil Loss, in	3.81 0.00
0 11		Cross-section 5	A	B	C	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, o
		To original Surface Elev, cm	31	30.5	31	1000120	6.5	100.04	39.0
		To eroded Surface Elev, cm	30.5	30.5	31	Vavg (fps) =	6.50	Bed Max Shear	
		Soil Loss / Gain, cm	-0.5	0	0	navg =	0.053	Stress (psf)	Water Depth (i
		Clopper Soil Loss, cm	-0.5	0	0		0.55		0.00
10.4					0	Flow (cfs) =	3.55	5.04	3.28
10 ft				1	U Loss/Gain, in	-0.07		5.04 opper Soil Loss, in	-0.07
10 ft		Cross-section 6	A	Avg Bottom	Loss/Gain, in C		Avg Cl V @ 0.6d		-0.07 To Water Surf, o
10 tt		To original Surface Elev, cm	31	Avg Bottom B 32	Loss/Gain, in C 33	-0.07 V @ 0.2d	Avg Cl V @ 0.6d 6.5	opper Soil Loss, in	-0.07
10 tt		To original Surface Elev, cm To eroded Surface Elev, cm	31 31	Avg Bottom B 32 32	Loss/Gain, in C 33 32.5	-0.07 V @ 0.2d Vavg (fps) =	Avg Cl V @ 0.6d 6.5 6.50	opper Soil Loss, in V @ 0.8d Bed Max Shear	-0.07 To Water Surf, o 40.0
10 tt		To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm	31 31 0	Avg Bottom B 32 32 0	Loss/Gain, in C 33 32.5 -0.5	-0.07 V @ 0.2d Vavg (fps) = navg =	Avg Cl V @ 0.6d 6.5 6.50 0.052	opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf)	-0.07 To Water Surf, o 40.0 Water Depth (ir
10 ft		To original Surface Elev, cm To eroded Surface Elev, cm	31 31	Avg Bottom B 32 32 0 0	Loss/Gain, in C 33 32.5	-0.07 V @ 0.2d Vavg (fps) =	Avg Cl V @ 0.6d 6.5 6.50 0.052 3.48	opper Soil Loss, in V @ 0.8d Bed Max Shear	-0.07 To Water Surf, o 40.0
		To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm	31 31 0	Avg Bottom B 32 32 0 0	Loss/Gain, in C 33 32.5 -0.5 -0.5	-0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) =	Avg Cl V @ 0.6d 6.5 6.50 0.052 3.48	opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.94	-0.07 To Water Surf, o 40.0 Water Depth (ii 3.22
		To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm	31 31 0 0	Avg Bottom B 32 32 0 0 Avg Bottom	Loss/Gain, in C 33 32.5 -0.5 -0.5 Loss/Gain, in	-0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07	Avg Cl V @ 0.6d 6.5 6.50 0.052 3.48 Avg Cl	opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.94 opper Soil Loss, in	-0.07 To Water Surf, 6 40.0 Water Depth (ii 3.22 -0.07
		To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7	31 31 0 0 A	Avg Bottom B 32 32 0 0 Avg Bottom B	Loss/Gain, in C 33 32.5 -0.5 -0.5 Loss/Gain, in C	-0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07	Avg Cl V @ 0.6d 6.5 6.50 0.052 3.48 Avg Cl V @ 0.6d	opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.94 opper Soil Loss, in V @ 0.8d	-0.07 To Water Surf, 6 40.0 Water Depth (ii 3.22 -0.07 To Water Surf, 6
		To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm	31 31 0 0 A 34 34 0	Avg Bottom B 32 0 0 Avg Bottom B 33.5 33 -0.5	Loss/Gain, in C 33 32.5 -0.5 -0.5 Loss/Gain, in C 33 33 0	-0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg =	Avg Cl V @ 0.6d 6.5 6.50 0.052 3.48 Avg Cl V @ 0.6d 6.5 6.50 0.052	opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.94 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf)	-0.07 To Water Surf, (40.0 Water Depth (ii 3.22 -0.07 To Water Surf, (41.5 Water Depth (ii
12 ft		To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm To eroded Surface Elev, cm	31 31 0 0 A 34 34	Avg Bottom B 32 0 0 Avg Bottom B 33.5 33 -0.5 -0.5	Loss/Gain, in C 33 32.5 -0.5 -0.5 Loss/Gain, in C 33 33 0 0	-0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) =	Avg Cl V @ 0.6d 6.5 6.50 0.052 3.48 Avg Cl V @ 0.6d 6.5 6.50 0.052 3.48	opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.94 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.94	-0.07 To Water Surf, (40.0 Water Depth (ii 3.22 -0.07 To Water Surf, (41.5 Water Depth (ii 3.22
		To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm	31 31 0 0 A 34 34 0 0 0	Avg Bottom B 32 0 0 Avg Bottom B 33.5 33 -0.5 -0.5 Avg Bottom	Loss/Gain, in C 33 32.5 -0.5 -0.5 -0.5 Loss/Gain, in 33 33 0 0 Loss/Gain, in	-0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07	Avg Cl V @ 0.6d 6.5 6.50 0.052 3.48 Avg Cl V @ 0.6d 6.5 6.50 0.052 3.48 Avg Cl	opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.94 opper Soil Loss, in V @ 0.8d V @ 0.8d Bed Max Shear Stress (psf) 4.94 opper Soil Loss, in	-0.07 To Water Surf, 4 40.0 Water Depth (ii 3.22 -0.07 To Water Surf, 6 41.5 Water Depth (ii 3.22 -0.07
12 ft		To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm	31 31 0 A A 34 34 0 0 0 A	Avg Bottom B 32 0 0 Avg Bottom B 33.5 33 -0.5 -0.5 Avg Bottom B	Loss/Gain, in C 33 32.5 -0.5 -0.5 -0.5 Loss/Gain, in C 0 Loss/Gain, in C	-0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) =	Avg Cl V @ 0.6d 6.5 6.50 0.052 3.48 Avg Cl V @ 0.6d 6.5 6.50 0.052 3.48 Avg Cl 0.052 3.48 V @ 0.6d	opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.94 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.94	-0.07 To Water Surf, 4 40.0 Water Depth (ii 3.22 -0.07 To Water Surf, 6 41.5 Water Depth (ii 3.22 -0.07 To Water Surf, 6
12 ft		To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 8 To original Surface Elev, cm	31 31 0 0 4 34 34 34 0 0 0 4 33	Avg Bottom B 32 0 0 Avg Bottom B 33.5 33 -0.5 -0.5 Avg Bottom B 33	Loss/Gain, in C 33 32.5 -0.5 -0.5 Loss/Gain, in C 33 0 0 Loss/Gain, in C 33 3 3 0 0 0 Loss/Gain, in	-0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d	Avg Cl V @ 0.6d 6.5 6.50 0.052 3.48 Avg Cl V @ 0.6d 6.5 6.50 0.052 3.48 Avg Cl V @ 0.6d 7	opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.94 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.94 opper Soil Loss, in V @ 0.8d	-0.07 To Water Surf, 4 40.0 Water Depth (ii 3.22 -0.07 To Water Surf, 6 41.5 Water Depth (ii 3.22 -0.07
12 ft		To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm	31 31 0 A A 34 34 0 0 0 A	Avg Bottom B 32 0 0 Avg Bottom B 33.5 33 -0.5 -0.5 Avg Bottom B	Loss/Gain, in C 33 32.5 -0.5 -0.5 -0.5 Loss/Gain, in C 0 Loss/Gain, in C	-0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) =	Avg Cl V @ 0.6d 6.5 6.50 0.052 3.48 Avg Cl V @ 0.6d 6.5 6.50 0.052 3.48 Avg Cl 0.052 3.48 V @ 0.6d	opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.94 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.94 opper Soil Loss, in V @ 0.8d Bed Max Shear	-0.07 To Water Surf, 40.0 Water Depth (i 3.22 -0.07 To Water Surf, 41.5 Water Depth (i 3.22 -0.07 To Water Surf, 7
12 ft		To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 8 To original Surface Elev, cm To eroded Surface Elev, cm	31 31 0 0 4 34 34 34 0 0 0 0 4 33 33 33	Avg Bottom B 32 0 0 Avg Bottom B 33.5 -0.5 -0.5 Avg Bottom B 33 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Loss/Gain, in C 33 32.5 -0.5 -0.5 Loss/Gain, in C 33 0 0 0 Loss/Gain, in C 33 33 0 0 0 1 2 2 2 3 4 34	-0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d	Avg Cl V @ 0.6d 6.5 6.50 0.052 3.48 Avg Cl V @ 0.6d 6.5 6.50 0.052 3.48 Avg Cl V @ 0.6d V @ 0.6d 7 7.00	opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.94 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.94 opper Soil Loss, in V @ 0.8d	-0.07 To Water Surf, 40.0 Water Depth (i 3.22 -0.07 To Water Surf, 41.5 Water Depth (i 3.22 -0.07 To Water Surf, 41.5
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12 ft		To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 8 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 9 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 10 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Clopper Soil Loss, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 10 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 11 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm	31 31 0 0 A 34 34 0 0 0 0 A 33 33 0 0 0 A 33 33 0 0 0 A 33 32.5 -0.5 -	Avg Bottom B 32 32 32 32 32 32 32 0 Avg Bottom B 33 -0.5 Avg Bottom B 33 0 Avg Bottom B 33 0 Avg Bottom B 33 0 0 Avg Bottom B 33 33 0 <td>Loss/Gain, in C 33 32.5 -0.5 -0.5 Loss/Gain, in C 33 0 0 0 Loss/Gain, in C 33 3 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 Loss/Gain, in C 33.5 3 3.5 3 3.5 3 3.5 3 3.5 3 3.5 3 3.5 3 3.5 3 3.5 3 3.5 3 3.5 3 3.5 3 3.5 3 3.5 3 3.5 3 3.5 3 3.5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td> <td>-0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d</td> <td>Avg Cl V @ 0.6d 6.5 6.50 0.052 3.48 Avg Cl V @ 0.6d 6.5 6.50 0.052 3.48 Avg Cl V @ 0.6d 7 7.00 0.048 3.75 Avg Cl V @ 0.6d 7 7.00 0.048 3.75 Avg Cl V @ 0.6d 7 7.00 0.048 3.67 Avg Cl V @ 0.6d 7 7.50 0.044 3.85 Avg Cl V @ 0.6d 7.5 7.50 0.044 3.94</td> <td>opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.94 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.94 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.94 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.84 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.74 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.74</td> <td>-0.07 To Water Surf, 40.0 Water Depth (i 3.22 -0.07 To Water Surf, 41.5 Water Depth (i 3.22 -0.07 To Water Surf, 41.5 Water Depth (i 3.22 0.00 To Water Surf, 41.5 Water Depth (i 3.15 -0.07 To Water Surf, 42.0 Water Depth (i 3.08 -0.07 To Water Surf, -0.07 To Water Surf, -0.07 To Water Depth (i 3.08 -0.07 -0.0</td>	Loss/Gain, in C 33 32.5 -0.5 -0.5 Loss/Gain, in C 33 0 0 0 Loss/Gain, in C 33 3 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 Loss/Gain, in C 33.5 33.5 0 0 0 Loss/Gain, in C 33.5 3 3.5 3 3.5 3 3.5 3 3.5 3 3.5 3 3.5 3 3.5 3 3.5 3 3.5 3 3.5 3 3.5 3 3.5 3 3.5 3 3.5 3 3.5 3 3.5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d	Avg Cl V @ 0.6d 6.5 6.50 0.052 3.48 Avg Cl V @ 0.6d 6.5 6.50 0.052 3.48 Avg Cl V @ 0.6d 7 7.00 0.048 3.75 Avg Cl V @ 0.6d 7 7.00 0.048 3.75 Avg Cl V @ 0.6d 7 7.00 0.048 3.67 Avg Cl V @ 0.6d 7 7.50 0.044 3.85 Avg Cl V @ 0.6d 7.5 7.50 0.044 3.94	opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.94 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.94 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.94 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.84 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.74 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.74	-0.07 To Water Surf, 40.0 Water Depth (i 3.22 -0.07 To Water Surf, 41.5 Water Depth (i 3.22 -0.07 To Water Surf, 41.5 Water Depth (i 3.22 0.00 To Water Surf, 41.5 Water Depth (i 3.15 -0.07 To Water Surf, 42.0 Water Depth (i 3.08 -0.07 To Water Surf, -0.07 To Water Surf, -0.07 To Water Depth (i 3.08 -0.07 -0.0
12 ft		To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 8 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 9 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 10 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 10 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 11 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 11 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 11 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 11	31 31 0 0 A 34 34 0 0 0 0 A 33 33 0 0 0 A 33 33 0 0 0 A 33 33 0 0 0 A 33 33 0 0 0 0 A 33 33 0 0 0 0 0 0 0 0 0 0 0 0 0	Avg Bottom B 32 32 32 32 32 32 32 0 Avg Bottom B 33 -0.5 Avg Bottom B 33 0 Avg Bottom B 33 0 Avg Bottom B 33 0 0 Avg Bottom B 33 33 0 <td>Loss/Gain, in C 33 32.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0</td> <td>-0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = -0.07 V @ 0.2d Vavg (fps) = -0.07 V @ 0.2d</td> <td>Avg Cl V @ 0.6d 6.5 6.50 0.052 3.48 Avg Cl V @ 0.6d 6.5 6.50 0.052 3.48 Avg Cl V @ 0.6d 7 7.00 0.048 3.75 Avg Cl V @ 0.6d 7 7.00 0.048 3.67 Avg Cl V @ 0.6d 7 7.50 0.044 3.85 Avg Cl V @ 0.6d 7.5 7.50 0.044 3.94 Avg Cl</td> <td>opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.94 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.94 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.94 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.84 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.74 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.84 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.84 opper Soil Loss, in</td> <td>-0.07 To Water Surf, 40.0 Water Depth (i 3.22 -0.07 To Water Surf, 41.5 Water Depth (i 3.22 -0.07 To Water Surf, 41.5 Water Depth (i 3.22 0.00 To Water Surf, 41.0 Water Depth (i 3.15 -0.07 To Water Surf, 42.0 Water Depth (i 3.08 -0.07 To Water Depth (i 3.08 -0.07 To Water Depth (i 3.08 -0.07 To Water Depth (i -0.07 To Water Depth (i -0.</td>	Loss/Gain, in C 33 32.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0	-0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = -0.07 V @ 0.2d Vavg (fps) = -0.07 V @ 0.2d	Avg Cl V @ 0.6d 6.5 6.50 0.052 3.48 Avg Cl V @ 0.6d 6.5 6.50 0.052 3.48 Avg Cl V @ 0.6d 7 7.00 0.048 3.75 Avg Cl V @ 0.6d 7 7.00 0.048 3.67 Avg Cl V @ 0.6d 7 7.50 0.044 3.85 Avg Cl V @ 0.6d 7.5 7.50 0.044 3.94 Avg Cl	opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.94 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.94 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.94 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.84 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.74 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.84 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 4.84 opper Soil Loss, in	-0.07 To Water Surf, 40.0 Water Depth (i 3.22 -0.07 To Water Surf, 41.5 Water Depth (i 3.22 -0.07 To Water Surf, 41.5 Water Depth (i 3.22 0.00 To Water Surf, 41.0 Water Depth (i 3.15 -0.07 To Water Surf, 42.0 Water Depth (i 3.08 -0.07 To Water Depth (i 3.08 -0.07 To Water Depth (i 3.08 -0.07 To Water Depth (i -0.07 To Water Depth (i -0.

3 - 2	2
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CHANNEL 3	- SHEAR STRESS 2		2/14/09		Start Time:	1:00 PM	End Time:	1:30 PM	
40 ft long flume	20 ft test section	Soil:	Loam		Shear (psf):	10.00	Slope:	30%	
40 ft long flume rpms	20 ft test section 2 ft wide flume			Fle	examat Perma	anent Channel Lin	-		
1	2 3	Inlet Weir	1	2	3	TEST	DATA		
	FLOW	Water Depth, in		15.00					
Weir width (ft) = 4	4	Water Velocity, ft/s		4.50					
0 ft A	B, C	Flow Rate, cfs	0.00	22.50	0.00				
		Cross-section 1	A	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf,
		To original Surface Elev, cm	28	28	27.5		8		42.0
		To eroded Surface Elev, cm	28	28	27	Vavg (fps) =	8.00	Bed Max Shear	
		Soil Loss / Gain, cm	0	0	-0.5	navg =	0.062	Stress (psf)	Water Depth (i
2 ft		Clopper Soil Loss, cm	0	0 Aug Dattom	-0.5	Flow (cfs) =	7.52	8.67	5.64
2 11		Cross-section 2	A	B	Loss/Gain, in C	-0.07 V @ 0.2d	V @ 0.6d	opper Soil Loss, in V @ 0.8d	-0.07 To Water Surf,
		To original Surface Elev, cm	30	30	30	V @ 0.20	8.5	V @ 0.00	43.5
		To eroded Surface Elev, cm	30	30	30	Vavg (fps) =	8.50	Bed Max Shear	
		Soil Loss / Gain, cm	0	0	0	navg =	0.056	Stress (psf)	Water Depth (i
		Clopper Soil Loss, cm	0	0	0	Flow (cfs) =	7.53	8.17	5.31
4 ft				Avg Bottom	Loss/Gain, in	0.00	Avg Cl	opper Soil Loss, in	0.00
		Cross-section 3	A	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf,
		To original Surface Elev, cm	30	29	29.5		8.5		43.0
		To eroded Surface Elev, cm	30	29	29	Vavg (fps) =	8.50	Bed Max Shear	
		Soil Loss / Gain, cm	0	0	-0.5	navg =	0.056	Stress (psf)	Water Depth (
6 ft		Clopper Soil Loss, cm	0	0 Ava Bottom	-0.5 Loss/Gain, in	Flow (cfs) = -0.07	7.62 Ava Cl	8.27 opper Soil Loss, in	5.38 -0.07
		Cross-section 4	A	B	C	-0.07 V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf,
		To original Surface Elev, cm	28	28	29	V @ 0.20	8.5	V & 0.00	42.0
		To eroded Surface Elev, cm	28	28	28.5	Vavg (fps) =	8.50	Bed Max Shear	
		Soil Loss / Gain, cm	0	0	-0.5	navg =	0.057	Stress (psf)	Water Depth (
		Clopper Soil Loss, cm	0	0	-0.5	Flow (cfs) =	7.72	8.37	5.45
8 ft				Avg Bottom	Loss/Gain, in	-0.07	Avg Cl	opper Soil Loss, in	-0.07
		Cross-section 5	A	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf,
		To original Surface Elev, cm	30.5	30.5	31		8.5		44.0
		To eroded Surface Elev, cm	30	30.5	31	Vavg (fps) =	8.50	Bed Max Shear	
		Soil Loss / Gain, cm	-0.5	0	0	navg =	0.056	Stress (psf)	
10.4				0	0	navg = Flow (cfs) =	0.056 7.53	Stress (psf) 8.17	Water Depth (i 5.31
10 ft		Soil Loss / Gain, cm Clopper Soil Loss, cm	-0.5 -0.5	0 0 Avg Bottom	0 0 Loss/Gain, in	navg = Flow (cfs) = -0.07	0.056 7.53 Avg Cl	Stress (psf) 8.17 opper Soil Loss, in	5.31 -0.07
_10 ft		Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 6	-0.5 -0.5 A	0 0 Avg Bottom B	0 0 Loss/Gain, in C	navg = Flow (cfs) =	0.056 7.53 Avg Cl V @ 0.6d	Stress (psf) 8.17	5.31 -0.07 To Water Surf,
10 ft		Soil Loss / Gain, cm Clopper Soil Loss, cm	-0.5 -0.5	0 0 Avg Bottom	0 0 Loss/Gain, in	navg = Flow (cfs) = -0.07	0.056 7.53 Avg Cl	Stress (psf) 8.17 opper Soil Loss, in V @ 0.8d	5.31 -0.07
10 ft		Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 6 To original Surface Elev, cm	-0.5 -0.5 A 31	0 0 Avg Bottom B 32	0 0 Loss/Gain, in C 32.5	navg = Flow (cfs) = -0.07 V @ 0.2d	0.056 7.53 Avg Cl V @ 0.6d 8.5	Stress (psf) 8.17 opper Soil Loss, in	5.31 -0.07 To Water Surf,
10 ft		Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm	-0.5 -0.5 A 31 31	0 0 Avg Bottom B 32 32	0 0 Loss/Gain, in C 32.5 32	navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) =	0.056 7.53 Avg Cl V @ 0.6d 8.5 8.50	Stress (psf) 8.17 opper Soil Loss, in V @ 0.8d Bed Max Shear	5.31 -0.07 To Water Surf, 45.0
10 ft 12 ft		Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm	-0.5 -0.5 A 31 31 0	0 0 Avg Bottom B 32 32 0 0 0	0 0 Loss/Gain, in C 32.5 32 -0.5	navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg =	0.056 7.53 Avg Cl V @ 0.6d 8.5 8.50 0.055 7.44 Avg Cl	Stress (psf) 8.17 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf)	5.31 -0.07 To Water Surf, 45.0 Water Depth (
		Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7	-0.5 -0.5 A 31 31 0 0 A	0 0 Avg Bottom B 32 32 0 0 Avg Bottom B	0 0 Loss/Gain, in C 32.5 32 -0.5 -0.5 Loss/Gain, in C	navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) =	0.056 7.53 Avg Cl V @ 0.6d 8.5 8.50 0.055 7.44 Avg Cl V @ 0.6d	Stress (psf) 8.17 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 8.07	5.31 -0.07 To Water Surf, 45.0 Water Depth (5.25 -0.07 To Water Surf,
		Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm	-0.5 -0.5 A 31 31 0 0 0 A A 34	0 0 Avg Bottom B 32 32 0 0 Avg Bottom B 33	0 0 Loss/Gain, in C 32.5 32 -0.5 -0.5 Loss/Gain, in C 33	navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d	0.056 7.53 Avg Cl V @ 0.6d 8.5 8.50 0.055 7.44 Avg Cl V @ 0.6d 9	Stress (psf) 8.17 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 8.07 opper Soil Loss, in	5.31 -0.07 To Water Surf, 45.0 Water Depth (5.25 -0.07
		Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm To eroded Surface Elev, cm	-0.5 -0.5 A 31 31 0 0 0 A A 34 33.5	0 0 Avg Bottom B 32 32 0 0 Avg Bottom B 33 33	0 0 Loss/Gain, in C 32.5 -0.5 -0.5 Loss/Gain, in C 33 32.5	navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) =	0.056 7.53 Avg Cl V @ 0.6d 8.5 8.50 0.055 7.44 Avg Cl V @ 0.6d 9 9.00	Stress (psf) 8.17 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 8.07 opper Soil Loss, in V @ 0.8d Bed Max Shear	5.31 -0.07 To Water Surf, 45.0 Water Depth (5.25 -0.07 To Water Surf, 46.0
		Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm	-0.5 -0.5 A 31 31 0 0 0 A A 34 33.5 -0.5	0 0 Avg Bottom B 32 32 0 0 Avg Bottom B 33 33 0	0 0 Loss/Gain, in C 32.5 32 -0.5 Loss/Gain, in C 33 32.5 -0.5	navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg =	0.056 7.53 Avg Cl V @ 0.6d 8.5 8.50 0.055 7.44 Avg Cl V @ 0.6d 9 9.00 0.051	Stress (psf) 8.17 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 8.07 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf)	5.31 -0.07 To Water Surf, 45.0 Water Depth (5.25 -0.07 To Water Surf, 46.0 Water Depth (
12 ft		Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm To eroded Surface Elev, cm	-0.5 -0.5 A 31 31 0 0 0 A A 34 33.5	0 0 Avg Bottom B 32 0 0 Avg Bottom B 33 33 0 0 0	0 0 Loss/Gain, in C 32.5 32 -0.5 Loss/Gain, in C 33 32.5 -0.5 -0.5 -0.5	navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) =	0.056 7.53 Avg Cl V @ 0.6d 8.5 8.50 0.055 7.44 Avg Cl V @ 0.6d 9 9.00 0.051 7.68	Stress (psf) 8.17 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 8.07 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.87	5.31 -0.07 To Water Surf, 45.0 Water Depth (5.25 -0.07 To Water Surf, 46.0 Water Depth (5.12
		Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 6 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Soil Loss / Gain, cm	-0.5 -0.5 A 31 31 0 0 A 34 33.5 -0.5 -0.5	0 0 Avg Bottom B 32 0 0 Avg Bottom B 33 33 0 0 Avg Bottom	0 0 Loss/Gain, in C 32.5 32 -0.5 -0.5 Loss/Gain, in C 33 32.5 -0.5 -0.5 Loss/Gain, in	navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d V@ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13	0.056 7.53 Avg Cl V @ 0.6d 8.5 8.50 0.055 7.44 Avg Cl V @ 0.6d 9 9.00 0.051 7.68 Avg Cl	Stress (psf) 8.17 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 8.07 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.87 opper Soil Loss, in	5.31 -0.07 To Water Surf, 45.0 Water Depth (5.25 -0.07 To Water Surf, 46.0 Water Depth (5.12 -0.13
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12 ft		Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 6 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Clopper Soil Loss, cm Clopper Soil Loss, cm Cross-section 8 To original Surface Elev, cm	-0.5 -0.5 A 31 31 0 0 7 A 334 33.5 -0.5 -0.5 -0.5 A 33	0 0 Avg Bottom B 32 0 0 0 Avg Bottom B 33 33 0 0 0 Avg Bottom B 33 33 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 Loss/Gain, in C 32.5 32 -0.5 -0.5 Loss/Gain, in C 33 32.5 -0.5 Loss/Gain, in C 33 32.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0	navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d	0.056 7.53 Avg Cl V @ 0.6d 8.5 8.50 0.055 7.44 Avg Cl V @ 0.6d 9 9.00 0.051 7.68 Avg Cl V @ 0.6d 9	Stress (psf) 8.17 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 8.07 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.87 opper Soil Loss, in	5.31 -0.07 To Water Surf, 45.0 Water Depth (5.25 -0.07 To Water Surf, 46.0 Water Depth (5.12 -0.13 To Water Surf, 46.0
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12 ft		Soil Loss / Gain, cm Clopper Soil Loss, cm To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 8 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Clopper Soil Loss, cm Cross-section 9 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 10 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Clopper Soil Loss, cm Cross-section 10 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm	-0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5	0 0 Avg Bottom B 32 0 0 Avg Bottom B 33 0 0 Avg Bottom B 33 33 0 0 Avg Bottom B 33 33 0 0 0 Avg Bottom B 33 0 0 0 Avg Bottom B 33 0 0 0 Avg Bottom B 33 0 0 0 Avg Bottom B 33 0 0 0 Avg Bottom B 33 0 0 0 Avg Bottom B 34 34 34 34 34 34 34 34 34 34	0 0 Loss/Gain, in C 32.5 32 -0.5 -0.5 Loss/Gain, in C 33 32.5 -0.5 Loss/Gain, in C 34 33.5 -0.5 Loss/Gain, in C 33.5 -0.5 Loss/Gain, in C 35.5 -0.5 Loss/Gain, in C 35.5 -0.5 Loss/Gain, in C 35.5 -0.5 Loss/Gain, in C 35.5 -0.5 Loss/Gain, in C -0.5 Loss/Gain, in C -0.5 Loss/Gain, in C -0.5	navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = -0.13 V @ 0.2d Vavg (fps) = -0.07 V @ 0.2d Piow (cfs) = -0.07 V @ 0.2d Sign (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Piow (cfs) = -0.07 <td>0.056 7.53 Avg Cl V @ 0.6d 8.5 8.50 0.055 7.44 Avg Cl V @ 0.6d 9 9.00 0.051 7.68 Avg Cl V @ 0.6d 9 9.00 0.051 7.58 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.69 4vg Cl V @ 0.6d 9.5 9.50 0.047 7.69 4vg Cl V @ 0.6d 9.5 9.50 0.047 7.69 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.69 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.69 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.48 Avg Cl V @ 0.6d 9.5 9.50 0.046 7.48 Avg Cl V @ 0.6d 9.5 9.50 0.046 7.48 0.046 7.48 0.046 7.48 0.056</td> <td>Stress (psf) 8.17 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 8.07 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.87 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.76 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.46 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.26 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.26 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.26 opper Soil Loss, in V @ 0.8d Bed Max Shear</td> <td>5.31 -0.07 To Water Surf, 45.0 Water Depth (5.25 -0.07 To Water Surf, 46.0 Water Depth (5.12 -0.13 To Water Surf, 46.0 Water Depth (5.05 -0.07 To Water Surf, 45.0 Water Depth (4.86 -0.13 To Water Surf, 46.0 Water Depth (4.86 -0.13 To Water Surf, 46.0 Water Depth (4.72 -0.07 To Water Surf, 45.5</td>	0.056 7.53 Avg Cl V @ 0.6d 8.5 8.50 0.055 7.44 Avg Cl V @ 0.6d 9 9.00 0.051 7.68 Avg Cl V @ 0.6d 9 9.00 0.051 7.58 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.69 4vg Cl V @ 0.6d 9.5 9.50 0.047 7.69 4vg Cl V @ 0.6d 9.5 9.50 0.047 7.69 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.69 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.69 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.48 Avg Cl V @ 0.6d 9.5 9.50 0.046 7.48 Avg Cl V @ 0.6d 9.5 9.50 0.046 7.48 0.046 7.48 0.046 7.48 0.056	Stress (psf) 8.17 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 8.07 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.87 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.76 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.46 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.26 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.26 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.26 opper Soil Loss, in V @ 0.8d Bed Max Shear	5.31 -0.07 To Water Surf, 45.0 Water Depth (5.25 -0.07 To Water Surf, 46.0 Water Depth (5.12 -0.13 To Water Surf, 46.0 Water Depth (5.05 -0.07 To Water Surf, 45.0 Water Depth (4.86 -0.13 To Water Surf, 46.0 Water Depth (4.86 -0.13 To Water Surf, 46.0 Water Depth (4.72 -0.07 To Water Surf, 45.5
12 ft		Soil Loss / Gain, cm Clopper Soil Loss, cm To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 8 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 9 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 10 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 10 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 11 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Clopper Soil Loss, cm Clopper Soil Loss, cm Soil Loss / Gain, cm	-0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5	0 0 Avg Bottom B 32 0 0 Avg Bottom B 33 0 0 Avg Bottom B 33 0 0 Avg Bottom B 33 0 0 Avg Bottom B 33 0 0 Avg Bottom B 33 0 0 Avg Bottom B 33 33 0 0 Avg Bottom B 33 33 0 0 0 Avg Bottom B 33 33 0 0 0 Avg Bottom B 34 34 34 34 34 34 34 34 34 34	0 0 Loss/Gain, in C 32.5 32 -0.5 -0.5 Loss/Gain, in C 33 32.5 -0.5 Loss/Gain, in C 34 33.5 -0.5 Loss/Gain, in C 33.5 -0.5 Loss/Gain, in C 35.5 -0.5 Loss/Gain, in C 35.5 -0.5 Loss/Gain, in C 35.5 -0.5 Loss/Gain, in C 35.5 -0.5 Loss/Gain, in C 35.5 -0.5 Loss/Gain, in C -0.5 Loss/Gain, in C	navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Mavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Mavg (fps) =	0.056 7.53 Avg Cl V @ 0.6d 8.5 8.50 0.055 7.44 Avg Cl V @ 0.6d 9 9.00 0.051 7.68 Avg Cl V @ 0.6d 9 9.00 0.051 7.58 Avg Cl V @ 0.6d 9 9.00 0.051 7.58 Avg Cl V @ 0.6d 9 9.00 0.051 7.58 Avg Cl V @ 0.6d 9 9.00 0.051 7.68 Avg Cl V @ 0.6d 9 9.00 0.051 7.58 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.69 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.69 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.48 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.48 Avg Cl V @ 0.6d 9.5 9.50 0.046 7.48 Avg Cl V @ 0.6d 10 0.043	Stress (psf) 8.17 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.0 Poper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.76 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.76 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.46 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.26 opper Soil Loss, in V @ 0.8d Stress (psf) 7.26 Stress (psf) 7.26 Stre	5.31 -0.07 To Water Surf, 45.0 Water Depth (5.25 -0.07 To Water Surf, 46.0 Water Depth (5.12 -0.13 To Water Surf, 46.0 Water Depth (5.05 -0.07 To Water Surf, 45.0 Water Depth (4.86 -0.13 To Water Surf, 46.0 Water Depth (4.86 -0.13 To Water Surf, 46.0 Water Depth (4.72 -0.07 To Water Surf, 45.5
12 ft		Soil Loss / Gain, cm Clopper Soil Loss, cm To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 8 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Clopper Soil Loss, cm Cross-section 9 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 10 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Clopper Soil Loss, cm Cross-section 10 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm	-0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5	0 0 Avg Bottom B 32 0 0 Avg Bottom B 33 0 0 Avg Bottom B 33 0 0 Avg Bottom B 33 0 0 Avg Bottom B 33 0 0 Avg Bottom B 33 0 0 Avg Bottom B 33 0 0 Avg Bottom B 33 0 0 Avg Bottom B 33 0 0 Avg Bottom B 33 0 0 0 Avg Bottom B 33 0 0 0 0 Avg Bottom B 33 0 0 0 0 Avg Bottom B 33 0 0 0 0 Avg Bottom B 33 0 0 0 0 Avg Bottom B 34 33 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 Loss/Gain, in C 32.5 32 -0.5 -0.5 Loss/Gain, in C 33 32.5 -0.5 Loss/Gain, in C 34 33.5 -0.5 Loss/Gain, in C 33.5 -0.5 Loss/Gain, in C 34. 35.5 -0.5 Loss/Gain, in C 35.5 -0.5 Loss/Gain, in C 35.5 -0.5 -0.5 Loss/Gain, in C -0.5 -0.5 Loss/Gain, in C -0.5 -	navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = navg = Flow (cfs) =	0.056 7.53 Avg Cl V @ 0.6d 8.5 8.50 0.055 7.44 Avg Cl V @ 0.6d 9 9.00 0.051 7.68 Avg Cl V @ 0.6d 9 9.00 0.051 7.68 Avg Cl V @ 0.6d 9 9.00 0.051 7.58 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.69 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.48 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.48 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.48 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.48 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.48 7.48 7.48 7.48 7.48	Stress (psf) 8.17 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 8.07 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.87 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.76 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.46 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.46 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.26 opper Soil Loss, in V @ 0.8d Stress (psf) 7.06	5.31 -0.07 To Water Surf, 45.0 Water Depth (5.25 -0.07 To Water Surf, 46.0 Water Depth (5.12 -0.13 To Water Surf, 46.0 Water Depth (5.05 -0.07 To Water Surf, 45.0 Water Depth (4.86 -0.13 To Water Surf, 46.0 Water Depth (4.72 -0.07 To Water Surf, 46.0 Water Depth (4.72 -0.07 To Water Surf, 45.5 Water Depth (4.55
12 ft		Soil Loss / Gain, cm Clopper Soil Loss, cm To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 8 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 9 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 10 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 10 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 11 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Clopper Soil Loss, cm Clopper Soil Loss, cm Soil Loss / Gain, cm	-0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5	0 0 Avg Bottom B 32 0 0 Avg Bottom B 33 0 0 Avg Bottom B 33 0 0 Avg Bottom B 33 0 0 Avg Bottom B 33 0 0 Avg Bottom B 33 0 0 Avg Bottom B 33 0 0 Avg Bottom B 33 0 0 Avg Bottom B 33 0 0 Avg Bottom B 33 0 0 0 Avg Bottom B 33 0 0 0 0 Avg Bottom B 33 0 0 0 0 Avg Bottom B 34 33 0 0 0 0 Avg Bottom B 34 34 34 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 Loss/Gain, in C 32.5 32 -0.5 -0.5 Loss/Gain, in C 33 32.5 -0.5 Loss/Gain, in C 33.5 -0.5 Loss/Gain, in C 34.3 -0.5 -0.5 Loss/Gain, in C 35.5 -0.5 -0.5 Loss/Gain, in C -0.5 -0.5 Loss/Gain, in C -0.5 -0.5 -0.5 Loss/Gain, in C -0.5 -0.5 -0.5 -0.5 -0.5 Loss/Gain, in C -0.5	navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Mavg (fps) = navg = Flow (cfs) = -0.07 V @ 0.2d Mavg (fps) =	0.056 7.53 Avg Cl V @ 0.6d 8.5 8.50 0.055 7.44 Avg Cl V @ 0.6d 9 9.00 0.051 7.68 Avg Cl V @ 0.6d 9 9.00 0.051 7.68 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.69 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.69 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.69 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.48 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.69 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.48 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.48 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.48 Avg Cl V @ 0.6d 9.5 9.50 0.047 7.48 Avg Cl V @ 0.6d 10 10.00 0.043 7.66 Avg Cl	Stress (psf) 8.17 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 8.07 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.87 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.76 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.46 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.26 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 7.06 opper Soil Loss, in	5.31 -0.07 To Water Surf, 45.0 Water Depth / 5.25 -0.07 To Water Surf, 46.0 Water Depth / 5.12 -0.13 To Water Surf, 46.0 Water Depth / 5.05 -0.07 To Water Surf, 45.0 Water Depth / 4.86 -0.13 To Water Surf, 46.0 Water Depth / 4.86 -0.13 To Water Surf, 46.0 Water Depth / 4.72 -0.07 To Water Surf, 45.5

	Start Ti
3 - 3	

CHANNEL 3 - S	SHEAR STRESS 3	Date: Soil:	2/14/09 Loam	Target	Start Time: Shear (psf):	2:00 PM 14.00	End Time: Slope:		<u>.</u>
40 ft long flume	20 ft test section		Loam			anent Channel Lir			
rpms	2 ft wide flume					TEST	DATA		
1	2 3	Inlet Weir	1	2	3				
FL	ow	Water Depth, in		19.00					
Weir width (ft) = 4		Water Velocity, ft/s		6.00					
0 ft A B	с	Flow Rate, cfs	0.00	38.00	0.00				
	· · · · · · · · · · · · · · · · · · ·	Cross-section 1	А	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, c
		To original Surface Elev, cm	28	28	27		10		46.0
		To eroded Surface Elev, cm	27.5	27.5	27	Vavg (fps) =	10.00	Bed Max Shear	
		Soil Loss / Gain, cm	-0.5	-0.5	0	navg =	0.059	Stress (psf)	Water Depth (in
		Clopper Soil Loss, cm	-0.5	-0.5	0	Flow (cfs) =	12.25	11.29	7.35
2 ft				Avg Bottom	Loss/Gain, in	-0.13	Avg C	lopper Soil Loss, in	-0.13
	— —	Cross-section 2	А	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, o
		To original Surface Elev, cm	30	30	30		10.5		47.5
		To eroded Surface Elev, cm	30	30	30	Vavg (fps) =	10.50	Bed Max Shear	
		Soil Loss / Gain, cm	0	0	0	navg =	0.054	Stress (psf)	Water Depth (in
		Clopper Soil Loss, cm	0	0	0	Flow (cfs) =	12.06	10.59	6.89
4 ft				Avg Bottom	Loss/Gain, in	0.00	Avg C	opper Soil Loss, in	0.00
		Cross-section 3	А	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, o
		To original Surface Elev, cm	30	29	29		10.5		47.0
		To eroded Surface Elev, cm	30	29	29	Vavg (fps) =	10.50	Bed Max Shear	
		Soil Loss / Gain, cm	0	0	0	navg =	0.054	Stress (psf)	Water Depth (ir
		Clopper Soil Loss, cm	0	0	0	Flow (cfs) =	12.17	10.69	6.96
6 ft				Avg Bottom	Loss/Gain, in	0.00	Avg C	lopper Soil Loss, in	0.00
		Cross-section 4	А	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, o
		To original Surface Elev, cm	28	28	28.5		10.5		45.5
		To eroded Surface Elev, cm	28	28	28	Vavg (fps) =	10.50	Bed Max Shear	
		Soil Loss / Gain, cm	0	0	-0.5	navg =	0.054	Stress (psf)	Water Depth (ir
		Clopper Soil Loss, cm	0	0	-0.5	Flow (cfs) =	12.06	10.59	6.89
8 ft				Avg Bottom	Loss/Gain, in	-0.07	Avg C	opper Soil Loss, in	-0.07
		Cross-section 5	Α	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, o
		To original Surface Elev, cm	30	30.5	31		10.5		48.0
		To eroded Surface Elev, cm	30	30	31	Vavg (fps) =	10.50	Bed Max Shear	
		Soil Loss / Gain, cm	0	-0.5	0	navg =	0.054	Stress (psf)	Water Depth (ir
		Clopper Soil Loss, cm	0	-0.5	0	Flow (cfs) =	12.17	10.69	6.96
10 ft				1	Loss/Gain, in	-0.07		lopper Soil Loss, in	-0.07
		Cross-section 6	A	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, c
		To original Surface Elev, cm	31	32	32		11		48.5
		To eroded Surface Elev, cm	31	31.5	32	Vavg (fps) =	11.00		
		Soil Loss / Gain, cm	0	-0.5	0	navg =	0.050	Bed Max Shear Stress (psf)	Water Depth (ir
		Clopper Soil Loss, cm	0	-0.5	0	Flow (cfs) =	12.27	10.29	6.69
12 ft				1	Loss/Gain, in	-0.07		lopper Soil Loss, in	-0.07
		Cross-section 7	A	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, o
		To original Surface Elev, cm	33.5	33	32.5		11		49.5
		To eroded Surface Elev, cm	33	33	32	Vavg (fps) =	11.00		1010
		Soil Loss / Gain, cm	-0.5	0	-0.5	navg =	0.050	Bed Max Shear Stress (psf)	Water Depth (ir
		Clopper Soil Loss, cm	-0.5	0	-0.5	Flow (cfs) =	12.15	10.18	6.63
14 ft		0.0pp01 00/1 2000, 011	0.0		Loss/Gain, in	-0.13		lopper Soil Loss, in	-0.13
		Cross-section 8	A	B	C	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, o
		To original Surface Elev, cm	33	33	33.5	. © 0.20	11 v @ 0.00	. e 0.00	50.0
	1	To eroded Surface Elev, cm	33	33	33.5	Vavg (fps) =	11.00		50.0
		Soil Loss / Gain, cm	0	0	-0.5	navg =	0.050	Bed Max Shear Stress (psf)	Water Depth (in
		Clopper Soil Loss, cm	0	0	-0.5	Flow (cfs) =	12.27	10.29	6.69
16 ft		Ciopper Juir Luss, Ull	U		-0.5 Loss/Gain, in	-0.07		lopper Soil Loss, in	-0.07
		Cross-section 9	A	B B	C	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, o
		To original Surface Elev, cm	32	33	33	v @ 0.20	v @ 0.6a 11	v @ 0.00	49.0
		To original Surface Elev, cm	32	33	33				49.0
			32	-1	33	Vavg (fps) =	11.00	Bed Max Shear	Water Death (
		Soil Loss / Gain, cm			0	navg =	0.049	Stress (psf)	Water Depth (in
18 ft		Clopper Soil Loss, cm	0	-1 Ava Bottom	0 Loss/Gain, in	Flow (cfs) = -0.13	12.03 Ava C	10.08 lopper Soil Loss, in	6.56 -0.13
10 11	<u> </u>	0	^		1			1	
		Cross-section 10	A	B	C	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, o
		To original Surface Elev, cm	33	34	35	No. (1.)	11.5		50.0
		To eroded Surface Elev, cm	33	33.5	35	Vavg (fps) =	11.50	Bed Max Shear	
		Soil Loss / Gain, cm	0	-0.5	0	navg =	0.046	Stress (psf)	Water Depth (in
		Clopper Soil Loss, cm	0	-0.5	0	Flow (cfs) =	12.20	9.78	6.36
20 ft					Loss/Gain, in	-0.07		lopper Soil Loss, in	-0.07
		Cross-section 11	Α	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf,
		To original Surface Elev, cm	33.5	34	34		12		50.0
		To eroded Surface Elev, cm	33	34	34	Vavg (fps) =	12.00	Bed Max Shear	
		Soil Loss / Gain, cm	-0.5	0	0	navg =	0.045	Stress (psf)	Water Depth (i
		Clopper Soil Loss, cm	-0.5	0	0	Flow (cfs) =	12.86	9.88	6.43
		Clopper Cell 2000, elli							
		Soil Loss / Gain, in	-0.05		Loss/Gain, in -0.05	-0.07 Avg Bottom Loss		lopper Soil Loss, in	-0.07

3	-	4
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CHANNEL 3 - S	SHEAR STRESS 4	Date:	2/14/09	Toraci	Start Time: Shear (psf):	5:00 PM 18.00	End Time: Slope:	5:30 PM 30%	
40 ft long flume	20 ft test section	Soil:	Loam			anent Channel Lir		30%	
rpms	2 ft wide flume			116	skamat i erma		DATA		
	2 3	Inlet Weir	1	2	3				
FL	ow	Water Depth, in		18.00					
Weir width (ft) = 4	C = 0.00	Water Velocity, ft/s		4.50					
0 ft A E	<u>с</u>	Flow Rate, cfs	0.00	27.00	0.00				
		Cross-section 1	A	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, c
		To original Surface Elev, cm	27.5	27.5	27		14.5		55.5
		To eroded Surface Elev, cm	27	27	27	Vavg (fps) =	14.50	Bed Max Shear	
		Soil Loss / Gain, cm	-0.5	-0.5	0	navg =	0.054	Stress (psf)	Water Depth (in
2 ft		Clopper Soil Loss, cm	-0.5	-0.5	0 Loss/Gain, in	Flow (cfs) = -0.13	27.12	17.24 opper Soil Loss, in	-0.13
2 11		Cross-section 2	A	B	C	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, c
		To original Surface Elev, cm	30	30	30	100.24	14.5	10000	57.5
		To eroded Surface Elev, cm	29	29	30	Vavg (fps) =	14.50	Bed Max Shear	
		Soil Loss / Gain, cm	-1	-1	0	navg =	0.053	Stress (psf)	Water Depth (in
		Clopper Soil Loss, cm	-1	-1	0	Flow (cfs) =	26.80	17.04	11.09
4 ft				Avg Bottom	Loss/Gain, in	-0.26	Avg Cl	opper Soil Loss, in	-0.26
		Cross-section 3	Α	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, c
		To original Surface Elev, cm	30	29	29		14.5		57.0
		To eroded Surface Elev, cm	29	29	28	Vavg (fps) =	14.50	Bed Max Shear	
		Soil Loss / Gain, cm	-1	0	-1	navg =	0.053	Stress (psf)	Water Depth (in
6 ft		Clopper Soil Loss, cm	-1	0 Avg Bottom	-1	Flow (cfs) = -0.26	26.96	17.14 opper Soil Loss, in	-0.26
011		Cross-section 4	A	B B	C	-0.20 V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, c
		To original Surface Elev, cm	28	28	28	V @ 0.20	15	V @ 0.00	56.0
		To eroded Surface Elev, cm	28	28	28	Vavg (fps) =	15.00	5 111 01	00.0
		Soil Loss / Gain, cm	0	0	0	navg =	0.051	Bed Max Shear Stress (psf)	Water Depth (in
		Clopper Soil Loss, cm	0	0	0	Flow (cfs) =	27.56	16.94	11.02
8 ft				Avg Bottom	Loss/Gain, in	0.00	Avg Cl	lopper Soil Loss, in	0.00
		Cross-section 5	Α	В	С	V @ 0.2d	V @ 0.6d	V @ 0.8d	To Water Surf, c
		To original Surface Elev, cm	30	30	31		15		57.5
		To eroded Surface Elev, cm	30	30	30	Vavg (fps) =	15.00	Bed Max Shear	
		Soil Loss / Gain, cm	0	0	-1	navg =	0.051	Stress (psf)	Water Depth (in
		Clopper Soil Loss, cm	0	0					10.83
40.4				-	-1	Flow (cfs) =	27.07	16.64	
10 ft		Cross section 6	٨	Avg Bottom	Loss/Gain, in	-0.13	Avg Cl	opper Soil Loss, in	-0.13
10 ft		Cross-section 6	A 31	Avg Bottom B	Loss/Gain, in C		Avg Cl V @ 0.6d		-0.13 To Water Surf, c
10 ft		To original Surface Elev, cm	31	Avg Bottom B 31.5	Loss/Gain, in C 32	-0.13 V @ 0.2d	Avg Cl V @ 0.6d 15	opper Soil Loss, in V @ 0.8d	-0.13
10 ft				Avg Bottom B	Loss/Gain, in C	-0.13 V @ 0.2d Vavg (fps) =	Avg Cl V @ 0.6d	opper Soil Loss, in V @ 0.8d Bed Max Shear	-0.13 To Water Surf, c 58.5
10 ft		To original Surface Elev, cm To eroded Surface Elev, cm	31 31	Avg Bottom B 31.5 31	Loss/Gain, in C 32 31.5	-0.13 V @ 0.2d	Avg Cl V @ 0.6d 15 15.00	opper Soil Loss, in V @ 0.8d	-0.13 To Water Surf, c 58.5
10 ft		To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm	31 31 0	Avg Bottom B 31.5 31 -0.5	Loss/Gain, in C 32 31.5 -0.5 -0.5	-0.13 V @ 0.2d Vavg (fps) = navg =	Avg Cl V @ 0.6d 15 15.00 0.050 26.90	opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf)	-0.13 To Water Surf, c 58.5 Water Depth (in
		To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm	31 31 0	Avg Bottom B 31.5 31 -0.5 -0.5	Loss/Gain, in C 32 31.5 -0.5 -0.5	-0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) =	Avg Cl V @ 0.6d 15 15.00 0.050 26.90	opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 16.54	-0.13 To Water Surf, c 58.5 Water Depth (in 10.76 -0.13
		To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm	31 31 0 0 A 33	Avg Bottom B 31.5 31 -0.5 -0.5 Avg Bottom B 33	Loss/Gain, in C 32 31.5 -0.5 -0.5 Loss/Gain, in C 32	-0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d	Avg Cl V @ 0.6d 15 15.00 0.050 26.90 Avg Cl V @ 0.6d 15	opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 16.54 opper Soil Loss, in	-0.13 To Water Surf, c 58.5 Water Depth (ir 10.76 -0.13
		To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm To eroded Surface Elev, cm	31 31 0 0 A 33 32	Avg Bottom B 31.5 31 -0.5 -0.5 Avg Bottom B 33 33	Loss/Gain, in C 32 31.5 -0.5 -0.5 Loss/Gain, in C 32 32	-0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) =	Avg Cl V @ 0.6d 15 15.00 0.050 26.90 Avg Cl V @ 0.6d 15 15.00	opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 16.54 opper Soil Loss, in V @ 0.8d Bed Max Shear	-0.13 To Water Surf, c 58.5 Water Depth (in 10.76 -0.13 To Water Surf, c 59.5
		To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm	31 31 0 0 A 33 32 -1	Avg Bottom B 31.5 31 -0.5 -0.5 Avg Bottom B 33 33 0	Loss/Gain, in C 32 31.5 -0.5 -0.5 Loss/Gain, in C 32 32 0	-0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg =	Avg Cl V @ 0.6d 15 15.00 0.050 26.90 Avg Cl V @ 0.6d 15 15.00 0.050	opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 16.54 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf)	-0.13 To Water Surf, c 58.5 Water Depth (ir 10.76 -0.13 To Water Surf, c 59.5 Water Depth (ir
12 ft		To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm To eroded Surface Elev, cm	31 31 0 0 A 33 32	Avg Bottom B 31.5 31 -0.5 -0.5 Avg Bottom B 33 33 0 0 0	Loss/Gain, in C 32 31.5 -0.5 -0.5 Loss/Gain, in C 32 32 0 0	-0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) =	Avg Cl V @ 0.6d 15 15.00 0.050 26.90 Avg Cl V @ 0.6d 15 15.00 0.050 26.74	opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 16.54 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 16.44	-0.13 To Water Surf, c 58.5 Water Depth (ir 10.76 -0.13 To Water Surf, c 59.5 Water Depth (ir 10.70
		To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm	31 31 0 0 A 33 32 -1 -1	Avg Bottom B 31.5 31 -0.5 -0.5 Avg Bottom B 33 33 0 0 0 Avg Bottom	Loss/Gain, in C 32 31.5 -0.5 -0.5 Loss/Gain, in C 32 32 0 0 Loss/Gain, in	-0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13	Avg Cl V @ 0.6d 15 15.00 0.050 26.90 Avg Cl V @ 0.6d 15 15.00 0.050 26.74 Avg Cl	opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 16.54 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 16.44 opper Soil Loss, in	-0.13 To Water Surf, c 58.5 Water Depth (ir 10.76 -0.13 To Water Surf, c 59.5 Water Depth (ir 10.70 -0.13
12 ft		To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm	31 31 0 A 33 32 -1 -1 A	Avg Bottom B 31.5 -0.5 -0.5 Avg Bottom B 33 33 0 0 Avg Bottom B B	Loss/Gain, in C 32 31.5 -0.5 -0.5 Loss/Gain, in C 32 32 0 Loss/Gain, in C	-0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) =	Avg Cl V @ 0.6d 15 15.00 0.050 26.90 Avg Cl V @ 0.6d 15 15.00 0.050 26.74 Avg Cl V @ 0.6d	opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 16.54 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 16.44	-0.13 To Water Surf, c 58.5 Water Depth (ir 10.76 -0.13 To Water Surf, c 59.5 Water Depth (ir 10.70 -0.13 To Water Surf, c
12 ft		To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm	31 31 0 0 A 33 32 -1 -1	Avg Bottom B 31.5 31 -0.5 -0.5 Avg Bottom B 33 33 0 0 0 Avg Bottom	Loss/Gain, in C 32 31.5 -0.5 -0.5 Loss/Gain, in C 32 32 0 0 Loss/Gain, in	-0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d	Avg Cl V @ 0.6d 15 15.00 0.050 26.90 Avg Cl V @ 0.6d 15 15.00 0.050 26.74 Avg Cl V @ 0.6d 15.5	opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 16.54 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 16.44 opper Soil Loss, in V @ 0.8d	-0.13 To Water Surf, c 58.5 Water Depth (ir 10.76 -0.13 To Water Surf, c 59.5 Water Depth (ir 10.70 -0.13
12 ft		To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 8 To original Surface Elev, cm	31 31 0 0 4 33 32 -1 -1 -1 A 33	Avg Bottom B 31.5 -0.5 -0.5 Avg Bottom B 33 33 0 0 0 Avg Bottom B 33 33 0 0	Loss/Gain, in C 32 31.5 -0.5 -0.5 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 33	-0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13	Avg Cl V @ 0.6d 15 15.00 0.050 26.90 Avg Cl V @ 0.6d 15 15.00 0.050 26.74 Avg Cl V @ 0.6d	opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 16.54 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 16.44 opper Soil Loss, in	-0.13 To Water Surf, c 58.5 Water Depth (ir 10.76 -0.13 To Water Surf, c 59.5 Water Depth (ir 10.70 -0.13 To Water Surf, c
12 ft		To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 8 To original Surface Elev, cm	31 31 0 0 4 33 32 -1 -1 -1 A 33 33	Avg Bottom B 31.5 -0.5 -0.5 Avg Bottom B 33 33 0 0 0 Avg Bottom B 33 33 0 0 0 33 33 0 0 33 33 33 0 0 0 0	Loss/Gain, in C 32 31.5 -0.5 -0.5 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 33 33	-0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) =	Avg Cl V @ 0.6d 15 15.00 0.050 26.90 Avg Cl V @ 0.6d 15 15.00 0.050 26.74 Avg Cl V @ 0.6d 15.5 15.50	opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 16.54 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 16.44 opper Soil Loss, in V @ 0.8d Bed Max Shear	-0.13 To Water Surf, c 58.5 Water Depth (ir 10.76 -0.13 To Water Surf, c 59.5 Water Depth (ir 10.70 -0.13 To Water Surf, c 59.0
12 ft		To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 8 To original Surface Elev, cm To eroded Surface Elev, cm Soil Surface Elev, cm Soil Loss / Gain, cm	31 31 0 0 4 33 32 -1 -1 -1 4 33 33 0	Avg Bottom B 31.5 -0.5 -0.5 Avg Bottom B 33 -0 -0 -0 Avg Bottom B 	Loss/Gain, in C 32 31.5 -0.5 -0.5 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 33 33 0	-0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg = Navg (fps) = navg =	Avg Cl V @ 0.6d 15 15.00 0.050 26.90 Avg Cl V @ 0.6d 15 15.00 0.050 26.74 Avg Cl V @ 0.6d 15.5 15.50 0.047 26.44	opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 16.54 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 16.44 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf)	-0.13 To Water Surf, c 58.5 Water Depth (ir 10.76 -0.13 To Water Surf, c 59.5 Water Depth (ir 10.70 -0.13 To Water Surf, c 59.0 Water Depth (ir
12 ft		To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 8 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm	31 31 0 0 4 33 32 -1 -1 -1 4 33 33 0	Avg Bottom B 31.5 -0.5 -0.5 Avg Bottom B 33 -0 -0 -0 Avg Bottom B 	Loss/Gain, in C 32 31.5 -0.5 -0.5 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 33 33 0 0 Loss/Gain, in C	-0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = navg = Flow (cfs) =	Avg Cl V @ 0.6d 15 15.00 0.050 26.90 Avg Cl V @ 0.6d 15 15.00 0.050 26.74 Avg Cl V @ 0.6d 15.5 15.50 0.047 26.44	opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 16.54 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 16.44 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 15.73	-0.13 To Water Surf, c 58.5 Water Depth (ir 10.76 -0.13 To Water Surf, c 59.5 Water Depth (ir 10.70 -0.13 To Water Surf, c 59.0 Water Depth (ir 10.24
12 ft		To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Soil Loss / Gain, cm Clopper Soil Loss, cm	31 31 0 0 0 A 33 32 -1 -1 -1 A 33 33 0 0 0 0 4 32	Avg Bottom B 31.5 -0.5 Avg Bottom B 33 33 0 0 Avg Bottom B 33 33 0 0 Avg Bottom B 33 33 0 0 Avg Bottom B 33 33 33 0 0 Avg Bottom B 33 33 33 0 0 Avg Bottom B 33 33 33 33 33 33 33 33 33 33 33 33 3	Loss/Gain, in C 32 31.5 -0.5 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 33 33 0 0 Loss/Gain, in C 33 33 0 0 Loss/Gain, in C 33 33 0 0 0 Loss/Gain, in C	-0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d	Avg Cl V @ 0.6d 15 15.00 0.050 26.90 Avg Cl V @ 0.6d 15 15.00 0.050 26.74 Avg Cl V @ 0.6d 15.5 15.50 0.047 26.44 Avg Cl V @ 0.6d 15.5	opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 16.54 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 16.44 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 15.73 opper Soil Loss, in	-0.13 To Water Surf, c 58.5 Water Depth (ir 10.76 -0.13 To Water Surf, c 59.5 Water Depth (ir 10.70 -0.13 To Water Surf, c 59.0 Water Depth (ir 10.24 0.00
12 ft		To original Surface Elev, cm To eroded Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 7 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 8 To original Surface Elev, cm Soil Loss / Gain, cm Clopper Soil Loss, cm Cross-section 9 To original Surface Elev, cm To eroded Surface Elev, cm	31 31 0 0 0 A 33 32 -1 -1 -1 -1 A 33 33 0 0 0 0 4 32 32	Avg Bottom B 31.5 -0.5 Avg Bottom B 33 33 0 0 Avg Bottom B 33 33 0 0 Avg Bottom B 33 33 0 0 Avg Bottom B 33 33 33 0 0 Avg Bottom B 33 33 33 0 0 2 32 32	Loss/Gain, in C 32 31.5 -0.5 -0.5 Loss/Gain, in C 32 32 0 0 Loss/Gain, in C 33 33 0 0 Loss/Gain, in C 33 33 0 0 Loss/Gain, in 33 33 33 0	-0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = Navg = Flow (cfs) = -0.13 V @ 0.2d Vavg (fps) = navg = Flow (cfs) = 0.00 V @ 0.2d Vavg (fps) =	Avg Cl V @ 0.6d 15 15.00 0.050 26.90 Avg Cl V @ 0.6d 15 15.00 0.050 26.74 Avg Cl V @ 0.6d 15.5 15.50 0.047 26.44 Avg Cl V @ 0.6d 15.5 15.50	opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 16.54 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 16.44 opper Soil Loss, in V @ 0.8d Bed Max Shear Stress (psf) 15.73 opper Soil Loss, in V @ 0.8d Bed Max Shear	-0.13 To Water Surf, c 58.5 Water Depth (ii 10.76 -0.13 To Water Surf, c 59.5 Water Depth (ii 10.70 -0.13 To Water Surf, c 59.0 Water Depth (ii 10.24 0.00 To Water Surf, c 58.0
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APPENDIX B – TEST SOIL

Test Soil Grain Size Distribution Curve

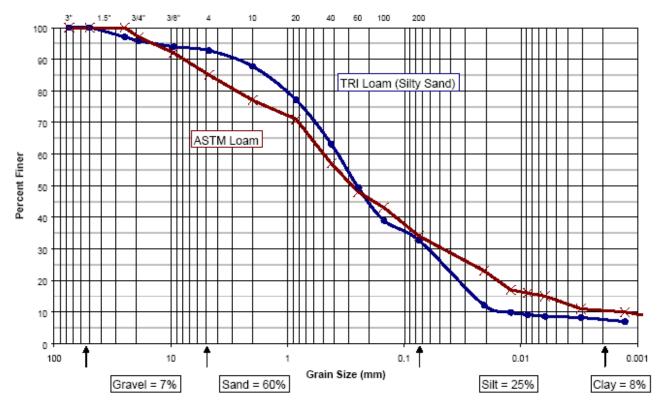
Compaction Curves



A Texas Research International Company

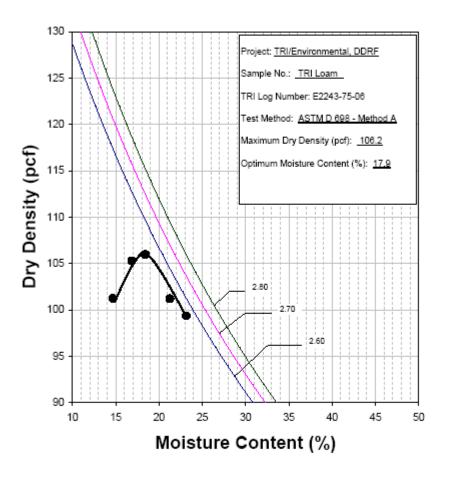


Atterburg Limits Liquid Limit = 32 Plastic Limit = 27 Plasticity Index = 5





Proctor Compaction Test



John M. Allen, E.I.T 10/12/2006 Quality Review/Date

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

9063 Bee Caves Road
Austin, TX 78733-6201
(512) 263-2101
(512) 263-2558
1-800-880-TEST



APPENDIX C – 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) 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.
- ASTM D 7351: Determination of Sediment Retention Device Effectiveness In Sheet Flow Applications.

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; jsprague@tri-env.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.

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