IHSS GROUP 000-5
PRESENT LANDFILL (IHSS-114)

ACCELERATED ACTION FOR THE PRESENT LANDFILL
ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE
CONSTRUCTION CERTIFICATION REPORT

ATTACHMENT A OF THE
FINAL CLOSEOUT REPORT

VOLUME III

Prepared for:

KAISER-HILL COMPANY, LLC
ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE
12101 Airport Way, Unit B
Broomfield, CO 80021-2583

Prepared by:

TETRA TECH, INC.
1900 South Sunset Street, Suite 1-F
Longmont, Colorado 80501

Tetra Tech Job No. 19-4886.001.00

September 2005

Reviewed for Classification/UCNI
By: Janet Nesheim, Derivative Classifier
DOE, EMCBC
Date: 11-06-08
Confirmed Unclassified, Not UCNI

RECEIVED
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TETRA TECH, INC.

ADMIN RECORD

Tetra Tech, Inc. is an Equal Opportunity Employer

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KAISER•HILL
COMPANY

Final Closeout Report for IHSS Group 000-5 Present Landfill (IHSS-114)

Volume III

Environmental Restoration
Rocky Flats Environmental
Technology Site

September 2005

SUBMITTAL TRANSMITTAL FORM

For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 12/4/04	XXX	New Submittal / Resubmittal

Section I REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS *(This section to be initiated by the Subcontractor)*

To:	From:	Subcontract No: KH020577	Submittal No. 045 A
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026		Previous Submittal No. 045
Specification Sec. No. (Cover only one section with each Submittal)		Project Title: Construction of the Present Landfill Accelerated Action	

Item No.	Description of Item Submitted (Type, size, model number, etc.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8)	No. of Copies	Contract Reference Document		Deviation (See Instruction #6)	Contractor Action Code (See Instruction #9)
				Spec. Paragraph No.	Drawing Sheet No.		
a.	b.	c.	d.	e.	f.	g.	h.
1	Interface Shear (FML Textured vs. GDN) 13.5 degree angle	N/A	6	02210	N/A	None	
2	Interface Shear (FML Textured vs. GDN) 23.7 degree angle	N/A	6	02210	N/A	None	
3	Interface friction test Graph (GDN vs. FML textured)	N/A	6	02210	N/A	None	
4	Interface Shear (FML Textured vs. GCL) 19.6 degree angle	N/A	6	02210	N/A	None	
5	Interface Shear (FML Textured vs. GCL)) 16.7 degree angle	N/A	6	02210	N/A	None	
6	Interface friction test graph (GCL vs. FML textured)	N/A	6	02210	N/A	None	

Remarks: Note orientation of GCL geotextile tested (woven side or non-woven side). Submittal 45 indicated that the tested textured FML was an HDPE product. TRI has verified that this was a typo and that the tested product was LLDPE. This submittal corrects that error.

Acknowledge Receipt of Corrected TRI Laboratory Result Test Reports

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.

Paul Kreitz 12/4/04

Signature of Subcontractor:

Section II Robert K. Davis 01/30/2005 Reviewed

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

OF CQAE
J.H. Rocky Flats

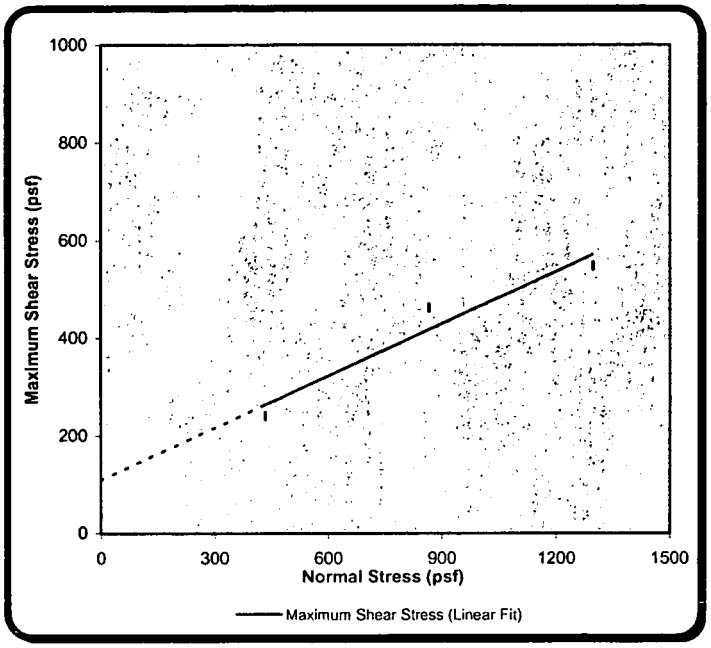
TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

INTERFACE FRICTION TEST REPORT

Client: **Stoller Corporation**
Project: **Rocky Flats**
Test Date: 9/30-10/4/04

TRI Log#: E2201-12-05
Test Method: ASTM D 6243

Tested Interface: Flexible Membrane Liner (Textured LLDPE Geomembrane #103127006) vs. CETCO Bentomat GCL #5484 (Woven side)



Upper Box: CETCO Bentomat GCL #5484 (Woven side)

Lower Box: Flexible Membrane Liner (Geomembrane #103127006)

Interface Conditioning: Interface soaked and loading applied for a minimum of 72 hours prior to shear

Box Dimension: 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.01 inches/minute

Trial Number	1	2	3
Bearing Slide Resistance (lbs)	12	16	20
Normal Stress (psf)	432	864	1296
Maximum Shear Stress (psf)	252	478	568
Corrected Shear Stress (psf)	240	462	548
Secant Angle (degrees)	29.0	28.1	22.9

RESULTS: Maximum Friction Angle and Y-intercept

Regression Friction Angle (degrees):		**19.6**		
Y-intercept or Regression Adhesion (psf):		**109**		
Regression Line:	Y=	0.356	* X +	109
Regression Coefficient (r squared):		0.939		

SRA 10/04/04
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.

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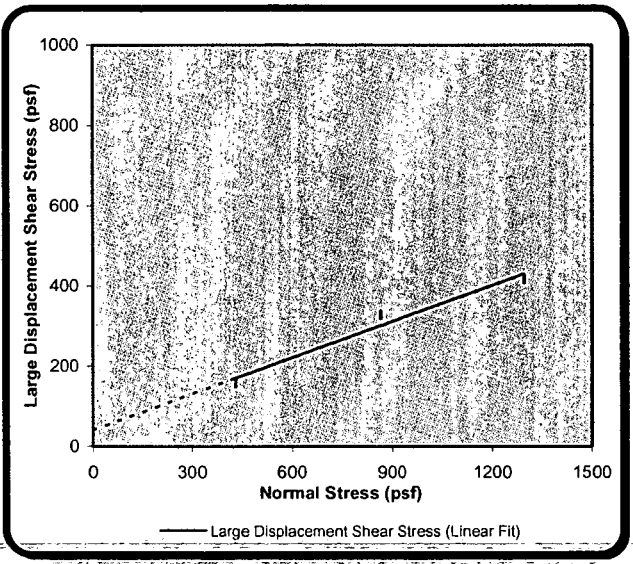
TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

INTERFACE FRICTION TEST REPORT

Client: **Stoller Corporation**
Project: **Rocky Flats**
Test Date 9/30-10/4/04

TRI Log#: E2201-12-05
Test Method: ASTM D 6243

Tested Interface: Flexible Membrane Liner (Textured LLDPE Geomembrane #10312700 CETCO Bentomat GCL #5484 (Woven side)



Upper Box: CETCO Bentomat GCL #5484 (Woven side)

Lower Box: Flexible Membrane Liner (Geomembrane #103127006)

Interface Conditioning: Interface soaked and loading applied for a minimum of 72 hours prior to shear

Box Dimension 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.01 inches/minute

Trial Number	1	2	3
Bearing Slide Resistance (lbs)	12	16	20
Normal Stress (psf)	432	864	1296
Large Displacment Shear Stress (psf)	169	344	437
Corrected Shear Stress (psf)	157	328	417
Secant Angle (degrees)	20.0	20.8	17.8

RESULTS: Large Displacement Friction Angle and Y-intercept at 3.3-in. of Displacement

Regression Friction Angle (degrees):		**16.7**		
Y-intercept or Regression Adhesion (psf):		**41**		
Regression Line:	Y=	0.301	* X +	41
Regression Coefficient (r squared):		0.968		

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TRI/ENVIRONMENTAL, INC.
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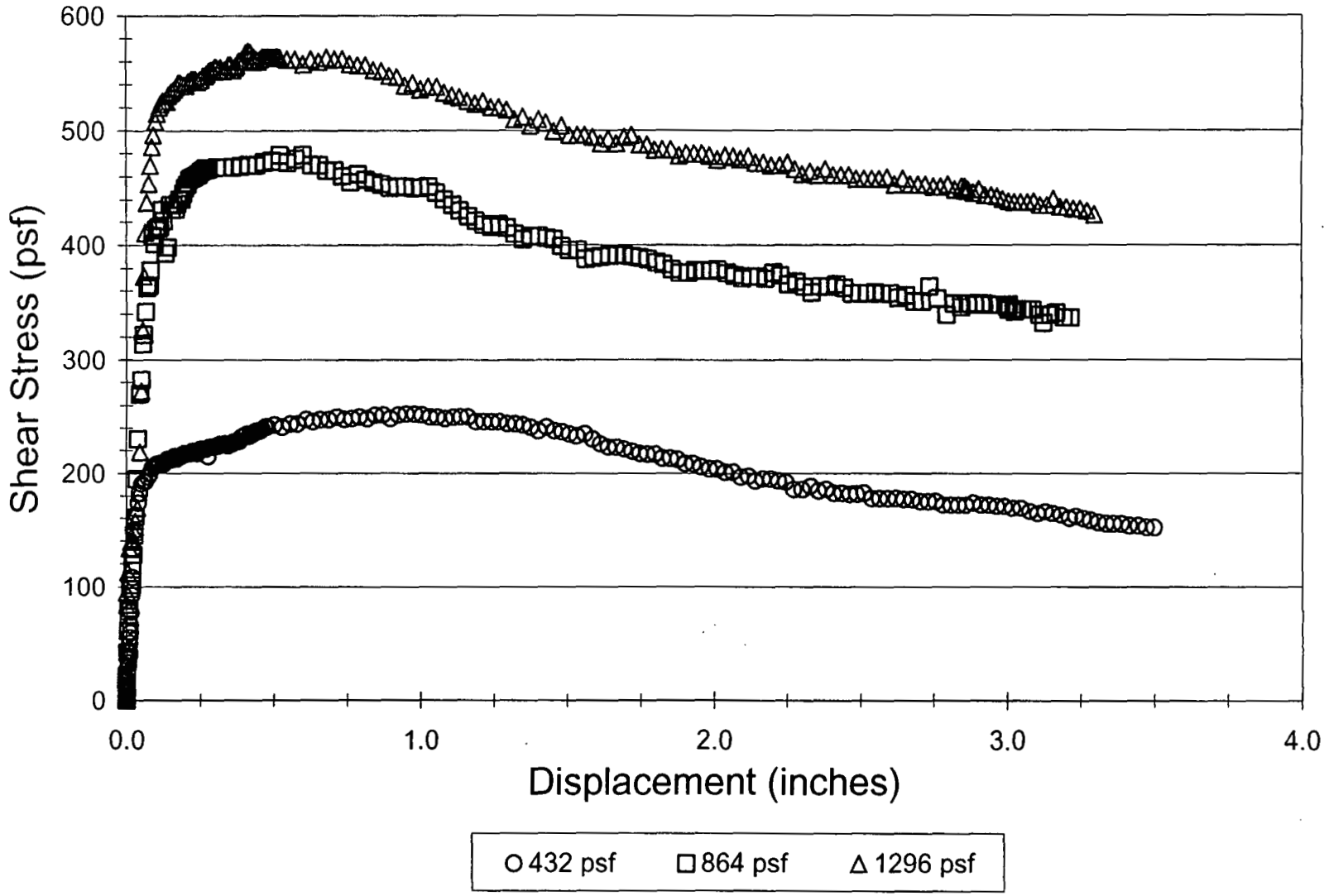
STOLLER INTERFACE FRICTION TEST
CETCO Bentomat GCL #5484 (Woven side) vs.
Flexible Membrane Liner (Textured LLDPE Geomembrane #103127006)



TRI Log No. E2201-12-05 9063 Bee Caves Road Austin, TX 78733-6201 (512) 263-2101 FAX (512) 263-2558 1-800-880-TEST

TRI/ENVIRONMENTAL, INC.
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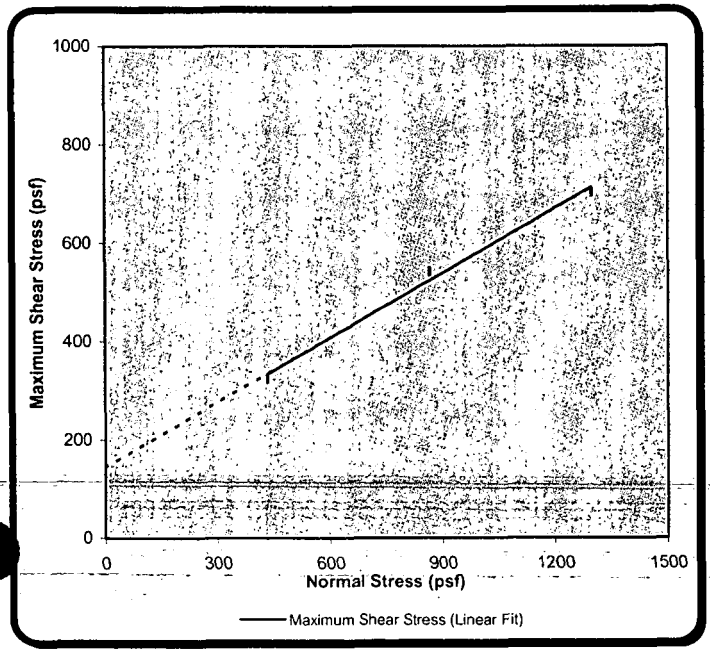
INTERFACE FRICTION TEST REPORT

Client: **Stoller Corporation**
Project: **Rocky Flats**
Test Date: 9/21-9/21/04

TRI Log#: E2201-12-05
Test Method: ASTM D 5321

Tested Interface: Flexible Membrane Liner (Textured LLDPE Geomembrane #103127006) vs. Geosynthetic Drainage Net (Geocomposite #C2-2-2-03-1704)



Upper Box: Geosynthetic Drainage Net (Geocomposite #C2-2-2-03-1704)

Lower Box: Flexible Membrane Liner (Geomembrane #103127006)

Interface Conditioning: Interface soaked and loading applied for a minimum of 15 minutes prior to shear

Box Dimension: 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.2 inches/minute

Trial Number	1	2	3
Bearing Slide Resistance (lbs)	12	16	20
Normal Stress (psf)	432	864	1296
Maximum Shear Stress (psf)	336	558	723
Corrected Shear Stress (psf)	324	542	703
Secant Angle (degrees)	36.9	32.1	28.5

RESULTS: Maximum Friction Angle and Y-intercept

Regression Friction Angle (degrees):		**23.7**		
Y-intercept or Regression Adhesion (psf):		**144**		
Regression Line:	Y=	0.438	* X +	144
Regression Coefficient (r squared):		0.993		

SRA 10/04/04
Quality Review/Date

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TRI/ENVIRONMENTAL, INC.
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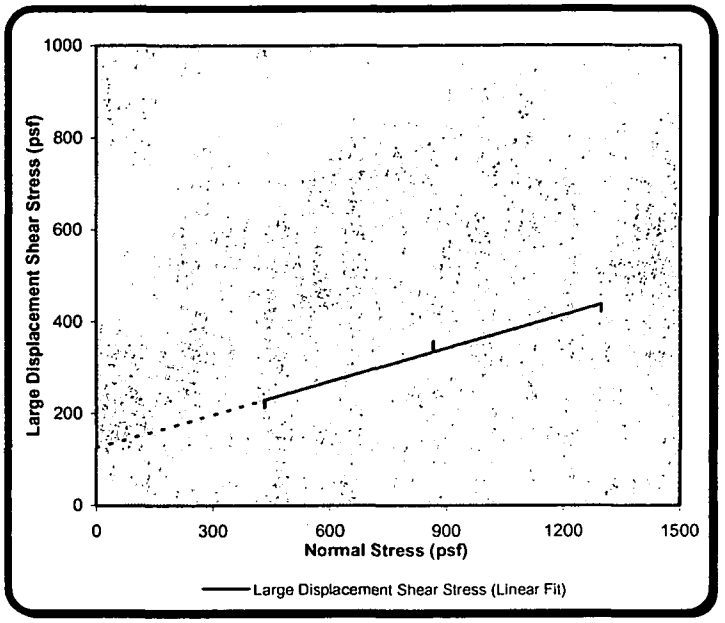
INTERFACE FRICTION TEST REPORT

Client: **Stoller Corporation**
Project: **Rocky Flats**
Test Date: 9/21-9/21/04

TRI Log#: E2201-12-05
Test Method: ASTM D 5321

Tested Interface: Flexible Membrane Liner (Textured LLDPE Geomembrane #103127006) vs. Geosynthetic Drainage Net (Geocomposite #C2-2-2-03-1704)



Upper Box: Geosynthetic Drainage Net (Geocomposite #C2-2-2-03-1704)

Lower Box: Flexible Membrane Liner (Geomembrane #103127006)

Interface Conditioning: Interface soaked and loading applied for a minimum of 15 minutes prior to shear

Box Dimension: 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.2 inches/minute

Trial Number	1	2	3
Bearing Slide Resistance (lbs)	12	16	20
Normal Stress (psf)	432	864	1296
Large Displacment Shear Stress (psf)	234	364	450
Corrected Shear Stress (psf)	222	348	430
Secant Angle (degrees)	27.2	21.9	18.3

RESULTS: Large Displacement Friction Angle and Y-intercept at 3.0-in. of Displacement

Regression Friction Angle (degrees):		**13.5**		
Y-intercept or Regression Adhesion (psf):		**125**		
Regression Line:	Y=	0.241	* X +	125
Regression Coefficient (r squared):		0.985		

SRA 10/04/04
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TRI/ENVIRONMENTAL, INC.
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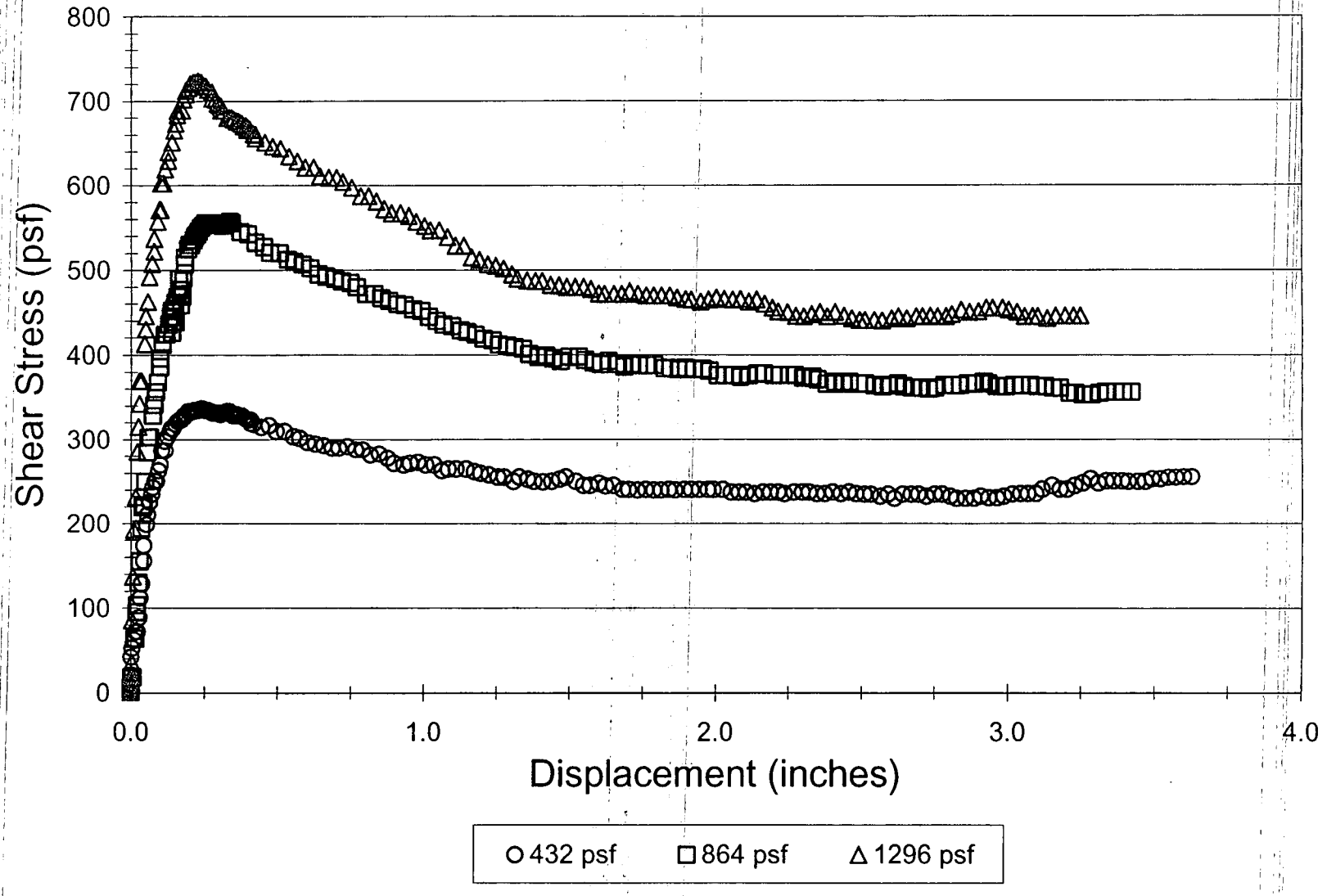
STOLLER INTERFACE FRICTION TEST
Geosynthetic Drainage Net (Geocomposite #C2-2-2-03-1704) vs. Flexible Membrane Liner (Textured LLDPE Geomembrane #103127006)



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SUBMITTAL TRANSMITTAL FORM

For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 10/18/04	XXX	New Submittal
			Resubmittal

Section I — REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS *(This section to be initiated by the Subcontractor)*

To:	From:	Subcontract No: KH020577	Submittal No. 045
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026		Previous Submittal No.

Specification Sec. No. (Cover only one section with each Submittal)	Project Title: Construction of the Present Landfill Accelerated Action

Item No.	Description of Item Submitted (Type, size, model number, etc.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8)	No. of Copies	Contract Reference Document		Deviation (See Instruction #6)	Contractor Action Code (See Instruction #9)
				Spec. Paragraph No.	Drawing Sheet No.		
a.	b.	c.	d.	e.	f.	g.	h.
1	Interface Shear (FML Textured vs. GCL)	N/A	6	02210	N/A	None	
2	Interface Shear (FML Textured vs. GDN)	N/A	6	02210	N/A	None	
3	Interface Shear (Geocomposite vs. Cushion Soil	N/A	6	02210	N/A	None	
4	Interface Shear (FML Smooth vs. GCL)	N/A	6	02210	N/A	None	
5	Interface Shear (FML Smooth vs. Geocomposite)	N/A	6	02210	N/A	None	
6	Interface Shear (GCL vs. Cushion Soil	N/A	6	02210	N/A	None	

Remarks: Note orientation of GCL geotextile tested (woven side or non-woven side).

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted. 10-18-04

Signature of Subcontractor:

Jim Erickson for Paul Kreitz

Section II — Reviewed

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

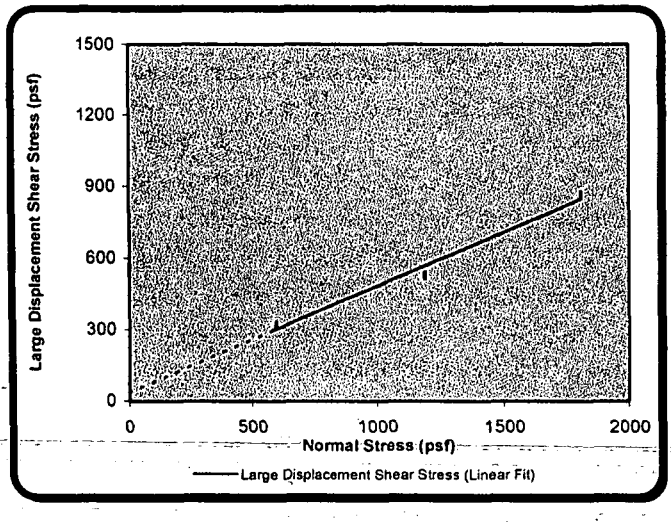
TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

INTERFACE FRICTION TEST REPORT

Client: **Stoller Corporation**
Project: **Rocky Flats**
Test Date: 9/23-9/27/04

TRI Log#: E2201-12-05
Test Method: ASTM D 6243

Tested Interface: CETCO Bentomat ST GCL #5484 (Woven Side) vs. Cushion Soil



Upper Box: CETCO Bentomat ST GCL #5484 (woven side)

Lower Box: Cushion soil compacted to 118.4 pcf at 10.3 % moisture content (95 % maximum dry density at optimum moisture content as determined by a standard Proctor test).

Interface Conditioning: Interface soaked and loading applied for 72 hours prior to shear

Box Dimension: 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.01 inches/minute

Trial Number	1	2	3
Bearing Slide Resistance (lbs)	14	19	25
Normal Stress (psf)	593	1187	1809
Large Displacment Shear Stress (psf)	332	548	888
Corrected Shear Stress (psf)	318	529	863
Secant Angle (degrees)	28.2	24.0	25.5

RESULTS: Large Displacement Friction Angle and Y-intercept at 3.2-in. of Displacement

Regression Friction Angle (degrees):		**24.2**		
Y-intercept or Regression Adhesion (psf):		**33**		
Regression Line:	Y=	0.448	* X +	33
Regression Coefficient (r squared):		0.986		

SRA 10/04/04
Quality Review/Date

Note: The normal stress and shear stress values contain an area correction.

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.

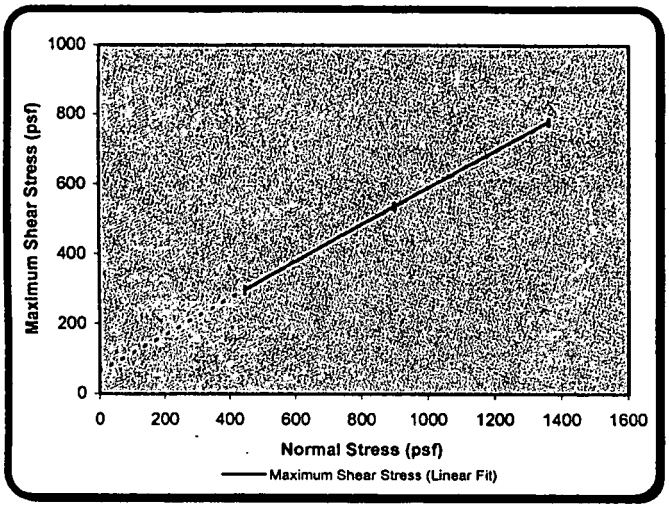
TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

INTERFACE FRICTION TEST REPORT

Client: **Stoller Corporation**
Project: **Rocky Flats**
Test Date: 9/23-9/27/04

TRI Log#: E2201-12-05
Test Method: ASTM D 6243

Tested Interface: CETCO Bentomat ST GCL #5484 (Woven Side) vs. Cushion Soil



Upper Box: CETCO Bentomat ST GCL #5484 (woven side)

Lower Box: Cushion soil compacted to 118.4 pcf at 10.3 % moisture content (95 % maximum dry density at optimum moisture content as determined by a standard Proctor test).

Interface Conditioning: Interface soaked and loading applied for 72 hours prior to shear

Box Dimension: 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.01 inches/minute

Trial Number	1	2	3
Bearing Slide Resistance (lbs)	12	17	21
Normal Stress (psf)	447	897	1359
Maximum Shear Stress (psf)	308	553	799
Corrected Shear Stress (psf)	296	536	778
Secant Angle (degrees)	33.5	30.9	29.8

RESULTS: Maximum Friction Angle and Y-intercept

Regression Friction Angle (degrees): **27.9**
Y-intercept or Regression Adhesion (psf): **60**

Regression Line: Y= 0.529 * X + 60
Regression Coefficient (r squared): 1.000

SRA 10/04/04
Quality Review/Date

Note: The normal stress and shear stress values contain an area correction.

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.

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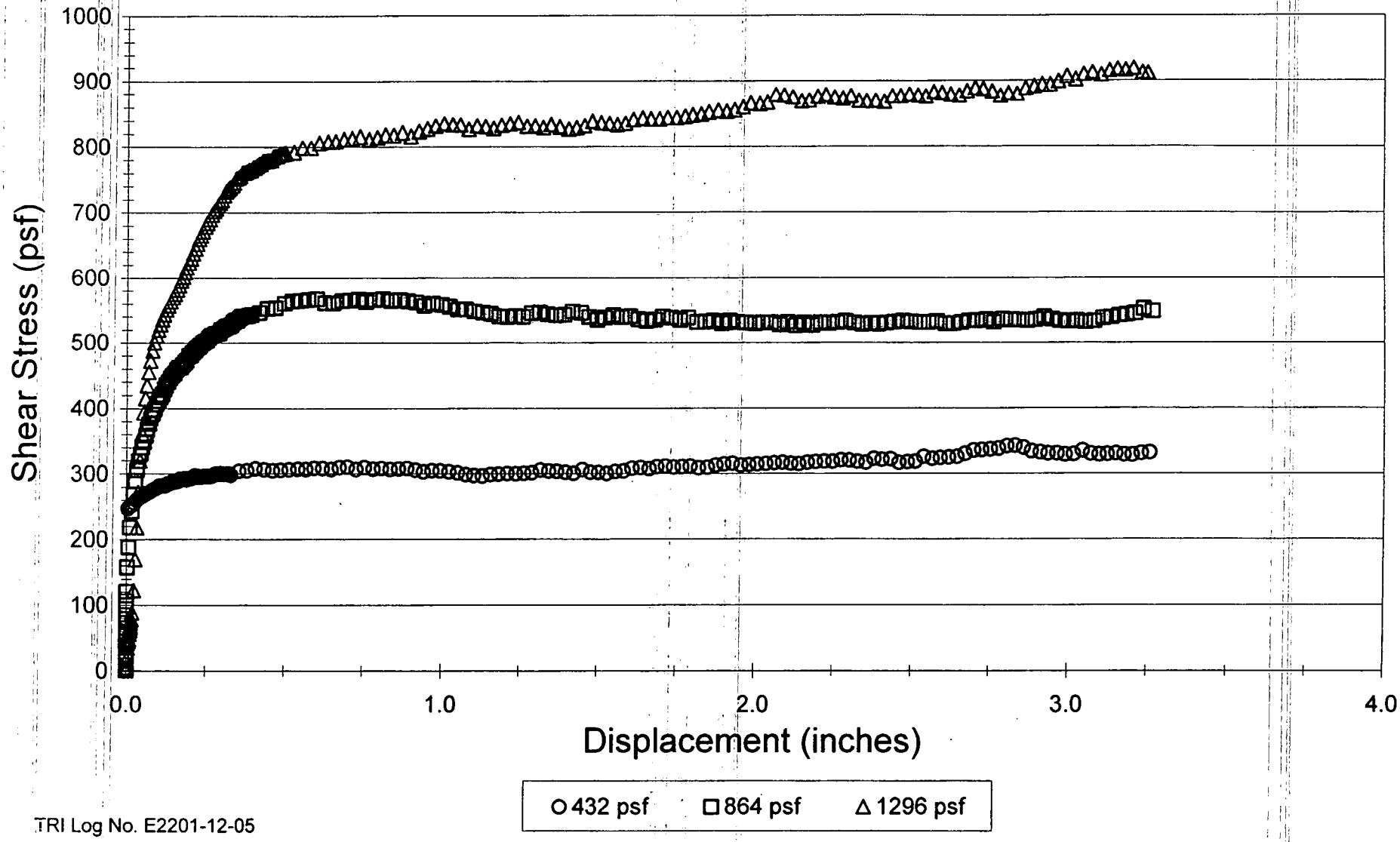
STOLLER INTERFACE FRICTION TEST
CETCO Bentomat ST GCL #5484 (Woven side)
vs. Cushion Soil



TRI Log No. E2201-12-05

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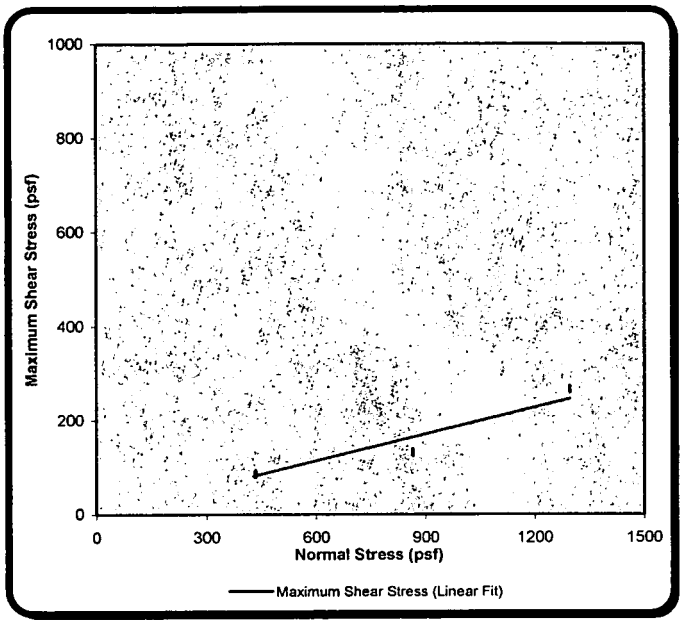
TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

INTERFACE FRICTION TEST REPORT

Client: **Stoller Corporation**
Project: **Rocky Flats**
Test Date: 10/8-10/11/04

TRI Log#: E2201-12-05
Test Method: ASTM D 6243

Tested Interface: Flexible Membrane Liner (Smooth 60 mil LLDPE Geomembrane #3231) vs. CETCO Bentomat GCL #10657 (Woven side)



Upper Box: CETCO Bentomat GCL #10657 (Woven side)

Lower Box: Flexible Membrane Liner (Geomembrane #3231)

Interface Conditioning: Interface soaked and loading applied for a minimum of 72 hours prior to shear

Box Dimension: 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.01 inches/minute

Trial Number	1	2	3
Bearing Slide Resistance (lbs)	12	16	20
Normal Stress (psf)	432	864	1296
Maximum Shear Stress (psf)	98	147	286
Corrected Shear Stress (psf)	86	131	266
Secant Angle (degrees)	11.2	8.6	11.6

RESULTS: Maximum Friction Angle and Y-intercept

Regression Friction Angle (degrees):		**11.0**		
Y-intercept or Regression Adhesion (psf):		**0**		
Regression Line:	Y=	0.195	* X +	0
Regression Coefficient (r squared):		0.960		

SRA 10/12/04
Quality Review/Date

Note: The regression line includes the origin.

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TRI/Environmental, Inc.

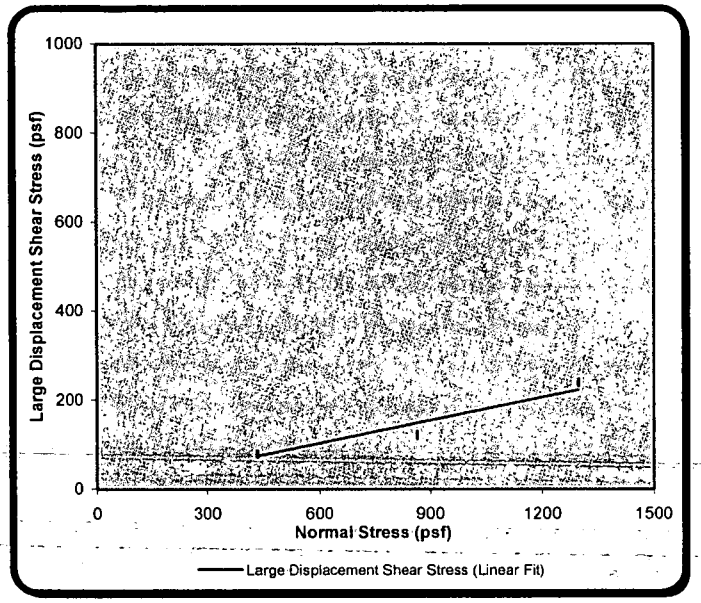
A Texas Research International Company

INTERFACE FRICTION TEST REPORT

Client: **Stoller Corporation**
Project: **Rocky Flats**
Test Date: 10/8-10/11/04

TRI Log#: E2201-12-05
Test Method: ASTM D 6243

Tested Interface: Flexible Membrane Liner (Smooth 60 mil LLDPE Geomembrane #3231) vs. CETCO Bentomat GCL #10657 (Woven side)



Upper Box: CETCO Bentomat GCL #10657 (Woven side)

Lower Box: Flexible Membrane Liner (Geomembrane #3231)

Interface Conditioning: Interface soaked and loading applied for a minimum of 72 hours prior to shear

Box Dimension: 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.01 inches/minute

Trial Number	1	2	3
Bearing Slide Resistance (lbs)	12	16	20
Normal Stress (psf)	432	864	1296
Large Displacment Shear Stress (psf)	91	137	259
Corrected Shear Stress (psf)	79	121	239
Secant Angle (degrees)	10.3	8.0	10.4

RESULTS: Large Displacement Friction Angle and Y-intercept at 3.0-in. of Displacement

Regression Friction Angle (degrees):		**10.0**		
Y-intercept or Regression Adhesion (psf):		**0**		
Regression Line:	Y=	0.175	* X +	0
Regression Coefficient (r squared):		0.966		

SRA 10/12/04
Quality Review/Date

Note: The regression line includes the origin.

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TRI/ENVIRONMENTAL, INC.
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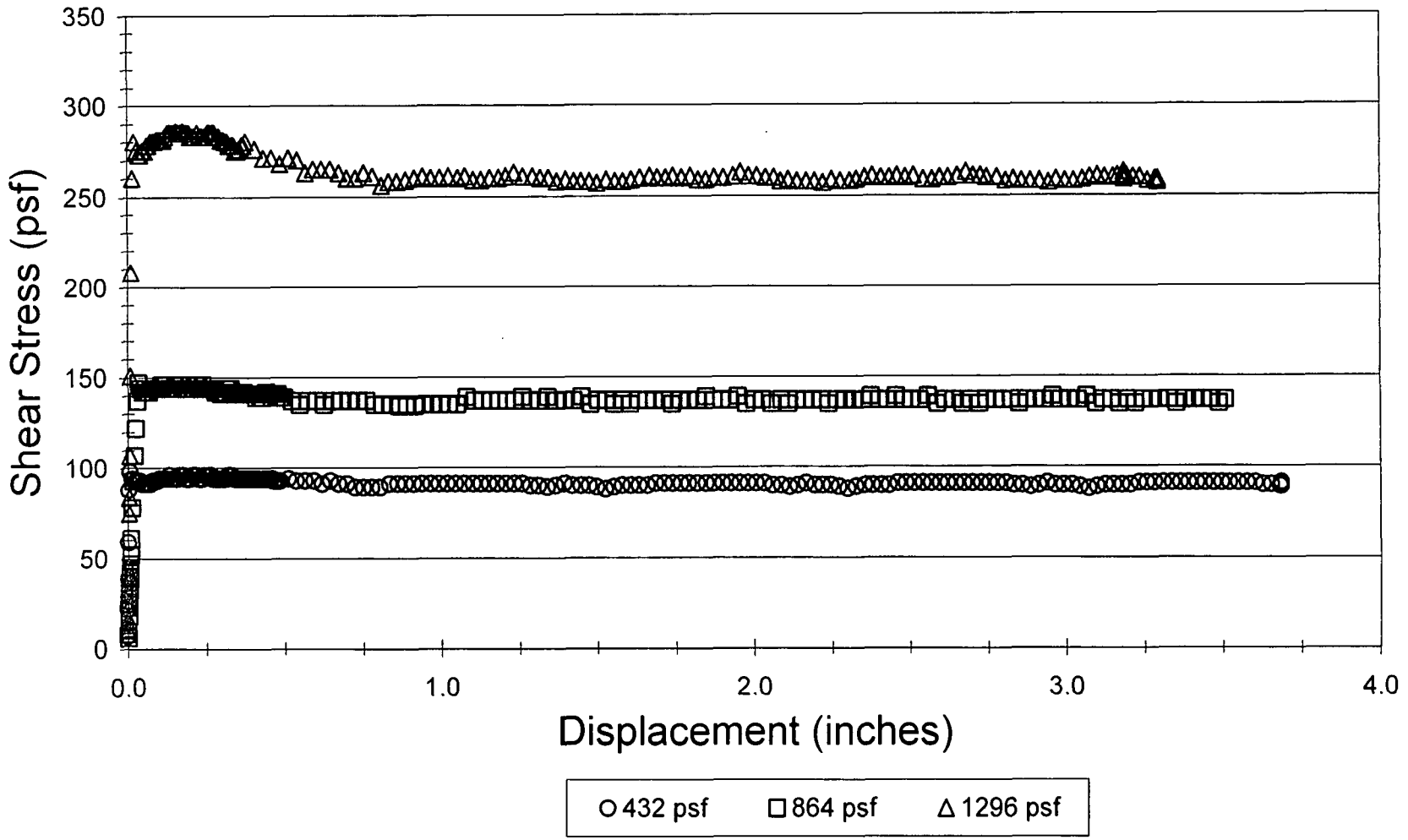
STOLLER INTERFACE FRICTION TEST
CETCO Bentomat GCL #10657 (Woven side) vs. Flexible Membrane Liner (Smooth 60 mil LLDPE Geomembrane #3231)



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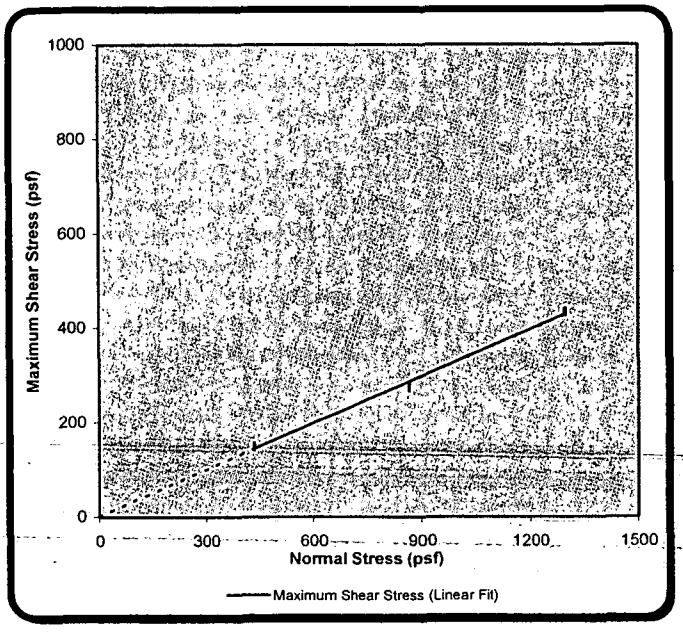
TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

INTERFACE FRICTION TEST REPORT

Client: **Stoller Corporation**
Project: **Rocky Flats**
Test Date: 10/8-10/8/04

TRI Log#: E2201-12-05
Test Method: ASTM D 5321

Tested Interface: Flexible Membrane Liner (Smooth 60 mil LLDPE Geomembrane #3231) vs. Double-sided Geocomposite #1822-200



Upper Box: Double-sided Geocomposite #1822-200

Lower Box: Flexible Membrane Liner (Geomembrane #3231)

Interface Conditioning: Interface soaked and loading applied for a minimum of 15 minutes prior to shear

Box Dimension: 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.2 inches/minute

Trial Number	1	2	3
Bearing Slide Resistance (lbs)	12	16	20
Normal Stress (psf)	432	864	1296
Maximum Shear Stress (psf)	161	290	454
Corrected Shear Stress (psf)	149	274	434
Secant Angle (degrees)	19.0	17.6	18.5

RESULTS: Maximum Friction Angle and Y-intercept

Regression Friction Angle (degrees):		**18.2**		
Y-intercept or Regression Adhesion (psf):		**1**		
Regression Line:	Y=	0.330	* X +	1
Regression Coefficient (r squared):		0.995		

SRA 10/12/04
Quality Review/Date

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TRI/ENVIRONMENTAL, INC.

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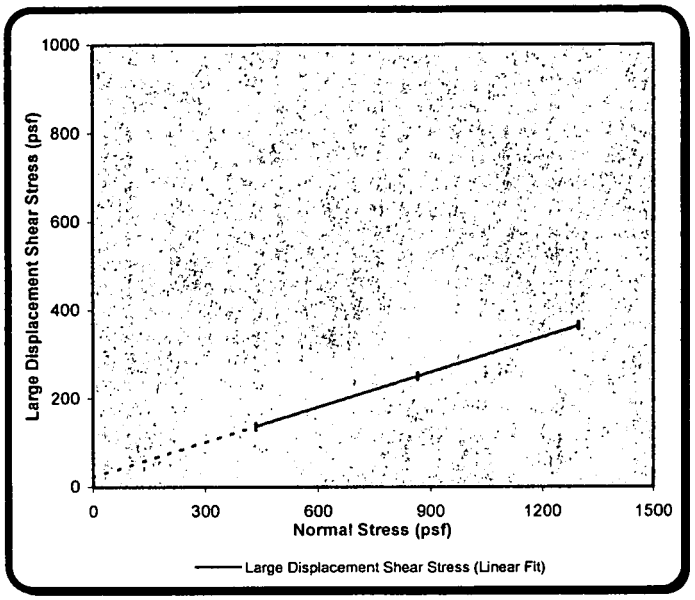
INTERFACE FRICTION TEST REPORT

Client: **Stoller Corporation**
Project: **Rocky Flats**
Test Date: 10/8-10/8/04

TRI Log#: E2201-12-05
Test Method: ASTM D 5321

Tested Interface: Flexible Membrane Liner (Smooth 60 mil LLDPE Geomembrane #3231) vs. Double-sided Geocomposite #1822-200



Upper Box: Double-sided Geocomposite #1822-200

Lower Box: Flexible Membrane Liner (Geomembrane #3231)

Interface Conditioning: Interface soaked and loading applied for a minimum of 15 minutes prior to shear

Box Dimension: 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.2 inches/minute

Trial Number	1	2	3
Bearing Slide Resistance (lbs)	12	16	20
Normal Stress (psf)	432	864	1296
Large Displacment Shear Stress (psf)	148	266	384
Corrected Shear Stress (psf)	136	250	364
Secant Angle (degrees)	17.5	16.1	15.7

RESULTS: Large Displacement Friction Angle and Y-intercept at 3.0-in. of Displacement

Regression Friction Angle (degrees):		**14.8**		
Y-intercept or Regression Adhesion (psf):		**22**		
Regression Line:	Y=	0.264	* X +	22
Regression Coefficient (r squared):		1.000		

SRA 10/12/04
Quality Review/Date

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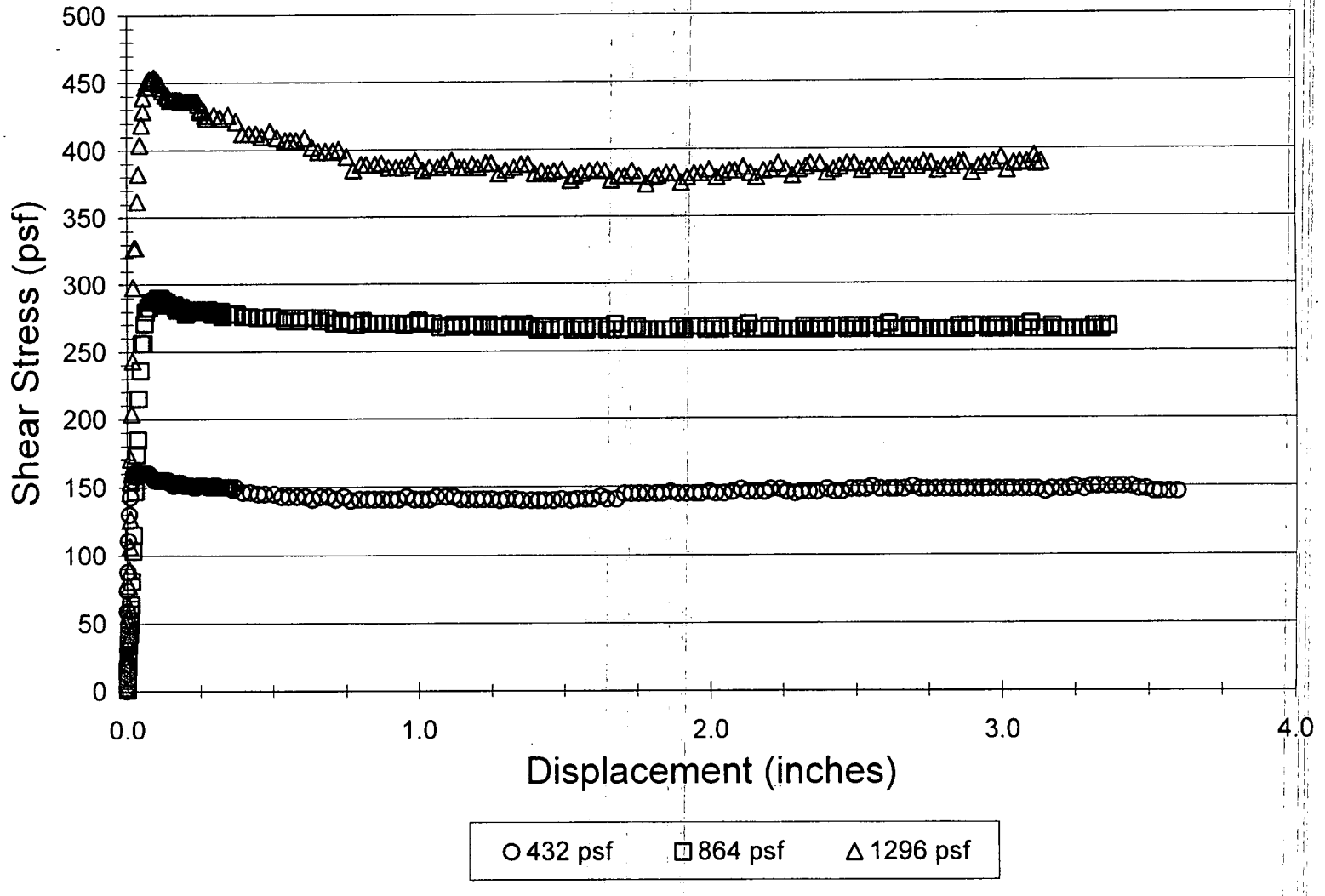
STOLLER INTERFACE FRICTION TEST
Double-sided Geocomposite #1822-200 vs. Flexible Membrane Liner
(Smooth 60 mil LLDPE Geomembrane #3231)



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TRI/ENVIRONMENTAL, INC.

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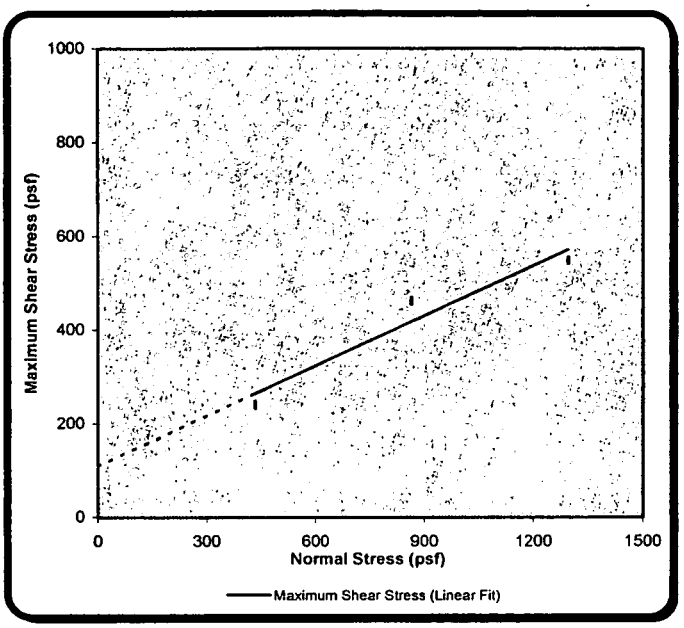
INTERFACE FRICTION TEST REPORT

Client: **Stoller Corporation**
Project: **Rocky Flats**
Test Date: 9/30-10/4/04

TRI Log#: E2201-12-05
Test Method: ASTM D 6243

Tested Interface: Flexible Membrane Liner (Textured HDPE Geomembrane #103127006) vs. CETCO Bentomat GCL #5484 (Woven side)



Upper Box: CETCO Bentomat GCL #5484 (Woven side)

Lower Box: Flexible Membrane Liner (Geomembrane #103127006)

Interface Conditioning: Interface soaked and loading applied for a minimum of 72 hours prior to shear

Box Dimension: 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.01 inches/minute

Trial Number	1	2	3
Bearing Slide Resistance (lbs)	12	16	20
Normal Stress (psf)	432	864	1296
Maximum Shear Stress (psf)	252	478	568
Corrected Shear Stress (psf)	240	462	548
Secant Angle (degrees)	29.0	28.1	22.9

RESULTS: Maximum Friction Angle and Y-intercept

Regression Friction Angle (degrees):		**19.6**		
Y-intercept or Regression Adhesion (psf):		**109**		
Regression Line:	Y=	0.356	* X +	109
Regression Coefficient (r squared):		0.939		

SRA 10/04/04
Quality Review/Date

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TRI/ENVIRONMENTAL, INC.

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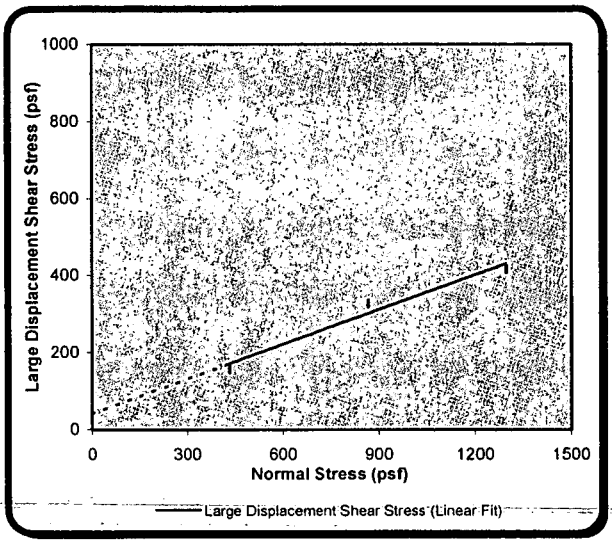
INTERFACE FRICTION TEST REPORT

Client: **Stoller Corporation**
Project: **Rocky Flats**
Test Date 9/30-10/4/04

TRI Log#: E2201-12-05
Test Method: ASTM D 6243

Tested Interface: Flexible Membrane Liner (Textured HDPE Geomembrane #103127006 CETCO Bentomat GCL #5484 (Woven side)



Upper Box: CETCO Bentomat GCL #5484 (Woven side)

Lower Box: Flexible Membrane Liner (Geomembrane #103127006)

Interface Conditioning: Interface soaked and loading applied for a minimum of 72 hours prior to shear

Box Dimension 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.01 inches/minute

Trial Number	1	2	3
Bearing Slide Resistance (lbs)	12	16	20
Normal Stress (psf)	432	864	1296
Large Displacment Shear Stress (psf)	169	344	437
Corrected Shear Stress (psf)	157	328	417
Secant Angle (degrees)	20.0	20.8	17.8

RESULTS: Large Displacement Friction Angle and Y-intercept at 3.3-in. of Displacement

Regression Friction Angle (degrees):		**16.7**		
Y-intercept or Regression Adhesion (psf):		**41**		
Regression Line:	Y=	0.301	* X +	41
Regression Coefficient (r squared):		0.968		

SRA 10/04/04
Quality Review/Date

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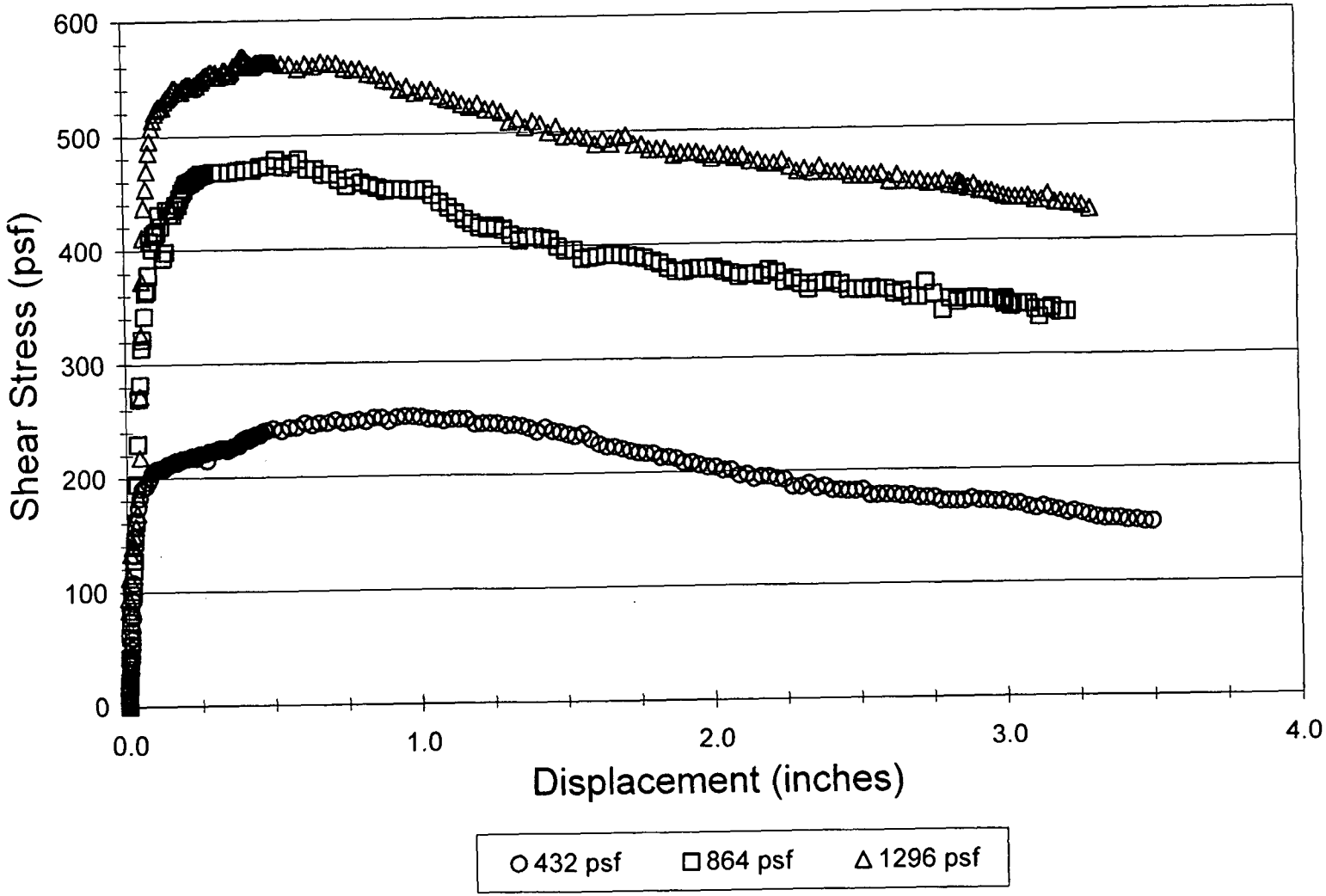
STOLLER INTERFACE FRICTION TEST
CETCO Bentomat GCL #5484 (Woven side) vs.
Flexible Membrane Liner (Textured HDPE Geomembrane #103127006)



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TRI/ENVIRONMENTAL, INC.
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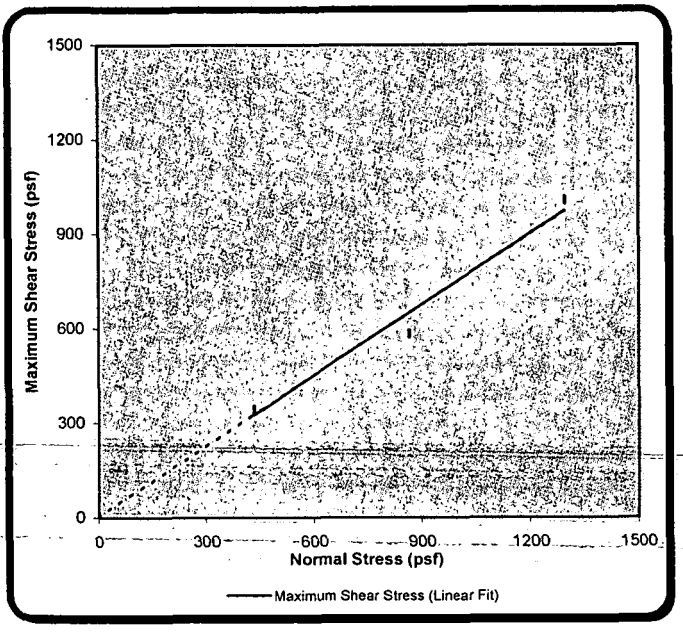
INTERFACE FRICTION TEST REPORT

Client: **Stoller Corporation**
Project: **Rocky Flats**
Test Date: 9/21-9/22/04

TRI Log#: E2201-12-05
Test Method: ASTM D 5321

Tested Interface: Geosynthetic Drainage Net (Geocomposite #C2-2-2-03-1704) vs. Cushion Soil



Upper Box: Cushion soil compacted to 118.4 pcf at 10.3 % moisture content (95 % maximum dry density at optimum moisture content as determined by a standard Proctor test).

Lower Box: Geosynthetic Drainage Net (Geocomposite #C2-2-2-03-1704)

Interface Conditioning: Interface soaked and loading applied for a minimum of 24 hours prior to shear

Box Dimension: 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.01 inches/minute

Trial Number	1	2	3
Bearing Slide Resistance (lbs)	12	16	20
Normal Stress (psf)	432	864	1296
Maximum Shear Stress (psf)	356	599	1029
Corrected Shear Stress (psf)	344	583	1009
Secant Angle (degrees)	38.5	34.0	37.9

RESULTS: Maximum Friction Angle and Y-intercept

Regression Friction Angle (degrees):		**36.9**		
Y-intercept or Regression Adhesion (psf):		**0**		
Regression Line:	Y=	0.752	* X +	-2
Regression Coefficient (r squared):		0.989		

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Quality Review/Date

Note: The regression line includes the origin.

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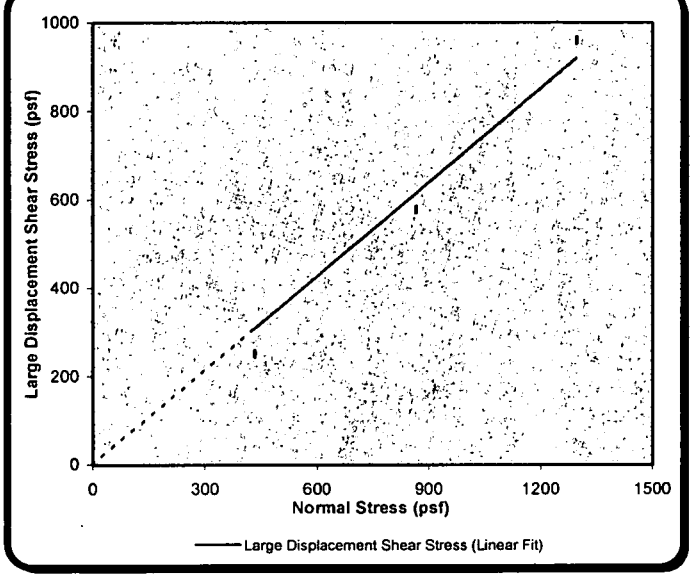
INTERFACE FRICTION TEST REPORT

Client: **Stoller Corporation**
Project: **Rocky Flats**
Test Date: 9/21-9/22/04

TRI Log#: E2201-12-05
Test Method: ASTM D 5321

Tested Interface: Geosynthetic Drainage Net (Geocomposite #C2-2-2-03-1704) vs. Cushion Soil



Upper Box: Cushion soil compacted to 118.4 pcf at 10.3 % moisture content (95 % maximum dry density at optimum moisture content as determined by a standard Proctor test).

Lower Box: Geosynthetic Drainage Net (Geocomposite #C2-2-2-03-1704)

Interface Conditioning: Interface soaked and loading applied for a minimum of 24 hours prior to shear

Box Dimension: 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.01 inches/minute

Trial Number	1	2	3
Bearing Slide Resistance (lbs)	12	16	20
Normal Stress (psf)	432	864	1296
Large Displacment Shear Stress (psf)	264	594	981
Corrected Shear Stress (psf)	252	578	961
Secant Angle (degrees)	30.2	33.8	36.5

RESULTS: Large Displacement Friction Angle and Y-intercept at 3.0-in. of Displacement

Regression Friction Angle (degrees):		**34.7**		
Y-intercept or Regression Adhesion (psf):		**0**		
Regression Line:	Y=	0.693	* X +	16
Regression Coefficient (r squared):		0.977		

SRA 10/04/04
Quality Review/Date

Note: The regression line includes the origin.

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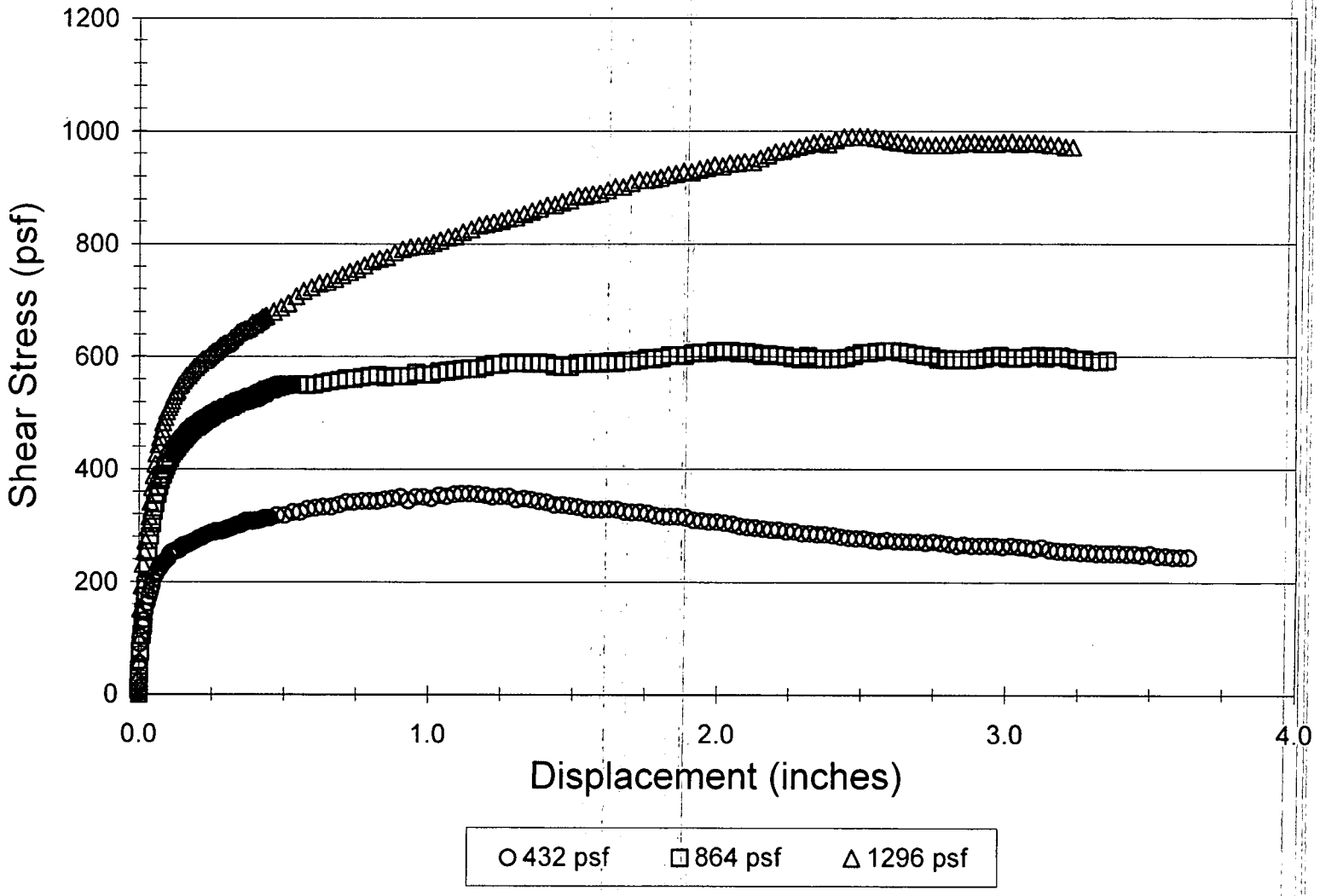
STOLLER INTERFACE FRICTION TEST
Cushion Soil vs. Geosynthetic Drainage Net
(Geocomposite # C2-2-03-1704)



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TRI/ENVIRONMENTAL, INC.
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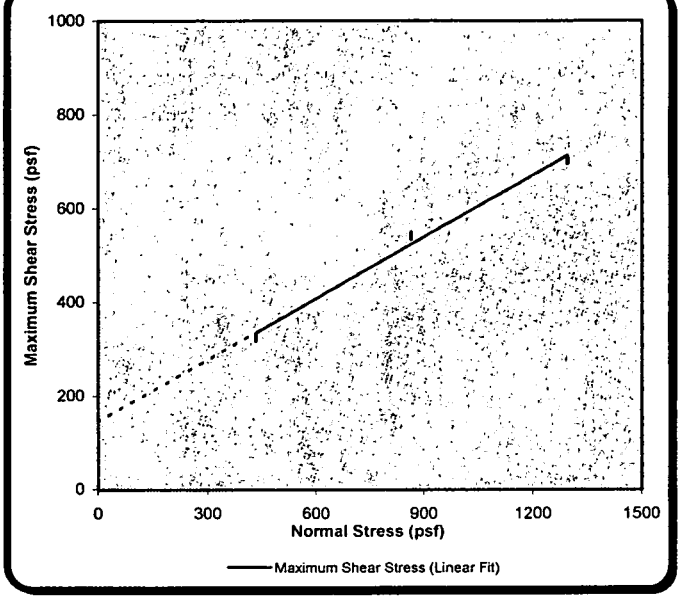
INTERFACE FRICTION TEST REPORT

Client: **Stoller Corporation**
Project: **Rocky Flats**
Test Date: 9/21-9/21/04

TRI Log#: E2201-12-05
Test Method: ASTM D 5321

Tested Interface: Flexible Membrane Liner (Textured HDPE Geomembrane #103127006) vs. Geosynthetic Drainage Net (Geocomposite #C2-2-2-03-1704)



Upper Box: Geosynthetic Drainage Net (Geocomposite #C2-2-2-03-1704)

Lower Box: Flexible Membrane Liner (Geomembrane #103127006)

Interface Conditioning: Interface soaked and loading applied for a minimum of 15 minutes prior to shear

Box Dimension: 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.2 inches/minute

Trial Number	1	2	3
Bearing Slide Resistance (lbs)	12	16	20
Normal Stress (psf)	432	864	1296
Maximum Shear Stress (psf)	336	558	723
Corrected Shear Stress (psf)	324	542	703
Secant Angle (degrees)	36.9	32.1	28.5

RESULTS: Maximum Friction Angle and Y-intercept

Regression Friction Angle (degrees):		**23.7**		
Y-intercept or Regression Adhesion (psf):		**144**		
Regression Line:	Y=	0.438	* X +	144
Regression Coefficient (r squared):		0.993		

SRA 10/04/04
Quality Review/Date

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TRI/ENVIRONMENTAL, INC.

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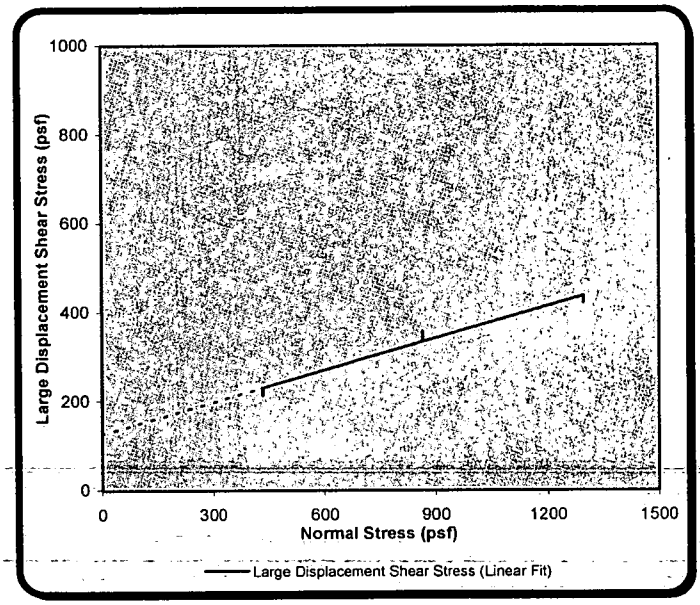
INTERFACE FRICTION TEST REPORT

Client: **Stoller Corporation**
Project: **Rocky Flats**
Test Date: 9/21-9/21/04

TRI Log#: E2201-12-05
Test Method: ASTM D 5321

Tested Interface: Flexible Membrane Liner (Textured HDPE Geomembrane #103127006) vs. Geosynthetic Drainage Net (Geocomposite #C2-2-2-03-1704)



Upper Box: Geosynthetic Drainage Net (Geocomposite #C2-2-2-03-1704)

Lower Box: Flexible Membrane Liner (Geomembrane #103127006)

Interface Conditioning: Interface soaked and loading applied for a minimum of 15 minutes prior to shear

Box Dimension: 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.2 inches/minute

Trial Number	1	2	3
Bearing Slide Resistance (lbs)	12	16	20
Normal Stress (psf)	432	864	1296
Large Displacment Shear Stress (psf)	234	364	450
Corrected Shear Stress (psf)	222	348	430
Secant Angle (degrees)	27.2	21.9	18.3

RESULTS: Large Displacement Friction Angle and Y-intercept at 3.0-in. of Displacement

Regression Friction Angle (degrees):		**13.5**		
Y-intercept or Regression Adhesion (psf):		**125**		
Regression Line:	Y=	0.241	* X +	125
Regression Coefficient (r squared):		0.985		

SRA 10/04/04
Quality Review/Date

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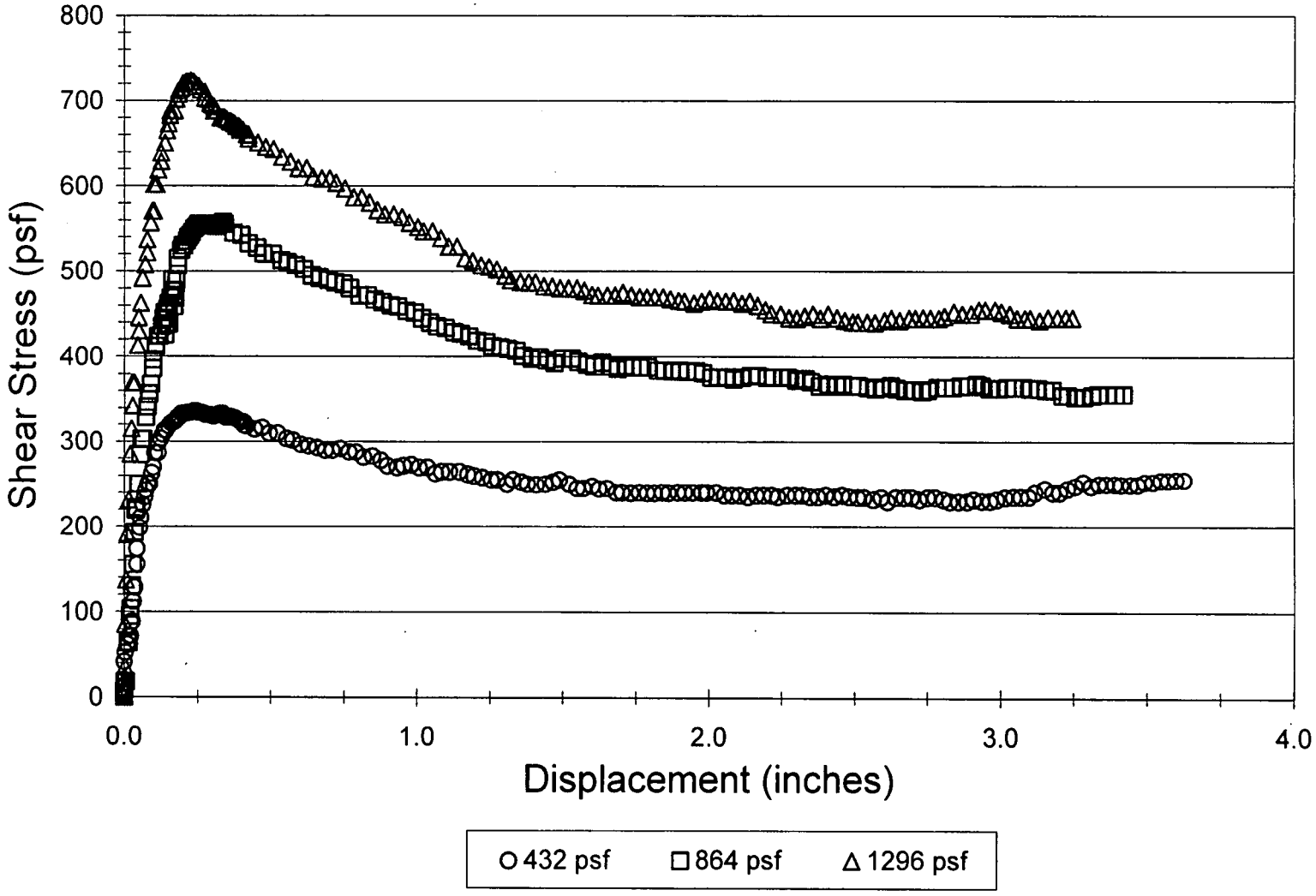
STOLLER INTERFACE FRICTION TEST
Geosynthetic Drainage Net (Geocomposite #C2-2-2-03-1704) vs. Flexible Membrane Liner (Textured HDPE Geomembrane #103127006)



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For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date:	10/1/04	New Submittal X
			Resubmittal

Section I — REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS *(This section to be initiated by the Subcontractor)* 03/18/05

To:	From:	Subcontract No: KH020577	Submittal No. (38) Rev 48
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026		Previous Submittal No.

Specification Sec. No. (Cover only one section with each Submittal)

Project Title: Construction of the Present Landfill Accelerated Action

Item No.	Description of Item Submitted (Type, size, model number, etc.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8)	No. of Copies	Contract Reference Document		Deviation (See Instruction #6)	Contractor Action Code (See Instruction #9)
				Spec. Paragraph No.	Drawing Sheet No.		
a.	b.	c.	d.	e.	f.	g.	h.
1	Geo-technical data – Rocky Flats Alluvium soil	N/A	4	N/A	N/A	N/A	

Remarks:
Acknowledge Receipt Soil Test Reports

Robert M. Davis 03/18/05
CQAE for RFETS

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.

Signature of Subcontractor: Paul Kreitz

Section II — Reviewed

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

SUBMITTAL TRANSMITTAL FORM

For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 11/8/04	X	New Submittal
			Resubmittal

Section I REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS *(This section to be initiated by the Subcontractor)*

To:	From:	Subcontract No: KH020577	Submittal No. 049
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026		Previous Submittal No.

Specification Sec. No. (Cover only one section with each Submittal)

Project Title: Construction of the Present Landfill Accelerated Action

Item No. (a.)	Description of Item Submitted (Type, size, model number, etc.) (b.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8) (c.)	No. of Copies (d.)	Contract Reference Document: Spec. Paragraph No. (e.)	Contract Reference Document: Drawing Sheet No. (f.)	Deviation (See Instruction #6) (g.)	Contractor Action Code (See Instruction #9) (h.)
1	Rocky Flats Alluvial Material – Test results for offsite alluvial material source	N/A	2	N/A	N/A	N/A	
2	Price quote for off-site alluvial material	N/A	2	N/A	N/A	N/A	

Rocky Flats Plant

☐ APPROVED ☒ APPROVED AS CORRECTED

☐ NOT APPROVED ☐ REVISE AND RESUBMIT

Conduct Compaction Test
Fill with same process as other (1st) Test fill & Document

Remarks: APPROVAL IS FOR CONFORMANCE WITH THE DESIGN CONCEPT OF THE PLANS AND SPECIFICATIONS AND FOR COMPLIANCE WITH THE INFORMATION GIVEN THEREIN. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMATION AND CORRELATION OF ALL DIMENSIONS AT THE CONSTRUCTION SITE; FOR INFORMATION THAT PERTAINS SOLELY TO FABRICATION PROCESSES OR TO TECHNIQUES OF CONSTRUCTION; AND FOR COORDINATION OF THE WORK OF ALL CRAFTS

OK CQA
Jeff Raba Test Tech 11/11/04

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.

Signature of Subcontractor: Paul Kreitz 11/8/04

Section II Robert M. Davis DATE: 11/08/2004 Reviewed

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

October-04

043-2246.0001

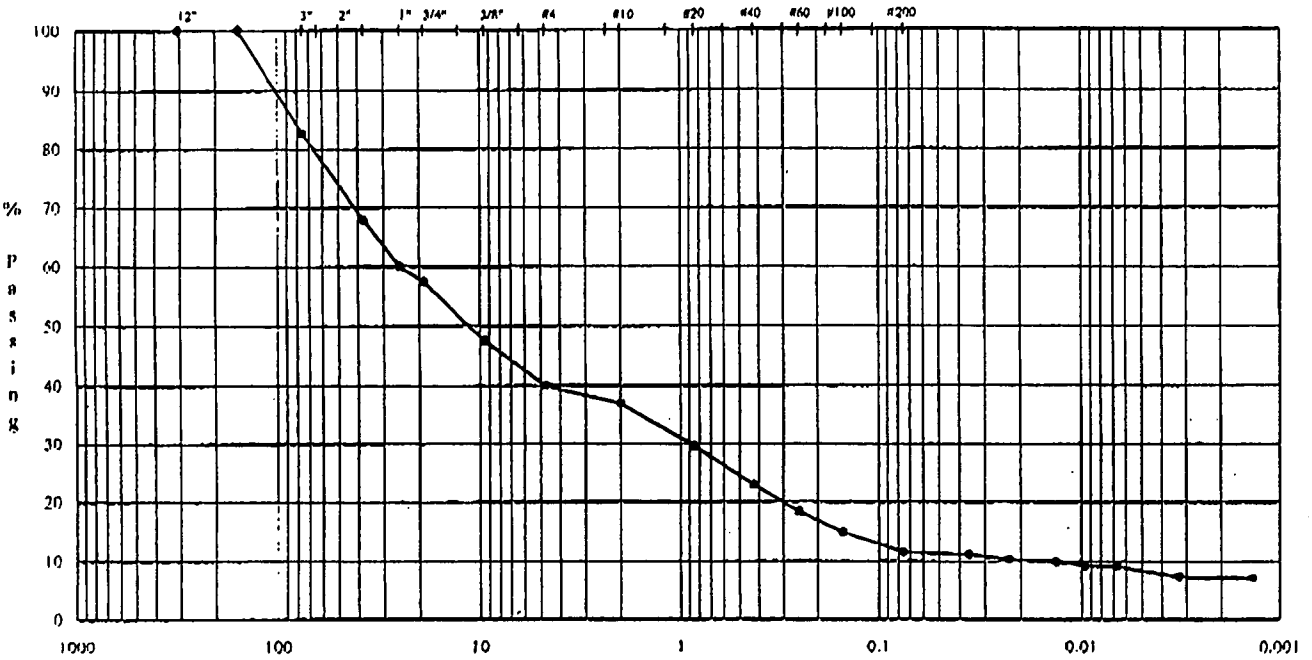
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: **Rocky Flats/Field & Lab Testing/CO**

SAMPLE ID: **APR-1** Depth (ft): --

TYPE: **BULK**



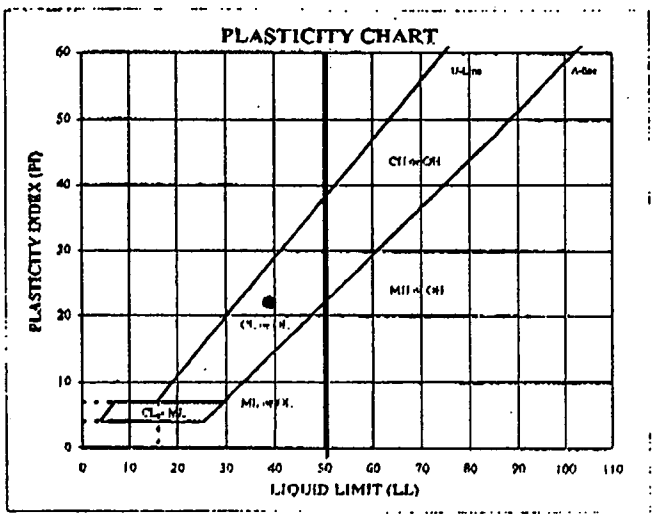
COBBLES	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
	GRAVEL		SAND			FINES

U.S. Standard Sieves Sizes and Numbers

Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0" 304.8	100.0		
6.0" 154.2	100.0	Cobbles	17.40
6.0" 154.2	100.0		
6.0" 154.2	100.0		
3.0" 75.0	82.6		
1.5" 37.5	67.7		
1.0" 25.0	60.0	Coarse Gravel	25.22
0.75" 19.0	57.4		
0.375" 9.5	47.4		
#4 4.8	39.9	Fine Gravel	17.51
#10 2.00	36.9	Coarse Sand	2.98
#20 0.85	29.5		
#40 0.43	22.8	Medium Sand	14.07
#60 0.25	18.3		
#100 0.15	14.9		
#200 0.075	11.4	Fine Sand	11.38

Hydrometer Analysis

(mm)	%Finer		
0.036	11.1		
0.023	10.2		
0.013	9.8	Fines	
0.0095	9.2	Silt or Clay	11.44
0.0067	9.0		
0.0033	7.3		
0.0014	7.0		



ATTERBERG LIMITS

M_c	LL	PL	PI	SpG (assumed)
10.4	39	17	22	2.70

DESCRIPTION: Strong brown (7.55 YR 5/6) clayey gravel with sand

USCS: GC

TECH: JR

DATE: 11/3/2004

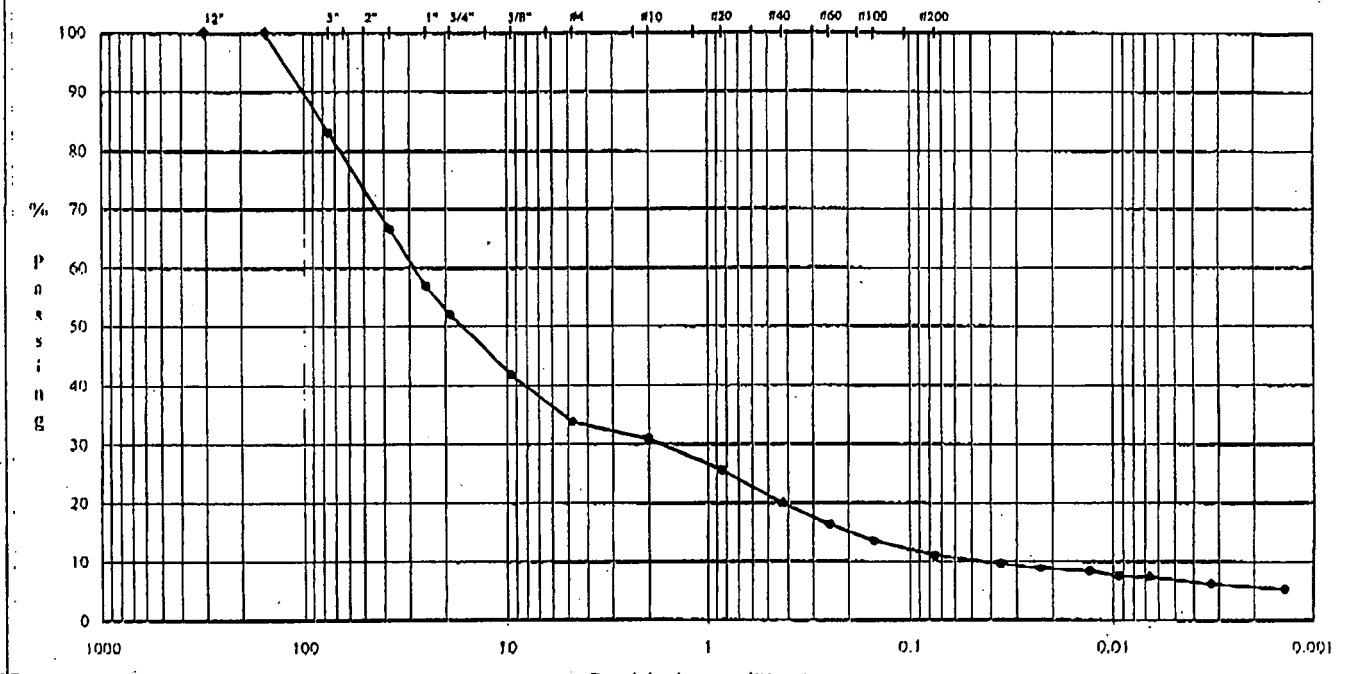
REVIEW: MB

October-04 043-2246.0001

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: Rocky Flats/Field & Lab Testing/CO
SAMPLE ID: APR-2 Depth (ft):
TYPE: BULK



	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
COBBLES	GRAVEL		SAND			FINES

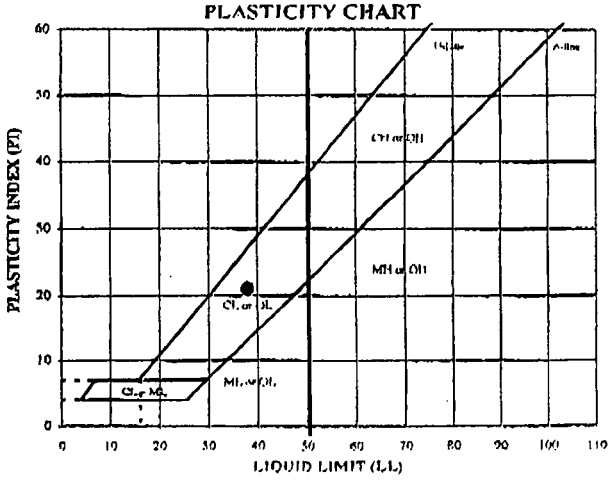
U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0		
6.0"	154.2	100.0	Cobbles	16.90
6.0"	154.2	100.0		
6.0"	154.2	100.0		
3.0"	75.0	83.1		
1.5"	37.5	66.5		
1.0"	25.0	56.7	Coarse Gravel	31.22
0.75"	19.0	51.9		
0.375"	9.5	41.7		
#4	4.8	33.7	Fine Gravel	18.23
#10	2.00	30.9	Coarse Sand	2.77
#20	0.85	25.6		
#40	0.43	19.9	Medium Sand	11.03
#60	0.25	16.3		
#100	0.15	13.4		
#200	0.075	10.9	Fine Sand	8.91

Hydrometer Analysis

(mm)	%Finer		
0.036	9.6		
0.023	8.9		
0.013	8.4	Fines	
0.0094	7.5	Silt or Clay	10.94
0.0067	7.3		
0.0033	6.1		
0.0014	5.2		

PLASTICITY CHART



ATTERBERG LIMITS

M_c	LL	PL	PI	SpG (assumed)
9.8	38	17	21	2.70

DESCRIPTION: Strong brown (7.55 YR 5/6) clayey gravel with sand
USCS: GC

TECH JR
DATE 11/5/2004
REVIEW MB

SUBMITTAL T[illegible]MITTAL FORM

For Submittal of Shop Drawings, Equipment Data, Material Samp[illegible] Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 11/22/04	X	New S[illegible]ittal
			Resubmittal

Section I — **REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS** *(This section to be initiated by the Subcontractor)*

To:	From:	Subcontract No: KH020577	Submittal No. 56
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026		Previous Submittal No.

Specification Sec. No. (Cover only one section with each Submittal)

Project Title: Construction of the Present Landfill Accelerated Action

Item No.	Description of Item Submitted (Type, size, model number, etc.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8)	No. of Copies	Contract Reference Document		Deviation (See Instruction #6)	Contractor Action Code (See Instruction #9)
				Spec. Paragraph No.	Drawing Sheet No.		
a.	b.	c.	d.	e.	f.	g.	h.
1	Tire Ground Pressures for Volvo A30C and A35C Equipment	N/A	6	None	N/A	N/A	
	Volvo Trucks are acceptable to travel						
	on 10" Cushion Soil & 2-foot Soil						
	Cover at PLF						
	Robert K. Davis 01/28/05						

Remarks:

Information requested by K-H relative to equipment to be used in construction of the Present Landfill Cap.

Summary: A30C, Front – 21.7 psi, Mid – 23.8 psi, Rear – 23.8 psi
A35C, Front – 20.0 psi, Mid – 25.2 psi, Rear – 25.2 psi

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.

Signature of Subcontractor: Paul Kreitz 11/22/04

Section II — **Reviewed**

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:
	OK CRAE J.H. Rube Tetra Tech	

Sheet [illegible]

To Bruce / Kurt
FR gary
Merrifield

-3-

MANUFACTURER		VOLVO	CAT
MODEL	unit	A30C	D300E Series II
SPEC DATE		May-98	Sep-98
CAPACITY - Payload	tons (tonnes)	30.0 (27.0)	30.0 (27.2)
2:1 Heaped Volume	yds (m)	21.6 (16.5)	21.6 (16.5)
Density	lbs/yd (kg/m)		
ENGINE - Turbo Inter/After cooled			
Make/Model		Volvo TD104 KAE	Cat 3306
GHP	hp (kw)	316(235)	300 (223)
PWHP	hp (kw)	311 (232)	285 (213)
Max. Torque	ft-lb (Nm)	1077/1460@1100rpm	I.N.A.
Displacement	ci (l)	586 (9.6)	638 (10.5)
TRANSMISSION - Type		Planetary	Planetary
Make/Model		Volvo PT1663	Cat
Shift		Fully Automatic	Auto Shift
Gears		6/2	5/2
Lockup			
Top Speed	mph (km)	32.7 (52.3)	30.6 (49.3)
TORQUE		Single Stage	Single Stage
DIFF LOCKS/TRACTION AIDS			
Dropbox-Longitudinal		100%	100%
Axles		100%	100%
STEERING - Type		Hydromechanical	Hydraulic, Orbitrol
Turning Diameter	ft (m)	52' 10" (16.09)	49' 8" (15.2)
BODY			
Dump Angle	deg	70	70
Body Up	sec	14	11
Body Down	sec	13	9.5
BRAKES - Type		Disc	Disc
Actuation		Air/Oil	Oil
Retardation: Engine/Hydraulic Transmission		Standard/Standard	N.A./Standard
SUSPENSION			
Front, Mounting		Rubber/Shocks, Three Point	Nitrogen/Oil, Four
Rear, Mounting		Mech/Rubber, Three Point	Mech/Rubber, Thr
TIRES Standard		23.5 R25	23.5 R25
Optional		30/65 R25	30/65 R25
GROUND PRESSURE (@ gross)			
Front	psi (kPA)	21.7(150)/opt-18	21.7 (150)
Mid	psi (kPA)	23.8(164)/opt-19.6	25.5 (176)
Rear	psi (kPA)	23.8(164)/opt-18.6	25.5 (176)
EW	lbs (kg)	46,050 (20900)	46,503 (22,450)
GW	lbs (kg)	105,400 (47900)	103,572 (46900)
GW/PWHP		340	350
TQ (GW)		550	550

-8-

MANUFACTURER	VOLVO	CAT
MODEL	A35C	D350E II
unit		
SPECIFICATIONS		
CAPACITIES		
2:1 Heaped Volume	yds (m)	
Density	lbs/yd (kg/m)	
ENGINE - Turbocharged/Aftercooled		
Make/Model		
GHP	hp (kw)	
FWHP	hp (kw)	
Max. Torque	ft-lb (Nm)	
Displacement	ci (l)	
TRANSMISSION-Type		
Make/Model		
Shift		
Gears		
Lockup		
Top Speed	mph (km)	
DROPBOX		
DIFF LOCKS/TRACTION AIDS		
Dropbox-Longitudinal		
Axles		
STEERING-Type		
Turning Diameter	ft (m)	
BODY		
Dump Angle	deg	
Body Up	sec	
Body Down	sec	
BRAKES-Type		
Actuation		
Retardation: Engine/Hydraulic Transmission		
SUSPENSION		
Front, Mounting		
Rear, Mounting		
TIRES-Standard		
Optional		
GROUND PRESSURE (0 psi/kPa)		
Front	psi (kPA)	
Mid	psi (kPA)	
Rear	psi (kPA)	
WEIGHTS		
Empty	lbs (kg)	
GVW/FWHP	lbs (kg)	
Front		
Rear		
PERFORMANCE		
350 (32.0)		350 (32.0)
25 (19.0)		24.6 (18.8)
ENGINE - Turbocharged/Aftercooled		
Volvo TD 122KME		Cat 3406E
358 (267)		363 (286)
351 (262)		355 (265)
1176 (1595)		1213 (1645)
732 (12)		893 (14.6)
TRANSMISSION-Type		Planetary
Volvo PT 1761		Cat
Fully Automatic		Automatic
6/2		4/1
33.8 (54.5)		31.5 (50.7)
DROPBOX		2-stage Single-stage
100%		100%
100%		100%
STEERING-Hydromechanical		Hydraulic Orbitrol
57'0" (17.4)		55' 4" (16.88)
BODY		
73		71
15		12
18		7
BRAKES-4-wheel-dry-disc		4 wheel wet disc
Oil		Oil
Standard/Standard		Standard/ N.A.
SUSPENSION		
Rubber/Shocks, Three Point		Nitrogen/Oil, Four Point
Mech/Rubber, Three Point		Mech/Rubber, Three Poi
TIRES-Standard 29.5 R25		29.5 R25
GROUND PRESSURE (0 psi/kPa)		
20.0 (138)		26 (179)
25.2 (174)		24.6 (171)
25.2 (174)		24.6 (171)
WEIGHTS		
56,680 (25700)		64,580 (29
122,210 (5770		96,720 (
65,530		67,8
56,680		67,8

SUBMITTAL TRANSMITTAL FORM

For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 11/29/04	X	New Submittal
			Resubmittal

Section I — **REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS** *(This section to be initiated by the Subcontractor)*

To:	From:	Subcontract No: KH020577	Submittal No. 58
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026		Previous Submittal No.

Specification Sec. No. (Cover only one section with each Submittal)

Project Title: Construction of the Present Landfill Accelerated Action

Item No. a.	Description of Item Submitted (Type, size, model number, etc.) b.	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8) c.	No. of Copies d.	Contract Reference Document: Spec. Paragraph No. e.	Contract Reference Document: Drawing Sheet No. f.	Deviation (See Instruction #6) g.	Contractor Action Code (See Instruction #9) h.
1	Rock Layer – Crush Strength Test Results	N/A	6	N/A	N/A	N/A	

Rocky Flats Plant

☒ APPROVED ☐ APPROVED AS CORRECTED
☐ NOT APPROVED ☐ REVISE AND RESUBMIT

Remarks: APPROVAL IS FOR CONFORMANCE WITH THE DESIGN CONCEPT OF THE PLANS AND SPECIFICATIONS AND FOR COMPLIANCE WITH THE INFORMATION GIVEN THEREIN. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMATION AND CORRELATION OF ALL DIMENSIONS AT THE CONSTRUCTION SITE; FOR INFORMATION THAT PERTAINS SOLELY TO FABRICATION PROCESSES OR TO TECHNIQUES OF CONSTRUCTION; AND FOR COORDINATION OF THE WORK OF ALL CRAFTS.

BY: Robert Davis DATE: 11/30/04

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.

Signature of Subcontractor: Paul Kreitz

Section II Reviewed

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

OK CRA
J.H. Rale
TT

Post-it® Fax Note 7671	Date 11/14/04	# of pages ▶
To Mark	From Hamid Rajai	
Co./Dept. Golder Assoc.	Co.	
Phone #	Phone #	
Fax # 303-935-2080	Fax #	

ASTM D 2938

CLIENT: Golder Associates

LOCATION: Rock Flat, CO.

PROJECT: RFETS Project

JOB NO.: 2003-94

DATE TESTED: 11/08/04 HN

Specimen ID Boring, Sample	Diameter (in.)	Length (in.)	Mass (gms)	Wet Density (pcf)	Failure Load (lb)	Failure Types **	Compressive Strength (psi)
RL-1R	2.001	2.852	384.50	153.3	40,359	C	*12240

>> 4,000 psi
OK
H Rahe
Terra Tech

Notes and Comments:

* Indicates L/D < 2.0. Correction Factor from ASTM D 2938 used.
C=Ca/[0.88+0.24b/h]
Ca = Failure Load / Surface Area
b = Sample Diameter
h = Sample Length

** Failure Types:
S: Shear Failure, M: Matrix Failure, F/V: Fracture, Bedding/Void Failure, C: Combination

Data Entered By: HN Date: 11/08/2004
Date Checked By: KR Date: 11/8/04
Filename: GOUCSR11

ADVANCED TERRA TESTING, Inc.

SUBMITTAL TRANSMITTAL FORM

For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 1-12-05	X	New Submittal
			Resubmittal

Section I REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS *(This section to be initiated by the Subcontractor)*

To:	From:	Subcontract No: KH020577	Submittal No. 066
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026		Previous Submittal No.

Specification Sec. No. (Cover only one section with each Submittal)

Project Title: Construction of the Present Landfill Accelerated Action

Item No. a.	Description of Item Submitted (Type, size, model number, etc.) b.	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8) c.	No. of Copies d.	Contract Reference Document: Spec. Paragraph No. e.	Contract Reference Document: Drawing Sheet No. f.	Deviation (See Instruction #6) g.	Contractor Action Code (See Instruction #9) h.
1	Interface Shear Test Results double-sided geocomposite #C2-8-2-5-04-0387-150 vs. CETCO Bentomat DN GCL #6661	N/A	6		N/A	N/A	
2	Interface Shear Test Results CETCO Bentomat DN GCL vs. 60-mil textured geomembrane #104122976						

Shear Test Results included only Large Displacement Results. Need to add maximum results and results of 3rd test. Submittal is Incomplete.

Rocky Flats Plant

☐ APPROVED ☐ APPROVED AS CORRECTED

☐ NOT APPROVED ☒ REVISE AND RESUBMIT

Remarks:

APPROVAL IS FOR CONFORMANCE WITH THE DESIGN CONCEPT OF THE PLANS AND SPECIFICATIONS AND FOR COMPLIANCE WITH THE INFORMATION GIVEN THEREIN. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMATION AND CORRELATION OF ALL DIMENSIONS AT THE CONSTRUCTION SITE; FOR INFORMATION THAT PERTAINS SOLELY TO FABRICATION PROCESSES OR TO TECHNIQUES OF CONSTRUCTION; AND FOR COORDINATION OF THE WORK OF ALL CRAFTS.

BY: Robert K. Davis DATE: 01/19/05

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.

Signature of Subcontractor:

Section II Reviewed

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

Also See Submittal No. 82

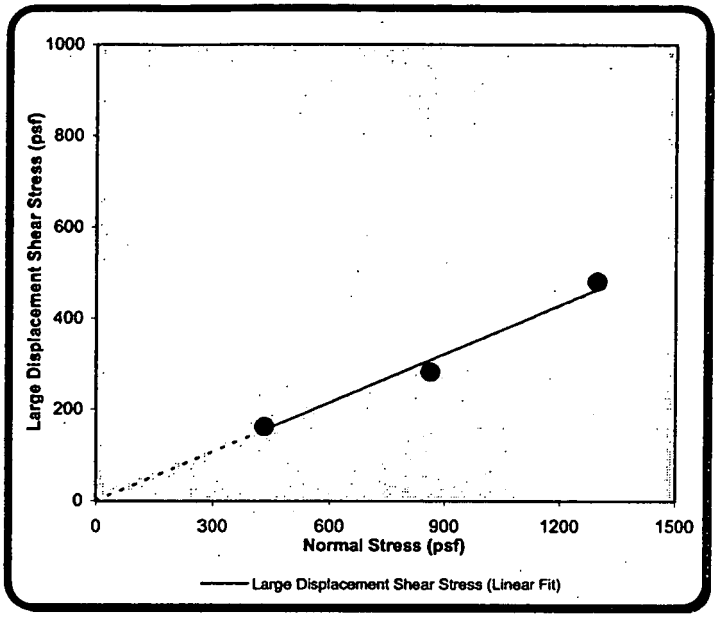
TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

INTERFACE FRICTION TEST REPORT

Client: **Stoller Corporation**
Project: **Rocky Flats**
Test Date: 1/7-1/10/05

TRI Log#: E2201-40-09
Test Method: ASTM D 6243

Tested Interface: 60 mil Textured Geomembrane #104122976 vs. CETCO Bentomat DN GCL #6661



Upper Box: CETCO Bentomat GCL

Lower Box: 60 mil Textured Geomembrane

Interface Conditioning: Interface soaked and loading applied for a minimum of 72 hours prior to shear

Box Dimension: 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.01 inches/minute

Trial Number	1	2	3
Bearing Slide Resistance (lbs)	12	16	20
Normal Stress (psf)	432	864	1296
Large Displacment Shear Stress (psf)	173	297	500
Corrected Shear Stress (psf)	161	281	480
Secant Angle (degrees)	20.4	18.0	20.3

RESULTS: Large Displacement Friction Angle and Y-intercept at 3.3-in. of Displacement

Regression Friction Angle (degrees):		**19.7**		
Y-intercept or Regression Adhesion (psf):		**0**		
Regression Line:	Y=	0.357	* X +	0
Regression Coefficient (r squared):		0.991		

SRA 01/11/05
Quality Review/Date

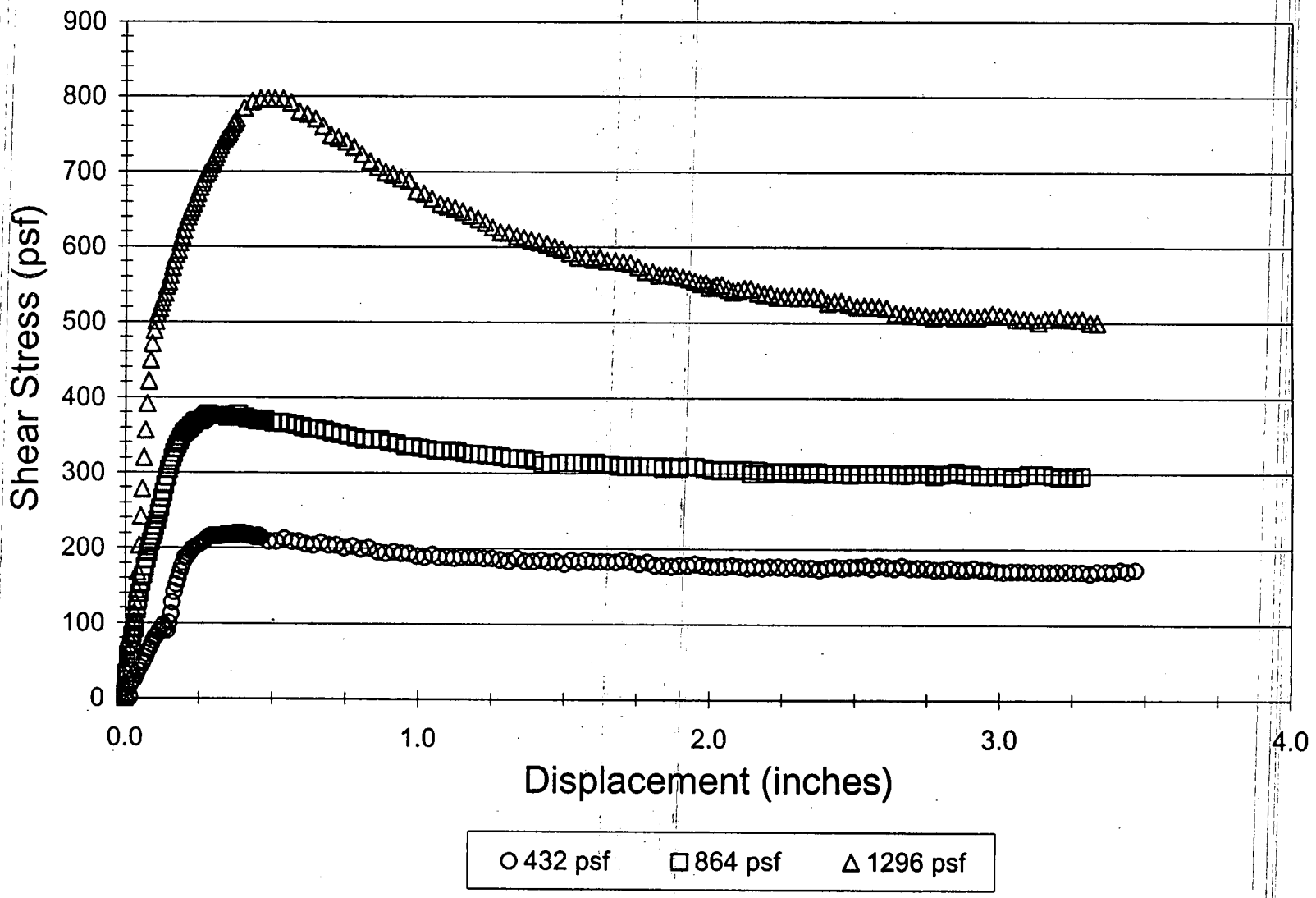
Note: The regression line includes the origin.

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

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

STOLLER INTERFACE FRICTION TEST
CETCO Bentomat DN GCL #6661 vs.
60 mil Textured Geomembrane #104122976



TRI Log No. E2201-40-09 9063 Bee Caves Road Austin, TX 78733-6201 (512) 263-2101 FAX (512) 263-2558 1-800-880-TEST

TRI/ENVIRONMENTAL, INC.

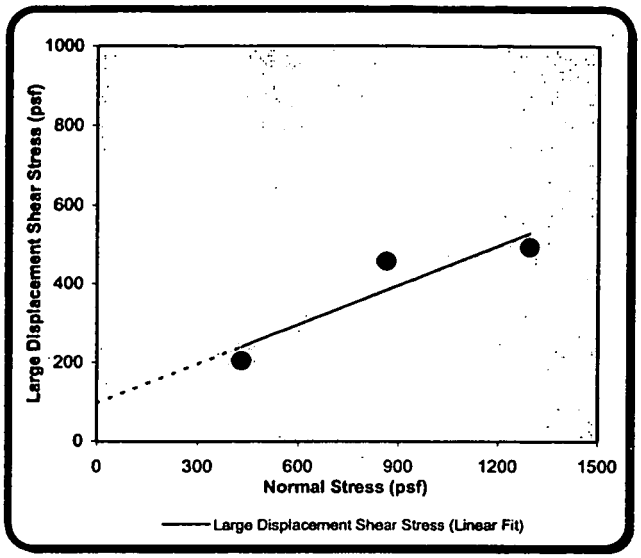
A Texas Research International Company

INTERFACE FRICTION TEST REPORT

Client: **Stoller Corporation**
Project: **Rocky Flats**
Test Date 1/7-1/10/05

TRI Log#: E2201-40-09
Test Method: ASTM D6243

Tested Interface: Double-sided Geocomposite #C2-8-2-5-04-0387-150 vs. CETCO Bentomat DN GCL #6661



Upper Box: CETCO Bentomat GCL

Lower Box: Double-sided Geocomposite

Interface Conditioning: Interface soaked and loading applied for a minimum of 72 hours prior to shear

Box Dimension 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.01 inches/minute

Trial Number	1	2	3
Bearing Slide Resistance (lbs)	12	16	20
Normal Stress (psf)	432	864	1296
Large Displacment Shear Stress (psf)	216	473	512
Corrected Shear Stress (ps	204	457	492
Secant Angle (degrees)	25.3	27.9	20.8

RESULTS: Large Displacement Friction Angle and Y-intercept at 3.3-in. of Displacement

Regression Friction Angle (degrees):		**18.4**		
Y-intercept or Regression Adhesion (psf):		**96**		
Regression Line:	Y=	0.333	* X +	96
Regression Coefficient (r squared):		0.839		

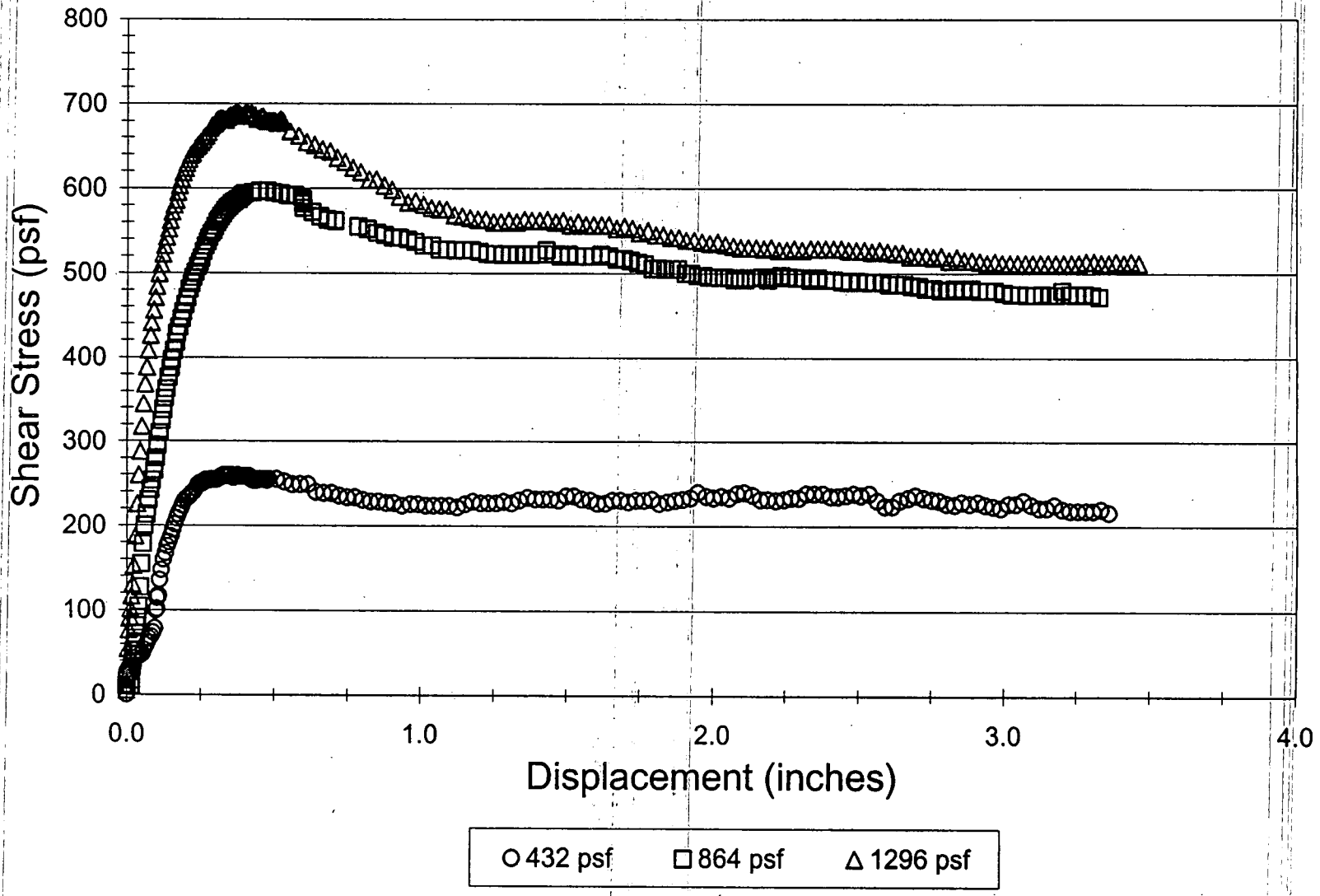
SRA 01/11/05
Quality Review/Date

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

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

STOLLER INTERFACE FRICTION TEST
CETCO Bentomat DN GCL #6661 vs.
Double-sided Geocomposite #C2-8-2-5-04-0387-150



TRI Log No. E2201-40-09 9063 Bee Caves Road Austin, TX 78733-6201 (512) 263-2101 FAX (512) 263-2558 1-800-880-TEST

[illegible]r Submittal of Shop Drawings, Equipment Data, Material Sampl[illegible] Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 1/17/05	X	New S[illegible]ttal Resubmittal

Section I — **REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS** *(This section to be initiated by the Subcontractor)*

To:	From:		
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026	Subcontract No: KH020577	Submittal No. 069 Previous Submittal No.

Specification Sec. No. (Cover only one section with each Submittal)

Project Title: Construction of the Present Landfill Accelerated Action

Item No.	Description of Item Submitted (Type, size, model number, etc.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8)	No. of Copies	Contract Reference Document: Spec. Paragraph No.	Contract Reference Document: Drawing Sheet No.	Deviation (See Instruction #6)	Contractor Action Code (See Instruction #9)
a.	b.	c.	d.	e.	f.	g.	h.
1	GCL MQA/MQC Test Data Package	N/A	6	02226-0947, 1.03 A.2	N/A	N/A	

Rocky Flats Plant

☒ APPROVED ☒ APPROVED AS CORRECTED
☐ NOT APPROVED ☐ REVISE AND RESUBMIT

See notes below requiring additional submittal info required on ST

Remarks: APPROVAL IS FOR CONFORMANCE WITH THE DESIGN CONCEPT OF THE PLANS AND SPECIFICATIONS AND FOR COMPLIANCE WITH THE INFORMATION GIVEN THEREIN. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMATION AND CORRELATION OF ALL DIMENSIONS AT THE CONSTRUCTION SITE; FOR INFORMATION THAT PERTAINS SOLELY TO FABRICATION PROCESSES OR TO TECHNIQUES OF CONSTRUCTION; AND FOR COORDINATION OF THE WORK OF ALL CRAFTS.

BY: Robert Davis DATE: 05/23/05

Verbal Approval Provide to Stoller on 01/20/05 RWD

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.

Signature of Subcontractor: [signature] 1/17/05

Section II Reviewed

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

Also See Submittal 149 for ST Info RWD

OK - CQAE; still need MQC Certs. for add'l. Bentomat ST (10 rolls needed for top; RFI No. 71) CQAE [illegible] Tetra Tech and Perm, Flux & Internal Shear Strength of Bentomat DN OK

Sheet 1 of 2

Date: 1/11/2005
Purchase Order: 31198
Order Number: 000197349

Dan Lahr
Colorado Lining Company

Parker, CO 80134
dlahr@coloradolining.com

Dear Mr./ Ms. Lahr,

Please find enclosed the MQA/MQC test data package for Geosynthetic Clay Liner shipments to Colorado Lining Company. The shipments left our Lovell, Wyoming plant on 1/10/2005.

If you have any questions regarding this information, please contact me at 800-322-1149 ext. 423.

Sincerely,

Roger B. Wilkerson
Quality Assurance Coordinator
CETCO Lovell Plant

GEOSYNTHETIC CLAY LINER
MANUFACTURING QUALITY ASSURANCE DATA PACKAGE

PROJECT NAME: Rocky Flats
CUSTOMER P.O.: 31198
ORDER NUMBER: 000197349
PREPARED FOR: Colorado Lining Company

CONTENTS:

- Daily production and needle detection certification
- GCL property specifications
- Order packing list
- GCL MQA tracking form
- GCL manufacturing quality control test data
- Bentonite clay certification
- Raw material test results

PREPARED BY: Roger B. Wilkerson
Quality Assurance Coordinator
CETCO
P.O. Box 428
92 Hwy. 37
Lovell, WY 82431

Telephone: 800-322-1149 ext. 423
Fax: (307)548-6927
E-Mail: rwilke@cetco.com

DAILY GCL PRODUCTION & NEEDLE DETECTION CERTIFICATION

PROJECT NAME: Rocky Flats
CUSTOMER P.O.: 31198
PREPARED FOR: Colorado Lining Company

Order Number: 000197349
Ship Date: 1/10/2005

Colloid Environmental Technologies Company hereby affirms and certifies that all of the BENTOMAT DN manufactured for the above order has been continually inspected for the presence of broken needles through the use of a metal detector, and that all detected needle fragments have been removed with an in-line magnet.

CETCO affirms that these products meet the physical and chemical criteria listed on the attached GCL property specification sheet.

Roger B. Wilkerson
Quality Assurance Coordinator
Colloid Environmental Technologies Co. (CETCO)

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LINING TECHNOLOGIES
800.527.9948 www.cetco.com

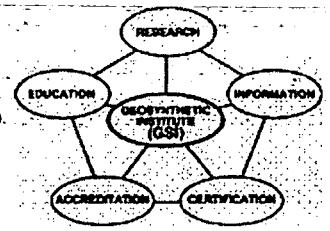
GCL PROPERTY SPECIFICATIONS FOR BENTOMAT DN

Test Method	Test Method Property	Test Frequency	Certified Value
ASTM D 5891	Bentonite Fluid Loss	1 per 50 Tons	18 ml Max
ASTM D 5993	Bentonite Mass/Area	40,000 sq ft (4000 sq m)	0.75 lb /sq ft (3.6 kg/sq m) Min
ASTM D 5890	Bentonite Swell Index	1 per 50 Tons	24 ml/2g Min
ASTM D 4632	GCL Grab Strength	200,000 sq ft (20,000 sq m)	150 lbs (660 N) MARV
ASTM D 6768	GCL Grab Strength	200,000 sq ft (20,000 sq m)	37.5 lbs/in (66 N/cm) MARV
ASTM D 6243	GCL Hydrated Internal Shear Strength	Periodic	6500 psf (311 kPa) typ @ 10,800 psf
ASTM D 5321	GCL Hydrated Internal Shear Strength	Periodic	500 psf (24 kPa) typ @ 200 psf
ASTM D 5887	GCL Hydraulic Conductivity	Weekly	5 x 10^-9 cm/ sec Max
ASTM D 5887	GCL Index Flux	Weekly	1 x 10^-8 m^3/m^2/sec Max
ASTM D 6496	GCL Peel Strength	40,000 sq ft (4000 sq m)	2.5 lbs/in (4.4 N/cm) Min
ASTM D 4632	GCL Peel Strength	40,000 sq ft (4000 sq m)	15 lbs (65 N) Min

Bentonite property tests are performed at a bentonite processing facility before shipment to CETCO's production facility.

All tensile testing is in the machine direction.

CETCO's MQA laboratory is GAI-accredited (www.geosynthetic-institute.org/gai/lab.html).



FABRIC SUPPLIER REQUIREMENTS FOR BENTOMAT DN

Raw Material	test method	mass per area	units
Nonwoven Cover Fabric	ASTM D 5261	6.0	oz/yd2
Bentomat DN Base Nonwoven Fabric	ASTM D 5261	6.0	oz/yd2

Fabric certifications from our raw material suppliers are on file at our production facility.

GCL ORDER PACKING LIST

GCL shipped for certification package number 000197349

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
000197349	LO-BENTOMAT DN	200503LO	00000003	150	14.5	2175	2670
000197349	LO-BENTOMAT DN	200503LO	00000004	150	14.5	2175	2688
000197349	LO-BENTOMAT DN	200503LO	00000005	150	14.5	2175	2671
000197349	LO-BENTOMAT DN	200503LO	00000006	150	14.5	2175	2680
000197349	LO-BENTOMAT DN	200503LO	00000007	150	14.5	2175	2683
000197349	LO-BENTOMAT DN	200503LO	00000008	150	14.5	2175	2689
000197349	LO-BENTOMAT DN	200503LO	00000009	150	14.5	2175	2688
000197349	LO-BENTOMAT DN	200503LO	00000010	150	14.5	2175	2682
000197349	LO-BENTOMAT DN	200503LO	00000011	150	14.5	2175	2675
000197349	LO-BENTOMAT DN	200503LO	00000012	150	14.5	2175	2673
000197349	LO-BENTOMAT DN	200503LO	00000013	150	14.5	2175	2671
000197349	LO-BENTOMAT DN	200503LO	00000014	150	14.5	2175	2668
000197349	LO-BENTOMAT DN	200503LO	00000015	150	14.5	2175	2688
000197349	LO-BENTOMAT DN	200503LO	00000016	150	14.5	2175	2691
000197349	LO-BENTOMAT DN	200503LO	00000017	150	14.5	2175	2685
000197349	LO-BENTOMAT DN	200503LO	00000018	150	14.5	2175	2679
000197349	LO-BENTOMAT DN	200503LO	00000019	150	14.5	2175	2683
000197349	LO-BENTOMAT DN	200503LO	00000020	150	14.5	2175	2680
000197349	LO-BENTOMAT DN	200503LO	00000021	150	14.5	2175	2674
000197349	LO-BENTOMAT DN	200503LO	00000022	150	14.5	2175	2689
000197349	LO-BENTOMAT DN	200503LO	00000023	150	14.5	2175	2671
000197349	LO-BENTOMAT DN	200503LO	00000024	150	14.5	2175	2688
000197349	LO-BENTOMAT DN	200503LO	00000025	150	14.5	2175	2666
000197349	LO-BENTOMAT DN	200503LO	00000027	150	14.5	2175	2671
000197349	LO-BENTOMAT DN	200503LO	00000028	150	14.5	2175	2683
000197349	LO-BENTOMAT DN	200503LO	00000029	150	14.5	2175	2675
000197349	LO-BENTOMAT DN	200503LO	00000030	150	14.5	2175	2681

Order #	Fabric	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
000197349	LO-BENTOMAT DN	200503LO	00000031	150	14.5	2175	2669
000197349	LO-BENTOMAT DN	200503LO	00000032	150	14.5	2175	2671
000197349	LO-BENTOMAT DN	200503LO	00000033	150	14.5	2175	2680
000197349	LO-BENTOMAT DN	200503LO	00000034	150	14.5	2175	2674
000197349	LO-BENTOMAT DN	200503LO	00000035	150	14.5	2175	2668
000197349	LO-BENTOMAT DN	200503LO	00000036	150	14.5	2175	2671
000197349	LO-BENTOMAT DN	200503LO	00000037	150	14.5	2175	2669
000197349	LO-BENTOMAT DN	200503LO	00000038	150	14.5	2175	2674
000197349	LO-BENTOMAT DN	200503LO	00000039	150	14.5	2175	2680
000197349	LO-BENTOMAT DN	200503LO	00000040	150	14.5	2175	2673
000197349	LO-BENTOMAT DN	200503LO	00000041	150	14.5	2175	2670
000197349	LO-BENTOMAT DN	200503LO	00000042	150	14.5	2175	2679
000197349	LO-BENTOMAT DN	200503LO	00000043	150	14.5	2175	2688
000197349	LO-BENTOMAT DN	200503LO	00000044	150	14.5	2175	2680
000197349	LO-BENTOMAT DN	200503LO	00000045	150	14.5	2175	2671
000197349	LO-BENTOMAT DN	200503LO	00000046	150	14.5	2175	2688
000197349	LO-BENTOMAT DN	200503LO	00000047	150	14.5	2175	2690
000197349	LO-BENTOMAT DN	200503LO	00000048	150	14.5	2175	2691
000197349	LO-BENTOMAT DN	200503LO	00000049	150	14.5	2175	2693
000197349	LO-BENTOMAT DN	200503LO	00000050	150	14.5	2175	2678
000197349	LO-BENTOMAT DN	200503LO	00000051	150	14.5	2175	2677
000197349	LO-BENTOMAT DN	200503LO	00000052	150	14.5	2175	2677
000197349	LO-BENTOMAT DN	200503LO	00000053	150	14.5	2175	2681
000197349	LO-BENTOMAT DN	200503LO	00000054	150	14.5	2175	2674
000197349	LO-BENTOMAT DN	200503LO	00000055	150	14.5	2175	2680
000197349	LO-BENTOMAT DN	200503LO	00000056	150	14.5	2175	2669
000197349	LO-BENTOMAT DN	200503LO	00000057	150	14.5	2175	2675
000197349	LO-BENTOMAT DN	200503LO	00000058	150	14.5	2175	2677
000197349	LO-BENTOMAT DN	200503LO	00000059	150	14.5	2175	2688
000197349	LO-BENTOMAT DN	200503LO	00000060	150	14.5	2175	2688
000197349	LO-BENTOMAT DN	200503LO	00000061	150	14.5	2175	2690
000197349	LO-BENTOMAT DN	200503LO	00000062	150	14.5	2175	2678

Order #	Product	Lot Number	Roll Number	Length (in)	Width (in)	Sq Footage	Weight (lbs)
000197349	LO-BENTOMAT DN	200503LO	00000063	150	14.5	2175	2674
000197349	LO-BENTOMAT DN	200503LO	00000064	150	14.5	2175	2680
000197349	LO-BENTOMAT DN	200503LO	00000065	150	14.5	2175	2669
000197349	LO-BENTOMAT DN	200503LO	00000066	150	14.5	2175	2675
000197349	LO-BENTOMAT DN	200503LO	00000067	150	14.5	2175	2681
000197349	LO-BENTOMAT DN	200503LO	00000068	150	14.5	2175	2693
000197349	LO-BENTOMAT DN	200503LO	00000069	150	14.5	2175	2677
000197349	LO-BENTOMAT DN	200503LO	00000070	150	14.5	2175	2688
000197349	LO-BENTOMAT DN	200503LO	00000071	150	14.5	2175	2690
000197349	LO-BENTOMAT DN	200503LO	00000072	150	14.5	2175	2674
000197349	LO-BENTOMAT DN	200503LO	00000073	150	14.5	2175	2668
000197349	LO-BENTOMAT DN	200503LO	00000074	150	14.5	2175	2676
000197349	LO-BENTOMAT DN	200503LO	00000075	150	14.5	2175	2680
000197349	LO-BENTOMAT DN	200503LO	00000076	150	14.5	2175	2674
000197349	LO-BENTOMAT DN	200503LO	00000077	150	14.5	2175	2682
000197349	LO-BENTOMAT DN	200503LO	00000078	150	14.5	2175	2688
000197349	LO-BENTOMAT DN	200503LO	00000079	150	14.5	2175	2690
000197349	LO-BENTOMAT DN	200503LO	00000080	150	14.5	2175	2684
000197349	LO-BENTOMAT DN	200503LO	00000081	150	14.5	2175	2680
000197349	LO-BENTOMAT DN	200503LO	00000082	150	14.5	2175	2685
000197349	LO-BENTOMAT DN	200503LO	00000083	150	14.5	2175	2679
000197349	LO-BENTOMAT DN	200503LO	00000084	150	14.5	2175	2680
000197349	LO-BENTOMAT DN	200503LO	00000085	150	14.5	2175	2685
000197349	LO-BENTOMAT DN	200503LO	00000086	150	14.5	2175	2669
000197349	LO-BENTOMAT DN	200503LO	00000087	150	14.5	2175	2677
000197349	LO-BENTOMAT DN	200503LO	00000088	150	14.5	2175	2680
000197349	LO-BENTOMAT DN	200503LO	00000089	150	14.5	2175	2689
000197349	LO-BENTOMAT DN	200503LO	00000090	150	14.5	2175	2686
000197349	LO-BENTOMAT DN	200503LO	00000091	150	14.5	2175	2674
000197349	LO-BENTOMAT DN	200503LO	00000092	150	14.5	2175	2680
000197349	LO-BENTOMAT DN	200503LO	00000093	150	14.5	2175	2684
000197349	LO-BENTOMAT DN	200503LO	00000094	150	14.5	2175	2681
			Totals:	13650	1319.5	197925	243825
						Total Number of Rolls Certified: 91	

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GCL MQA TRACKING FORM

Listing of finished and raw materials used to produce certification package number 000197349

GCL			Geotextiles				Clay
LO-BENTOMAT DN			LO-N/W-WHITE-DN			LO-N/W-BLACK-DN-6 OZ	LO-CG 50-DN
GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200503LO	00000003	00000003	200443VR	00003808	00003808	1.68028	010505C
200503LO	00000004	00000003	200443VR	00003808	00003808	1.68028	010505C
200503LO	00000005	00000003	200443VR	00003808	00003808	1.68028	010505C
200503LO	00000006	00000003	200443VR	00003808	00003808	1.68028	010505C
200503LO	00000007	00000003	200443VR	00003808	00003808	1.68028	010505C
200503LO	00000008	00000003	200443VR	00003808	00003808	1.68028	010505C
200503LO	00000009	00000003	200442VR	00003733	00003730	1.68033	010505C
200503LO	00000010	00000003	200442VR	00003733	00003730	1.68033	010505C
200503LO	00000011	00000003	200442VR	00003733	00003730	1.68033	010505C
200503LO	00000012	00000003	200442VR	00003733	00003730	1.68033	010505C
200503LO	00000013	00000003	200442VR	00003733	00003730	1.68033	010505C
200503LO	00000014	00000003	200442VR	00003733	00003730	1.68033	010505C
200503LO	00000015	00000003	200442VR	00003733	00003730	1.68033	010505C
200503LO	00000016	00000003	200442VR	00003733	00003730	1.68033	010505C
200503LO	00000017	00000003	200442VR	00003733	00003730	1.68033	010505C
200503LO	00000018	00000018	200443VR	00003795	00003794	011005NWA	010505C
200503LO	00000019	00000018	200443VR	00003795	00003794	011005NWA	010505C
200503LO	00000020	00000018	200443VR	00003795	00003794	011005NWA	010505C
200503LO	00000021	00000021	200443VR	00003795	00003794	011005NWA	010505C
200503LO	00000022	00000021	200443VR	00003795	00003794	011005NWA	010505C
200503LO	00000023	00000021	200443VR	00003795	00003794	011005NWA	010505C
200503LO	00000024	00000021	200443VR	00003795	00003794	011005NWA	010505C
200503LO	00000025	00000021	200443VR	00003795	00003794	011005NWA	010505C
200503LO	00000027	00000021	200444VR	00003985	00003980	011005NWA	010505C
200503LO	00000028	00000021	200444VR	00003985	00003980	011005NWA	010505C
200503LO	00000029	00000021	200444VR	00003985	00003980	011105NWA	010505C
200503LO	00000030	00000021	200444VR	00003985	00003980	011105NWA	010505C
200503LO	00000031	00000021	200444VR	00003985	00003980	011105NWA	010505C
200503LO	00000032	00000021	200444VR	00003985	00003980	011105NWA	010505C

GGL Lot #	GGL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200503LO	00000033	00000021	200444VR	00003985	00003980	011105NWA	010505C
200503LO	00000034	00000021	200444VR	00003985	00003980	2003180774	010505C
200503LO	00000035	00000035	200444VR	00003867	00003863	2003180774	010505C
200503LO	00000036	00000035	200444VR	00003867	00003863	2003180774	010505C
200503LO	00000037	00000035	200444VR	00003867	00003863	2003180774	010505C
200503LO	00000038	00000035	200444VR	00003867	00003863	2003180774	010505C
200503LO	00000039	00000039	200444VR	00003867	00003863	2003180774	010505D
200503LO	00000040	00000039	200444VR	00003867	00003863	2003180774	010505D
200503LO	00000041	00000039	200444VR	00003867	00003863	2003180774	010505D
200503LO	00000042	00000039	200444VR	00003867	00003863	2003180778	010505D
200503LO	00000043	00000039	200444VR	00003867	00003863	2003180778	010505D
200503LO	00000044	00000039	200444VR	00003869	00003868	2003180778	010505D
200503LO	00000045	00000039	200444VR	00003869	00003868	2003180778	010505D
200503LO	00000046	00000039	200444VR	00003869	00003868	2003180778	010505D
200503LO	00000047	00000039	200444VR	00003869	00003868	2003180778	010505D
200503LO	00000048	00000039	200444VR	00003869	00003868	2003180778	010505D
200503LO	00000049	00000039	200444VR	00003869	00003868	2003180778	010505D
200503LO	00000050	00000039	200444VR	00003869	00003868	2003180778	010505D
200503LO	00000051	00000039	200444VR	00003869	00003868	2003180704	010505D
200503LO	00000052	00000039	200443VR	00003841	00003836	2003180704	010505D
200503LO	00000053	00000039	200443VR	00003841	00003836	2003180704	010505D
200503LO	00000054	00000039	200443VR	00003841	00003836	1.68023	010505D
200503LO	00000055	00000039	200443VR	00003841	00003836	1.68023	010505D
200503LO	00000056	00000039	200443VR	00003841	00003836	1.68023	010505D
200503LO	00000057	00000057	200443VR	00003841	00003836	1.68023	010505D
200503LO	00000058	00000057	200443VR	00003841	00003836	1.68023	010505D
200503LO	00000059	00000057	200443VR	00003841	00003836	1.68023	010505D
200503LO	00000060	00000057	200444VR	00003989	00003987	1.68023	010505D
200503LO	00000061	00000057	200444VR	00003989	00003987	1.68023	010505D
200503LO	00000062	00000057	200444VR	00003989	00003987	1.68034	010505D
200503LO	00000063	00000057	200444VR	00003989	00003987	1.68034	010505D
200503LO	00000064	00000057	200444VR	00003989	00003987	1.68034	010505D
200503LO	00000065	00000057	200444VR	00003989	00003987	1.68034	010505D
200503LO	00000066	00000057	200444VR	00003989	00003987	1.68034	010505D
200503LO	00000067	00000057	200444VR	00003989	00003987	1.68034	010505D

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
200503LO	00000068	00000057	200444VR	00003989	00003987	1.68034	010505D
200503LO	00000069	00000057	200444VR	00003981	00003980	1.68034	010505D
200503LO	00000070	00000057	200444VR	00003981	00003980	1.68034	010505D
200503LO	00000071	00000057	200444VR	00003981	00003980	1.68011	010505D
200503LO	00000072	00000057	200444VR	00003981	00003980	1.68011	010505D
200503LO	00000073	00000057	200444VR	00003981	00003980	1.68011	010505D
200503LO	00000074	00000057	200444VR	00003981	00003980	1.68011	010505D
200503LO	00000075	00000075	200444VR	00003981	00003980	1.68011	010505D
200503LO	00000076	00000075	200444VR	00003981	00003980	1.68011	010505D
200503LO	00000077	00000075	200443VR	00003831	00003830	1.68011	010505D
200503LO	00000078	00000075	200443VR	00003831	00003830	1.68011	010505D
200503LO	00000079	00000075	200443VR	00003831	00003830	1.68030	010505D
200503LO	00000080	00000075	200443VR	00003831	00003830	1.68030	010505D
200503LO	00000081	00000075	200443VR	00003831	00003830	1.68030	010505D
200503LO	00000082	00000075	200443VR	00003831	00003830	1.68030	010505D
200503LO	00000083	00000075	200443VR	00003831	00003830	1.68030	010505D
200503LO	00000084	00000075	200443VR	00003831	00003830	1.68030	010505D
200503LO	00000085	00000075	200443VR	00003831	00003830	1.68030	010505D
200503LO	00000086	00000075	200444VR	00003901	00003901	1.68030	010505D
200503LO	00000087	00000075	200444VR	00003901	00003901	1.68030	010605A
200503LO	00000088	00000075	200444VR	00003901	00003901	1.68030	010605A
200503LO	00000089	00000075	200444VR	00003901	00003901	1.68030	010605A
200503LO	00000090	00000075	200444VR	00003901	00003901	1.68026	010605A
200503LO	00000091	00000075	200444VR	00003901	00003901	1.68026	010605A
200503LO	00000092	00000075	200444VR	00003901	00003901	1.68026	010605A
200503LO	00000093	00000093	200444VR	00003901	00003901	1.68026	010605A
200503LO	00000094	00000093	200444VR	00003894	00003888	1.68026	010605A

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GCL MANUFACTURING QUALITY CONTROL TEST DATA

The following rolls in GCL certification package number 000197349 have been tested in our production facility lab.

Product	Lot # Tested	Roll # Tested	Mass Area	Grab Strength	Peel Strength
		Standard Test Method:	ASTM D 5993	ASTM D 4632	ASTM D 4632
		Standard Specification:	0.75 lb/sq ft MARV	150lbs MARV	15lbs MARV
LO-BENTOMAT DN	200503LO	00000003	0.97	349.6	40.1
LO-BENTOMAT DN	200503LO	00000021	0.85	349.6	25.4
LO-BENTOMAT DN	200503LO	00000039	0.92	349.6	41.1
LO-BENTOMAT DN	200503LO	00000057	0.86	349.6	50.2
LO-BENTOMAT DN	200503LO	00000075	0.81	349.6	60.5
LO-BENTOMAT DN	200503LO	00000093	0.94	373.5	43.6

ASTM test methods and property specifications per CETCO standard unless non-standard specifications were requested.
Any non-standard property specifications requested for this order are noted on the attached GCL property specifications sheet.

AMERICAN COLLOID COMPANY

BENTONITE CLAY CERTIFICATION

The bentonite clay used to produce certification package 000197349 has been tested by American Colloid Co. with the following results.

Clay Type	Clay Lot #	Swell	Fluid Loss	Moisture	% Passing 200m	% Retained 10m
Test Method:		ASTM D 5890	ASTM D 5891	ASTM D 2216	ASTM C 136	ASTM C 136
Specification:		24ml/2g Min	18ml Max	12% Max	1% Max	0%
LO-CG 50-DN	010505C	27	15.6	11.2	0.6	0

Tests approved by
Moses Briseno
American Colloid Company
Quality Assurance Coordinator

GEOTEXTILE TEST RESULTS FOR MATERIAL SUPPLIED BY OUR VILLA RICA, GA FACILITY

The GCL in certification package number 000197349 was manufactured using these geotextiles:

Material	Lot	Roll #	Mass/Area	Grab Strength
VR-NON-WOVEN	200442VR	00003730	7.0	90.3
VR-NON-WOVEN	200443VR	00003794	6.9	46.0
VR-NON-WOVEN	200443VR	00003808	6.6	91.6
VR-NON-WOVEN	200443VR	00003830	7.0	55.2
VR-NON-WOVEN	200443VR	00003836	6.5	54.6
VR-NON-WOVEN	200444VR	00003863	6.7	58.2
VR-NON-WOVEN	200444VR	00003868	6.8	51.5
VR-NON-WOVEN	200444VR	00003888	6.5	54.9
VR-NON-WOVEN	200444VR	00003901	6.8	64.5
VR-NON-WOVEN	200444VR	00003980	6.6	34.9
VR-NON-WOVEN	200444VR	00003987	6.7	64.9

CETCO
LINING TECHNOLOGIES
800.527.9948 www.cetco.com

GEOTEXTILE TEST RESULTS FROM MATERIAL SUPPLIERS

The GCL in certification package number 000197349was manufactured with geotextiles which were tested with the following results.

BASE			
Material Supplier	Roll Number	Mass Area oz/yd2	Grab Strength lbs
PT	011005NWA	6.2	147.3
PT	011105NWA	7.7	184.3
SK GT165	1.68011	6.3	157.0
SK GT165	1.68023	6.5	176.0
SK GT165	1.68026	6.9	160.0
SK GT165	1.68028	6.6	170.0
SK GT165	1.68030	6.2	146.0
SK GT165	1.68033	6.2	146.0
SK GT165	1.68034	6.2	146.0
SI HH65L	2003180700	7.1	213.0
SI HH65L	2003180700	7.1	213.0
SI HH65L	2003180773	6.7	193.0
SI HH65L	2003180776	6.4	175.0

CETCO
COLLOID ENVIRONMENTAL TECHNOLOGIES COMPANY

1350 W. SHURE DRIVE
ARLINGTON HEIGHTS, IL 60004

PHONE: (847) 392-5800
FAX: (847) 506-6150

DETERMINATION OF THE COEFFICIENT OF FRICTION BY DIRECT SHEAR METHOD (ASTM D 5321)

Project Name: 2004 Periodic Shear

Project No. periodic

Requested by: Jim Olsta

Date: 7/5/05

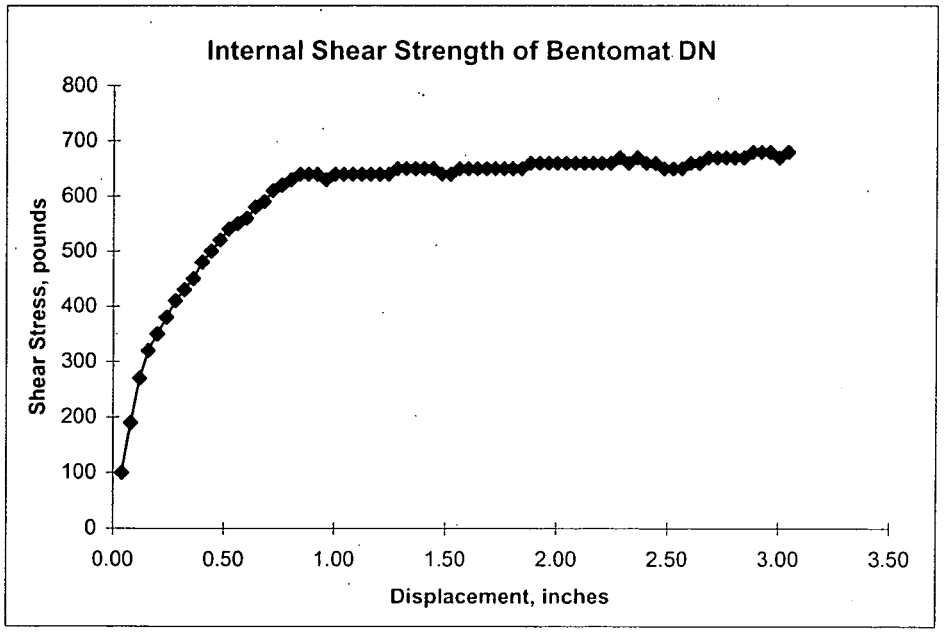
Analyst: N. Pietrowiak

TEST PARAMETERS:

Interface Tested:
Top Surface - Non-Woven side of Bentomat DN
Bottom Surface - Non-Woven Side of Bentomat DN
Shear Rate, in/min: 0.04
Shape of Specimen: Square
Lot#: 200402L0 Roll#: 1
Hydration Time: 48 Hours @ Normal Load

TEST RESULTS:

Normal Stress,psf	Peak Stress,psf
200	680



The data and information contained herein is based upon accepted industry practice and standards. CETCO makes no warranty of any kind and accepts no responsibility for results obtained through application of this information.

File Name: 1st quarter

2005 WEEKLY QA DATA
BENTOMAT DN
Production Facility: Lovell, WY

Week	Lot/Roll #	Permeability (cm/sec)	Flux ($m^3/m^2/sec$)		Week	Lot/Roll #	Permeability (cm/sec)	Flux ($m^3/m^2/sec$)
1	No Production				27			
2	No Production				28			
3	200503LO/ 75	3.8×10^{-9}	8.2×10^{-9}		29			
4	No Production				30			
5	No Production				31			
6	No Production				32			
7	No Production				33			
8	200508LO/ 384	4.9×10^{-9}	9.3×10^{-9}		34			
9	200509LO/ 711	3.1×10^{-9}	6.5×10^{-9}		35			
10	200510LO/ 1105	4.3×10^{-9}	9.2×10^{-9}		36			
11	200511LO/ 1541	4.5×10^{-9}	9.4×10^{-9}		37			
12					38			
13					39			
14					40			
15					41			
16					42			
17					43			
18					44			
19					45			
20					46			
21					47			
22					48			
23					49			
24					50			
25					51			
26					52			

All testing is performed according to ASTM D5887 using 5psi confining pressure and 2psi head pressure.

SUBMITTAL TRANSMITTAL FORM

For Submittal of Shop Drawings, Equipment Data, Material Sampl[illegible] Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 1/18/05	X	New S[illegible]ttal
			Resubmittal

Section I — **REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS** *(This section to be initiated by the Subcontractor)*

To:	From:	Subcontract No: KH020577	Submittal No. 070
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026		Previous Submittal No.

Specification Sec. No. (Cover only one section with each Submittal)

Project Title: Construction of the Present Landfill Accelerated Action

Item No.	Description of Item Submitted (Type, size, model number, etc.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8)	No. of Copies	Contract Reference Document		Deviation (See Instruction #6)	Contractor Action Code (See Instruction #9)
				Spec. Paragraph No.	Drawing Sheet No.		
a.	b.	c.	d.	e.	f.	g.	h.
1	Sketch of vertical passive gas vent constructed			N/A	N/A	N/A	

Rocky Flats Plant

☐ APPROVED ☒ APPROVED AS CORRECTED
☐ NOT APPROVED ☐ REVISE AND RESUBMIT

APPROVAL IS FOR CONFORMANCE WITH THE DESIGN CONCEPT OF THE PLANS AND SPECIFICATIONS AND FOR COMPLIANCE WITH THE INFORMATION GIVEN THEREIN. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMATION AND CORRELATION OF ALL DIMENSIONS AT THE CONSTRUCTION SITE; FOR INFORMATION THAT PERTAINS SOLELY TO FABRICATION PROCESSES OR TO TECHNIQUES OF CONSTRUCTION; AND FOR COORDINATION OF THE WORK OF ALL CRAFTS.

BY: Robert P. Davis DATE: 01/29/05

Remarks:
The attached sketch is a typical of the as- constructed vertical gas-vents in the Present Landfill. This configuration was directed by the K-H Project Manager. This sketch is submitted to facilitate the generation of required as-built drawings by K-H.

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.

Signature of Subcontractor: Paul Kreitz 1/18/05

Section II — **Reviewed**

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

OK CRAE
J.H. Roberts TA

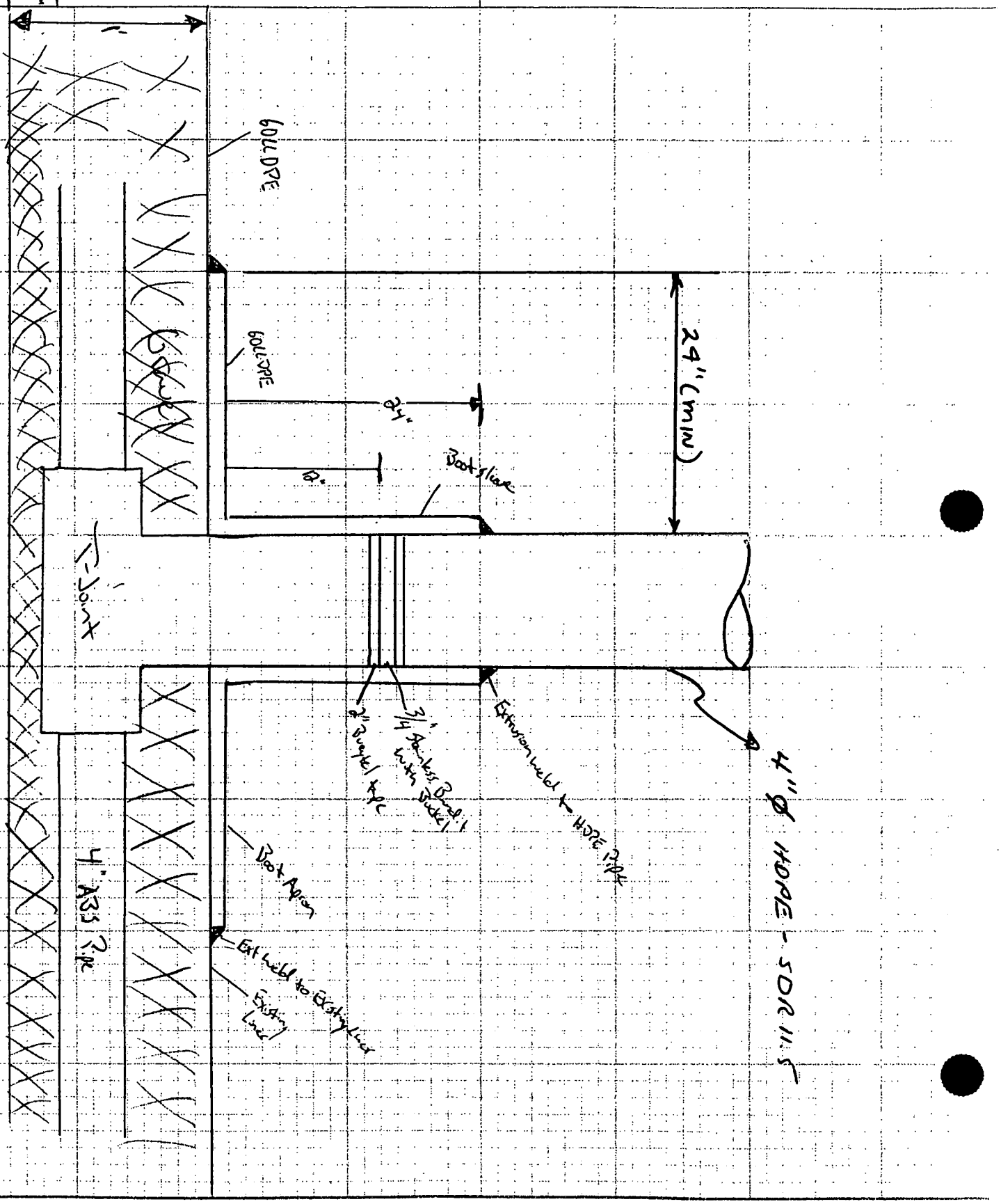
Stoller

JOB NO.: _____ DATE: _____

JOB NAME: _____

PREPARED: _____ REVIEWED: _____

SHEET NO.: _____ OF _____



SUBMITTAL TRANSMITTAL FORM

For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 3/21/05	X	New Submittal
			Resubmittal

Section I — **REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS** *(This section to be initiated by the Subcontractor)*

To:	From:		
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026	Subcontract No: KH020577	Submittal No. 078A Previous Submittal No. 078

Specification Sec. No. (Cover only one section with each Submittal)	Project Title: Construction of the Present Landfill Accelerated Action

Item No.	Description of Item Submitted (Type, size, model number, etc.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8)	No. of Copies	Contract Reference Document		Deviation (See Instruction #6)	Contractor Action Code (See Instruction #9)
				Spec. Paragraph No.	Drawing Sheet No.		
a.	b.	c.	d.	e.	f.	g.	h.
1	Sand Cone Density Test – 10" cushion, including nuclear density gauge results	N/A	6	02221-0943-6	N/A	N/A	

Receipt Acknowledged
Robert Davis 03/24/05

Remarks:
Note: The submitted sand cone test is outside of specified limits (too dry). However the density at that location was over 100%.

Please respond with written disposition for this test.

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.

Signature of Subcontractor: Paul Kreitz 3/24/05

Section II — **Reviewed**

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

OK CQAE
J.A. Rule TA

DENSITY COMPARISON BETWEEN NUKE GUAGE AND SAND CONE FOR CU-060 AND CUS-03														
							Moisture Contents			Proctor Results		-2 to 2	> 95%	
Date	Soil ID	Test #	Northing	Easting	Elevation	WD	Nuke MC	Oven MC	DD	Optimum MC	Optimum DD	% off MC	% Comp.	Pass/Fail
1/20/2005	9	CU-060	39894.01	20076.6	5985.19	136.8	9.5	-	124.9	10.4	125.1	-0.9	100%	PASS
1/20/2005	9	CUS-03	39285	20106.57	5991.52	134.4	-	7.9	124.6	10.4	125.1	-2.5	100%	FAIL

Summary of Soil Test for Cushion soils										
			Atterberg Limits			Grain Size Distribution			Standard Proctor	
Soil ID	Sample #	U.S.C.S.	LL	PL	PI	% Finer 3/4"	% Finer #4	% Finer #200	DD (pcf)	MC (%)
9	PF-9	SC	38	18	20	100	87	25	125.1	10.4

SAND CONE DENSITY TEST
Golder Associates

Test #	CUS-3

Date	20-Jan-05

Weight of Wet Material	3021.6	g

Cone and Plate #	A	
Bottle ID	J	
Start wt of Bottle and Sand	6008.7	g
Finish wt of Bottle and Sand	2127.8	g

Density of Sand	96.32	lb/ft^3
Soil ID	PF-9	
Optimum Dry Density	125.1	lb/ft^3
Optimum Moisture	10.4	%

Moisture Content

Tare Wt	312.3	g
Tare + Wet Soil	3333.9	g
Tare + Dry Soil	3112.3	g
Dry Soil	2800.0	g
Moisture	221.6	g
% Moisture	7.9	%

Volume Calculation

Wt of Sand Used	3880.9	g
Wt of Sand Used	8.6	lb
Volume of Sand	0.0888	ft^3
Volume of Cone & Plate	0.0393	ft^3
Sand Volume Minus Cone & Plate	0.0496	ft^3

Wet Density	134.4	lb/ft^3
Dry Density	124.5	lb/ft^3

Specifications

		Pass/Fail
>95% of Standard Proctor	100%	Pass
±2% Moisture Content	-2.5	Pass

Tech	PRH
Reviewed by	MSP

SUBMITTAL TRANSMITTAL FORM

For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 1/18/05	X	New Submittal
			Resubmittal

Section I — **REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS** *(This section to be initiated by the Subcontractor)*

To:	From:	Subcontract No: KH020577	Submittal No. 78
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026		Previous Submittal No.

Specification Sec. No. (Cover only one section with each Submittal)	Project Title: Construction of the Present Landfill Accelerated Action

Item No.	Description of Item Submitted (Type, size, model number, etc.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8)	No. of Copies	Contract Reference Document		Deviation (See Instruction #6)	Contractor Action Code (See Instruction #9)
				Spec. Paragraph No.	Drawing Sheet No.		
a.	b.	c.	d.	e.	f.	g.	h.
1	Sand Cone Density Test – 10" cushion	N/A	6	02221-0943-6	N/A	N/A	

Receipt of Test Results Acknowledge

Please Provide - Nuclear Density Gauge Results at this location

Remarks:
Note: The submitted sand cone test is outside of specified limits (too dry). However the density at that location was over 100%.

Please respond with written disposition for this test.

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.

Signature of Subcontractor: 1/28/05

Section II — **Reviewed**

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

Submittal No. 78

All Sand Cone Data

Included in

Appendix F

For Submittal of Shop Drawings, Equipment Data, Material Samples,
Manufacturer's Certificates of Compliance, or Other
(Read Instructions prior to initiating this form.)

Date: 2-2-05

Result

Section I — **REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS** *(This section to be initiated by the Subcontractor)*

To:	From:	Subcontract No: KH020577	Submittal No. 81
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026		Previous Submittal No.

Specification Sec. No. (Cover only one section with each Submittal)

Project Title: Construction of the Present Landfill Accelerated Action

Item No.	Description of Item Submitted (Type, size, model number, etc.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8)	No. of Copies	Contract Reference Document		Deviation (See Instruction #6)	Contractor Action Code (See Instruction #9)
				Spec. Paragraph No.	Drawing Sheet No.		
a.	b.	c.	d.	e.	f.	g.	h.
1	AkwaDrain soil strip drain Technical Data	N/A	6	N/A	N/A	N/A	
2	Installation Instructions	N/A	6	N/A	N/A	N/A	
3	Product Sample	N/A	1	N/A	N/A	N/A	

Rocky Flats Plant

☒ APPROVED ☐ APPROVED AS CORRECTED
☐ NOT APPROVED ☐ REVISE AND RESUBMIT

Remarks: APPROVAL IS FOR CONFORMANCE WITH THE DESIGN CONCEPT OF THE PLANS AND SPECIFICATIONS AND FOR COMPLIANCE WITH THE INFORMATION GIVEN THEREIN. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMATION AND CORRELATION OF ALL DIMENSIONS AT THE CONSTRUCTION SITE; FOR INFORMATION THAT PERTAINS SOLELY TO FABRICATION PROCESSES OR TO TECHNIQUES OF CONSTRUCTION; AND FOR COORDINATION OF THE WORK OF ALL CRAFTS.

Verbal approval provided on 02/06/2005

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.

Paul Kreitz 2/2/05

Signature of Subcontractor:

Section II

BY: Robert M. Davis DATE: 03/18/05 Reviewed

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

OK CQAE
J.H. Rule Tx

AKWADRAIN™ soil strip drain

PRODUCT DESCRIPTION

AKWADRAIN soil strip drain is a two-part prefabricated soil strip drain consisting of a formed polystyrene core covered on all sides with a non-woven, needle-punched polypropylene filter fabric. The fabric allows water to pass into the drain core while restricting the movement of soil particles which might clog the core. The core allows the water to flow to designated drainage exits.

BASIC USES

AKWADRAIN soil strip drain is designed to replace perforated pipe and stone drainage systems in various applications. It provides a significantly higher flow rate as well as increased ease of handling and installation. The product can be used alone or with other American Wick Drain products, depending on the application.

PACKAGING

- 6" x 150' Rolls
- 12" x 150' or 500' Rolls
- 18" x 150' or 500' Rolls
- 24" x 150' or 500' Rolls
- 36" x 100' Rolls

INSTALLATION INSTRUCTIONS

DRAIN ATTACHMENT METHODS:

When attachment to waterproofing material, concrete or wood is necessary, several methods may be used including metal stick pins, nails driven through washers or wood lathing, construction adhesives or double sided tape. Discuss materials compatibility with waterproofing supplier before using adhesives. Typically any method used for attaching waterproofing protection board will work with drain.

OUTLETS:

Fittings are available to connect AKWADRAIN to 4" pipe. These are available in several configurations, depending on drain width and pipe location. Details are available upon request.

SPLICES:

Splices are available for 6" AKWADRAIN. Other widths are spliced by peeling back the fabric and interlocking the dimpled core. Afterwards, replace the fabric and secure with tape.

CORNERS:

Fittings are available for bending drain around corners. Detailed instructions for installation of fittings available upon request.

BACKFILLING:

Soil should be placed and compacted directly against the drain. Direct compactor exhaust away from drain to prevent damage. Backfill to a minimum 3" above drain to allow for coverage after settlement.

DETAILED INSTRUCTIONS FOR INSTALLATION AND TERMINATION ARE AVAILABLE UPON REQUEST.

AMERICAN WICK DRAIN CORPORATION
1209 Airport Road • Monroe, NC • 28110, USA
800 242-WICK • 704 238-9200 • Fax 704 296-0690
www.americanwick.com • info@americanwick.com

AkwaDrain™ soil strip drain

Technical Data

PHYSICAL PROPERTIES	TYPICAL US VALUE	TYPICAL SI VALUE	TEST METHOD
FABRIC PROPERTIES			
Material	Polypropylene	Polypropylene	
Grab Tensile Strength	110 lbs	485N	ASTM D-4632
Puncture Strength	65 lbs	285N	ASTM D-4833
Trapezoidal Tear	50 lbs	220N	ASTM D-4533
Mullen Burst Strength	215 psi	1430kPa	ASTM D-3786
Elongation	60%	60%	ASTM D-4632
EOS (AOS)	100 sieve	150 micron	ASTM D-4751
Permittivity	1.6 sec^{-1}	1.6 sec^{-1}	ASTM D-4491
Permeability	0.3 cm/sec	0.3 cm/sec	ASTM D-4491
Flow Rate	150 g/min/ft^2	6110 L/min/m^2	ASTM D-4491
UV Resistance (After 500 hrs.)	70%	70%	ASTM D-4355
DRAIN PROPERTIES			
Peel Strength	38 lbs/ft^2	4 N/m^2	ASTM D-1876
Compressive Strength	6,000-9000 lbs/ft^2	630-940 N/m^2	ASTM D-1621 (Mod.)
Shear Strength	6,000-9000lbs/ft^2	630-940 N/m^2	ASTM D-1621 (Mod.)
Fungus Resistance (Core)	No Growth	No Growth	ASTM G-21
Unobstructed Inflow Area (Primary Side)	85%	85%	
In-Plane Flow (Hydraulic gradient=0.1, Loading=10 psi)	21 gpm/ft width	261L/min/m width	ASTM D-4716

DIMENSIONAL PROPERTIES

	6"x150'	*12"x150'*	*12"x500'*	*18"x150'*	*18"x500'*	*24"x150'*	*24"x500'*	*36"x100'*
Thickness (in)	1	1	1	1	1	1	1	1
Widths (in)	6	12	12	18	18	24	24	36
Roll Length (ft)	150	150	500	150	500	150	500	100
Roll Diameter (ft)	5	5	7	5	7	5	7	3.5
Roll Weight (lbs)	24	48	160	72	240	96	320	96

All information, drawings and specifications are based on the latest product information available at the time of printing. Constant improvement and engineering progress make it necessary that we reserve the right to make changes without notice. All physical properties are typical values. Standard variations in mechanical properties of 10% and in hydraulic properties of 20% are normal.

AMERICANWICKDRAIN CORPORATION
1209 Airport Road • Monroe, NC • 28110, USA
800 242-WICK • 704 238-9200 • Fax 704 296-0690
www.americanwick.com • info@americanwick.com

AMERDRAIN® sheet drain and AKWADRAIN™ strip drain keep landfills dry and remove leachate

The problem

Rain water enters the landfill.

Leachate builds up on the liner.

The AMERDRAIN sheet and AKWADRAIN strip drain solution

Sheet drain intercepts rain water in the landfill cap and routes it away from the landfill.
Installing sheet or strip drain either under or on top of the landfill liner provides controlled exit of leachate.

12"(300mm) strip drain on liner

AMERDRAIN sheet and strip drain offers the following benefits for landfills:

- **Low Installed Cost** - Combined installation and material cost is usually less than half that for aggregate drains.
- **Easy To Handle And Install** - Lightweight, easy-to-handle prefabricated drain is placed easily and quickly. No heavy equipm skilled laborers are required. Inexpensive to store and transport.
- **High Flow Capacity, No Clogging** - Structure of core provides multiple channels for vertical and horizontal water flow. Filter fabric permits high volume entry of water into core while restraining soil particles.
- **Strong And Durable** - Crush strength of core resists damage during installation or at greater soil depths. High tear and punc strength of fabric insures no damage during backfilling or use.
- **Simple Inspection** - Easy visual inspection of material and installation is possible.
- **Chemically Resistant** - Both core and fabric are resistant to all naturally-occurring soil materials. Optional fabrics and cores available for unusual chemical situations.
- **Reduces Drainage Space Requirements** - Thickness requires much less space than aggregate drainage.
- **Predictable performance** - Uniform properties and quality assure predictable drain performance.

A simple, reliable, money-saving alternative to aggregate drainage.

AMERDRAIN sheet drain for landfills

AMERDRAIN 650 sheet drain for intercepting water in landfills caps, collecting leachate on the liners, or detecting leachate under th

AMERDRAIN 850 sheet drain where a core with increased chemical resistance is required.

AKWADRAIN™ 12 - 36" strip drain installation instructions

AKWADRAIN prefabricated soil strip drain was designed for ease of installation. Installation requires only standard construction equipment. Standard connectors are available from the manufacturer or construction supply houses. Installation involves the follow processes - 1) trenching, 2) drain installation, 3) backfill & compaction, 4) drain splicing, 5) tee connections and 6) outlet installati

1. Trenching
Dig a trench 2-6" wide using a standard trenching machine. The required depth of the trench depends upon the drain width, applic and soil permeability. Provide a minimum of 3" of soil cover over drain to prevent damage by surface equipment.

2. Drain installation
Place the strip drain in the trench to fit against the side of the trench and at the bottom of the trench.

3. Backfilling & compaction
The material removed from the trench is usually used for backfill. The first layer of backfill should hold the drain tightly against the the trench. The first layer should be compacted prior to placing the second layer. The second layer is placed to a depth that will, wl compacted, be level with the original soil or leave the proper space at the top of the trench for placement of top soil.

4. Splicing drain
AKWADRAIN strip drain is usually shipped in 100-500' rolls. To splice rolls together, peel back fabric from both drain ends to be connected. Overlap core for two rows of cones. Replace fabric. Tape splice with 3" underground tape for a minimum of 6".

5. Drain outlets
Outlets to carry water away from the drain are placed as required by the application and topography. The end of the outlets may d water flow to bare ground, concrete drain pads, existing drain boxes, or some combination of these.

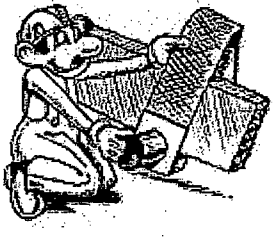
The usual material for outlet pipe is either 4" corrugated polyethylene pipe (CPE) or 4" smooth-wall PVC pipe (Schedule 40 or sewe pipe). Connections between the drain and outlet pipe are made by a combination of special drain connectors and standard CPE or P pipe connectors.

Outlet connectors are usually installed prior to the drain being placed into the trench. If the drain has been covered, excavate a 24' square area to expose the drain and complete a trench for the drain outlet pipe.

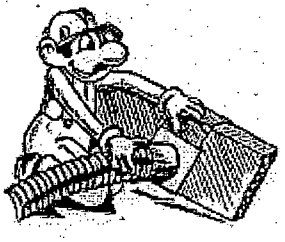
6. Installing outlet connectors
There are two types of outlets connectors. Both are "Universal" connectors which fit any width of drain. A Tee Connector can be ins at any place in the drain. An End Connector must be installed at the end of the drain.

Installing the Universal™ Tee Connector

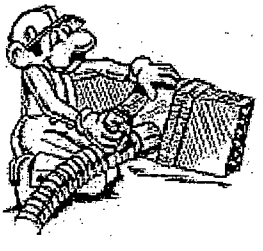
Use knife to cut a V notch 3" wide at bottom by 4" high



Slide fitting over V notch and wrap fabric around drain



Insert pipe into fitting (see #7 below)



Tape fabric and pipe with 3" underground tape.

Installing the Universal End Connector

Slide the connector over the end of the drain

Use fabric to close end of drain and tape in place

Insert pipe into fitting (see #7 below)

Tape pipe with 3" underground tape.

7. Outlet pipe information

Joints with corrugated polyethylene (CPE) outlet pipe

The joint between an outlet connector and CPE outlet pipe (without 90° elbow) is made by using a standard 4" sewer pipe adapter 463 or equal). Place the male end of the pipe adapter into the outlet connector and secure it with tape. The CPE outlet pipe attache the female end of the sewer pipe adapter. Secure joint with tape. The joint between an outlet connector and CPE outlet pipe using elbow (ADS 490 or equal) is made in the same manner as described above except that a 4" piece of CPE pipe is used to join the se adapter and the 90°elbow. The CPE outlet pipe connects to the 90° elbow. Secure all joints with tape.

Joints with PVC outlet pipe

To join an outlet connector to PVC pipe, place a short piece of 4" Schedule 40 pipe into the outlet connector. Connect a standard P\ elbow to the short pipe. Connect the outlet pipe to the other end of the elbow. Use a PVC Sch 40 to sewer pipe adapter if the outlet is PVC sewer pipe. Secure joints with PVC pipe cement.

For reference, the dimensions of 4" PVC pipe are as follows:

	Outside diameter	Min. wall thickness
Schedule 40	4.500"	0.237"
Sewer pipe	4.215"	0.120"

Related subjects

- - Strip drain product information
- Strip drain installation instructions - 6" drain
- 6" Strip drain specifications
- Highway edge drain specifications
- Universal outlet installation ins

AKWADRAIN strip drain where full coverage is not required.

Technical information for AMERDRAIN sheet drain and AKWADRAIN strip drain for landfills.

AutoCAD.DWG application drawings and Microsoft Word suggested specifications on 3 1/2" disk are available on request or by downloading from this web site.

Other similar sheet drain applications:

Tunnels & box culverts - Water can attack these structures from four directions - top, bottom and both sides. AMERDRAIN sheet dr provides rapid removal of water to reduce hydrostatic pressure and to reduce leakage into the structure. Reinforced shot Crete can applied directly to the sheet drain core.

Earth sheltered homes - The structure can be completely enclosed in sheet drain to limit hydrostatic pressure buildup, protect waterproofing and aid in preventing moisture from entering the structure.

Retaining walls & bridge abutments - Poor drainage behind a retaining wall will always result in a build up of hydrostatic pressure. drainage the wall may have to be built much stronger with a resultant higher cost and weight. Freezing of retained water can also extra loads against the wall.

Basements - An undrained or poorly-drained basement wall and slab can result in a multitude of problems ranging from structural of the wall itself to damage to building contents from high humidity levels. Unprotected exterior waterproofing can be damaged, br down or even disintegrate over time. Damp walls can transmit interior heat into the surrounding soil.

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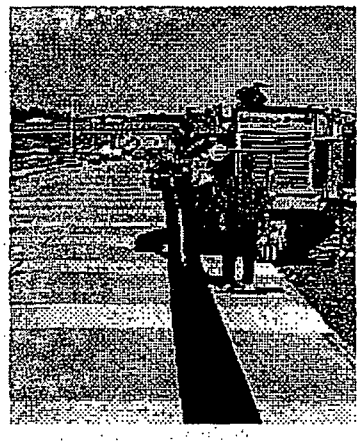
AKWADRAIN™ highway edge drain

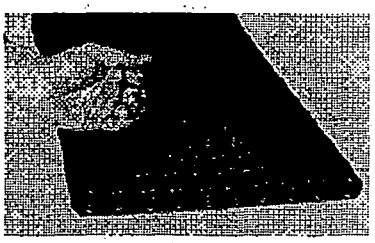
Product brochure (PDF: 530kb)

AKWADRAIN highway edge drain is a prefabricated, high-flow soil drainage system that offers a highly cost-effective solution to highway subbase drainage requirements. AKWADRAIN edge drain consists of a formed polymeric core surrounded by a geotextile filter fabric. The fabric allows water to pass into the core while restraining soil particles which might clog the core. The core allows water to flow to designated drainage exits.

AKWADRAIN edge drain is 1"(25mm) thick by 12-36" (300-1000mm) wide and is available in 500'(150m) long rolls. With a crush strength up to 12,000 psf(585 KN/m^2), AKWADRAIN edge drain core easily withstands the pressures of backfilling and compaction during installation with no loss of water flow capacity. And the multichannel structure of the formed polymeric core provides significantly increased water flow. The geotextile filter fabric covering prevents core clogging while allowing high volume water entry into the core.

Standard AKWADRAIN end connectors and tee fittings are available to attach strip drain to PVC or corrugated polyethylene pipe.





AKWADRAIN highway edge drain offers the following benefits:

- Longitudinal flow capacity of over 20 gallons per minute (for 12" drain) provides rapid removal of water from subbase even in inflow conditions. Structure of core provides multiple flow channels for vertical and horizontal water flow.
- **Inflow capacity on roadway side** of drain of over 100 gallons per minute per foot (for 12" drain). Over 85% of drain area is to receive water.
- **Core compressive strength** of 6,000-9,500 lbs per square foot (42-66 psi) under normal load. Practically no loss of strength under shear loading. Core material has minimal loss of strength due to creep.
- **Easy to handle and install.** Lightweight (6.5 oz/sq ft), easy to handle (12, 18 & 24" wide; 1" thick: 7' diameter; 500' long) d is placed quickly and easily with standard equipment. No skilled laborers are required. Inexpensive to transport and store com to aggregate drain.
- **Chemically resistant.** Both fabric and core have excellent resistance to petroleum-based chemicals, as well as all naturally-occurring soil materials.
- **Resists clogging.** Fabric is specially designed for edge drain applications to resist clogging from subbase materials. Other fab

are available for unusual subbase or soil materials.

- **Puncture and tear resistance.** Fabric has high resistance to puncture strength or tearing, which is particularly important du installation.
- **UV Resistant.** Fabric contains UV inhibitors to protect drain in storage and during installation.
- **Simple Inspection** - Easy visual inspection of material and installation is possible.
- **Predictable Performance** - Uniform properties and quality assure predictable drain performance.

A simple, reliable, money-saving alternative to aggregate drainage.

Related subjects

Highway edge drain product specifications
Highway edge drain three-part suggested specifications (WORD & PDF)

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Contents | Contact us | Search | About AWD

SUBMITTAL TRANSMITTAL FORM

For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 2-2-05	X	New Submittal
			Resubmittal

Section I — **REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS** *(This section to be initiated by the Subcontractor)*

To:	From:		
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026	Subcontract No: KH020577	Submittal No. 82 Previous Submittal No.

Specification Sec. No. (Cover only one section with each Submittal)

Project Title: Construction of the Present Landfill Accelerated Action

Item No.	Description of Item Submitted (Type, size, model number, etc.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8)	No. of Copies	Contract Reference Document		Deviation (See Instruction #6)	Contractor Action Code (See Instruction #9)
				Spec. Paragraph No.	Drawing Sheet No.		
a.	b.	c.	d.	e.	f.	g.	h.
1	Interface Friction Test Report, TRI Log# E2201-40-00 60-mil textured geomembrane #104122976 vs. double-sided geocomposite C2-8-2-5-04-0387-150	N/A	6	N/A	N/A	N/A	

Remarks:

Receipt of TRI Interface Friction Test Report Acknowledged – No Further Action Required

Robert K. Davis 02/20/2005

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.

Signature of Subcontractor: 2/2/05

Section II — **Reviewed**

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

OK CQAE
A.H. Rale II
2/20/05

TRI/ENVIRONMENTAL, INC.

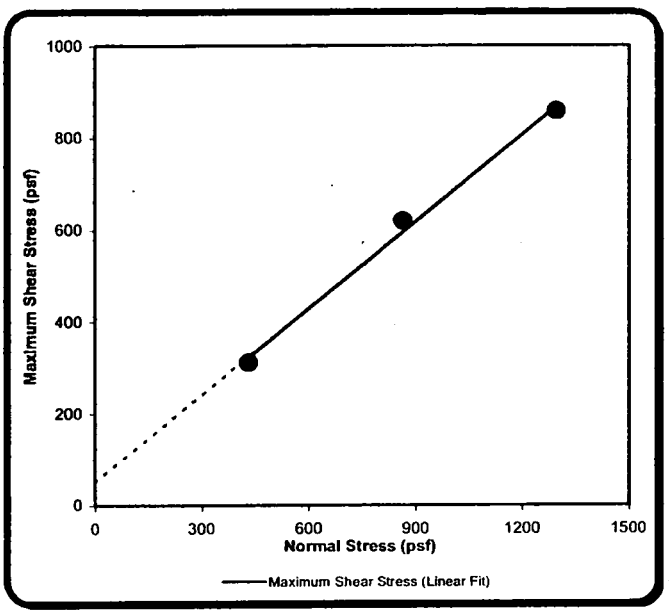
A Texas Research International Company

INTERFACE FRICTION TEST REPORT

Client: **Stoller Corporation**
Project: **Rocky Flats**
Test Date: 1/31-1/31/05

TRI Log#: E2201-40-09
Test Method: ASTM D 5321

Tested Interface: 60 mil Textured Geomembrane #104122976 vs. Double-sided Geocomposite C2-8-2-5-04-0387-150



Upper Box: Double-sided Geocomposite

Lower Box: 60 mil Textured Geomembrane

Interface Conditioning: Interface soaked and loading applied for a minimum of 15 minutes prior to shear

Box Dimension: 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.2 inches/minute

Trial Number	1	2	3
Bearing Slide Resistance (lbs)	12	16	20
Normal Stress (psf)	432	864	1296
Maximum Shear Stress (psf)	324	636	879
Corrected Shear Stress (psf)	312	620	859
Secant Angle (degrees)	35.8	35.7	33.5

RESULTS: Maximum Friction Angle and Y-intercept

Regression Friction Angle (degrees):		**32.3**		
Y-intercept or Regression Adhesion (psf):		**50**		
Regression Line:	Y=	0.633	* X +	50
Regression Coefficient (r squared):		0.995		

SRA 01/31/05
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

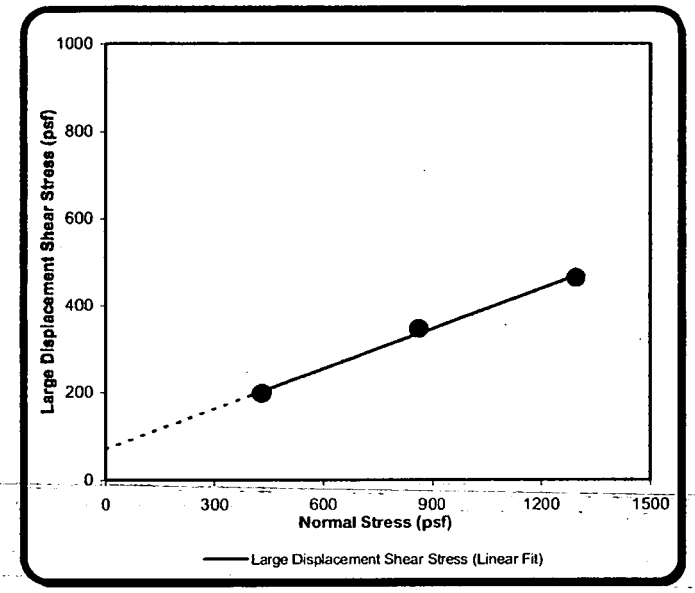
TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

INTERFACE FRICTION TEST REPORT

Client: **Stoller Corporation**
Project: **Rocky Flats**
Test Date: 1/31-1/31/05

TRI Log#: E2201-40-09
Test Method: ASTM D 5321

Tested Interface: 60 mil Textured Geomembrane #104122976 vs. Double-sided Geocomposite C2-8-2-5-04-0387-150



Upper Box: Double-sided Geocomposite

Lower Box: 60 mil Textured Geomembrane

Interface Conditioning: Interface soaked and loading applied for a minimum of 15 minutes prior to shear

Box Dimension: 12"x12"x4"

Test Condition: Wet

Shearing Rate: 0.2 inches/minute

Trial Number	1	2	3
Bearing Slide Resistance (lbs)	12	16	20
Normal Stress (psf)	432	864	1296
Large Displacment Shear Stress (psf)	211	363	484
Corrected Shear Stress (psf)	199	347	464
Secant Angle (degrees)	24.7	21.9	19.7

RESULTS: Large Displacement Friction Angle and Y-intercept at 3.3-in. of Displacement

Regression Friction Angle (degrees):		**17.0**		
Y-intercept or Regression Adhesion (psf):		**72**		
Regression Line:	Y=	0.306	* X +	72
Regression Coefficient (r squared):		0.995		

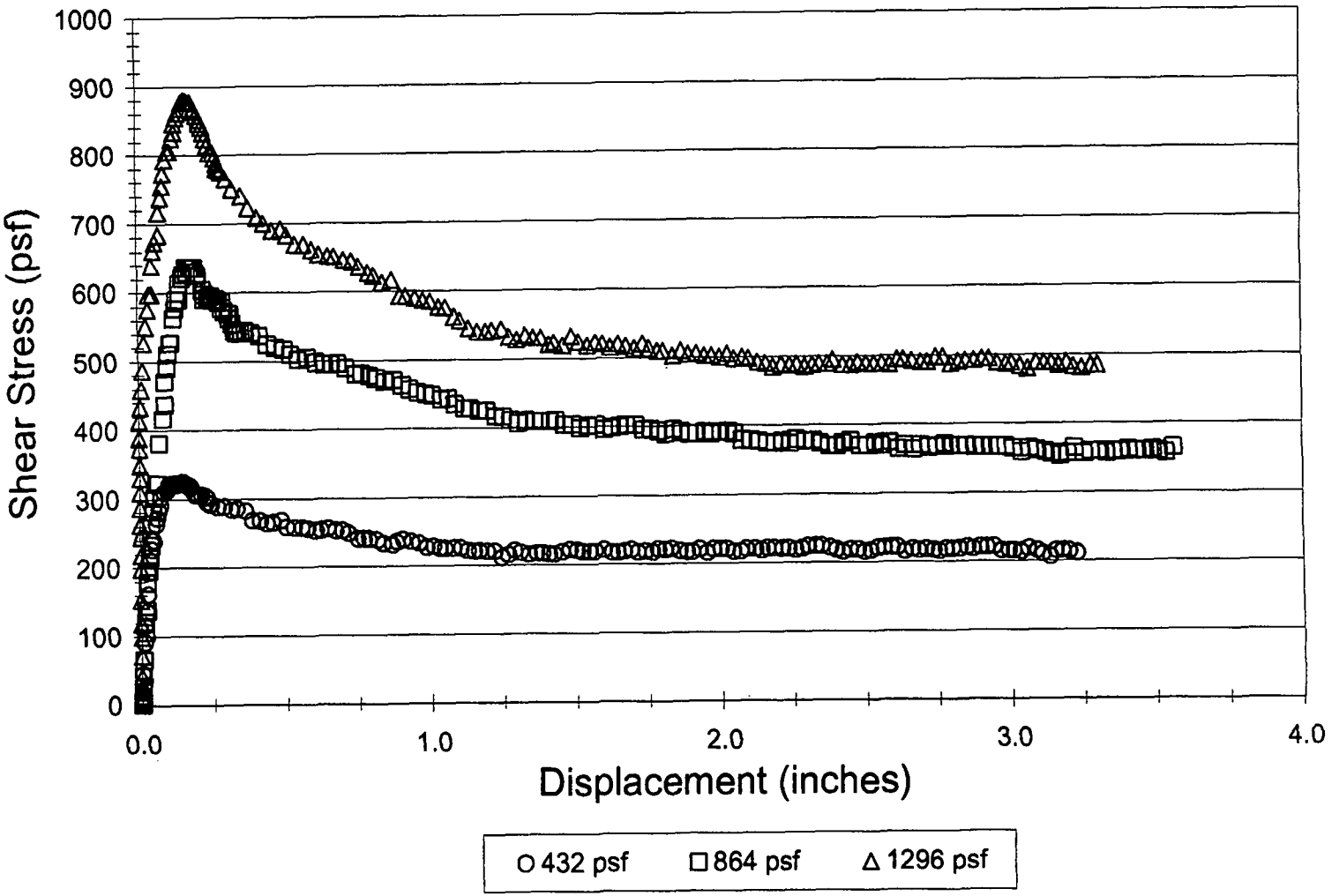
SRA 01/31/05
Quality Review/Date

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

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

STOLLER INTERFACE FRICTION TEST
Double-sided Geocomposite #C2-8-2-5-04-0387-150 vs. 60 mil Textured Geomembrane #104122976



TRI Log No. E2201-40-09 9063 Bee Caves Road Austin, TX 78733-6201 (512) 263-2101 FAX (512) 263-2558 1-800-880-TEST

For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 2/10/05	X	New Submittal
			Resubmittal

Section I — **REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS** *(This section to be initiated by the Subcontractor)*

To:	From:	Subcontract No: KH020577	Submittal No. 85
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026		Previous Submittal No.
Specification Sec. No. (Cover only one section with each Submittal)		Project Title: Construction of the Present Landfill Accelerated Action	

Item No.	Description of Item Submitted (Type, size, model number, etc.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8)	No. of Copies	Contract Reference Document		Deviation (See Instruction #6)	Contractor Action Code (See Instruction #9)
				Spec. Paragraph No.	Drawing Sheet No.		
a.	b.	c.	d.	e.	f.	g.	h.
1	Soil Testing Results – 371 Area Alluvial Material Stockpile	N/A	6		N/A	N/A	

Remarks:
Acknowledge Receipt of Test Reports
Robert Davis 04/01/05

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.

Signature of Subcontractor:

Section II — **Reviewed**

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

SUBMITTAL TRANSMITTAL FORM

For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 2/10/05	X	New Submittal
			Resubmittal

Section I **REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS** *(This section to be initiated by the Subcontractor)*

To:	From:		
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026	Subcontract No: KH020577	Submittal No. 85 Previous Submittal No.

Specification Sec. No. (Cover only one section with each Submittal)

Project Title: Construction of the Present Landfill Accelerated Action

Item No.	Description of Item Submitted (Type, size, model number, etc.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8)	No. of Copies	Contract Reference Document: Spec. Paragraph No.	Contract Reference Document: Drawing Sheet No.	Deviation (See Instruction #6)	Contractor Action Code (See Instruction #9)
a.	b.	c.	d.	e.	f.	g.	h.
1	Soil Testing Results – 371 Area Alluvial Material Stockpile	N/A	6		N/A	N/A	

Remarks:

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.

Paul Kreitz 2/10/05

Signature of Subcontractor:

Section II Reviewed

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

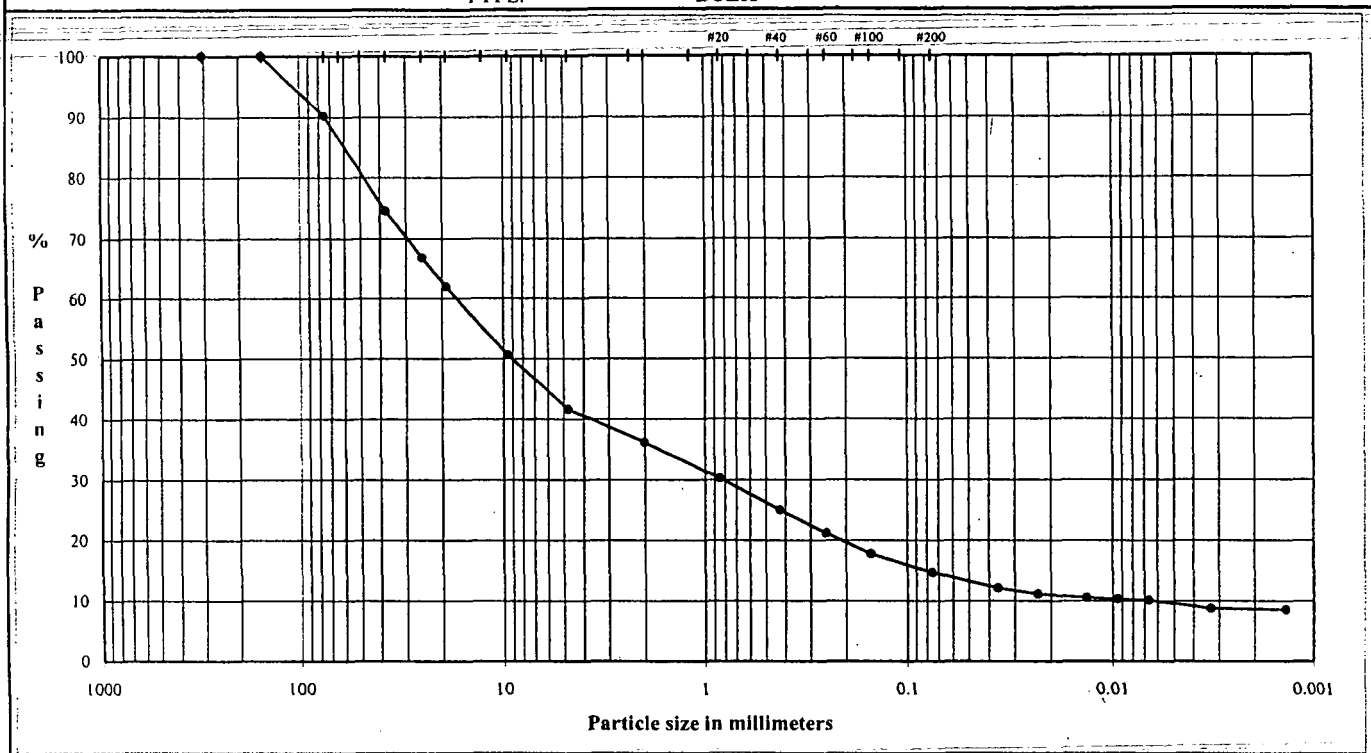
OK CQAE – Use RFA. but not clay material; Depleted in Feb.-Mar
J.H. Rale Tt

Sheet 1 of 2

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: **Rocky Flats/Field & Lab Testing/CO**
SAMPLE ID: **371DP-A2** Depth (ft): --
TYPE: **BULK**



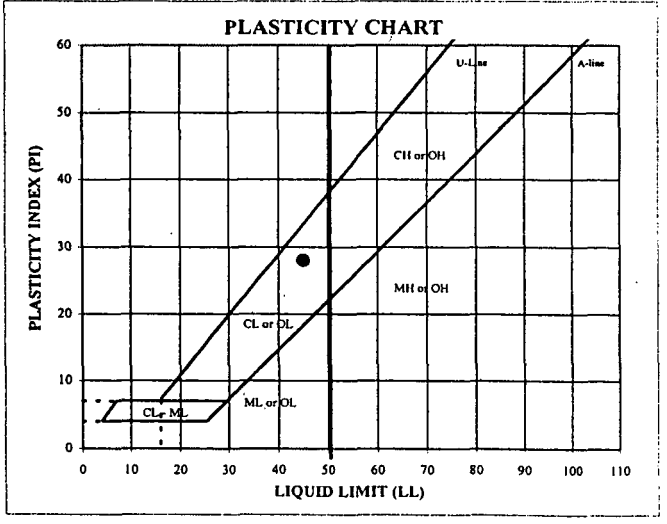
COBBLES	GRAVEL		SAND			FINES
	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0		
6.0"	154.2	100.0	Cobbles	9.78
6.0"	154.2	100.0		
6.0"	154.2	100.0		
3.0"	75.0	90.2		
1.5"	37.5	74.6		
1.0"	25.0	66.7	Coarse Gravel	28.28
0.75"	19.0	61.9		
0.375"	9.5	50.6		
#4	4.8	41.6	Fine Gravel	20.35
#10	2.00	36.2	Coarse Sand	5.40
#20	0.85	30.3		
#40	0.43	25.0	Medium Sand	11.22
#60	0.25	21.1		
#100	0.15	17.7		
#200	0.075	14.7	Fine Sand	10.30

Hydrometer Analysis

(mm)	%Finer		
0.036	12.1		
0.023	11.1		
0.013	10.5	Fines	
0.0095	10.3	Silt or Clay	14.66
0.0066	10.1		
0.0033	8.7		
0.0014	8.5		



ATTERBERG LIMITS

M,	LL	PL	PI	SpG
--	45	17	28	--

DESCRIPTION: Moderate yellowish brown (10YR 5/4) clayey gravel with sand

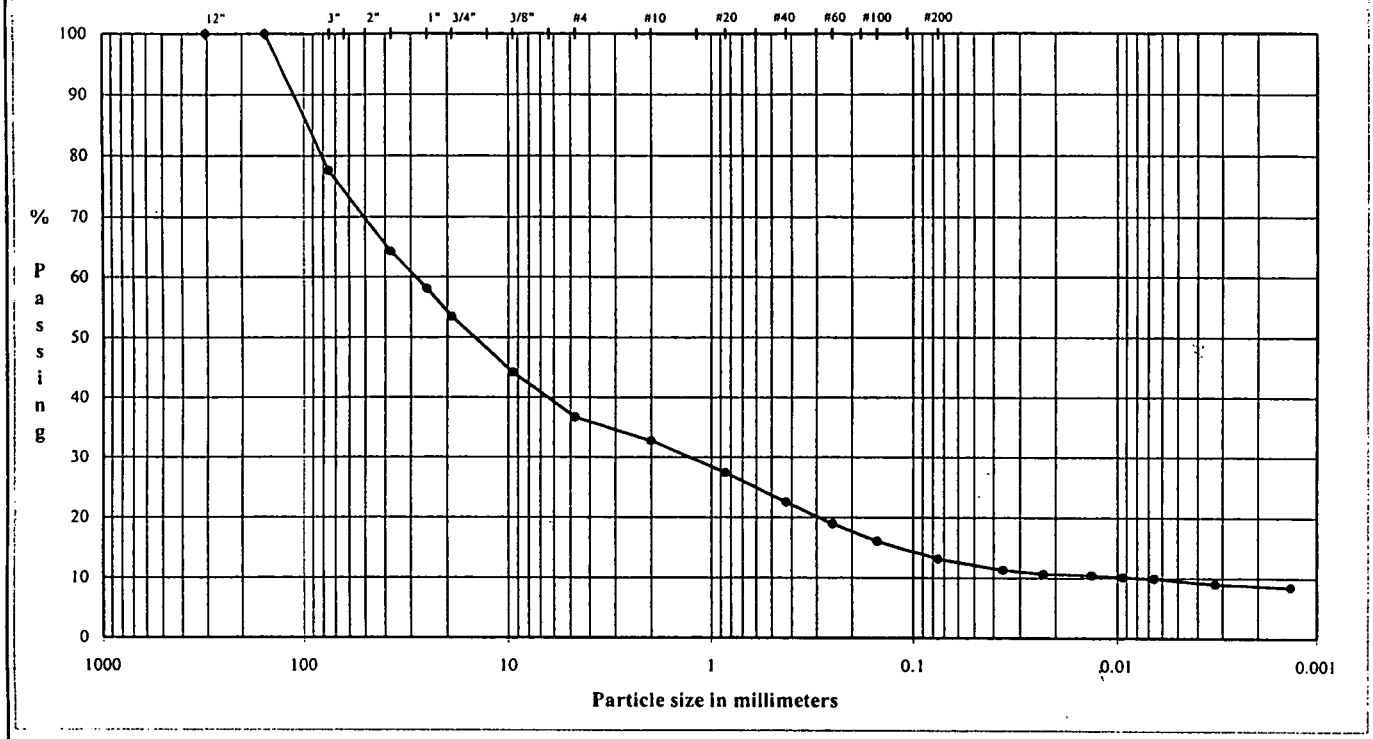
USCS: GC

TECH	MKS
DATE	1/28/2005
REVIEW	MB

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: **Rocky Flats/Field & Lab Testing/CO**
SAMPLE ID: **371DP-A1** Depth (ft): --
TYPE: **BULK**



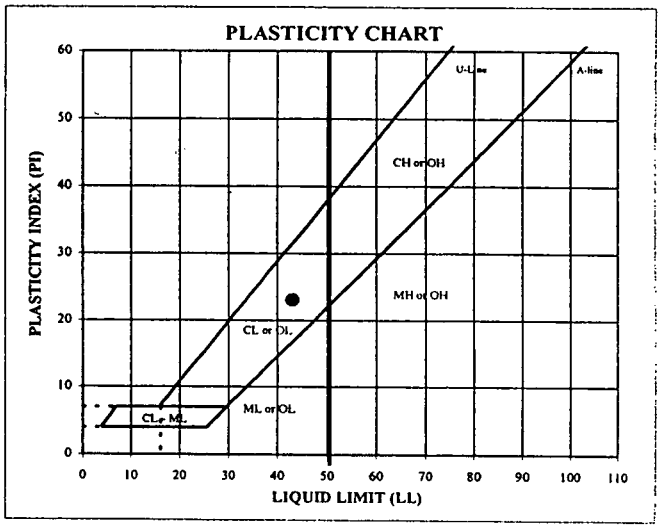
COBBLES	GRAVEL		SAND			FINES
	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0		
6.0"	154.2	100.0	Cobbles	22.43
6.0"	154.2	100.0		
6.0"	154.2	100.0		
3.0"	75.0	77.6		
1.5"	37.5	64.2		
1.0"	25.0	58.1	Coarse Gravel	24.12
0.75"	19.0	53.4		
0.375"	9.5	44.1		
#4	4.8	36.7	Fine Gravel	16.75
#10	2.00	32.8	Coarse Sand	3.93
#20	0.85	27.4		
#40	0.43	22.5	Medium Sand	10.29
#60	0.25	19.0		
#100	0.15	16.1		
#200	0.075	13.1	Fine Sand	9.33

Hydrometer Analysis

(mm)	%Finer		
0.036	11.3		
0.023	10.6		
0.013	10.4	Fines	
0.0094	10.1	Silt or Clay	13.14
0.0066	9.9		
0.0033	9.0		
0.0014	8.5		



ATTERBERG LIMITS

M_c	LL	PL	PI	SpG
--	43	20	23	--

DESCRIPTION: Moderate yellowish brown (10YR 5/4) clayey gravel with sand

USCS: GC

TECH	MKS
DATE	1/28/2005
REVIEW	MB

SUBMITTAL TRANSMITTAL FORM

For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 2/23/05	X	New Submittal
			Resubmittal

Section I — **REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS** *(This section to be initiated by the Subcontractor)*

To:	From:	Subcontract No: KH020577	Submittal No. 091
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026		Previous Submittal No.
Specification Sec. No. (Cover only one section with each Submittal)		Project Title: Construction of the Present Landfill Accelerated Action	

Item No.	Description of Item Submitted (Type, size, model number, etc.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8)	No. of Copies	Contract Reference Document		Deviation (See Instruction #6)	Contractor Action Code (See Instruction #9)
				Spec. Paragraph No.	Drawing Sheet No.		
a.	b.	c.	d.	e.	f.	g.	h.
1	Bulk Gradation Test Results for Rock	N/A	6		N/A	N/A	

Remarks:
Acknowledged Receipt of QC Test Results. Results passed specifications
Robert N. Davis 03/10/2005

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.
Paul Kreitz 2/23/05
Signature of Subcontractor:

Section II — **Reviewed**

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

OK CARE
Jeff Roberts

BULK GRADATION

DATE	October 5, 2004
PROJECT NAME	Rocky Flats
PROJECT NUMB	043-2246
SAMPLE ID:	RL-1 Depth (ft) --
MATERIAL	Rock Layer

Total Weight of Sample
2506260

Ratio (3"-:total 3"-)	21.01

	Wt Retained	Cumulative Wt. Reatined	Percent Retained	Percent Passing	Spec for % Passing
10.0"	0.00	0.0	0.00	100.00	0
6.0"	721763.59	721763.6	28.80	71.20	50-67
3.0"	553343.01	1275106.6	50.88	49.12	30-55
Total Passing 3"	1231153.04	2506259.6			-
2"	10384.2	1493329.4	59.58	40.42	-
1.5"	6212.20	1623878.1	64.79	35.21	-
1.0"	8316.50	1798648.4	71.77	28.23	~~45-35~~ 10-35 RMD
.75"	4927.90	1902207.7	75.90	24.10	-
.378"	8610.90	2083164.8	83.12	16.88	5-15
#4	5148.10	2191351.5	87.44	12.56	-
pan	14985.00	2506259.6	100.00	0.00	-

Tech	MSP
Reviewed by	PRH

DATE	October 11, 2004
PROJECT NAME	Rocky Flats
PROJECT NUMB	043-2246
SAMPLE ID:	RL-1R Depth (ft) --
MATERIAL	Rock Layer

Total Weight of Sample
2571733.5

Ratio (3"-:total 3"-)	20.06

	Wt Retained	Cumulative Wt. Reatined	Percent Retained	Percent Passing	Spec for % Passing
10.0"	0.00	0.0	0.00	100.00	0
6.0"	850531.10	850531.1	33.07	66.93	50-67
3.0"	632443.80	1482974.9	57.66	42.34	30-55
Total Passing 3"	1088757.80	2571732.7			-
2"	8585.4	1655166.2	64.36	35.64	-
1.5"	4254.80	1740501.7	67.68	32.32	-
1.0"	6790.60	1876696.0	72.97	27.03	~~15-35~~ 10-35 RMD
.75"	5025.70	1977492.9	76.89	23.11	-
.378"	10456.30	2187207.5	85.05	14.95	5-15
#4	8668.10	2361057.4	91.81	8.19	-
Total Passing #4	10504.20	2571732.7	100.00	0.00	-

Tech	MSP
Reviewed by	PRH

BULK GRADATION

DATE	December 28, 2004
PROJECT NAME	Rocky Flats
PROJECT NUMBI	043-2246
SAMPLE ID:	RL-2 Depth (ft) NA
MATERIAL	Rock Layer

Total Weight of Sample
847,600 g

Ratio (3"-:total 3"-)	5.28

	Wt Retained		Cumulative Wt. Reatined		Percent Retained	Percent Passing	Spec for % Passing
10.0"	0.0	g	0.00	g	0.00	100.00	100
6.0"	348,750.0	g	348,750.00	g	41.15	58.85	50-67
3.0"	236,950.0	g	585,700.00	g	69.10	30.90	30-55
Total Passing 3"	261,900.0	g	847,600.00	g			-

Split Sieve

1.0"	19,900.0	g	690,776.81	g	81.50	18.50	~~15-35~~ 10-35 RWO
.75"	6,950.0	g	727,474.50	g	85.83	14.17	-
.378"	6,950.0	g	764,172.18	g	90.16	9.84	5-15
#4	7,300.0	g	802,717.94	g	94.70	5.30	-
Total Passing #4	8,500.0	g	847,600.00	g	100.00	0.00	-

Tech	MGC
Reviewed by	MSP

DATE	January 12, 2005
PROJECT NAME	Rocky Flats
PROJECT NUMB	043-2246
SAMPLE ID:	RL-3 Depth (ft) NA
MATERIAL	Rock Layer

Total Weight of Sample
1,195,191 g

Ratio (3"-:total 3"-)	11.10

	Wt Retained		Cumulative Wt. Reatined		Percent Retained	Percent Passing	Spec for % Passing
10.0"	0.0	g	0.00	g	0.00	100.00	100
6.0"	420,508.2	g	420,508.20	g	35.18	64.82	50-67
3.0"	302,087.1	g	722,595.30	g	60.46	39.54	30-55
Total Passing 3"	472,595.3	g	1,195,190.60	g			-

Split Sieve

1.0"	11,939.9	g	855,110.30	g	71.55	28.45	~~15-35~~ 10-35 PWD
.75"	3,526.5	g	894,249.17	g	74.82	25.18	-
.378"	10,982.0	g	1,016,132.92	g	85.02	14.98	5-15
Total Passing .378"	16,133.5	g	1,195,190.60	g	100.00	0.00	-

Tech	MSP
Reviewed by	PRH

BULK GRADATION

DATE	January 18, 2005
PROJECT NAME	Rocky Flats
PROJECT NUMBI	043-2246
SAMPLE ID:	RL-4 Depth (ft): NA
MATERIAL	Rock Layer (Pit Run:6" Rock:1

Total Weight of Sample
4,107,033 g

Ratio (3"-:total 3"-)	34.15

	Wt Retained		Cumulative Wt. Reatined		Percent Retained	Percent Passing	Spec for % Passing
10.0"	0.0	g	0.00	g	0.00	100.00	100
6.0"	1,656,011.8	g	1,656,011.80	g	40.32	59.68	50-67
3.0"	883,961.0	g	2,539,972.80	g	61.84	38.16	30-55
Total Passing 3"	1,567,059.9	g	4,107,032.70	g			-

Split Sieve

1.0"	16,914.5	g	3,117,536.92	g	75.91	24.09	~~15-35~~ 10-35 RWD
.75"	3,801.7	g	3,247,350.13	g	79.07	20.93	-
.378"	7,553.1	g	3,505,259.00	g	85.35	14.65	5-15
Total Passing .378"	17,623.5	g	4,107,032.70	g	100.00	0.00	-

Tech	MSP
Reviewed by	PRH

SUBMITTAL TRANSMITTAL FORM

[illegible]or Submittal of Shop Drawings, Equipment Data, Material Sample[illegible] Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 2/23/05	X	New Su[illegible]al
			Resubmittal

Section I — **REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS** *(This section to be initiated by the Subcontractor)*

To: Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	From: Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026	Subcontract No: KH020577	Submittal No. 092 Previous Submittal No.

Specification Sec. No. (Cover only one section with each Submittal)

Project Title: Construction of the Present Landfill Accelerated Action

Item No.	Description of Item Submitted (Type, size, model number, etc.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8)	No. of Copies	Contract Reference Document: Spec. Paragraph No.	Contract Reference Document: Drawing Sheet No.	Deviation (See Instruction #6)	Contractor Action Code (See Instruction #9)
a.	b.	c.	d.	e.	f.	g.	h.
1	Material Certification for East Face Liner System	N/A	6	N/A	N/A	N/A	

Remarks:
Acknowledge Receipt of Geosynthetic Certifications (East Face Only) Robert N. Davis 03/18/05

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted. Paul Kreitz 2/23/05

Signature of Subcontractor:

Section II — Reviewed

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

See Submittal No. 149

Needs Bentomat DN Perm/Flux & Int. Shear Strength tests & MQC on 2 new rolls of 60 mil LLDPE-T, CQAE JH Rabe Tt

Sheet 1 of 2

Date: 1/11/2005
Purchase Order: 31198
Order Number: 000197349

Dan Lahr
Colorado Lining Company

Parker, CO 80134
dlahr@coloradolining.com

Dear Mr./Ms. Lahr,

Please find enclosed the MQA/MQC test data package for Geosynthetic Clay Liner shipments to Colorado Lining Company. The shipments left our Lovell, Wyoming plant on 1/10/2005.

If you have any questions regarding this information, please contact me at 800-322-1149 ext. 423.

Sincerely,

Roger B. Wilkerson
Quality Assurance Coordinator
CETCO Lovell Plant

GEOSYNTHETIC CLAY LINER
MANUFACTURING QUALITY ASSURANCE DATA PACKAGE

PROJECT NAME: Rocky Flats
CUSTOMER P.O.: 31198
ORDER NUMBER: 000197349
PREPARED FOR: Colorado Lining Company

CONTENTS:

- Daily production and needle detection certification
- GCL property specifications
- Order packing list
- GCL MQA tracking form
- GCL manufacturing quality control test data
- Bentonite clay certification
- Raw material test results

PREPARED BY: Roger B. Wilkerson
Quality Assurance Coordinator
CETCO
P.O. Box 428
92 Hwy. 37
Lovell, WY 82431

Telephone: 800-322-1149 ext. 423
Fax: (307)548-6927
E-Mail: rwilke@cetco.com

DAILY GCL PRODUCTION & NEEDLE DETECTION CERTIFICATION

PROJECT NAME: Rocky Flats
CUSTOMER P.O.: 31198
PREPARED FOR: Colorado Lining Company

Order Number: 000197349
Ship Date: 1/10/2005

Colloid Environmental Technologies Company hereby affirms and certifies that all of the BENTOMAT DN manufactured for the above order has been continually inspected for the presence of broken needles through the use of a metal detector, and that all detected needle fragments have been removed with an in-line magnet.

ETCO affirms that these products meet the physical and chemical criteria listed on ne attached GCL property specification sheet.

Roger B. Wilkerson
Quality Assurance Coordinator
Colloid Environmental Technologies Co. (CETCO)

CETCO
LINING TECHNOLOGIES
800.527.9948 www.cetco.com

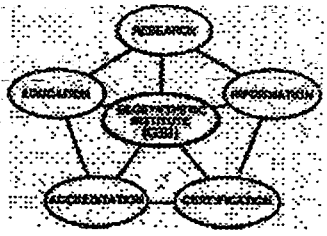
GCL PROPERTY SPECIFICATIONS FOR BENTOMAT DN

Test Method	Test Method Property	Test Frequency	Certified Value
ASTM D 5891	Bentonite Fluid Loss	1 per 50 Tons	18 ml Max
ASTM D 5993	Bentonite Mass/Area	40,000 sq ft (4000 sq m)	0.75 lb/sq ft (3.6 kg/sq m) Min
ASTM D 5890	Bentonite Swell Index	1 per 50 Tons	24 ml/2g Min
ASTM D 4632	GCL Grab Strength	200,000 sq ft (20,000 sq m)	150 lbs (660 N) MARV
ASTM D 6768	GCL Grab Strength	200,000 sq ft (20,000 sq m)	37.5 lbs/in (66 N/cm) MARV
ASTM D 6243	GCL Hydrated Internal Shear Strength	Periodic	6500 psf (311 kPa) typ @ 10,800 psf
ASTM D 5321	GCL Hydrated Internal Shear Strength	Periodic	500 psf (24 kPa) typ @ 200 psf
ASTM D 5887	GCL Hydraulic Conductivity	Weekly	5 x 10^-9 cm/ sec Max
ASTM D 5887	GCL Index Flux	Weekly	1 x 10^-8 m^3/m^2/sec Max
ASTM D 6496	GCL Peel Strength	40,000 sq ft (4000 sq m)	2.5 lbs/in (4.4 N/cm) Min
ASTM D 4632	GCL Peel Strength	40,000 sq ft (4000 sq m)	15 lbs (65 N) Min

Bentonite property tests are performed at a bentonite processing facility before shipment to CETCO's production facility.

All tensile testing is in the machine direction.

CETCO's MQA laboratory is GAI-accredited (www.geosynthetic-institute.org/gai/lab.html).



FABRIC SUPPLIER REQUIREMENTS FOR BENTOMAT DN

Raw Material	test method	mass per area	units
Nonwoven Cover Fabric	ASTM D 5261	6.0	oz/yd2
Bentomat DN Base Nonwoven Fabric	ASTM D 5261	6.0	oz/yd2

Fabric certifications from our raw material suppliers are on file at our production facility.

GCL ORDER PACKING LIST

GCL shipped for certification package number 000197349

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
000197349	LO-BENTOMAT DN	200503LO	00000003	150	14.5	2175	2670
000197349	LO-BENTOMAT DN	200503LO	00000004	150	14.5	2175	2688
000197349	LO-BENTOMAT DN	200503LO	00000005	150	14.5	2175	2671
000197349	LO-BENTOMAT DN	200503LO	00000006	150	14.5	2175	2680
000197349	LO-BENTOMAT DN	200503LO	00000007	150	14.5	2175	2683
000197349	LO-BENTOMAT DN	200503LO	00000008	150	14.5	2175	2689
000197349	LO-BENTOMAT DN	200503LO	00000009	150	14.5	2175	2688
000197349	LO-BENTOMAT DN	200503LO	00000010	150	14.5	2175	2682
000197349	LO-BENTOMAT DN	200503LO	00000011	150	14.5	2175	2675
000197349	LO-BENTOMAT DN	200503LO	00000012	150	14.5	2175	2673
000197349	LO-BENTOMAT DN	200503LO	00000013	150	14.5	2175	2671
000197349	LO-BENTOMAT DN	200503LO	00000014	150	14.5	2175	2668
000197349	LO-BENTOMAT DN	200503LO	00000015	150	14.5	2175	2688
000197349	LO-BENTOMAT DN	200503LO	00000016	150	14.5	2175	2691
000197349	LO-BENTOMAT DN	200503LO	00000017	150	14.5	2175	2685
000197349	LO-BENTOMAT DN	200503LO	00000018	150	14.5	2175	2679
000197349	LO-BENTOMAT DN	200503LO	00000019	150	14.5	2175	2683
000197349	LO-BENTOMAT DN	200503LO	00000020	150	14.5	2175	2680
000197349	LO-BENTOMAT DN	200503LO	00000021	150	14.5	2175	2674
000197349	LO-BENTOMAT DN	200503LO	00000022	150	14.5	2175	2689
000197349	LO-BENTOMAT DN	200503LO	00000023	150	14.5	2175	2671
000197349	LO-BENTOMAT DN	200503LO	00000024	150	14.5	2175	2688
000197349	LO-BENTOMAT DN	200503LO	00000025	150	14.5	2175	2666
000197349	LO-BENTOMAT DN	200503LO	00000027	150	14.5	2175	2671
000197349	LO-BENTOMAT DN	200503LO	00000028	150	14.5	2175	2683
000197349	LO-BENTOMAT DN	200503LO	00000029	150	14.5	2175	2675
000197349	LO-BENTOMAT DN	200503LO	00000030	150	14.5	2175	2681

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
000197349	LO-BENTOMAT DN	200503LO	00000031	150	14.5	2175	2669
000197349	LO-BENTOMAT DN	200503LO	00000032	150	14.5	2175	2671
000197349	LO-BENTOMAT DN	200503LO	00000033	150	14.5	2175	2680
000197349	LO-BENTOMAT DN	200503LO	00000034	150	14.5	2175	2674
000197349	LO-BENTOMAT DN	200503LO	00000035	150	14.5	2175	2668
000197349	LO-BENTOMAT DN	200503LO	00000036	150	14.5	2175	2671
000197349	LO-BENTOMAT DN	200503LO	00000037	150	14.5	2175	2669
000197349	LO-BENTOMAT DN	200503LO	00000038	150	14.5	2175	2674
000197349	LO-BENTOMAT DN	200503LO	00000039	150	14.5	2175	2680
000197349	LO-BENTOMAT DN	200503LO	00000040	150	14.5	2175	2673
000197349	LO-BENTOMAT DN	200503LO	00000041	150	14.5	2175	2670
000197349	LO-BENTOMAT DN	200503LO	00000042	150	14.5	2175	2679
000197349	LO-BENTOMAT DN	200503LO	00000043	150	14.5	2175	2688
000197349	LO-BENTOMAT DN	200503LO	00000044	150	14.5	2175	2680
000197349	LO-BENTOMAT DN	200503LO	00000045	150	14.5	2175	2671
000197349	LO-BENTOMAT DN	200503LO	00000046	150	14.5	2175	2688
000197349	LO-BENTOMAT DN	200503LO	00000047	150	14.5	2175	2690
000197349	LO-BENTOMAT DN	200503LO	00000048	150	14.5	2175	2691
000197349	LO-BENTOMAT DN	200503LO	00000049	150	14.5	2175	2693
000197349	LO-BENTOMAT DN	200503LO	00000050	150	14.5	2175	2678
000197349	LO-BENTOMAT DN	200503LO	00000051	150	14.5	2175	2677
000197349	LO-BENTOMAT DN	200503LO	00000052	150	14.5	2175	2677
0197349	LO-BENTOMAT DN	200503LO	00000053	150	14.5	2175	2681
000197349	LO-BENTOMAT DN	200503LO	00000054	150	14.5	2175	2674
000197349	LO-BENTOMAT DN	200503LO	00000055	150	14.5	2175	2680
000197349	LO-BENTOMAT DN	200503LO	00000056	150	14.5	2175	2669
000197349	LO-BENTOMAT DN	200503LO	00000057	150	14.5	2175	2675
000197349	LO-BENTOMAT DN	200503LO	00000058	150	14.5	2175	2677
000197349	LO-BENTOMAT DN	200503LO	00000059	150	14.5	2175	2688
000197349	LO-BENTOMAT DN	200503LO	00000060	150	14.5	2175	2688
000197349	LO-BENTOMAT DN	200503LO	00000061	150	14.5	2175	2690
000197349	LO-BENTOMAT DN	200503LO	00000062	150	14.5	2175	2678

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00197349	LO-BENTOMAT DN	200503LO	00000063	150	14.5	2175	2674
000197349	LO-BENTOMAT DN	200503LO	00000064	150	14.5	2175	2680
000197349	LO-BENTOMAT DN	200503LO	00000065	150	14.5	2175	2669
000197349	LO-BENTOMAT DN	200503LO	00000066	150	14.5	2175	2675
000197349	LO-BENTOMAT DN	200503LO	00000067	150	14.5	2175	2681
000197349	LO-BENTOMAT DN	200503LO	00000068	150	14.5	2175	2693
000197349	LO-BENTOMAT DN	200503LO	00000069	150	14.5	2175	2677
000197349	LO-BENTOMAT DN	200503LO	00000070	150	14.5	2175	2688
000197349	LO-BENTOMAT DN	200503LO	00000071	150	14.5	2175	2690
000197349	LO-BENTOMAT DN	200503LO	00000072	150	14.5	2175	2674
000197349	LO-BENTOMAT DN	200503LO	00000073	150	14.5	2175	2668
000197349	LO-BENTOMAT DN	200503LO	00000074	150	14.5	2175	2676
000197349	LO-BENTOMAT DN	200503LO	00000075	150	14.5	2175	2680
000197349	LO-BENTOMAT DN	200503LO	00000076	150	14.5	2175	2674
000197349	LO-BENTOMAT DN	200503LO	00000077	150	14.5	2175	2682
000197349	LO-BENTOMAT DN	200503LO	00000078	150	14.5	2175	2688
000197349	LO-BENTOMAT DN	200503LO	00000079	150	14.5	2175	2690
000197349	LO-BENTOMAT DN	200503LO	00000080	150	14.5	2175	2684
000197349	LO-BENTOMAT DN	200503LO	00000081	150	14.5	2175	2680
000197349	LO-BENTOMAT DN	200503LO	00000082	150	14.5	2175	2685
000197349	LO-BENTOMAT DN	200503LO	00000083	150	14.5	2175	2679
000197349	LO-BENTOMAT DN	200503LO	00000084	150	14.5	2175	2680
0197349	LO-BENTOMAT DN	200503LO	00000085	150	14.5	2175	2685
00197349	LO-BENTOMAT DN	200503LO	00000086	150	14.5	2175	2669
000197349	LO-BENTOMAT DN	200503LO	00000087	150	14.5	2175	2677
000197349	LO-BENTOMAT DN	200503LO	00000088	150	14.5	2175	2680
000197349	LO-BENTOMAT DN	200503LO	00000089	150	14.5	2175	2689
000197349	LO-BENTOMAT DN	200503LO	00000090	150	14.5	2175	2686
000197349	LO-BENTOMAT DN	200503LO	00000091	150	14.5	2175	2674
000197349	LO-BENTOMAT DN	200503LO	00000092	150	14.5	2175	2680
000197349	LO-BENTOMAT DN	200503LO	00000093	150	14.5	2175	2684
000197349	LO-BENTOMAT DN	200503LO	00000094	150	14.5	2175	2681
			Totals:	13650	1319.5	197925	243825
						Total Number of Rolls Certified: 91	

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GCL MQA TRACKING FORM

Listing of finished and raw materials used to produce certification package number 000197349

GCL			Geotextiles				Clay
LO-BENTOMAT DN			LO-N/W-WHITE-DN			LO-N/W-BLACK-DN-6 OZ	LO-CG 50-DN
GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200503LO	00000003	00000003	200443VR	00003808	00003808	1.68028	010505C
200503LO	00000004	00000003	200443VR	00003808	00003808	1.68028	010505C
200503LO	00000005	00000003	200443VR	00003808	00003808	1.68028	010505C
200503LO	00000006	00000003	200443VR	00003808	00003808	1.68028	010505C
200503LO	00000007	00000003	200443VR	00003808	00003808	1.68028	010505C
200503LO	00000008	00000003	200443VR	00003808	00003808	1.68028	010505C
200503LO	00000009	00000003	200442VR	00003733	00003730	1.68033	010505C
200503LO	00000010	00000003	200442VR	00003733	00003730	1.68033	010505C
200503LO	00000011	00000003	200442VR	00003733	00003730	1.68033	010505C
200503LO	00000012	00000003	200442VR	00003733	00003730	1.68033	010505C
200503LO	00000013	00000003	200442VR	00003733	00003730	1.68033	010505C
200503LO	00000014	00000003	200442VR	00003733	00003730	1.68033	010505C
200503LO	00000015	00000003	200442VR	00003733	00003730	1.68033	010505C
200503LO	00000016	00000003	200442VR	00003733	00003730	1.68033	010505C
200503LO	00000017	00000003	200442VR	00003733	00003730	1.68033	010505C
200503LO	00000018	00000018	200443VR	00003795	00003794	011005NWA	010505C
200503LO	00000019	00000018	200443VR	00003795	00003794	011005NWA	010505C
200503LO	00000020	00000018	200443VR	00003795	00003794	011005NWA	010505C
200503LO	00000021	00000021	200443VR	00003795	00003794	011005NWA	010505C
200503LO	00000022	00000021	200443VR	00003795	00003794	011005NWA	010505C
200503LO	00000023	00000021	200443VR	00003795	00003794	011005NWA	010505C
200503LO	00000024	00000021	200443VR	00003795	00003794	011005NWA	010505C
200503LO	00000025	00000021	200443VR	00003795	00003794	011005NWA	010505C
200503LO	00000027	00000021	200444VR	00003985	00003980	011005NWA	010505C
200503LO	00000028	00000021	200444VR	00003985	00003980	011005NWA	010505C
200503LO	00000029	00000021	200444VR	00003985	00003980	011105NWA	010505C
200503LO	00000030	00000021	200444VR	00003985	00003980	011105NWA	010505C
200503LO	00000031	00000021	200444VR	00003985	00003980	011105NWA	010505C
200503LO	00000032	00000021	200444VR	00003985	00003980	011105NWA	010505C

GCL Lot#	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200503LO	00000033	00000021	200444VR	00003985	00003980	011105NWA	010505C
00503LO	00000034	00000021	200444VR	00003985	00003980	2003180774	010505C
200503LO	00000035	00000035	200444VR	00003867	00003863	2003180774	010505C
200503LO	00000036	00000035	200444VR	00003867	00003863	2003180774	010505C
200503LO	00000037	00000035	200444VR	00003867	00003863	2003180774	010505C
200503LO	00000038	00000035	200444VR	00003867	00003863	2003180774	010505C
200503LO	00000039	00000039	200444VR	00003867	00003863	2003180774	010505D
200503LO	00000040	00000039	200444VR	00003867	00003863	2003180774	010505D
200503LO	00000041	00000039	200444VR	00003867	00003863	2003180774	010505D
200503LO	00000042	00000039	200444VR	00003867	00003863	2003180778	010505D
200503LO	00000043	00000039	200444VR	00003867	00003863	2003180778	010505D
200503LO	00000044	00000039	200444VR	00003869	00003868	2003180778	010505D
200503LO	00000045	00000039	200444VR	00003869	00003868	2003180778	010505D
200503LO	00000046	00000039	200444VR	00003869	00003868	2003180778	010505D
200503LO	00000047	00000039	200444VR	00003869	00003868	2003180778	010505D
200503LO	00000048	00000039	200444VR	00003869	00003868	2003180778	010505D
200503LO	00000049	00000039	200444VR	00003869	00003868	2003180778	010505D
200503LO	00000050	00000039	200444VR	00003869	00003868	2003180778	010505D
200503LO	00000051	00000039	200444VR	00003869	00003868	2003180704	010505D
200503LO	00000052	00000039	200443VR	00003841	00003836	2003180704	010505D
200503LO	00000053	00000039	200443VR	00003841	00003836	2003180704	010505D
200503LO	00000054	00000039	200443VR	00003841	00003836	1.68023	010505D
00503LO	00000055	00000039	200443VR	00003841	00003836	1.68023	010505D
00503LO	00000056	00000039	200443VR	00003841	00003836	1.68023	010505D
200503LO	00000057	00000057	200443VR	00003841	00003836	1.68023	010505D
200503LO	00000058	00000057	200443VR	00003841	00003836	1.68023	010505D
200503LO	00000059	00000057	200443VR	00003841	00003836	1.68023	010505D
200503LO	00000060	00000057	200444VR	00003989	00003987	1.68023	010505D
200503LO	00000061	00000057	200444VR	00003989	00003987	1.68023	010505D
200503LO	00000062	00000057	200444VR	00003989	00003987	1.68034	010505D
200503LO	00000063	00000057	200444VR	00003989	00003987	1.68034	010505D
200503LO	00000064	00000057	200444VR	00003989	00003987	1.68034	010505D
200503LO	00000065	00000057	200444VR	00003989	00003987	1.68034	010505D
200503LO	00000066	00000057	200444VR	00003989	00003987	1.68034	010505D
200503LO	00000067	00000057	200444VR	00003989	00003987	1.68034	010505D

GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200503LO	00000068	00000057	200444VR	00003989	00003987	1.68034	010505D
00503LO	00000069	00000057	200444VR	00003981	00003980	1.68034	010505D
200503LO	00000070	00000057	200444VR	00003981	00003980	1.68034	010505D
200503LO	00000071	00000057	200444VR	00003981	00003980	1.68011	010505D
200503LO	00000072	00000057	200444VR	00003981	00003980	1.68011	010505D
200503LO	00000073	00000057	200444VR	00003981	00003980	1.68011	010505D
200503LO	00000074	00000057	200444VR	00003981	00003980	1.68011	010505D
200503LO	00000075	00000075	200444VR	00003981	00003980	1.68011	010505D
200503LO	00000076	00000075	200444VR	00003981	00003980	1.68011	010505D
200503LO	00000077	00000075	200443VR	00003831	00003830	1.68011	010505D
200503LO	00000078	00000075	200443VR	00003831	00003830	1.68011	010505D
200503LO	00000079	00000075	200443VR	00003831	00003830	1.68030	010505D
200503LO	00000080	00000075	200443VR	00003831	00003830	1.68030	010505D
200503LO	00000081	00000075	200443VR	00003831	00003830	1.68030	010505D
200503LO	00000082	00000075	200443VR	00003831	00003830	1.68030	010505D
200503LO	00000083	00000075	200443VR	00003831	00003830	1.68030	010505D
200503LO	00000084	00000075	200443VR	00003831	00003830	1.68030	010505D
200503LO	00000085	00000075	200443VR	00003831	00003830	1.68030	010505D
200503LO	00000086	00000075	200444VR	00003901	00003901	1.68030	010505D
200503LO	00000087	00000075	200444VR	00003901	00003901	1.68030	010605A
200503LO	00000088	00000075	200444VR	00003901	00003901	1.68030	010605A
200503LO	00000089	00000075	200444VR	00003901	00003901	1.68030	010605A
00503LO	00000090	00000075	200444VR	00003901	00003901	1.68026	010605A
0503LO	00000091	00000075	200444VR	00003901	00003901	1.68026	010605A
0503LO	00000092	00000075	200444VR	00003901	00003901	1.68026	010605A
200503LO	00000093	00000093	200444VR	00003901	00003901	1.68026	010605A
200503LO	00000094	00000093	200444VR	00003894	00003888	1.68026	010605A

CETCO
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GCL MANUFACTURING QUALITY CONTROL TEST DATA

The following rolls in GCL certification package number 000197349 have been tested in our production facility lab.

Product	Lot # Tested	Roll # Tested	Mass Area	Grab Strength	Peel Strength
		Standard Test Method:	ASTM D 5993	ASTM D 4632	ASTM D 4632
		Standard Specification:	0.75 lb/sq ft MARV	150lbs MARV	15lbs MARV
LO-BENTOMAT DN	200503LO	00000003	0.97	349.6	40.1
LO-BENTOMAT DN	200503LO	00000021	0.85	349.6	25.4
LO-BENTOMAT DN	200503LO	00000039	0.92	349.6	41.1
LO-BENTOMAT DN	200503LO	00000057	0.86	349.6	50.2
LO-BENTOMAT DN	200503LO	00000075	0.81	349.6	60.5
O-BENTOMAT DN	200503LO	00000093	0.94	373.5	43.6

ASTM test methods and property specifications per CETCO standard unless non-standard specifications were requested.
Any non-standard property specifications requested for this order are noted on the attached GCL property specifications sheet.

AMERICAN COLLOID COMPANY

BENTONITE CLAY CERTIFICATION

The bentonite clay used to produce certification package 000197349 has been tested by American Colloid Co. with the following results.

Clay Type	Clay Lot #	Swell	Fluid Loss	Moisture	% Passing 200m	% Retained 10m
Test Method:		ASTM D 5890	ASTM D 5891	ASTM D 2216	ASTM C 136	ASTM C 136
Specification:		24ml/2g Min	18ml Max	12% Max	1% Max	0%
LO-CG 50-DN	010505C	27	15.6	11.2	0.6	0

Tests approved by
Moses Briseno
American Colloid Company
Quality Assurance Coordinator

GEOTEXTILE TEST RESULTS FOR MATERIAL SUPPLIED BY OUR VILLA RICA, GA FACILITY

The GCL in certification package number 000197349 was manufactured using these geotextiles:

Material	Lot #	Roll #	Mass Area	Grab Strenth
VR-NON-WOVEN	200442VR	00003730	7.0	90.3
VR-NON-WOVEN	200443VR	00003794	6.9	46.0
VR-NON-WOVEN	200443VR	00003808	6.6	91.6
VR-NON-WOVEN	200443VR	00003830	7.0	55.2
VR-NON-WOVEN	200443VR	00003836	6.5	54.6
VR-NON-WOVEN	200444VR	00003863	6.7	58.2
VR-NON-WOVEN	200444VR	00003868	6.8	51.5
VR-NON-WOVEN	200444VR	00003888	6.5	54.9
VR-NON-WOVEN	200444VR	00003901	6.8	64.5
VR-NON-WOVEN	200444VR	00003980	6.6	34.9
VR-NON-WOVEN	200444VR	00003987	6.7	64.9

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GEOTEXTILE TEST RESULTS FROM MATERIAL SUPPLIERS

The GCL in certification package number 000197349was manufactured with geotextiles which were tested with the following results.

BASE			
Material Supplier	Roll Number	Mass Area oz/yd2	Grab Strenth lbs
PT	011005NWA	6.2	147.3
PT	011105NWA	7.7	184.3
SK GT165	1.68011	6.3	157.0
SK GT165	1.68023	6.5	176.0
SK GT165	1.68026	6.9	160.0
SK GT165	1.68028	6.6	170.0
SK GT165	1.68030	6.2	146.0
SK GT165	1.68033	6.2	146.0
SK GT165	1.68034	6.2	146.0
SI HH65L	2003180700	7.1	213.0
SI HH65L	2003180700	7.1	213.0
SI HH65L	2003180773	6.7	193.0
SI HH65L	2003180776	6.4	175.0

ROCKY FLATS
60 LLDPET

GSE Roll Allocation

Order 38576
Customer Colorado Lining Company
Site Rocky Flats Present Closure

Roll#	*Resin Lot*	*Product Code*	*Description*	*Mfg. Date*	*Length*
104124720	CRM811520	LUT060A000	LUT060A000	1/8/2005	520
104124721	CRM811520	LUT060A000	LUT060A000	1/8/2005	520
104124722	CRM811520	LUT060A000	LUT060A000	1/8/2005	520
104124723	CRM811520	LUT060A000	LUT060A000	1/8/2005	520
104124724	CRM811520	LUT060A000	LUT060A000	1/9/2005	520
104124725	CRM811520	LUT060A000	LUT060A000	1/9/2005	520
104124726	CRM811520	LUT060A000	LUT060A000	1/9/2005	520
104124727	CRM811520	LUT060A000	LUT060A000	1/9/2005	520
104124728	CRM811520	LUT060A000	LUT060A000	1/9/2005	520
104124729	CRM811520	LUT060A000	LUT060A000	1/9/2005	520
104124730	CRM811520	LUT060A000	LUT060A000	1/9/2005	520
104124731	CRM811520	LUT060A000	LUT060A000	1/9/2005	520
104124732	CRM811520	LUT060A000	LUT060A000	1/9/2005	520
104124733	CRM811520	LUT060A000	LUT060A000	1/9/2005	520

14 ROLLS

Attn Dan Lahn 16 pages

Chevron Phillips Chemical Company LP

CoA Date: 12/07/2004

Certificate of Analysis

Shipped To: GSE LINING TECHNOLOGY INC HC
19103 GUNDLE ROAD
WESTFIELD TX 77090
USA

Recipient: DON BOHAC
Fax:

CPC Delivery #: 86778982
PO #: 30131
Weight: 189100 LB
Ship Date: 12/07/2004
Package: BULK
Mode: Hopper Car
Car #: CHVX898251
Seal No: 426196

Product: PE 7104 BULK

Lot Number: CRM811520

Property	Test Method	Value	Unit
Melt Index	ST-103	0.34	g/10ml
Density	ST-292	0.919	g/cm3
Production Date		11/28/04	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP. **However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.**

Kay F. Donaldson
Quality Control Supervisor

For CoA questions contact Peter Scheirman at 713-289-4799

GSE Lining Technology, Inc.

Roll Test Data Report

Roll No. 104124720

ROLL IDENTIFICATION

Roll Number	104124720	
Product Name	LUT060A000	
Production Date	1/8/2005	
Length ≈(+/- 1%)	520 158	feet meters
Width (Nominal)	22.5 6.9	feet meters
Sheet Area	11,700 1,086	sq. feet sq. meters
Weight	3,710 1,683	pounds kilograms

RESIN INFORMATION

Lot Number	CRM811520
Type	7104
Supplier	Chevron Phillips

GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.919
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.34

Physical Property	Test Method	Test Frequency	Customer Minimum English	Customer Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	60	(1.5)	60	(1.5)
Minimum		every roll	54	(1.4)	55	(1.4)
Tensile Properties:	ASTM D638,Type IV / D6693					
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	204	(357)
- MD		every 4th	90	(158)	224	(391)
Break Elongation, % - TD	gauge length = 2.0"	every 4th	250		627	
- MD	(51 mm)	every 4th	250		651	
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	33	(147)	39	(173)
- MD		every 4th	33	(147)	39	(172)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	66	(294)	104	(463)
Carbon Black Content, %	ASTM D 1603*					
		every 4th	2.0		2.4	
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th	9		10	
Density	ASTM D 1505					
		every 4th	0.920		0.926	
Asperity Height	GRI GM 12					
Average (mils)		every 2nd	13		29	
Side B		every 2nd	13		22	

Order No.	38576
Customer Name	Colorado Lining Company
Project Name	Rocky Flats Present Closure
Location	Golden, CO

*Modified

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APPROVED
L.H.
1/8/2005
QA

GSE Lining Technology, Inc.

Roll Test Data Report

Roll No. 104124721

ROLL IDENTIFICATION

Roll Number	104124721
Product Name	LUT060A000
Production Date	1/8/2005

Length ≈(+/- 1%)	520 158	feet meters
Width (Nominal)	22.5 6.9	feet meters
Sheet Area	11,700 1,086	sq. feet sq. meters
Weight	3,850 1,746	pounds kilograms

RESIN INFORMATION

Lot Number	CRM811520
Type	7104
Supplier	Chevron Phillips

GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.919
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.34

Physical Property	Test Method	Test Frequency	Customer Minimum English	Customer Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	60	(1.5)	63	(1.6)
Minimum		every roll	54	(1.4)	57	(1.4)
Tensile Properties:	ASTM D638,Type IV / D6693					
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	222	(389)
- MD		every 4th	90	(158)	270	(472)
Break Elongation, % - TD	gauge length = 2.0"	every 4th	250		650	
- MD	(51 mm)	every 4th	250		745	
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	33	(147)	44	(195)
- MD		every 4th	33	(147)	45	(200)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	66	(294)	114	(509)
Carbon Black Content, %	ASTM D 1603*					
		every 4th	2.0		2.4	
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th	9		10	
Density	ASTM D 1505					
		every 4th	0.920		0.927	
Asperity Height	GRI GM 12					
Average (mils)		every 2nd	13		28	
Side B		every 2nd	13		22	

Order No.	38576
Customer Name	Colorado Lining Company
Project Name	Rocky Flats Present Closure
Location	Golden, CO

*Modified

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GSE Lining Technology, Inc.

Roll Test Data Report

Roll No. 104124722

ROLL IDENTIFICATION

Roll Number	104124722	
Product Name	LUT060A000	
Production Date	1/8/2005	
Length ≈(+/- 1%)	520 158	feet meters
Width (Nominal)	22.5 6.9	feet meters
Sheet Area	11,700 1,086	sq. feet sq. meters
Weight	4,012 1,820	pounds kilograms

RESIN INFORMATION

Lot Number	CRM811520
Type	7104
Supplier	Chevron Phillips

GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.919
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.34

Physical Property	Test Method	Test Frequency	Customer Minimum English	Customer Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	60	(1.5)	63	(1.6)
Minimum		every roll	54	(1.4)	56	(1.4)
Tensile Properties:	ASTM D638,Type IV / D6693					
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	222	(389)
- MD		every 4th	90	(158)	270	(472)
Break Elongation, % - TD	gauge length = 2.0"	every 4th	250		650	
- MD	(51 mm)	every 4th	250		745	
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	33	(147)	44	(195)
- MD		every 4th	33	(147)	45	(200)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	66	(294)	114	(509)
Carbon Black Content, %	ASTM D 1603*					
		every 4th	2.0		2.4	
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th	9		10	
Density	ASTM D 1505					
		every 4th	0.920		0.927	
Asperity Height	GRI GM 12					
Average (mils)		every 2nd	13		28	
Side B		every 2nd	13		22	

Order No.	38576
Customer Name	Colorado Lining Company
Project Name	Rocky Flats Present Closure
Location	Golden, CO

*Modified

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GSE Lining Technology, Inc.

Roll Test Data Report

Roll No. 104124723

ROLL IDENTIFICATION

Roll Number	104124723	
Product Name	LUT060A000	
Production Date	1/8/2005	
Length ≈(+/- 1%)	520 158	feet meters
Width (Nominal)	22.5 6.9	feet meters
Sheet Area	11,700 1,086	sq. feet sq. meters
Weight	4,030 1,828	pounds kilograms

RESIN INFORMATION

Lot Number	CRM811520
Type	7104
Supplier	Chevron Phillips

GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.919
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.34

Physical Property	Test Method	Test Frequency	Customer Minimum English	Customer Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	60	(1.5)	63	(1.6)
Minimum		every roll	54	(1.4)	56	(1.4)
Tensile Properties:	ASTM D638,Type IV / D6693					
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	222	(389)
- MD		every 4th	90	(158)	270	(472)
Break Elongation, % - TD	gauge length = 2.0"	every 4th	250		650	
- MD	(51 mm)	every 4th	250		745	
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	33	(147)	44	(195)
- MD		every 4th	33	(147)	45	(200)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	66	(294)	114	(509)
Carbon Black Content, %	ASTM D 1603*					
		every 4th	2.0		2.4	
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th	9		10	
Density	ASTM D 1505					
		every 4th	0.920		0.927	
Asperity Height	GRI GM 12					
Average (mils)		every 2nd	13		25	
Side B		every 2nd	13		19	

Order No.	38576
Customer Name	Colorado Lining Company
Project Name	Rocky Flats Present Closure
Location	Golden, CO

*Modified

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1/9/2005
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GSE Lining Technology, Inc.

Roll Test Data Report

Roll No. 104124724

ROLL IDENTIFICATION

Roll Number	104124724	
Product Name	LUT060A000	
Production Date	1/9/2005	
Length ≈(+/- 1%)	520 158	feet meters
Width (Nominal)	22.5 6.9	feet meters
Sheet Area	11,700 1,086	sq. feet sq. meters
Weight	4,020 1,823	pounds kilograms

RESIN INFORMATION

Lot Number	CRM811520
Type	7104
Supplier	Chevron Phillips

GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.919
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.34

Physical Property	Test Method	Test Frequency	Customer Minimum English	Customer Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	60	(1.5)	63	(1.6)
Minimum		every roll	54	(1.4)	58	(1.5)
Tensile Properties:	ASTM D638,Type IV / D6693					
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	222	(389)
- MD		every 4th	90	(158)	270	(472)
Break Elongation, % - TD	gauge length = 2.0"	every 4th	250		650	
- MD	(51 mm)	every 4th	250		745	
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	33	(147)	44	(195)
- MD		every 4th	33	(147)	45	(200)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	66	(294)	114	(509)
Carbon Black Content, %	ASTM D 1603*					
		every 4th	2.0		2.4	
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th	9		10	
Density	ASTM D 1505					
		every 4th	0.920		0.927	
Asperity Height	GRI GM 12					
Average (mils)		every 2nd	13		25	
Side B		every 2nd	13		19	

Order No. 38576
Customer Name Colorado Lining Company
Project Name Rocky Flats Present Closure
Location Golden, CO
*Modified

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1/9/2005
QA

Roll Test Data Report

GSE Lining Technology, Inc.

Roll No. 104124725

ROLL IDENTIFICATION

Roll Number	104124725	
Product Name	LUT060A000	
Production Date	1/9/2005	
Length ≈(+/- 1%)	520 158	feet meters
Width (Nominal)	22.5 6.9	feet meters
Sheet Area	11,700 1,086	sq. feet sq. meters
Weight	4,022 1,824	pounds kilograms

RESIN INFORMATION

Lot Number	CRM811520
Type	7104
Supplier	Chevron Phillips

GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.919
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.34

Physical Property	Test Method	Test Frequency	Customer Minimum English	Customer Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	60	(1.5)	63	(1.6)
Minimum		every roll	54	(1.4)	60	(1.5)
Tensile Properties:	ASTM D638,Type IV / D6693					
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	217	(380)
- MD		every 4th	90	(158)	247	(433)
Break Elongation, % - TD	gauge length = 2.0"	every 4th	250		640	
- MD	(51 mm)	every 4th	250		685	
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	33	(147)	43	(191)
- MD		every 4th	33	(147)	43	(191)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	66	(294)	112	(498)
Carbon Black Content, %	ASTM D 1603*					
		every 4th	2.0		2.6	
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th	9		10	
Density	ASTM D 1505					
		every 4th	0.920		0.928	
Asperity Height	GRI GM 12					
Average (mils)		every 2nd	13		20	
Side B		every 2nd	13		17	

Order No.	38576
Customer Name	Colorado Lining Company
Project Name	Rocky Flats Present Closure
Location	Golden, CO

*Modified

GSE-8.2.4-007 Rev - - 02/03

APPROVED
7.20.
1/9/2005
QA

Roll Test Data Report

GSE Lining Technology, Inc.

Roll No. 104124726

ROLL IDENTIFICATION

Roll Number	104124726	
Product Name	LUT060A000	
Production Date	1/9/2005	
Length ≈(+/- 1%)	520 158	feet meters
Width (Nominal)	22.5 6.9	feet meters
Sheet Area	11,700 1,086	sq. feet sq. meters
Weight	4,000 1,814	pounds kilograms

RESIN INFORMATION

Lot Number	CRM811520
Type	7104
Supplier	Chevron Phillips

GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.919
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.34

Physical Property	Test Method	Test Frequency	Customer Minimum English	Customer Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	60	(1.5)	62	(1.6)
Minimum		every roll	54	(1.4)	59	(1.5)
Tensile Properties:	ASTM D638,Type IV / D6693					
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	217	(380)
- MD		every 4th	90	(158)	247	(433)
Break Elongation, % - TD	gauge length = 2.0"	every 4th	250		640	
- MD	(51 mm)	every 4th	250		685	
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	33	(147)	43	(191)
- MD		every 4th	33	(147)	43	(191)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	66	(294)	112	(498)
Carbon Black Content, %	ASTM D 1603*					
		every 4th	2.0		2.6	
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th	9		10	
Density	ASTM D 1505					
		every 4th	0.920		0.928	
Asperity Height	GRI GM 12					
Average (mils)		every 2nd	13		20	
Side B		every 2nd	13		17	

Order No.	38576
Customer Name	Colorado Lining Company
Project Name	Rocky Flats Present Closure
Location	Golden, CO

*Modified

GSE-8.2.4-007 Rev - - 02/03

APPROVED
7.w.
1/9/2005
QA

Roll Test Data Report

GSE Lining Technology, Inc.

Roll No. 104124727

ROLL IDENTIFICATION

Roll Number	104124727	
Product Name	LUT060A000	
Production Date	1/9/2005	
Length ≈(+/- 1%)	520	feet
	158	meters
Width (Nominal)	22.5	feet
	6.9	meters
Sheet Area	11,700	sq. feet
	1,086	sq. meters
Weight	3,972	pounds
	1,802	kilograms

RESIN INFORMATION

Lot Number	CRM811520
Type	7104
Supplier	Chevron Phillips

GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.919
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.34

Physical Property	Test Method	Test Frequency	Customer Minimum English	Customer Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	60	(1.5)	62	(1.6)
Minimum		every roll	54	(1.4)	59	(1.5)
Tensile Properties:	ASTM D638,Type IV / D6693					
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	217	(380)
- MD		every 4th	90	(158)	247	(433)
Break Elongation, % - TD	gauge length = 2.0"	every 4th	250		640	
- MD	(51 mm)	every 4th	250		685	
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	33	(147)	43	(191)
- MD		every 4th	33	(147)	43	(191)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	66	(294)	112	(498)
Carbon Black Content, %	ASTM D 1603*					
		every 4th	2.0		2.6	
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th	9		10	
Density	ASTM D 1505					
		every 4th	0.920		0.928	
Asperity Height	GRI GM 12					
Average (mils)		every 2nd	13		23	
Side B		every 2nd	13		18	

Order No. 38576
Customer Name Colorado Lining Company
Project Name Rocky Flats Present Closure
Location Golden, CO
*Modified
GSE-8.2.4-007 Rev - - 02/03

APPROVED
T.W.
1/9/2005
QA

Roll Test Data Report

GSE Lining Technology, Inc.

Roll No. 104124728

ROLL IDENTIFICATION

Roll Number	104124728	
Product Name	LUT060A000	
Production Date	1/9/2005	
Length ≈(+/- 1%)	520 158	feet meters
Width (Nominal)	22.5 6.9	feet meters
Sheet Area	11,700 1,086	sq. feet sq. meters
Weight	3,980 1,805	pounds kilograms

RESIN INFORMATION

Lot Number	CRM811520
Type	7104
Supplier	Chevron Phillips

GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.919
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.34

Physical Property	Test Method	Test Frequency	Customer Minimum English	Customer Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	60	(1.5)	63	(1.6)
Minimum		every roll	54	(1.4)	58	(1.5)
Tensile Properties:	ASTM D638,Type IV / D6693					
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	217	(380)
- MD		every 4th	90	(158)	247	(433)
Break Elongation, % - TD	gauge length = 2.0"	every 4th	250		640	
- MD	(51 mm)	every 4th	250		685	
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	33	(147)	43	(191)
- MD		every 4th	33	(147)	43	(191)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	66	(294)	112	(498)
Carbon Black Content, %	ASTM D 1603*					
		every 4th	2.0		2.6	
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th	9		10	
Density	ASTM D 1505					
		every 4th	0.920		0.928	
Asperity Height	GRI GM 12					
Average (mils)		every 2nd	13		23	
Side B		every 2nd	13		18	

Order No. 38576
Customer Name Colorado Lining Company
Project Name Rocky Flats Present Closure
Location Golden, CO
*Modified

GSE-8.2.4-007 Rev - - 02/03

APPROVED
1/9/2005
QA

Roll Test Data Report

GSE Lining Technology, Inc.

Roll No. 104124729

ROLL IDENTIFICATION

Roll Number	104124729	
Product Name	LUT060A000	
Production Date	1/9/2005	
Length ≈(+/- 1%)	520 158	feet meters
Width (Nominal)	22.5 6.9	feet meters
Sheet Area	11,700 1,086	sq. feet sq. meters
Weight	3,995 1,812	pounds kilograms

RESIN INFORMATION

Lot Number	CRM811520
Type	7104
Supplier	Chevron Phillips

GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.919
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.34

Physical Property	Test Method	Test Frequency	Customer Minimum English	Customer Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	60	(1.5)	63	(1.6)
Minimum		every roll	54	(1.4)	59	(1.5)
Tensile Properties:	ASTM D638,Type IV / D6693					
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	204	(357)
- MD		every 4th	90	(158)	228	(400)
Break Elongation, % - TD	gauge length = 2.0"	every 4th	250		611	
- MD	(51 mm)	every 4th	250		654	
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	33	(147)	41	(180)
- MD		every 4th	33	(147)	44	(198)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	66	(294)	118	(525)
Carbon Black Content, %	ASTM D 1603*					
		every 4th	2.0		2.5	
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th	9		10	
Density	ASTM D 1505					
		every 4th	0.920		0.927	
Asperity Height	GRI GM 12					
Average (mils)		every 2nd	13		31	
Side B		every 2nd	13		22	

Order No. 38576
Customer Name Colorado Lining Company
Project Name Rocky Flats Present Closure
Location Golden, CO

*Modified

GSE-8.2.4-007 Rev - - 02/03

APPROVED
D.G.
1/9/2005
QA

GSE Lining Technology, Inc.

Roll Test Data Report

Roll No. 104124730

ROLL IDENTIFICATION

Roll Number	104124730	
Product Name	LUT060A000	
Production Date	1/9/2005	
Length ≈(+/- 1%)	520 158	feet meters
Width (Nominal)	22.5 6.9	feet meters
Sheet Area	11,700 1,086	sq. feet sq. meters
Weight	3,966 1,799	pounds kilograms

RESIN INFORMATION

Lot Number	CRM811520
Type	7104
Supplier	Chevron Phillips

GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.919
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.34

Physical Property	Test Method	Test Frequency	Customer Minimum English	Customer Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	60	(1.5)	62	(1.6)
Minimum		every roll	54	(1.4)	58	(1.5)
Tensile Properties:	ASTM D638,Type IV / D6693					
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	204	(357)
- MD		every 4th	90	(158)	228	(400)
Break Elongation, % - TD	gauge length = 2.0"	every 4th	250		611	
- MD	(51mm)	every 4th	250		654	
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	33	(147)	41	(180)
- MD		every 4th	33	(147)	44	(198)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	66	(294)	118	(525)
Carbon Black Content, %	ASTM D 1603*					
		every 4th	2.0		2.5	
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th	9		10	
Density	ASTM D 1505					
		every 4th	0.920		0.927	
Asperity Height	GRI GM 12					
Average (mils)		every 2nd	13		31	
Side B		every 2nd	13		22	

Order No.	38576
Customer Name	Colorado Lining Company
Project Name	Rocky Flats Present Closure
Location	Golden, CO

*Modified

GSE-8.2.4-007 Rev - - 02/03

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Roll Test Data Report

GSE Lining Technology, Inc.

Roll No. 10412473]

ROLL IDENTIFICATION

Roll Number	104124731	
Product Name	LUT060A000	
Production Date	1/9/2005	
Length ≈(+/- 1%)	520 158	feet meters
Width (Nominal)	22.5 6.9	feet meters
Sheet Area	11,700 1,086	sq. feet sq. meters
Weight	3,966 1,799	pounds kilograms

RESIN INFORMATION

Lot Number	CRM811520
Type	7104
Supplier	Chevron Phillips

GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.919
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.34

Physical Property	Test Method	Test Frequency	Customer Minimum English	Customer Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5894					
Average		every roll	60	(1.5)	63	(1.6)
Minimum		every roll	54	(1.4)	58	(1.5)
Tensile Properties:	ASTM D638,Type IV / D6693					
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	204	(357)
- MD		every 4th	90	(158)	228	(400)
Break Elongation, % - TD	gauge length = 2.0"	every 4th	250		611	
- MD	(51 mm)	every 4th	250		654	
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	33	(147)	41	(180)
- MD		every 4th	33	(147)	44	(198)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	66	(294)	118	(525)
Carbon Black Content, %	ASTM D 1603*					
		every 4th	2.0		2.5	
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th	9		10	
Density	ASTM D 1505					
		every 4th	0.920		0.927	
Asperity Height	GRI GM 12					
Average (mils)		every 2nd	13		29	
Side B		every 2nd	13		19	

Order No.	38576
Customer Name	Colorado Lining Company
Project Name	Rocky Flats Present Closure
Location	Golden, CO

*Modified

GSE-8.2.4-007 Rev - - 02/03

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Roll Test Data Report

GSE Lining Technology, Inc.

Roll No. 104124732

ROLL IDENTIFICATION

Roll Number	104124732	
Product Name	LUT060A000	
Production Date	1/9/2005	
Length ≈(+/- 1%)	520 158	feet meters
Width (Nominal)	22.5 6.9	feet meters
Sheet Area	11,700 1,086	sq. feet sq. meters
Weight	3,978 1,804	pounds kilograms

RESIN INFORMATION

Lot Number	CRM811520
Type	7104
Supplier	Chevron Phillips

GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.919
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.34

Physical Property	Test Method	Test Frequency	Customer Minimum English	Customer Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	60	(1.5)	63	(1.6)
Minimum		every roll	54	(1.4)	58	(1.5)
Tensile Properties:	ASTM D638,Type IV / D6693					
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	204	(357)
- MD		every 4th	90	(158)	228	(400)
Break Elongation, % - TD	gauge length = 2.0"	every 4th	250		611	
- MD	(51 mm)	every 4th	250		654	
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	33	(147)	41	(180)
- MD		every 4th	33	(147)	44	(198)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	66	(294)	118	(525)
Carbon Black Content, %	ASTM D 1603*					
		every 4th	2.0		2.5	
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th	9		10	
Density	ASTM D 1505					
		every 4th	0.920		0.927	
Asperity Height	GRI GM 12					
Average (mils)		every 2nd	13		29	
Side B		every 2nd	13		19	

Order No. 38576
Customer Name Colorado Lining Company
Project Name Rocky Flats Present Closure
Location Golden, CO
*Modified
GSE-8.2.4-007 Rev - - 02/03

APPROVED D.G. 1/9/2005 QA

GSE Lining Technology, Inc.

Roll Test Data Report

Roll No. 104124733

ROLL IDENTIFICATION

Roll Number	104124733	
Product Name	LUT060A000	
Production Date	1/9/2005	
Length ≈(+/- 1%)	520 158	feet meters
Width (Nominal)	22.5 6.9	feet meters
Sheet Area	11,700 1,086	sq. feet sq. meters
Weight	3,980 1,805	pounds kilograms

RESIN INFORMATION

Lot Number	CRM811520
Type	7104
Supplier	Chevron Phillips

GSE RESIN TEST DATA

Property	Test Method	Results
Density, g/cc	ASTM D 1505	0.919
Melt index, g/10 min.	ASTM D 1238 (190/2.16)	0.34

Physical Property	Test Method	Test Frequency	Customer Minimum English	Customer Minimum Metric	Test Results English	Test Results Metric
Thickness, mil (mm)	ASTM D 5994					
Average		every roll	60	(1.5)	63	(1.6)
Minimum		every roll	54	(1.4)	59	(1.5)
Tensile Properties:	ASTM D638,Type IV / D6693					
Break Strength, ppi (N/cm) - TD		every 4th	90	(158)	211	(370)
- MD		every 4th	90	(158)	246	(431)
Break Elongation, % - TD	gauge length = 2.0"	every 4th	250		609	
- MD	(51 mm)	every 4th	250		659	
Tear Resistance, lb. (N)	ASTM D 1004					
- TD		every 4th	33	(147)	44	(196)
- MD		every 4th	33	(147)	45	(199)
Puncture Resistance, lb. (N)	ASTM D 4833					
		every 4th	66	(294)	122	(543)
Carbon Black Content, %	ASTM D 1603*					
		every 4th	2.0		2.5	
Carbon Black Dispersion	ASTM D 5596					
Views in Cat1 - Cat2		every 4th	9		10	
Density	ASTM D 1505					
		every 4th	0.920		0.927	
Asperity Height	GRI GM 12					
Average (mils)		every 2nd	13		25	
Side B		every 2nd	13		19	

Order No.	38576
Customer Name	Colorado Lining Company
Project Name	Rocky Flats Present Closure
Location	Golden, CO

*Modified

GSE-8.2.4-007 Rev -- 02/03

APPROVED D.G. 1/9/2005 QA

CERTIFICATION SHEET

DATE: January 18, 2005

PROJECT NO: 240304

ORDER NO: Pre-Certification

TRIP NO: Pre-Certification

CERTIFIED BY: KB

1-800-527-9948

TEST DESCRIPTION						*TRANSMISSIVITY	PEEL ADHESION	
ASTM METHOD						D4716	F904	
(modifications)							TOP	BOTTOM
UNITS						$x10^{-3}$ sq. m / s	ppi	ppi
SPECIFICATION						0.04	1.0	1.0
COMPOSITE ROLL NUMBER			GEONET ROLL NUMBER		GEOTEXTILE TOP	GEOTEXTILE BOTTOM			
C2-8-2-05	11-200		GNC-200-05	12	4316997	4316848			
C2-8-2-05	13-200		GNC-200-05	14	4316872	4316877			
C2-8-2-05	14-200		GNC-200-05	14	4316872	4316877			
C2-8-2-05	15-200		GNC-200-05	8	4317013	4316853			
C2-8-2-05	16-200		GNC-200-05	8	4317013	4316853			
C2-8-2-05	18-200		GNC-200-05	9	4316849	4316851			
C2-8-2-05	20-200		GNC-200-05	9	4317051	4316851	0.10	3.7	2.2
C2-8-2-05	21-200		GNC-200-05	10	4317051	4317003			
C2-8-2-05	22-200		GNC-200-05	10	4317051	4317003			
C2-8-2-05	23-200		GNC-200-05	10	4316827	4316989			
C2-8-2-05	24-200		GNC-200-05	5	4316827	4316989			
C2-8-2-05	25-200		GNC-200-05	5	4316827	4316989			
C2-8-2-05	26-200		GNC-200-05	5	4316829	4316856			
C2-8-2-05	27-200		GNC-200-05	6	4316829	4316856			
C2-8-2-05	28-200		GNC-200-05	6	4316829	4316856			
C2-8-2-05	29-200		GNC-200-05	6	4316825	4316833			
C2-8-2-05	30-200		GNC-200-05	7	4316825	4316833			

*Poly-Flex transmissivity values are based on a normal pressure of 10,000 psf, a gradient of 1.0, sample between two steel plates, and a seat time of 15 minutes.

CERTIFICATION SHEET

DATE: January 18, 2005

PROJECT NO: 240304

ORDER NO: Pre-Certification

TRIP NO: Pre-Certification

CERTIFIED BY: KB

1-800-527-9948

TEST DESCRIPTION					*TRANSMISSIVITY	PEEL ADHESION	
ASTM METHOD					D4716	F904	
(modifications)						TOP	BOTTOM
UNITS					$x10^{-2}$ sq. m / s	ppi	ppi
SPECIFICATION					0.04	1.0	1.0
COMPOSITE ROLL NUMBER		GEONET ROLL NUMBER		GEOTEXTILE TOP	GEOTEXTILE BOTTOM			
C2-8-2-05	31-200	GNC-200-05	7	4316875	4316837			
C2-8-2-05	32-200	GNC-200-05	7	4316875	4316837			
C2-8-2-05	33-200	GNC-200-05	2	4316875	4316837			
C2-8-2-05	34-200	GNC-200-05	2	4316844	4316874			
C2-8-2-05	35-200	GNC-200-05	2	4316844	4316874			
C2-8-2-05	36-200	GNC-200-05	3	4316844	4316874			
C2-8-2-05	37-200	GNC-200-05	3	4316870	4316842			
C2-8-2-05	38-200	GNC-200-05	3	4316870	4316842			
C2-8-2-05	39-200	GNC-200-05	4	4316869	4316855			
C2-8-2-05	40-200	GNC-200-05	4	4316869	4316855	0.15	5.6	1.3
C2-8-2-05	41-200	GNC-200-05	4	4316869	4316855			
C2-8-2-05	42-200	GNC-200-04	6130	4316845	4316863			
C2-8-2-05	43-200	GNC-200-04	6130	4316845	4316863			
C2-8-2-05	44-200	GNC-200-04	6130	4316845	4316863			
C2-8-2-05	45-200	GNC-200-04	6131	4316857	4316871			
C2-8-2-05	46-200	GNC-200-04	6131	4316857	4316871			
C2-8-2-05	47-200	GNC-200-04	6131	4316836	4316839			

*Poly-Flex transmissivity values are based on a normal pressure of 10,000 psf, a gradient of 1.0, sample between two steel plates, and a seat time of 15 minutes.

CERTIFICATION SHEET

DATE: January 18, 2005

PROJECT NO: 240304

ORDER NO: Pre-Certification

TRIP NO: Pre-Certification

CERTIFIED BY: R B

1-800-527-9948

TEST DESCRIPTION					*TRANSMISSIVITY	PEEL ADHESION	
ASTM METHOD					D4716	F904	
(modifications)						TOP	BOTTOM
UNITS					$x10^{-3}$ sq. m / s	ppi	ppi
SPECIFICATION					0.04	1.0	1.0
COMPOSITE ROLL NUMBER		GEONET ROLL NUMBER		GEOTEXTILE TOP	GEOTEXTILE BOTTOM			
C2-8-2-05	48-200	GNC-200-05	1	4316838	4316839			
C2-8-2-05	49-200	GNC-200-05	1	4316838	4316839			
C2-8-2-05	50-200	GNC-200-05	1	4316838	4316830			
C2-8-2-05	51-200	GNC-200-04	6128	4316838	4316830			
C2-8-2-05	52-200	GNC-200-04	6128	4316843	4316840			
C2-8-2-05	53-200	GNC-200-04	6128	4316843	4316840			
C2-8-2-05	54-200	GNC-200-04	6128	4316843	4316840			
C2-8-2-05	55-200	GNC-200-04	6129	4317018	4317030			
C2-8-2-05	56-200	GNC-200-04	6129	4317018	4317030			
C2-8-2-05	57-200	GNC-200-04	6127	4317018	4317030			
C2-8-2-05	58-200	GNC-200-04	6127	4316828	4317030			
C2-8-2-05	59-200	GNC-200-04	6127	4316828	4317024			
C2-8-2-05	60-200	GNC-200-04	5522	4316828	4317024	0.18	1.5	3.6
C2-8-2-05	61-200	GNC-200-04	5522	4316861	4316885			
C2-8-2-05	62-200	GNC-200-04	5522	4316861	4316885			
C2-8-2-05	63-200	GNC-200-04	5520	4316861	4316885			
C2-8-2-05	64-200	GNC-200-04	5520	4316838	4317020			

*Poly-Flex transmissivity values are based on a normal pressure of 10,000 psf, a gradient of 1.0, sample between two steel plates, and a seat time of 15 minutes.

JAN.19.2005 10:52AM NO.841 P.4/11

CERTIFICATION SHEET

DATE: January 18, 2005

PROJECT NO: 240304

ORDER NO: Pre-Certification

TRIP NO: Pre-Certification

CERTIFIED BY: KD

1-800-527-9948

TEST DESCRIPTION					*TRANSMISSIVITY	PEEL ADHESION	
ASTM METHOD					D4716	F904	
(modifications)						TOP	BOTTOM
UNITS					$x10^{-3}$ sq. m / s	ppi	ppi
SPECIFICATION					0.04	1.0	1.0
COMPOSITE ROLL NUMBER			GEONET ROLL NUMBER		GEOTEXTILE TOP	GEOTEXTILE BOTTOM			
C2-8-2-05	65-200		GNC-200-04	5520	4316838	4317020			
C2-8-2-05	66-200		GNC-200-04	5519	4316860	4316866			
C2-8-2-05	67-200		GNC-200-04	5519	4316860	4316866			
C2-8-2-05	68-200		GNC-200-04	5519	4316860	4316866			
C2-8-2-05	69-200		GNC-200-04	5518	4316831	4317017			
C2-8-2-05	70-200		GNC-200-04	5518	4316831	4317017			
C2-8-2-05	71-200		GNC-200-04	5518	4316834	4316859			
C2-8-2-05	72-200		GNC-200-04	5507	4316834	4316859			
C2-8-2-05	73-200		GNC-200-04	5507	4316834	4316859			
C2-8-2-05	74-200		GNC-200-04	5510	4316862	4317031			

*Poly-Flex transmissivity values are based on a normal pressure of 10,000 psf, a gradient of 1.0, sample between two steel plates, and a seat time of 15 minutes.

CERTIFICATION SHEET

DATE: January 18, 2005

PROJECT NO: 240304

ORDER NO: PreCertification

TRIP NO: PreCertification

CERTIFIED BY: K.B

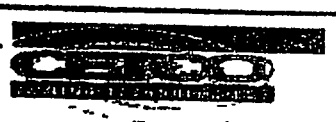
1-800-527-6948

TEST DESCRIPTION		THICKNESS	MASS/AREA	CARBON BLACK	ULTIMATE TENSILE STRENGTH	*TRANSMISSIVITY	DENSITY
ASTM METHOD		D5199	D5261	D1603	D6035	D4716	D1505
(modifications)		avg		min			
UNITS		mils	lbs / sq. ft.	%	ppi	$x10^{-3}$ sq. m / s	gm/cc
SPECIFICATION		200	0.162	2	45	1	0.940
ROLL NUMBER							
GNC-200-05	1-620	200	0.170	2.3	58	1.53	0.950
GNC-200-05	2-620	200	0.170	2.3	58		0.950
GNC-200-05	3-620	200	0.170	2.3	58		0.950
GNC-200-05	4-620	200	0.170	2.3	58		0.950
GNC-200-05	5-620	200	0.170	2.3	58		0.950
GNC-200-05	6-620	200	0.170	2.3	58		0.950
GNC-200-05	7-620	200	0.170	2.3	58		0.950
GNC-200-05	8-620	200	0.170	2.3	58		0.950
GNC-200-05	9-620	200	0.171	2.3	58		0.950
GNC-200-05	10-620	200	0.171	2.4	60	1.40	0.950
GNC-200-05	12-620	200	0.171	2.4	60		0.950
GNC-200-05	14-620	200	0.171	2.4	60		0.950
GNC-200-04	5507-620	200	0.176	2.8	51		0.952
GNC-200-04	5510-620	200	0.176	2.9	51	2.02	0.952
GNC-200-04	5518-620	200	0.176	2.9	51		0.952
GNC-200-04	5519-620	200	0.176	2.9	51		0.952
GNC-200-04	5520-620	200	0.176	2.7	52	2.10	0.950

*Poly-Flex transmissivity values are based on a normal pressure of 10,000 psf, a gradient of 1.0, sample between two steel plates, and a seat time of 15 minutes.

CERTIFICATION SHEET

PROJECT NO: 240304
TRIP NO: PreCertification
DATE: January 18, 2005
ORDER NO: PreCertification
CERTIFIED BY: R.D



1-800-527-9948

TEST DESCRIPTION		THICKNESS	MASS/AREA	CARBON BLACK	ULTIMATE TENSILE STRENGTH	*TRANSMISSIVITY	DENSITY
ASTM METHOD		D5199	D5261	D1603	D5035	D4716	D1505
(modifications)		avg		min			
UNITS		mils	lbs / sq. ft.	%	ppl	$x10^{-5}$ sq. m / s	gm/cc
SPECIFICATION		200	0.162	2	45	1	0.940
ROLL NUMBER							
GNC-200-04	5522-620	200	0.176	2.7	62		0.950
GNC-200-04	6127-620	200	0.170	2.6	54		0.950
GNC-200-04	6128-620	200	0.170	2.6	54		0.950
GNC-200-04	6129-620	200	0.170	2.6	54		0.950
GNC-200-04	6130-620	200	0.170	2.3	58	1.53	0.950
GNC-200-04	6131-620	200	0.170	2.3	58		0.950

*Poly-Flex transmissivity values are based on a normal pressure of 10,000 psf, a gradient of 1.0, sample between two steel plates, and a seat time of 15 minutes.

CERTIFICATION SHEET

DATE: January 18, 2005

PROJECT NO: 240304

ORDER NO: Pre-Certification

TRIP NO: Pre-Certification

CERTIFIED BY: K. B

1-800-527-9948

TEST DESCRIPTION		Product	Unit Weight	Grab Tensile	Mullen Burst	Puncture	AOS	Flow Rate
ASTM METHOD			D5261	D4632	D3786	D4833	D4751	D4491
(modifications)								
UNITS			oz/yd^2	lb	psi	lb	sieve	gal/min/ft^2
SPECIFICATION			8	200	380	120	80	100
Textile Roll Number								
SI08	4316825	GTS-08-0900	8.90	258	551	149	80	110
SI08	4316827	GTS-08-0900	8.90	258	551	149	80	110
SI08	4316828	GTS-08-0900	8.90	258	551	149	80	110
SI08	4316829	GTS-08-0900	8.90	258	551	149	80	110
SI08	4316830	GTS-08-0900	8.90	258	551	149	80	110
SI08	4316831	GTS-08-0900	9.50	274	487	170	80	110
SI08	4316833	GTS-08-0900	9.50	274	487	170	80	110
SI08	4316834	GTS-08-0900	9.50	274	487	170	80	110
SI08	4316836	GTS-08-0900	9.50	274	487	170	80	110
SI08	4316837	GTS-08-0900	9.50	274	487	170	80	110
SI08	4316838	GTS-08-0900	9.50	274	487	170	80	110
SI08	4316839	GTS-08-0900	9.50	274	487	170	80	110
SI08	4316840	GTS-08-0900	8.70	238	469	153	80	110
SI08	4316842	GTS-08-0900	8.70	238	469	153	80	110
SI08	4316843	GTS-08-0900	8.70	238	469	153	80	110
SI08	4316844	GTS-08-0900	8.70	238	469	153	80	110
SI08	4316845	GTS-08-0900	8.70	238	469	153	80	110

CERTIFICATION SHEET

DATE: January 18, 2005

PROJECT NO: 240304

ORDER NO: Pre-Certification

TRIP NO: Pre-Certification

CERTIFIED BY: K.B

1-800-527-9948

TEST DESCRIPTION		Product	Unit Weight	Grab Tensile	Mullen Burst	Puncture	AOS	Flow Rate
ASTM METHOD			D5261	D4632	D3786	D4833	D4751	D4491
(modifications)								
UNITS			oz/yd^2	lb	psi	lb	sieve	gal/min/ft^2
SPECIFICATION			8	200	380	120	80	100
Textile Roll Number								
S108	4316846	GTS-08-0900	8.70	238	469	153	80	110
S108	4316849	GTS-08-0900	8.70	238	469	153	80	110
S108	4316851	GTS-08-0900	8.70	238	469	153	80	110
S108	4316853	GTS-08-0900	8.70	238	469	153	80	110
S108	4316855	GTS-08-0900	10.40	302	547	162	80	110
S108	4316856	GTS-08-0900	10.40	302	547	162	80	110
S108	4316857	GTS-08-0900	10.40	302	547	162	80	110
S108	4316858	GTS-08-0900	10.40	302	547	162	80	110
S108	4316859	GTS-08-0900	10.40	302	547	162	80	110
S108	4316860	GTS-08-0900	10.40	302	547	162	80	110
S108	4316861	GTS-08-0900	10.40	302	547	162	80	110
S108	4316862	GTS-08-0900	10.40	302	547	162	80	110
S108	4316863	GTS-08-0900	10.40	302	547	162	80	110
S108	4316865	GTS-08-0900	10.40	302	547	162	80	110
S108	4316866	GTS-08-0900	10.40	302	547	162	80	110
S108	4316869	GTS-08-0900	10.40	302	547	162	80	110
S108	4316870	GTS-08-0900	9.20	261	473	161	80	110

CERTIFICATION SHEET

DATE: January 18, 2005

PROJECT NO: 240304

ORDER NO: Pre-Certification

TRIP NO: Pre-Certification

CERTIFIED BY: K.B

1-800-527-9948

TEST DESCRIPTION		Product	Unit Weight	Grab Tensile	Mullen Burst	Puncture	AOS	Flow Rate
ASTM METHOD			D5261	D4632	D3786	D4833	D4751	D4491
(modifications)								
UNITS			oz/yd^2	lb	psi	lb	sieve	gal/min/ft^2
SPECIFICATION			8	200	380	120	80	100
Textile Roll Number								
SI08	4316871	GTS-08-0900	9.20	261	473	161	80	110
SI08	4316872	GTS-08-0900	9.20	261	473	161	80	110
SI08	4316874	GTS-08-0900	9.20	261	473	161	80	110
SI08	4316875	GTS-08-0900	9.20	261	473	161	80	110
SI08	4316877	GTS-08-0900	9.50	271	510	157	80	110
SI08	4316989	GTS-08-0900	8.70	223	434	144	80	110
SI08	4316997	GTS-08-0900	9.20	240	441	144	80	110
SI08	4317003	GTS-08-0900	9.20	240	441	144	80	110
SI08	4317013	GTS-08-0900	9.30	248	559	162	80	110
SI08	4317017	GTS-08-0900	9.30	248	559	162	80	110
SI08	4317018	GTS-08-0900	9.30	248	559	162	80	110
SI08	4317020	GTS-08-0900	9.90	269	450	143	80	110
SI08	4317024	GTS-08-0900	9.90	269	450	143	80	110
SI08	4317030	GTS-08-0900	9.00	249	487	146	80	110
SI08	4317031	GTS-08-0900	9.30	243	613	146	80	110
SI08	4317051	GTS-08-0900	9.90	249	569	151	80	110

CETCO

DATE 18-Jan-05

Material Pre-Certification List

Poly-Flex # 240304

Customer: CETCO / Rocky Mountain

	Blend	Roll Number	Weight	Roll Description
1	200 MIL	C2-8-2-05- 0011- 200	840	13.5' X 200' X .08oz DBL
2	200 MIL	C2-8-2-05- 0013- 200	850	13.5' X 200' X .08oz DBL
3	200 MIL	C2-8-2-05- 0014- 200	875	13.5' X 200' X .08oz DBL
4	200 MIL	C2-8-2-05- 0015- 200	900	13.5' X 200' X .08oz DBL
5	200 MIL	C2-8-2-05- 0016- 200	876	13.5' X 200' X .08oz DBL
6	200 MIL	C2-8-2-05- 0018- 200	870	13.5' X 200' X .08oz DBL
7	200 MIL	C2-8-2-05- 0020- 200	905	13.5' X 200' X .08oz DBL
8	200 MIL	C2-8-2-05- 0021- 200	880	13.5' X 200' X .08oz DBL
9	200 MIL	C2-8-2-05- 0022- 200	885	13.5' X 200' X .08oz DBL
10	200 MIL	C2-8-2-05- 0023- 200	885	13.5' X 200' X .08oz DBL
11	200 MIL	C2-8-2-05- 0024- 200	860	13.5' X 200' X .08oz DBL
12	200 MIL	C2-8-2-05- 0025- 200	890	13.5' X 200' X .08oz DBL
13	200 MIL	C2-8-2-05- 0026- 200	910	13.5' X 200' X .08oz DBL
14	200 MIL	C2-8-2-05- 0027- 200	816	13.5' X 200' X .08oz DBL
15	200 MIL	C2-8-2-05- 0028- 200	896	13.5' X 200' X .08oz DBL
16	200 MIL	C2-8-2-05- 0029- 200	920	13.5' X 200' X .08oz DBL
17	200 MIL	C2-8-2-05- 0030- 200	895	13.5' X 200' X .08oz DBL
18	200 MIL	C2-8-2-05- 0031- 200	890	13.5' X 200' X .08oz DBL
19	200 MIL	C2-8-2-05- 0032- 200	875	13.5' X 200' X .08oz DBL
20	200 MIL	C2-8-2-05- 0033- 200	890	13.5' X 200' X .08oz DBL
21	200 MIL	C2-8-2-05- 0034- 200	890	13.5' X 200' X .08oz DBL
22	200 MIL	C2-8-2-05- 0035- 200	910	13.5' X 200' X .08oz DBL
23	200 MIL	C2-8-2-05- 0036- 200	910	13.5' X 200' X .08oz DBL
24	200 MIL	C2-8-2-05- 0037- 200	900	13.5' X 200' X .08oz DBL
25	200 MIL	C2-8-2-05- 0038- 200	890	13.5' X 200' X .08oz DBL
26	200 MIL	C2-8-2-05- 0039- 200	840	13.5' X 200' X .08oz DBL
27	200 MIL	C2-8-2-05- 0040- 200	840	13.5' X 200' X .08oz DBL
28	200 MIL	C2-8-2-05- 0041- 200	910	13.5' X 200' X .08oz DBL
29	200 MIL	C2-8-2-05- 0042- 200	890	13.5' X 200' X .08oz DBL
30	200 MIL	C2-8-2-05- 0043- 200	910	13.5' X 200' X .08oz DBL
31	200 MIL	C2-8-2-05- 0044- 200	920	13.5' X 200' X .08oz DBL
32	200 MIL	C2-8-2-05- 0045- 200	880	13.5' X 200' X .08oz DBL
33	200 MIL	C2-8-2-05- 0046- 200	885	13.5' X 200' X .08oz DBL
34	200 MIL	C2-8-2-05- 0047- 200	900	13.5' X 200' X .08oz DBL
35	200 MIL	C2-8-2-05- 0048- 200	900	13.5' X 200' X .08oz DBL

CETCO

Material Pre-Certification List

36	200 MIL	C2-8-2-05- 0049- 200	885	13.5' X 200' X .08oz DBL
37	200 MIL	C2-8-2-05- 0050- 200	900	13.5' X 200' X .08oz DBL
38	200 MIL	C2-8-2-05- 0051- 200	900	13.5' X 200' X .08oz DBL
39	200 MIL	C2-8-2-05- 0052- 200	881	13.5' X 200' X .08oz DBL
40	200 MIL	C2-8-2-05- 0053- 200	910	13.5' X 200' X .08oz DBL
41	200 MIL	C2-8-2-05- 0054- 200	900	13.5' X 200' X .08oz DBL
42	200 MIL	C2-8-2-05- 0055- 200	910	13.5' X 200' X .08oz DBL
43	200 MIL	C2-8-2-05- 0056- 200	925	13.5' X 200' X .08oz DBL
44	200 MIL	C2-8-2-05- 0057- 200	920	13.5' X 200' X .08oz DBL
45	200 MIL	C2-8-2-05- 0058- 200	915	13.5' X 200' X .08oz DBL
46	200 MIL	C2-8-2-05- 0059- 200	935	13.5' X 200' X .08oz DBL
47	200 MIL	C2-8-2-05- 0060- 200	928	13.5' X 200' X .08oz DBL
48	200 MIL	C2-8-2-05- 0061- 200	940	13.5' X 200' X .08oz DBL
49	200 MIL	C2-8-2-05- 0062- 200	955	13.5' X 200' X .08oz DBL
50	200 MIL	C2-8-2-05- 0063- 200	965	13.5' X 200' X .08oz DBL
51	200 MIL	C2-8-2-05- 0064- 200	920	13.5' X 200' X .08oz DBL
52	200 MIL	C2-8-2-05- 0065- 200	910	13.5' X 200' X .08oz DBL
53	200 MIL	C2-8-2-05- 0066- 200	920	13.5' X 200' X .08oz DBL
54	200 MIL	C2-8-2-05- 0067- 200	930	13.5' X 200' X .08oz DBL
55	200 MIL	C2-8-2-05- 0068- 200	960	13.5' X 200' X .08oz DBL
56	200 MIL	C2-8-2-05- 0069- 200	930	13.5' X 200' X .08oz DBL
57	200 MIL	C2-8-2-05- 0070- 200	945	13.5' X 200' X .08oz DBL
58	200 MIL	C2-8-2-05- 0071- 200	950	13.5' X 200' X .08oz DBL
59	200 MIL	C2-8-2-05- 0072- 200	910	13.5' X 200' X .08oz DBL
60	200 MIL	C2-8-2-05- 0073- 200	920	13.5' X 200' X .08oz DBL
61	200 MIL	C2-8-2-05- 0074- 200	920	13.5' X 200' X .08oz DBL
	shipped pieces		54,966	

I certify that all roll conditions were inspected and approved.

C.E.M.

Truck Loader

SUBMITTAL TRANSMITTAL FORM

For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 2/23/05	X	New Submittal
			Resubmittal

Section I — **REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS** *(This section to be initiated by the Subcontractor)*

To:	From:	Subcontract No: KH020577	Submittal No. 93
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026		Previous Submittal No.

Specification Sec. No. (Cover only one section with each Submittal)

Project Title: Construction of the Present Landfill Accelerated Action

Item No.	Description of Item Submitted (Type, size, model number, etc.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8)	No. of Copies	Contract Reference Document		Deviation (See Instruction #6)	Contractor Action Code (See Instruction #9)
				Spec. Paragraph No.	Drawing Sheet No.		
a.	b.	c.	d.	e.	f.	g.	h.
1	Test Results for Wash Rock used in passive vent system trenches - PLF	N/A	6		N/A	N/A	
	Rocky Flats Plant						

☒ APPROVED ☐ APPROVED AS CORRECTED
☐ NOT APPROVED ☐ REVISE AND RESUBMIT

Remarks: APPROVAL IS FOR CONFORMANCE WITH THE DESIGN CONCEPT OF THE PLANS AND SPECIFICATIONS AND FOR COMPLIANCE WITH THE INFORMATION GIVEN THEREIN. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMATION AND CORRELATION OF ALL DIMENSIONS AT THE CONSTRUCTION SITE; FOR INFORMATION THAT PERTAINS SOLELY TO FABRICATION PROCESSES OR TO TECHNIQUES OF CONSTRUCTION; AND FOR COORDINATION OF THE WORK OF ALL CRAFTS.

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.

Signature of Subcontractor: 2/23/05

Section II BY: Robert Davis DATE: 03/18/05 Reviewed

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

OK CQAE
J.H. Role TA

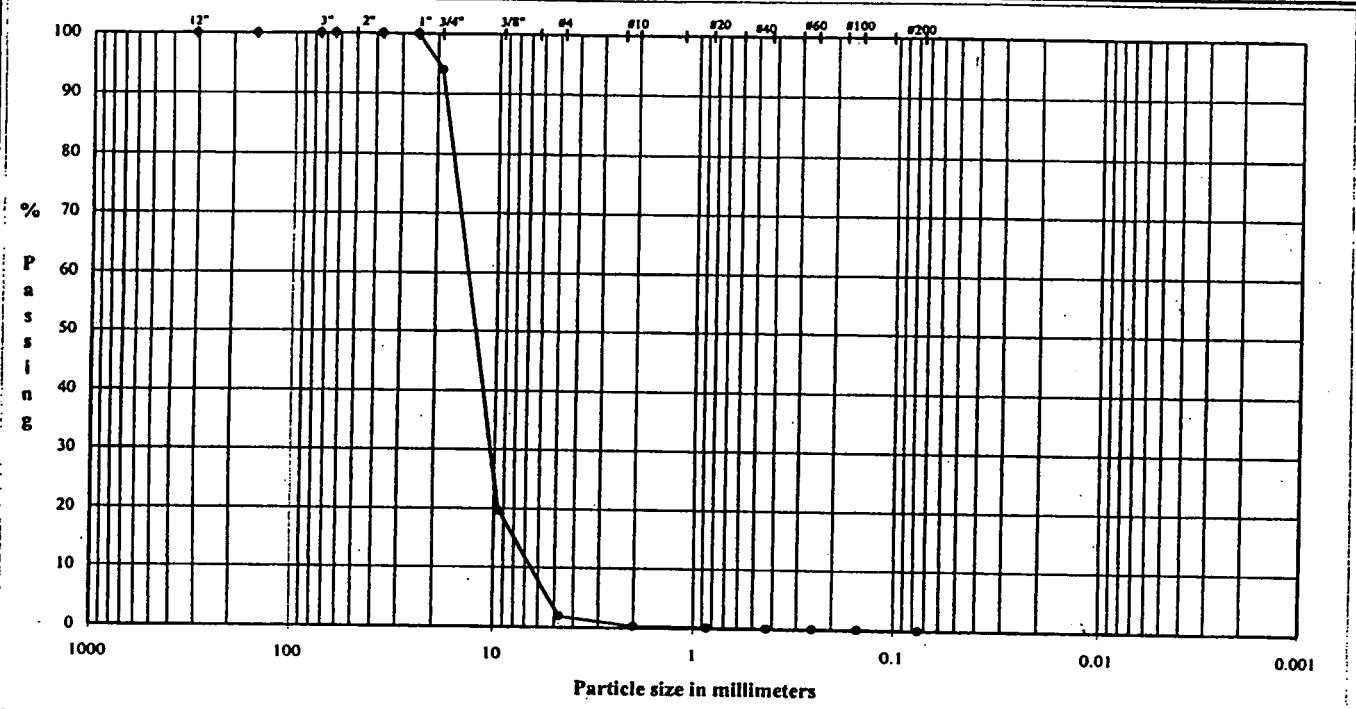
January-05

043-2246-0002

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

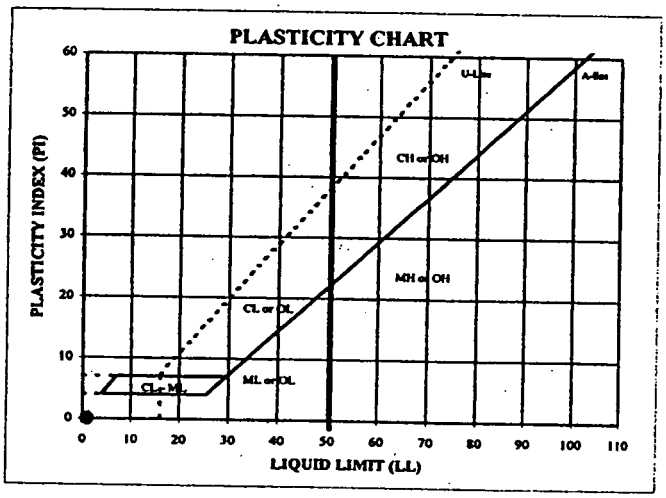
PROJECT NAME: Rocky Flats/Field & Laboratory Testing/CO
SAMPLE ID: GVG-1 Depth (ft): –
TYPE: Bulk



COBBLES	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
	GRAVEL		SAND			FINES

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0		
6.0"	154.2	100.0	Cobbles	0.00
3.0"	75.0	100.0		
2.5"	63.5	100.0		
1.5"	37.5	100.0		
1.0"	25.0	100.0		
0.75"	19.0	94.0	Coarse Gravel	5.99
0.375"	9.5	19.6		
#4	4.8	1.9	Fine Gravel	92.16
#10	2.0	0.3	Coarse Sand	1.59
#20	0.9	0.2		
#40	0.4	0.1	Medium Sand	0.14
#60	0.3	0.1		
#100	0.2	0.1		
#200	0.1	0.1	Fine Sand	0.06
			Fines	0.07



ATTERBERG LIMITS

WL	LL	PL	PI	SG
–	–	–	–	–

DESCRIPTION: Medium gray poorly graded gravel

USCS: GP

TECH	NG
DATE	2/14/05
REVIEW	MB

SUBMITTAL TRANSMITTAL FORM

For Submittal of Shop Drawings, Equipment Data, Material Sam… Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 2/23/05	X	New …nittal
			Resubmittal

Section I REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS *(This section to be initiated by the Subcontractor)*

To:	From:	Subcontract No: KH020577	Submittal No. 94
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026		Previous Submittal No.

Specification Sec. No. (Cover only one section with each Submittal)	Project Title: Construction of the Present Landfill Accelerated Action

Item No. (a.)	Description of Item Submitted (Type, size, model number, etc.) (b.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8) (c.)	No. of Copies (d.)	Contract Reference Document: Spec. Paragraph No. (e.)	Contract Reference Document: Drawing Sheet No. (f.)	Deviation (See Instruction #6) (g.)	Contractor Action Code (See Instruction #9) (h.)
1	Rock Layer Compressive Strength Test Results	N/A	6		N/A	N/A	

Rocky Flats Plant

☒ APPROVED ☐ APPROVED AS CORRECTED
☐ NOT APPROVED ☐ REVISE AND RESUBMIT

APPROVAL IS FOR CONFORMANCE WITH THE DESIGN CONCEPT OF THE PLANS AND SPECIFICATIONS AND FOR COMPLIANCE WITH THE INFORMATION GIVEN THEREIN. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMATION AND CORRELATION OF ALL DIMENSIONS AT THE CONSTRUCTION SITE; FOR INFORMATION THAT PERTAINS SOLELY TO FABRICATION PROCESSES OR TO TECHNIQUES OF CONSTRUCTION; AND FOR COORDINATION OF THE WORK OF ALL CRAFTS.

BY: Robert K. Davis DATE: 02/19/05

03 PWD

Remarks:

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.

Signature of Subcontractor: 2/23/05

Section II Reviewed

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

OF CQAE
J.K. Role TA
3/05

UNCONFINED COMPRESSIVE STRENGTH
ASTM D 2938

LIENT: Golder Associates, Inc. JOB NO.: 2003-96

OCATION: DATE TESTED: 2/7/05 HN

ROJECT: Rocky Flat, #043-2246

Specimen ID Boring	Diameter (in.)	Length (in.)	Mass (gms)	Wet Density (pcf)	Failure Load (lb)	Failure Types •	Compressive Strength (psi)
RL-3	1.995	4.297	571.90	162.2	28,253	F	9,040
RL-4	1.995	4.418	608.80	167.9	36,846	S/F	11,790

otes and Comments: • Failure Types:
S: Shear Failure, M: Matrix Failure, F/V: Fracture, Bedding/Void Failure, C: Combination

ata Entered By: HN Date: 02/07/2005
ata Checked By: CJ Date: 02/07/05
ename: GOUCSR12

ADVANCED TERRA TESTING, Inc.

SUBMITTAL TRANSMITTAL FORM

For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 2/23/05	X	New Submittal
			Resubmittal

Section I — **REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS** *(This section to be initiated by the Subcontractor)*

To:	From:	Subcontract No: KH020577	Submittal No. 95
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026		Previous Submittal No.
Specification Sec. No. (Cover only one section with each Submittal)		Project Title: Construction of the Present Landfill Accelerated Action	

Item No.	Description of Item Submitted (Type, size, model number, etc.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8)	No. of Copies	Contract Reference Document		Deviation (See Instruction #6)	Contractor Action Code (See Instruction #9)
				Spec. Paragraph No.	Drawing Sheet No.		
a.	b.	c.	d.	e.	f.	g.	h.
1	Rocky Flats Alluvial Test Results – Samples AC22-1, AC22-2, and AC22-3	N/A	6		N/A	N/A	

Remarks: Acknowledge Receipt of Test Data

Roberts, Davis 03/18/05

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted. Paul Kreitz 2/23/05

Signature of Subcontractor:

Section II — **Reviewed**

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

CQAE
J.H. Rule TA

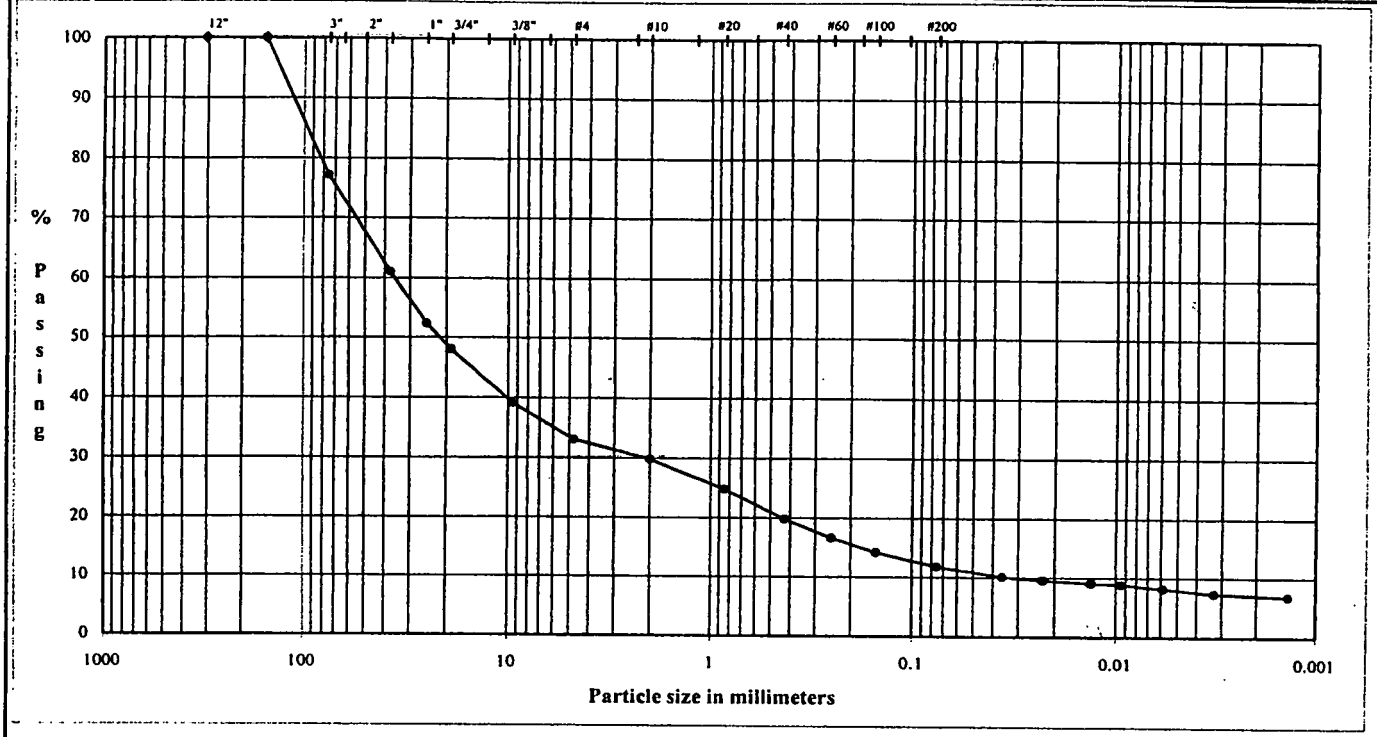
February-05

043-2246-0002

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: **Rocky Flats/Field & Lab Testing/CO**
SAMPLE ID: **AC22-1** Depth: -
TYPE: **Pail**



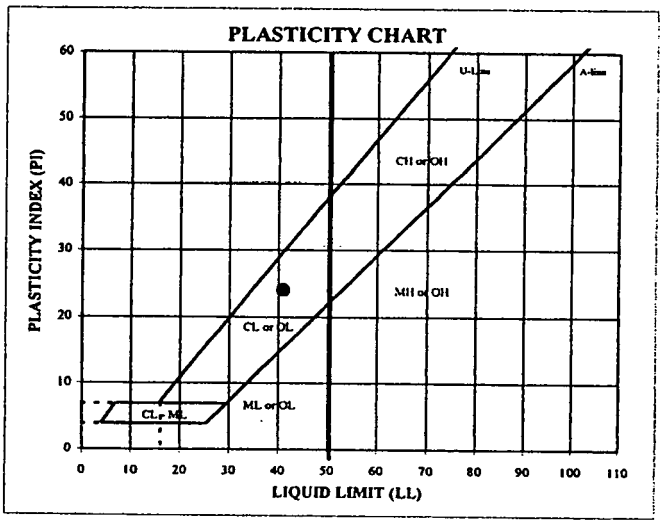
COBBLES	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
	GRAVEL		SAND			FINES

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0		
6.0"	154.2	100.0	Cobbles	22.86
6.0"	154.2	100.0		
6.0"	154.2	100.0		
3.0"	75.0	77.1		
1.5"	37.5	61.0		
1.0"	25.0	52.3	Coarse Gravel	29.17
0.75"	19.0	48.0		
0.375"	9.5	39.1		
#4	4.8	33.1	Fine Gravel	14.91
#10	2.00	29.8	Coarse Sand	3.26
#20	0.85	24.8		
#40	0.43	19.8	Medium Sand	9.99
#60	0.25	16.6		
#100	0.15	14.2		
#200	0.075	11.8	Fine Sand	8.04

Hydrometer Analysis

(mm)	%Finer		
0.036	10.1		
0.023	9.5		
0.013	9.0	Fines	
0.0095	8.9	Silt or Clay	11.78
0.0059	8.2		
0.0033	7.3		
0.0014	6.8		



ATTERBERG LIMITS

M_c	LL	PL	PI	SpG (assumed)
–	41	17	24	2.70

DESCRIPTION: Moderate yellowish brown (10YR 5/4) poorly graded gravel with clay and sand

USCS: GP-GC

TECH: MKS
DATE: 2/18/2005
REVIEW: MB

February-05

043-2246-0002

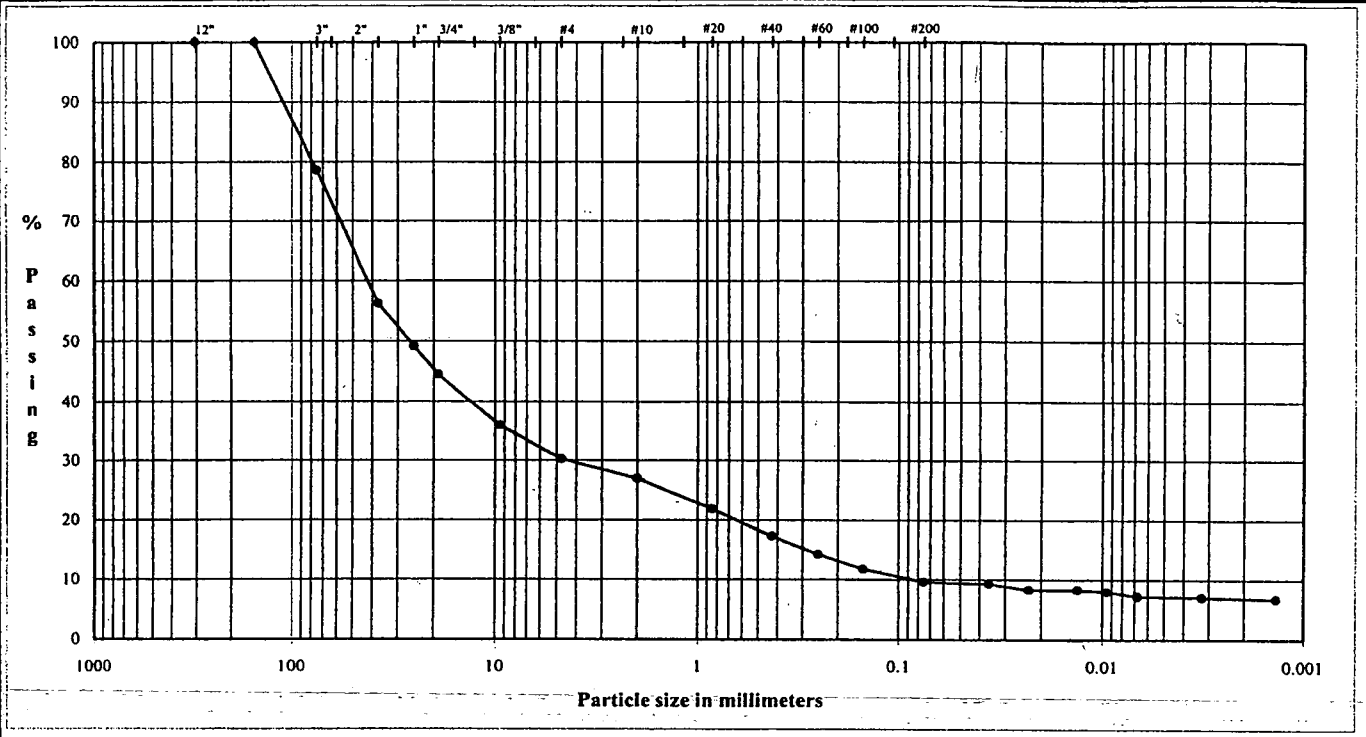
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: **Rocky Flats/Field & Lab Testing/CO**

SAMPLE ID: **AC22-2** Depth: –

TYPE: **Pail**



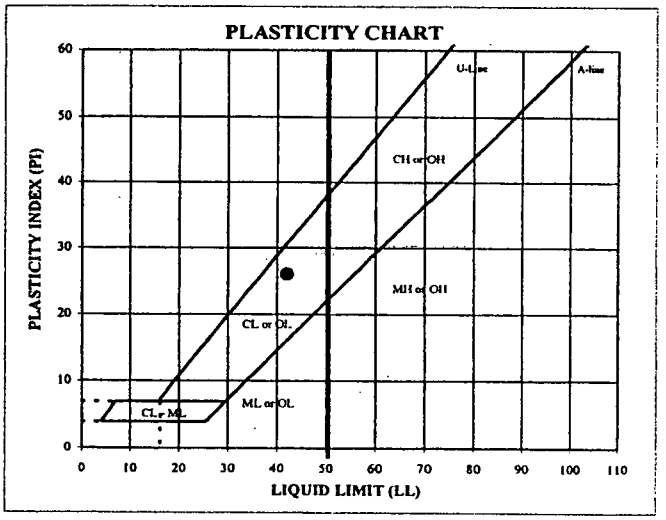
COBBLES	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
	GRAVEL		SAND			FINES

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0		
6.0"	154.2	100.0	Cobbles	21.41
6.0"	154.2	100.0		
6.0"	154.2	100.0		
3.0"	75.0	78.6		
1.5"	37.5	56.3		
1.0"	25.0	49.2	Coarse Gravel	34.09
0.75"	19.0	44.5		
0.375"	9.5	36.0		
#4	4.8	30.2	Fine Gravel	14.27
#10	2.00	27.0	Coarse Sand	3.28
#20	0.85	21.9		
#40	0.43	17.3	Medium Sand	9.71
#60	0.25	14.1		
#100	0.15	11.7		
#200	0.075	9.6	Fine Sand	7.67

Hydrometer Analysis

(mm)	%Finer		
0.036	9.2		
0.023	8.3		
0.013	8.3	Fines	
0.0095	8.0	Silt or Clay	9.58
0.0068	7.2		
0.0032	7.0		
0.0014	6.7		



ATTERBERG LIMITS

M_c	LL	PL	PI	SpG (assumed)
--	42	16	26	2.70

DESCRIPTION: Moderate yellowish brown (10YR 5/4) poorly graded gravel with clay and sand

USCS: GP-GC

TECH: PRH

DATE: 2/20/2005

REVIEW: MB

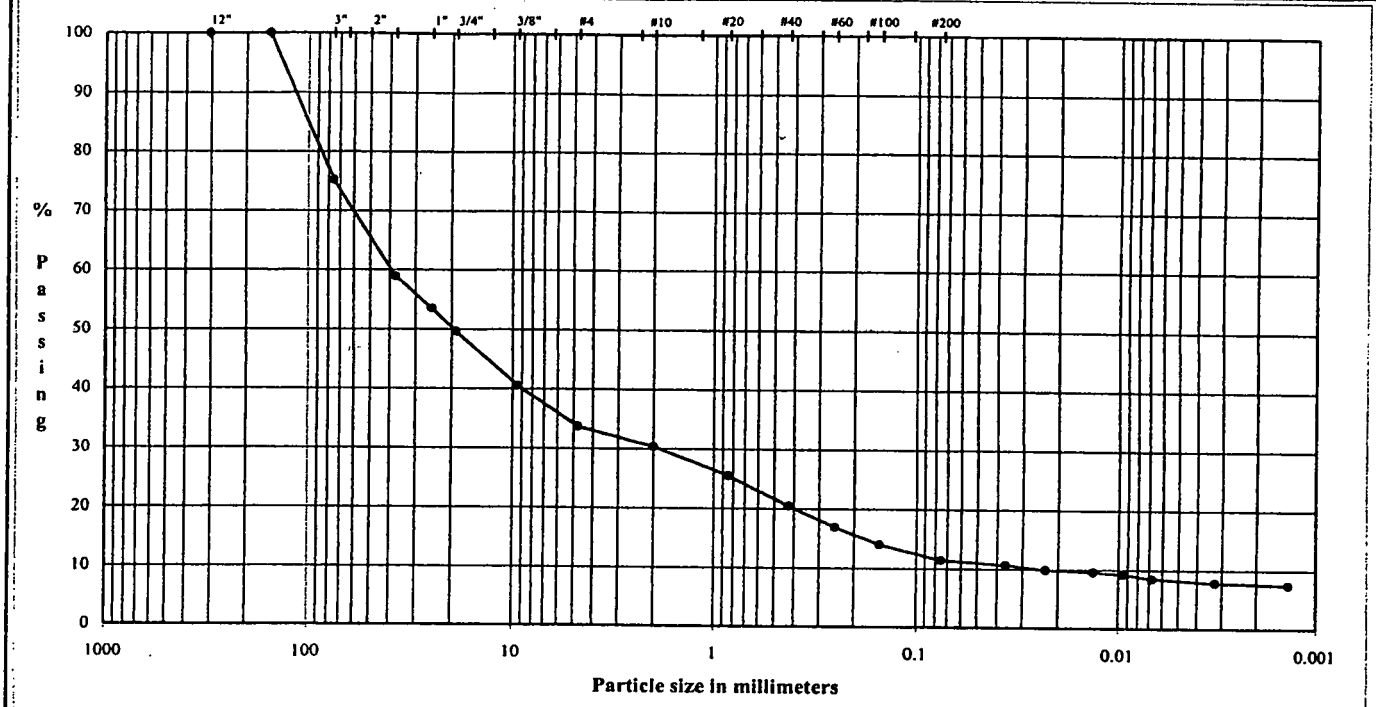
February-05

043-2246-0002

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: **Rocky Flats/Field & Lab Testing/CO**
SAMPLE ID: **AC22-3** Depth: -
TYPE: **Pail**



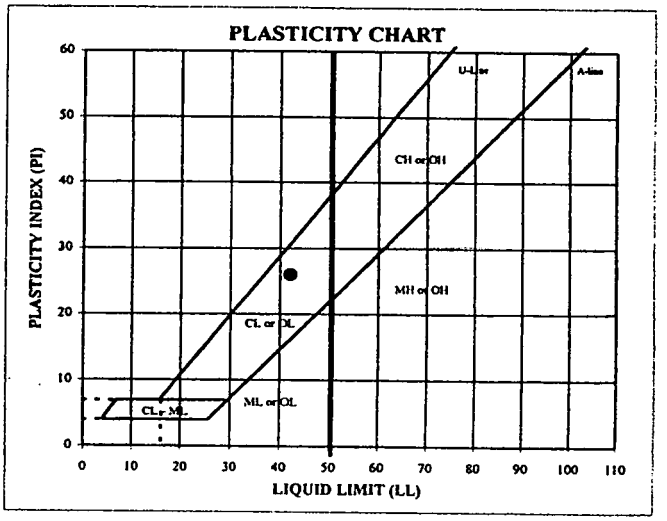
COBBLES	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
	GRAVEL		SAND			FINES

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0		
6.0"	154.2	100.0	Cobbles	24.89
6.0"	154.2	100.0		
6.0"	154.2	100.0		
3.0"	75.0	75.1		
1.5"	37.5	58.9		
1.0"	25.0	53.5	Coarse Gravel	25.46
0.75"	19.0	49.7		
0.375"	9.5	40.5		
#4	4.8	33.7	Fine Gravel	15.93
#10	2.00	30.3	Coarse Sand	3.38
#20	0.85	25.6		
#40	0.43	20.5	Medium Sand	9.90
#60	0.25	16.9		
#100	0.15	14.0		
#200	0.075	11.4	Fine Sand	9.02

Hydrometer Analysis

(mm)	%Finer		
0.036	10.6		
0.023	9.9		
0.013	9.6	Fines	
0.0095	9.2	Silt or Clay	11.43
0.0067	8.5		
0.0032	7.8		
0.0014	7.4		



ATTERBERG LIMITS

M_c	LL	PL	PI	SpG (assumed)
--	42	16	26	2.70

DESCRIPTION: Moderate yellowish brown (10YR 5/4) poorly graded gravel with clay and sand

USCS: GP-GC

TECH	PRH
DATE	2/20/2005
REVIEW	MB

SUBMITTAL TRANSMITTAL FORM

For Submittal of Shop Drawings, Equipment Data, Material Sam... Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 3/1/05	X	New ...ittal
			Resubmittal

Section I REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS *(This section to be initiated by the Subcontractor)*

To:	From:	Subcontract No: KH020577	Submittal No. 96
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026		Previous Submittal No.

Specification Sec. No. (Cover only one section with each Submittal)

Project Title: Construction of the Present Landfill Accelerated Action

Item No.	Description of Item Submitted (Type, size, model number, etc.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8)	No. of Copies	Contract Reference Document		Deviation (See Instruction #6)	Contractor Action Code (See Instruction #9)
				Spec. Paragraph No.	Drawing Sheet No.		
a.	b.	c.	d.	e.	f.	g.	h.
1	East Slope Panel Layout Geocomposite, GCL-DN, and 60-mil LLDPET	N/A	6		N/A	N/A	

Place highest asperity side of textured FML up towards the GDN Pus

Rocky Flats Plant

☐ APPROVED ☒ APPROVED AS CORRECTED

☐ NOT APPROVED ☐ REVISE AND RESUBMIT

Remarks:

APPROVAL IS FOR CONFORMANCE WITH THE DESIGN CONCEPT OF THE PLANS AND SPECIFICATIONS AND FOR COMPLIANCE WITH THE INFORMATION GIVEN THEREIN. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMATION AND CORRELATION OF ALL DIMENSIONS AT THE CONSTRUCTION SITE; FOR INFORMATION THAT PERTAINS SOLELY TO FABRICATION PROCESSES OR TO TECHNIQUES OF CONSTRUCTION; AND FOR COORDINATION OF THE WORK OF ALL CRAFTS.

BY: Robert K. Davis DATE: 03/24/05

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.

Signature of Subcontractor: Anne Kenick for Paul Kreitz

Section II Reviewed

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

OK CQAE w/ attached recommendations J.H. Rale TA

Rahe, John -- MFG, Inc.

From: Rahe, John -- MFG, Inc.
Sent: Tuesday, March 22, 2005 2:34 PM
To: 'Robert.Davis@rfets.gov'
Cc: 'josh.valentine@ttrmc.com'; 'marshall.massaro@ttrmc.com'
Subject: PLF - Review of Submittal No. 96 - Geosysnthetic Panel Layout Diagrams

Bob,

Following review of Submittal No. 96 for the Geosysnthetic Panel Layout Diagrams (resubmittal of previous deficient submittal) for the eastern portion of the PLF, which includes the 60-mil LLDPE-T on 4:1 slope (smooth LLDPE on top), GCL (Bentomat DN on 4:1 and Bentomat ST on top) and GDN, I have the following comments:

The layout diagrams appear to be schematically correct, although no scale was presented to verify the accuracy of the locations of panels and anchor trenches. These should be verified per design by field QA

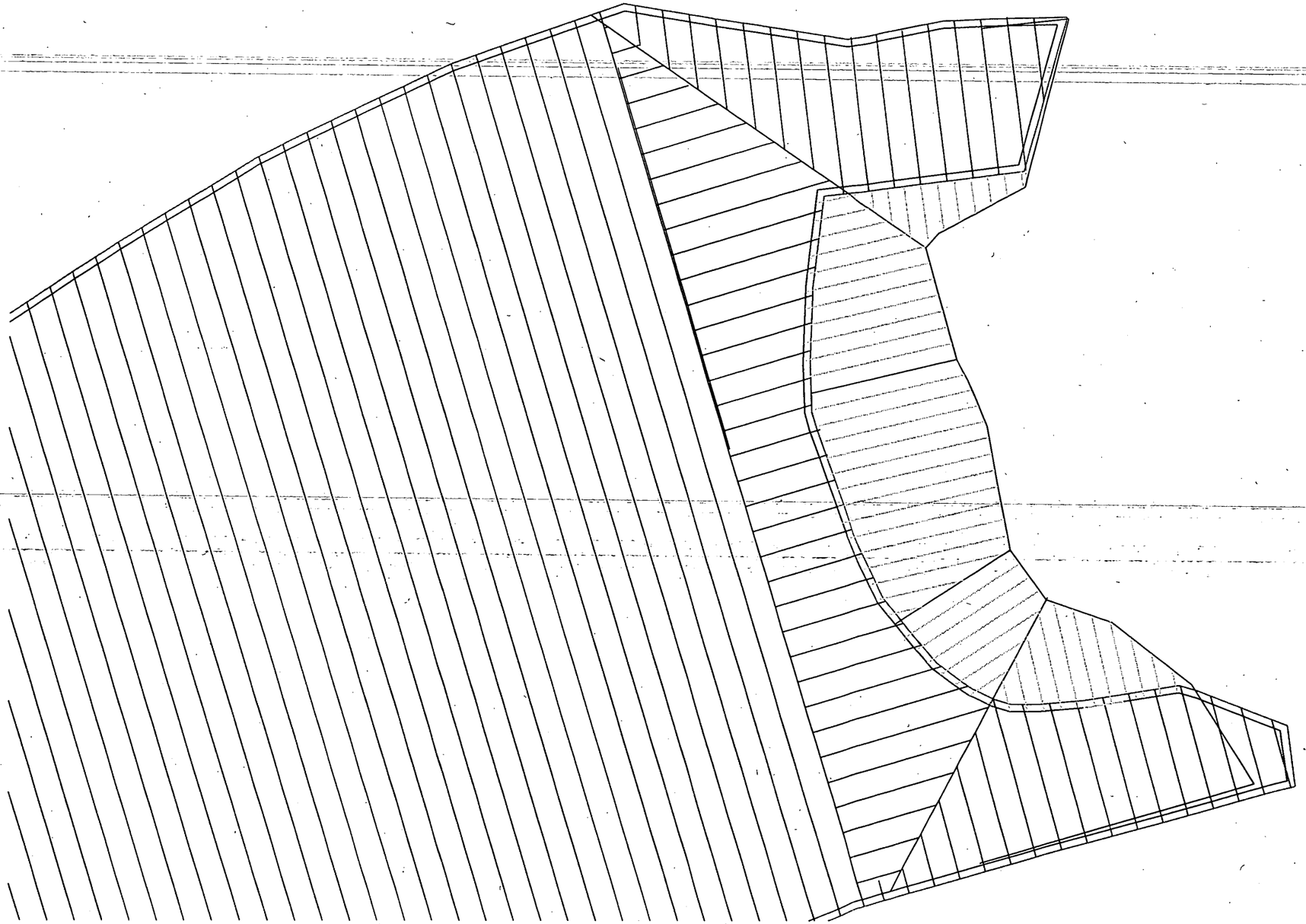
The GCL diagram indicates that the dark lines represent the "Smooth Panel" limits; this should indicate that these dark lines are the Bentomat ST panels for the remainder of the top area, while the light shade lines are the Bentomat DN for the 4:1 side slope.

As mentioned previously, the LLDPE-T should be installed on the 4:1 slopes so that the side with the higher asperity is facing up to provide interface with the overlying GDN to maximize the this critical interface friction angle. The field QA should verify this condition as well as other aspects of the installation.

Let me know if you have any questions.

Thanks,
John

John H. Rahe, P.E.
Tetra Tech/MFG
303-447-0913 (ext. 104)



Notes :

1). DARK lines represent approximate location of SMOOTH panel limits.

2). LIGHT SHADE lines represent approximate location of GCL - DN panel limits.

ROCKY FLATS EAST SLOPE

PANEL LAYOUT
GCL - DN
GOLDEN, CO

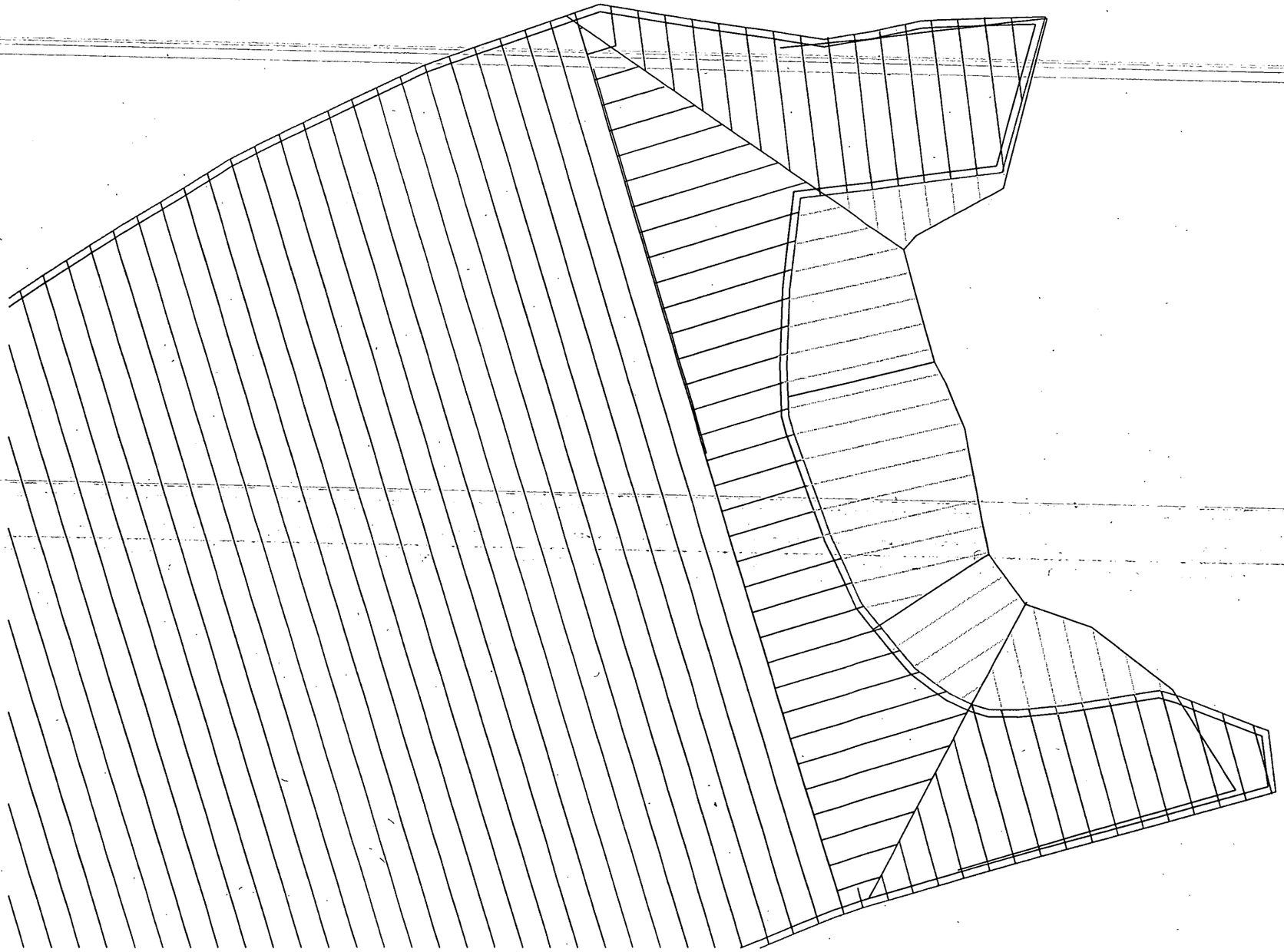
Submitted By:
COLORADO
LINING
INTERNATIONAL

DATE: FEBRUARY 25, 2005

REV: 0

Scale: NTS

Drawn By: D. LAHR



Notes :

1) DARK lines represent approximate location of SMOOTH LLDPE panel limits.

2) YELIGHT SHADE lines represent approximate location of TEXTURED LLDPE panel limits.

Submitted By:
COLORADO LINING INTERNATIONAL

ROCKY FLATS EAST SLOPE

PANEL LAYOUT
60 MIL LLDPET

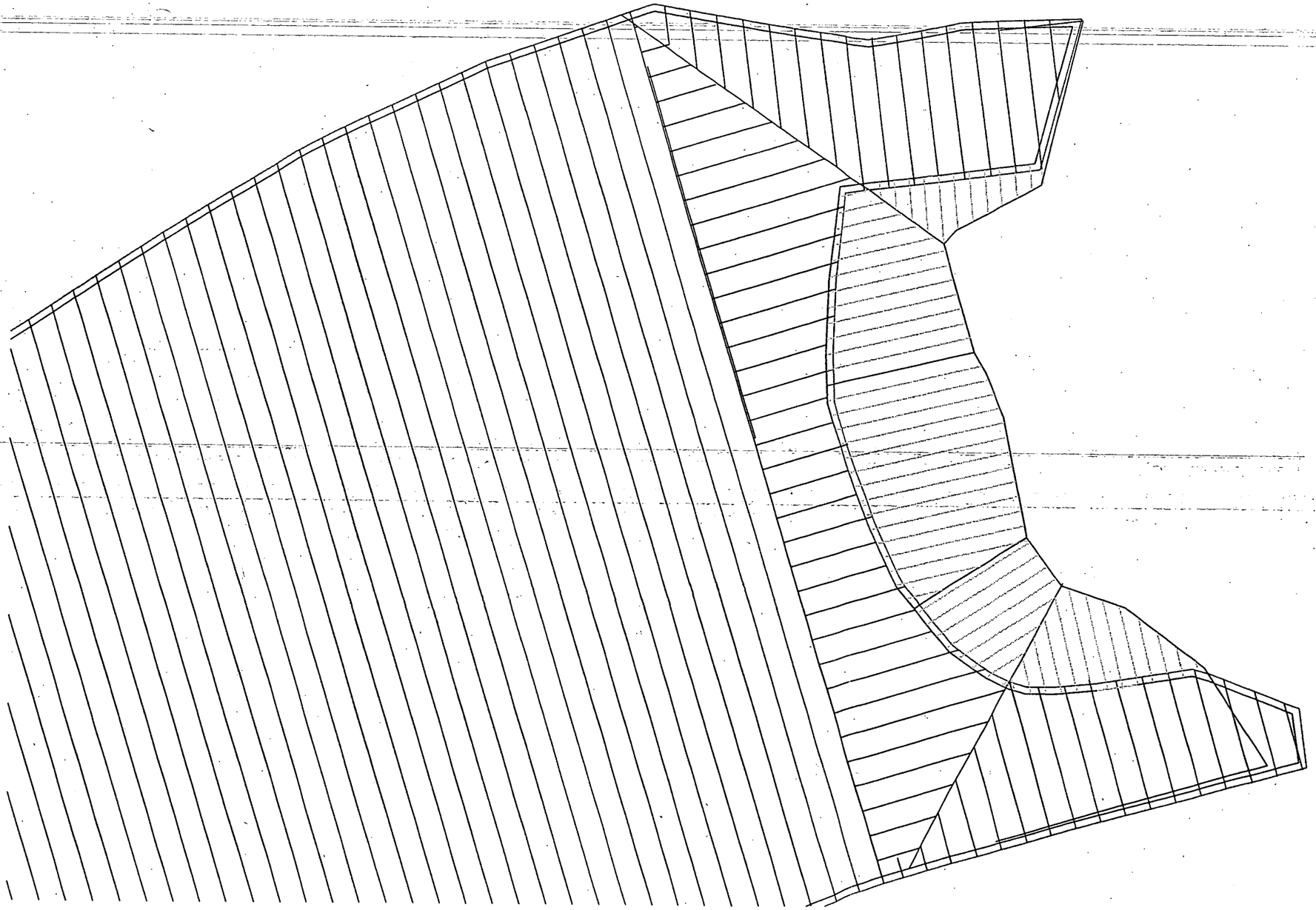
GOLDEN, CO

DATE: FEBRUARY 25, 2005

REV: 0

Scale: NTS

Drawn By: D. LAHR



Notes :

1. DARK lines represent approximate location of SMOOTH LLDPE panel limits.
2. LIGHT SHADE lines represent approximate location of GEOCOMPOSITE panel limits.

ROCKY FLATS EAST SLOPE

PANEL LAYOUT
GEOCOMPOSITE
GOLDEN, CO

Submitted By:
COLORADO
LINING
INTERNATIONAL

DATE
FEBRUARY 25, 2005

REV
0

Scale NTS

For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other
(Read Instructions prior to initiating this form.)

Date: 3/9/05

X New Submittal

Resubmittal

Section I REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS *(This section to be initiated by the Subcontractor)*

To:	From:		
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026	Subcontract No: KH020577	Submittal No. 101 Previous Submittal No.

Specification Sec. No. 01110, 01310, 01320, 01700, 01720, 01722, 02200, 02210, 02221, 02224, 02225, 02226, 02228, 02245

Project Title: Construction of the Present Landfill Accelerated Action

Item No.	Description of Item Submitted (Type, size, model number, etc.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8)	No. of Copies	Contract Reference Document		Deviation (See Instruction #6)	Contractor Action Code (See Instruction #9)
				Spec. Paragraph No.	Drawing Sheet No.		
a.	b.	c.	d.	e.	f.	g.	h.
1	Soil Test Data from 280 2-inch Stockpile	N/A	6	N/A	N/A	N/A	

Remarks:
Acknowledge Receipt of Test Results
Robert W. Davis 03/18/05

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.
Paul Kreitz 3/9/05

Signature of Subcontractor:

Section II Reviewed

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

CQAE
J.H. Rile TA

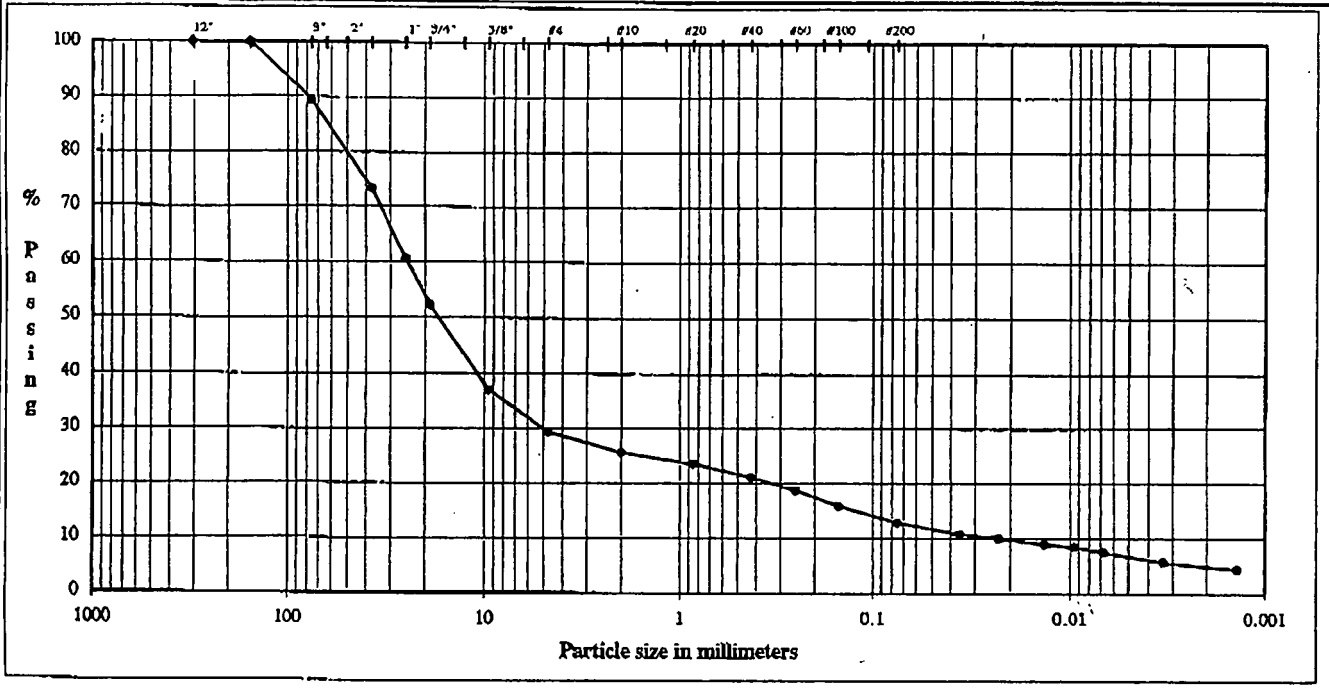
February-05

043-2246-0002

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: Rocky Flats/Field & Lab Testing/CO
SAMPLE ID: ANWF-1 Depth: -
TYPE: Pail



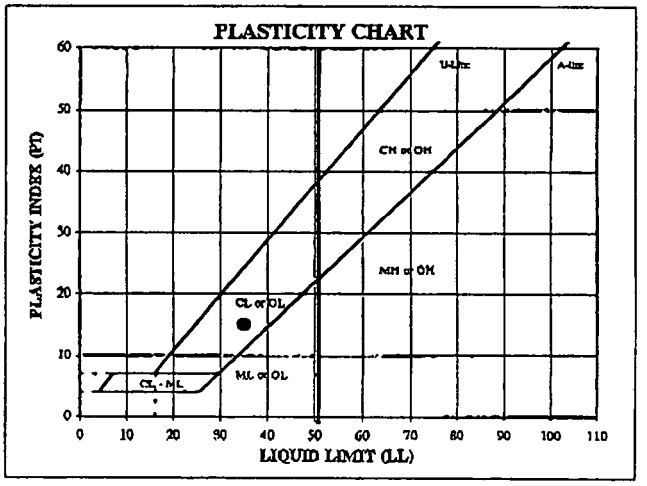
COBBLES	GRAVEL		SAND			FINES
	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0		
6.0"	154.2	100.0	Cobbles	10.54
6.0"	154.2	100.0		
6.0"	154.2	100.0		
3.0"	75.0	89.5		
1.5"	37.5	73.3		
1.0"	25.0	60.6	Coarse Gravel	37.22
0.75"	19.0	52.2		
0.375"	9.5	37.1		
#4	4.8	29.4	Fine Gravel	22.83
#10	2.00	25.7	Coarse Sand	3.70
#20	0.85	23.6		
#40	0.43	21.1	Medium Sand	4.61
#60	0.25	18.8		
#100	0.15	15.9		
#200	0.075	12.8	Fine Sand	8.28

Hydrometer Analysis

(mm)	%Finer		
0.036	10.8		
0.023	10.1		
0.013	9.0	Finer	
0.0095	8.5	Silt or Clay	12.83
0.0068	7.5		
0.0033	5.7		
0.0014	4.4		



ATTERBERG LIMITS

M_c	LL	PL	PI	δpG (assumed)
-	35	20	15	2.70

DESCRIPTION: Brownish black (5YR 2/1) clayey gravel with sand

USCS: GC

TECH	MKS
DATE	2/21/2005
REVIEW	MB

MAR. 4. 2005 10:05AM GOLDER ASSOCIATES NO. 0596 P. 2/7

February-05

043-2246-0002

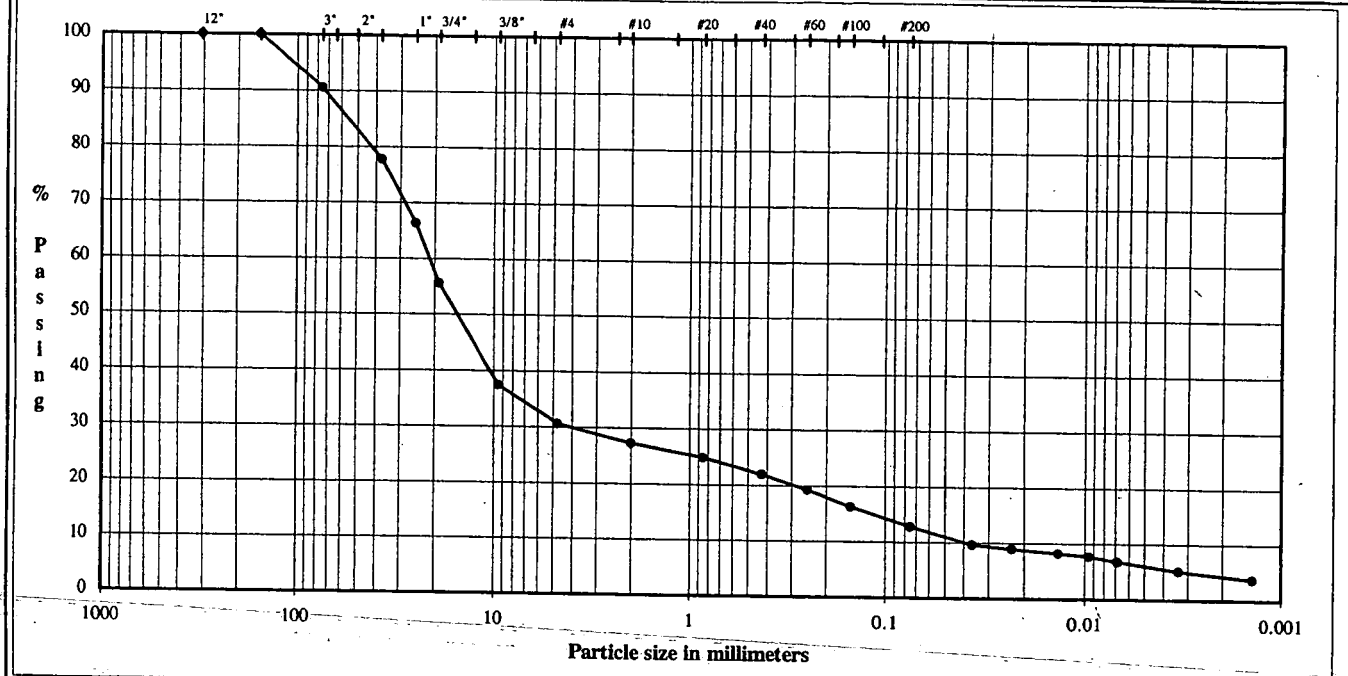
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: Rocky Flats/Field & Lab Testing/CO

SAMPLE ID: ANWF-2 Depth:

TYPE: Pail



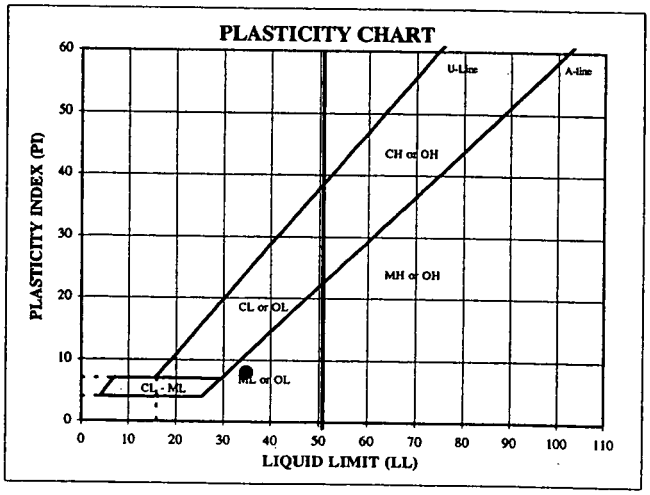
COBBLES	GRAVEL		SAND			FINES
	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0		
6.0"	154.2	100.0	Cobbles	9.41
6.0"	154.2	100.0		
6.0"	154.2	100.0		
3.0"	75.0	90.6		
1.5"	37.5	77.8		
1.0"	25.0	66.3	Coarse Gravel	35.03
0.75"	19.0	55.6		
0.375"	9.5	37.5		
#4	4.8	30.7	Fine Gravel	24.88
#10	2.00	27.3	Coarse Sand	3.36
#20	0.85	24.9		
#40	0.43	22.0	Medium Sand	5.34
#60	0.25	19.3		
#100	0.15	16.3		
#200	0.075	12.8	Fine Sand	9.17

Hydrometer Analysis

(mm)	%Finer		
0.036	9.6		
0.023	8.9		
0.014	8.2	Fines	
0.0095	7.7	Silt or Clay	12.81
0.0068	6.8		
0.0034	5.2		
0.0014	3.8		



ATTERBERG LIMITS

M,	LL	PL	PI	SpG (assumed)
--	35	27	8	2.70

DESCRIPTION: Brownish black (5YR 2/1) silty gravel with sand

USCS: GM

TECH MKS

DATE 02/21/2005

REVIEW MB

Manufacturer's Certificates of Compliance, or Other
(Read Instructions prior to initiating this form.)

Date: 3/14/05

Resub[redacted]l

Section I — **REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS** *(This section to be initiated by the Subcontractor)*

To:	From:	Subcontract No: KH020577	Submittal No. 103
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026		Previous Submittal No.

Specification Sec. No. 01310

Project Title: Construction of the Present Landfill Accelerated Action

Item No.	Description of Item Submitted (Type, size, model number, etc.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8)	No. of Copies	Contract Reference Document		Deviation (See Instruction #6)	Contractor Action Code (See Instruction #9)
				Spec. Paragraph No.	Drawing Sheet No.		
a.	b.	c.	d.	e.	f.	g.	h.
1	Bulk Gradation Summary for 2-inch and 22-inch Cover Materials	N/A	6	N/A	N/A	N/A	

Remarks: One copy given to QA / Earth-Tech for review. This is an interim submittal only. It is not the final record survey and therefore is not stamped by the Licensed Surveyor. Final record survey for each layer will come at completion of that layer.

Acknowledge Receipt of Test Results

Robert V. Davis 03/18/05

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.

Paul Kreitz 3/14/05

Signature of Subcontractor:

Section II — **Reviewed**

Enclosures Returned (List by ~~Item No.~~):	Title and Signature of Accepting Authority:	Date:

CQAE J.K. Kale TX

Bulk Gradation Summary for 2" and 22" Cover Materials

	Individual	% retained	% retained	% passing
SAMPLE	12"+	6"+	3"+	3"-
AM2-01	0	0.69%	7.71%	91.61%
AM22-01	0	5.92%	12.98%	81.10%
AM22-02	0	6.10%	18.27%	75.63%
AM22-03	0	7.78%	15.55%	76.60%
AM22-04	0	7.80%	12.63%	79.57%
AM22-05	0	2.79%	18.00%	79.21%
AM22-06	0	1.63%	10.69%	87.68%
AM22-07	0	8.72%	16.34%	74.95%
AM22-08	0	5.27%	15.80%	78.93%
AM22-09	0	6.87%	12.77%	80.35%

AM2-# = 2 inch cover sample
AM22-# = 22 inch cover sample

SUBMITTAL TRANSMITTAL FORM

For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 3/16/05	X	New Submittal
			Resubmittal

Section I — **REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS** *(This section to be initiated by the Subcontractor)*

To:	From:	Subcontract No: KH020577	Submittal No. 106
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026		Previous Submittal No.

Specification Sec. No. (Cover only one section with each Submittal)	Project Title: Construction of the Present Landfill Accelerated Action

Item No.	Description of Item Submitted (Type, size, model number, etc.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8)	No. of Copies	Contract Reference Document		Deviation (See Instruction #6)	Contractor Action Code (See Instruction #9)
				Spec. Paragraph No.	Drawing Sheet No.		
a.	b.	c.	d.	e.	f.	g.	h.
1	Bulk Gradations for (2) RFA 22" Samples Taken at Centennial Aggregate Pit	N/A	6		N/A	N/A	
	Note: Sample ID #s: AMV-01 & AMV-02						

Remarks:
Acknowledge Receipt of Test Results
Robert V. Davis 03/18/05

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.
Paul Kreitz 3/16/05
Signature of Subcontractor:

Section II — **Reviewed**

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

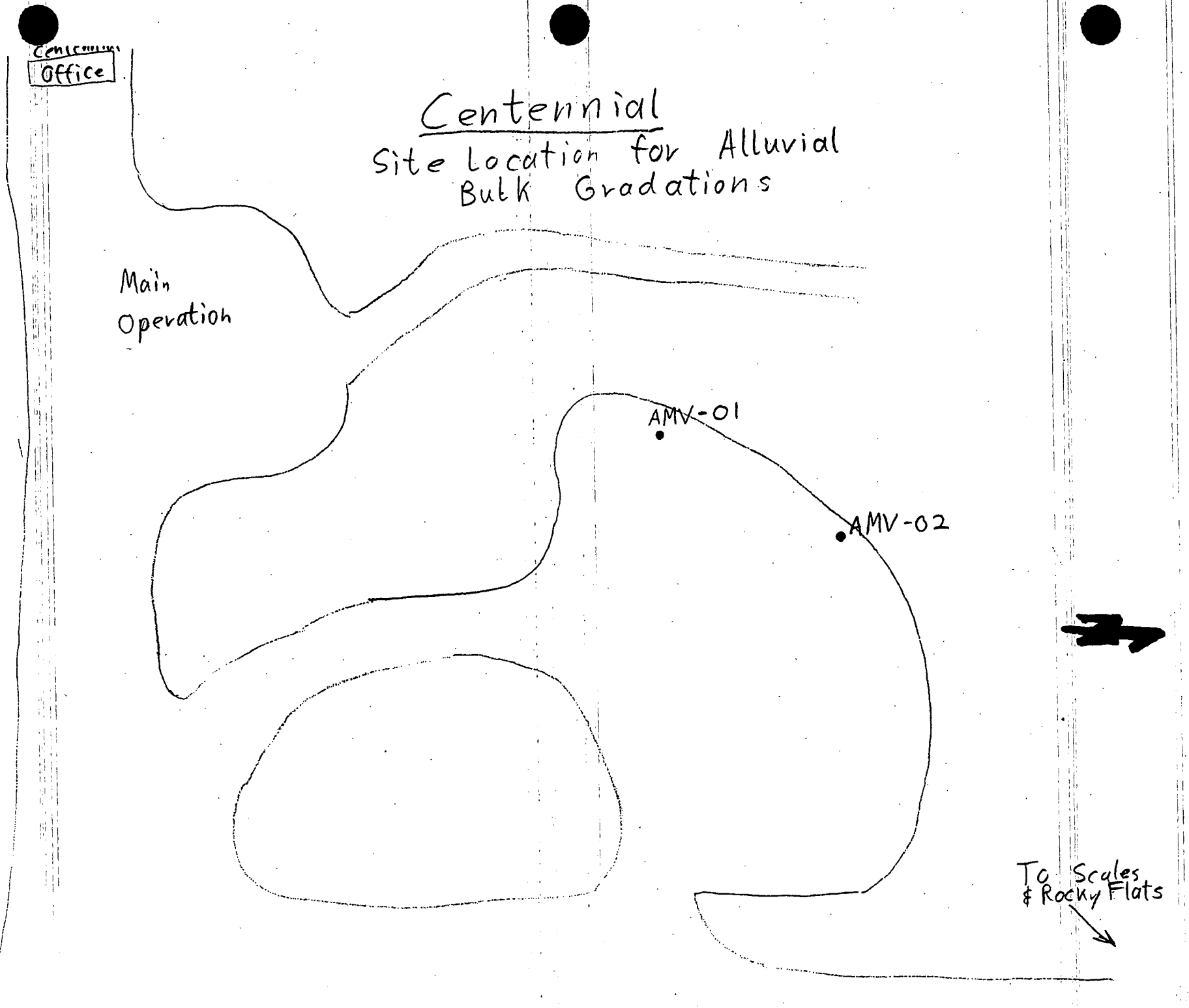
COAE JH Rule TA

Bulk Gradation Summary for 2" and 22" Cover Materials

SAMPLE	Individual 12"+	% retained 6"+	% retained 3"+	% passing 3"-
AM2-01	0	0.69%	7.71%	91.61%
AM22-01	0	5.92%	12.98%	81.10%
AM22-02	0	6.10%	18.27%	75.63%
AM22-03	0	7.78%	15.55%	76.60%
AM22-04	0	7.80%	12.63%	79.57%
AM22-05	0	2.79%	18.00%	79.21%
AM22-06	0	1.63%	10.69%	87.68%
AM22-07	0	8.72%	16.34%	74.95%
AM22-08	0	5.27%	15.80%	78.93%
AM22-09	0	6.87%	12.77%	80.35%
AMV-01	0	8.70%	15.55%	75.74%
AMV-02	0	6.53%	16.25%	77.22%

Avg 5.88 for 6"+ Rock

AM2-# = 2 inch cover sample
AM22-# = 22 inch cover sample


Centennial
Office
Centennial
Site Location for Alluvial
Bulk Gradations
Main
Operation
AMV-01
AMV-02
To Scales
& Rocky Flats

SUBMITTAL TRANSMITTAL FORM

For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 3/18/05	X	New Submittal
			Resubmittal

Section I — **REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS** *(This section to be initiated by the Subcontractor)*

To:	From:		
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026	Subcontract No: KH020577	Submittal No. 107 Previous Submittal No.

Specification Sec. No. (Cover only one section with each Submittal)

Project Title: Construction of the Present Landfill Accelerated Action

Item No.	Description of Item Submitted (Type, size, model number, etc.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8)	No. of Copies	Contract Reference Document		Deviation (See Instruction #6)	Contractor Action Code (See Instruction #9)
				Spec. Paragraph No.	Drawing Sheet No.		
a.	b.	c.	d.	e.	f.	g.	h.
1	New Seep Aeration Box – concrete and grating submittals	N/A	6		~~N/A~~	~~N/A~~	
				Concrete Design – Approved			
				Fiberglass Grating – Obtain Embedment Angles as shown on page 10 of Product Brochure. Provide intermediate support bar(s) as required by manufacturer.			

Rocky Flats Plant

☐ APPROVED ☒ APPROVED AS CORRECTED

☐ NOT APPROVED ☐ REVISE AND RESUBMIT

APPROVAL IS FOR CONFORMANCE WITH THE DESIGN CONCEPT OF THE PLANS AND SPECIFICATIONS AND FOR COMPLIANCE WITH THE INFORMATION GIVEN THEREIN. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMATION AND CORRELATION OF ALL DIMENSIONS AT THE CONSTRUCTION SITE; FOR INFORMATION THAT PERTAINS SOLELY TO FABRICATION PROCESSES OR TO TECHNIQUES OF CONSTRUCTION; AND FOR COORDINATION OF THE WORK OF ALL CRAFTS.

BY: Robert K. Davis DATE: 03/22/05

Remarks:

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.

Signature of Subcontractor: Paul Kreitz 3/18/05

Section II — Reviewed

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

OK CQAE (Conc; Embed Ls needed)
J.K. Rahe Jr
3/05

LAFARGE
NORTH AMERICA

Construction Materials

Mix Identification No.:	4632		
Design Strength:	4000	Pumpability Index:	6
Mix Description:	General Use, Exterior		
Typical Usage:	Exterior Concrete		
Lafarge N.A. Lab No.:			

Mix Proportions:

Materials:	Type or Size	ASTM Standard	Design Weights per Cubic Yard			
Cement	1-2	C-150	480	lb.		
SCM	Class C	C-618	120	lb.		
Coarse Aggregate	57/67	C-33	1800	lb.		
Int. Aggregate	# 8	C-33		lb.		
Fine Aggregate	Sand	C-33	1220	lb.		
AEA		C-260	2.0	oz.		
WRA	A	C-494	24.0	oz.		
MRWR	A	C-494		oz.		
HRWR	F	C-494		oz.		
Water	City	C-94	254	lb.	30.5	gal.
Special Material						

The above weights are based upon aggregates in a saturated, surface dry (SSD) condition. Batch plant corrections must be made for moisture in aggregates. Mix proportions may be adjusted in accordance with 301-99, section 4.2.3.6

Physical Properties of Mixture:

Slump	2 - 4	in.
Air Content	4.5 - 7.5	%
Unit Weight	142.9	pcf
Yield	27.11	cu. ft.
Water/Cement Ratio	0.42	
Initial Time of Set		hr/min

Compressive Strength (psi):

(From Field Data)

3 Day	7 Day	28 Day	56 Day
	3685	5005	

LAFARGE North America

Rick Wheeler
Quality Assurance Manager
Front Range Concrete Division

Lafarge Use Only

Product Classification:		
Field 1	Field 2	Field 3
1109		1507

Western U.S. Region
1590 W. 12th Avenue, Denver, CO 80204-3410
Office: 303-657-4000
Web: www.lafargenorthamerica.com

LAFARGE
NORTH AMERICA

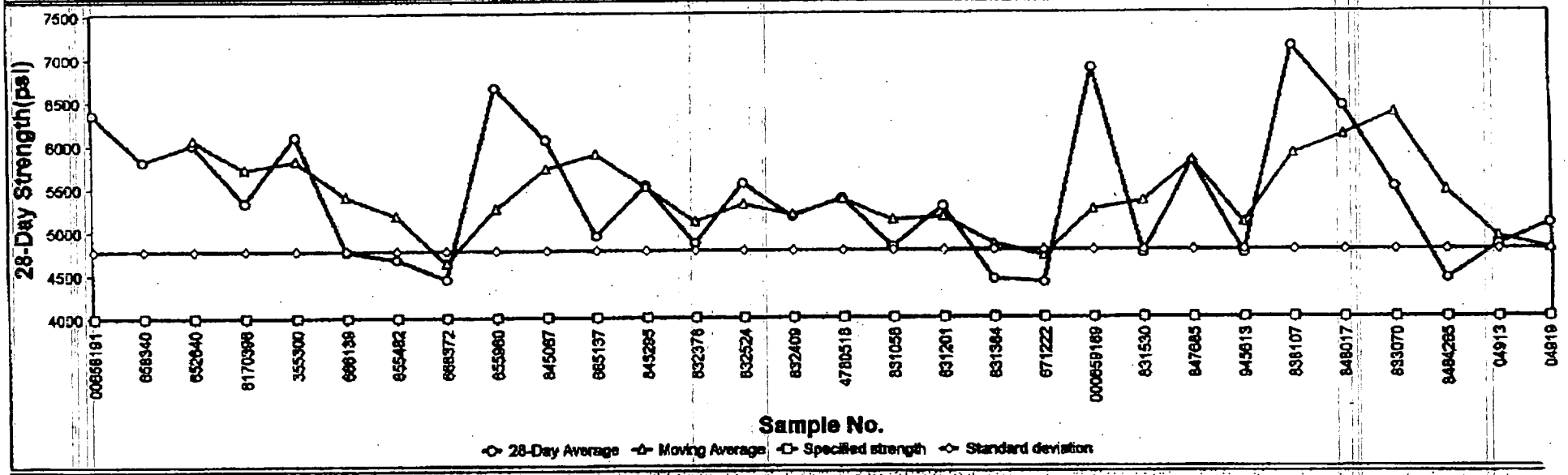
CONCRETE
STRENGTH TEST EVALUATION ACI-214/318

Mix design No. :	4632 - 4000 Gen Exterior City [Default]	Date :	/ /
Strength :	4000 psi	Aggregate size :	1 in.-No.4
Plant(s) :	All plants		

ACI 214 Strength analysis summary

	Slump (in.)	Air (%)	Temp (°F)	7-Day (psi)	28-Day (psi)
Minimum	2.00	2.5	66.0	2865	4400
Average	3.28	5.6	77.2	4097	5401
Maximum	4.50	7.9	87.0	5420	7120
Standard deviation	0.62	1.0	5.6	711	772

28-Day	
Average range	155 psi
Cummulative Coefficient of variation	14.31 %
Within-test Std	137 psi
Within-test Coefficient of variation	2.55 %



ACI 318 Strength performance approval

Number of tests/Correction factor	30 / 1.000	Margin of extra performance (5401 - 5300)	100 psi
Adjusted Standard deviation	772 psi		
d2 factor for computing within-test standard deviation	1.128	Mix is approved	
f'cr = f'c + 1.34 Std	5035 psi		
f'cr = f'c + 2.33 Std - 500 psi	**5300 psi**		

Remarks:

Reported by: Date : 11/24/2004 Verified by:

LAFARGE
NORTH AMERICA

CONCRETE STRENGTH TEST EVALUATION ACI-214/318

Mix design No. :	**4632 - 4000 Gen Exterior City [Default]**	**Date :**	/ /
Strength :	4000 psi	Aggregate size :	1 in.-No.4
Plant(s) :	All plants		

Tests results

Sample No.	Date	Slump	Air	Temp	7 day	28 day	28 day	Range	28-Day average	Moving avg. of (3)	Moving Std of (3)	CV of (3)
		(in.)	(%)	(°F)		(psi)				(psi)		
04919	10/4/2004	4.25	7.9	68.0	2865	5270	4870	400	5070	4775	320	6.70
04913	9/29/2004	4.50	7.8	68.0	3615	4790	4850	60	4820	4908	537	10.94
8484265	9/23/2004	3.25	5.0	72.0	3240	4540	4330	210	4435	5443	996	18.30
833070	9/20/2004	2.50	5.8	76.0	4030	5700	5290	410	5495	6338	815	12.86
848017	9/17/2004	2.00	6.4	72.0	4990	6420	6430	10	6425	6092	1229	20.17
838107	9/15/2004	3.00	5.1	66.0	5420	7260	6980	280	7120	5880	1198	20.37
945613	9/10/2004	4.00	7.0	70.0	3430	4740	4720	20	4730	5085	611	12.02
847685	9/8/2004	3.00	6.0	71.0	4130	5680	5900	220	5790	4987	1070	21.46
831530	9/7/2004	3.50	5.0	86.0	3880	4790	4680	110	4735	4523	1343	29.69
831384	9/3/2004	3.50	5.1	87.0	3280	4450	4420	30	4435	5237	423	8.08
671222	9/3/2004	4.00	5.5	77.0	3130	4230	4570	340	4400	5518	498	9.03
000659189	9/3/2004	2.50	2.5	75.0	5360	6900	6850	50	6875	5651	1419	25.11
831201	9/2/2004	3.00	4.5	78.0	4440	5200	5360	160	5280	5207	304	5.84
831058	9/1/2004	3.00	6.2	81.0	3610	4780	4840	60	4810	5167	287	5.55
832524	8/31/2004	3.75	6.2	78.0	4190	5570	5520	50	5545	5362	391	7.29
832409	8/31/2004	3.00	4.8	80.0	4070	5160	5160		5160	5132	346	6.74
4780518	8/31/2004	2.50	4.5	80.0		5310	5450	140	5380	5252	193	3.67
832378	8/30/2004	3.00	5.5	85.0		4800	4910	110	4855	5105	362	7.05
845295	8/24/2004	2.50	5.0	80.0	4530	5530	5510	20	5520	5505	558	10.14
665137	8/23/2004	4.00	5.4	80.0	3630	4880	5000	120	4940	5885	873	14.83
845067	8/21/2004	3.25	5.5	77.0	4630	6160	5950	210	6055	5720	1145	20.02
655980	8/18/2004	3.50	5.0	73.0	5270	6530	6790	260	6660	5290	1219	23.04
666372	8/16/2004	3.50	6.0	83.0	3140	4380	4510	130	4445	4627	164	3.54
666139	8/13/2004	2.50	7.0	72.0	4030	4830	4700	130	4765	5178	670	12.94
655482	8/13/2004	4.00	6.0	86.0	3390	4640	4700	60	4670	5368	800	14.90
355300	8/12/2004	3.00	5.2	77.0	4260	5980	6220	240	6100	5805	418	7.20

Reported by: Date : 11/24/2004 Verified by:_____

LAFARGE NORTH AMERICA

CONCRETE STRENGTH TEST EVALUATION ACI-214/318

Mix design No. : 4632 - 4000 Gen Exterior City [Default] **Date :** / /

Strength : 4000 psi **Aggregate size :** 1 in.-No.4

Plant(s) : All plants

Tests results

Sample No.	Date	Slump	Air	Temp	7 day	28 day	28 day	Range	28-Day average	Moving avg. of (3)	Moving Std of (3)	CV of (3)
		(in.)	(%)	(°F)		(psi)				(psi)		
6170396	8/11/2004	3.50	5.0	82.0	4160	5370	5300	70	5335	5710	347	6.08
652640	8/10/2004	3.50	6.5	78.0	4680	6240	5780	460	6010	6050	273	4.51
658340	8/9/2004	2.75	6.2	78.0	4470	5920	5710	210	5815			
00658191	8/6/2004	4.00	6.0	80.0	4870	6400	6310	90	6355			

Reported by: **Date :** 11/24/2004 **Verified by:**

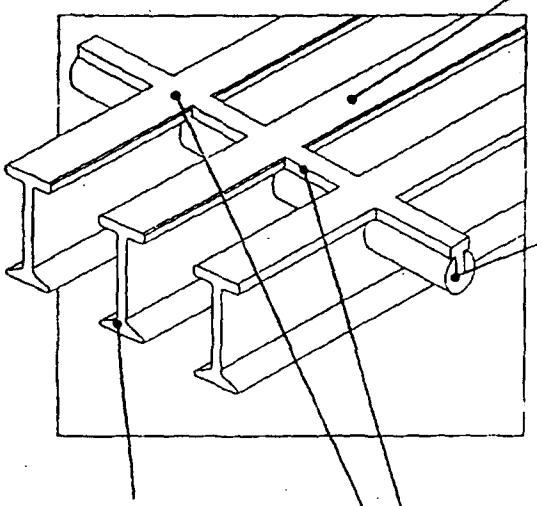
TOTAL P.07

Pultruded Fiberglass the sensible choice

GATOR-DECK™

Low Installation Costs

Weighing considerably less than conventional metal gratings, fiberglass grating is easier and less expensive to transport, install, and remove. Only simple hand tools are required for installation and removal, eliminating the need for costly equipment and labor costs associated with heavy lifting, cutting, and welding.



Slip-Resistant Surface

A coarse epoxy grit is bonded to the walking surfaces of all Gator Deck® pultruded grating and Gator Deck® stair treads for improved traction, especially in high-traffic areas.

Two-Part Mechanical Locking Cross-Rod

A continuous pultruded groove rod interlocked with spacer bar provide a mechanical lock at each bearing bar. This interlocking design increases the support and stability of Gator Deck® under extreme loads.

Reliability

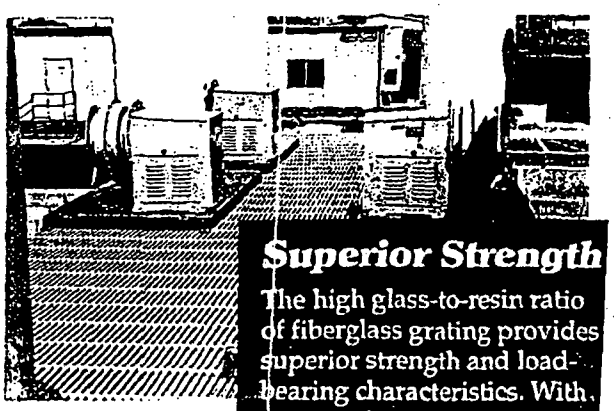
You can count on Gator Deck®'s superior ability to fight the elements with its durable lightweight construction and quality.

Self-Draining

Strategically angled lower I-bars allow for easy fluid runoff which aids self-cleaning.

Patented Flush-Top Cross-Rod and Bearing Bar

Topped by a standard epoxy grit slip-resistant surface, this system mechanically locks cross rods and bearing bars together, increasing unidirectional strength and enabling easy fabrication.



Superior Strength

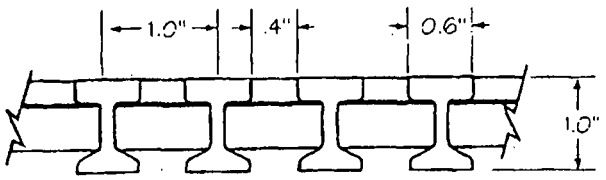
The high glass-to-resin ratio of fiberglass grating provides superior strength and load-bearing characteristics. With structural integrity protected by its unique corrosion resistance capabilities, fiberglass grating lasts longer than traditional materials.

Non-Conductivity

Seasafe's glass and resin formulations are non-sparking and create a safety barrier for personnel in electrical applications, including electrical work platforms and fencing around high-voltage equipment. In addition, its non-magnetic properties make it transparent to electromagnetic waves in applications involving radio, television, and microwave installations.

Gator-Deck® GD-14010

seasafe
a subsidiary of



Bearing Bar Type	I-Bar
Open Area	40%
Thickness	1.0"
Bearing Bar Centers	1.0"
Resin Systems	IFR,VFR
Colors	Yellow, Gray or White
Approx. Weight	3.41 lbs / sq ft

SPAN INCHES	LOAD TYPE									LOAD FOR .25-inch deflection	LOAD FOR .375-inch deflection
12	UL	250	500	1000	1500	2000	2500	3500	4500		
	UL deflection	.003	.006	.012	.018	.024	.030	.042	.054		
	CL	250	500	1000	1500	2000	2500	3500	4500		
	CL deflection	.005	.010	.019	.029	.039	.048	.068	.087		
18	UL	105	250	500	750	1000	1500	2250	3000	4464	6696
	UL deflection	.006	.014	.028	.042	.056	.084	.126	.168		
	CL	100	250	500	750	1500	2250	3000	4000	4198	6297
	CL deflection	.006	.015	.030	.045	.089	.134	.179	.238		
24	UL	100	200	300	400	600	800	1200	1600	1471	2206
	UL deflection	.017	.034	.051	.068	.102	.136	.204	.272		
	CL	100	200	400	600	1000	1400	1800	2200	1894	2841
	CL deflection	.013	.026	.053	.079	.132	.185	.235	.290		
30	UL	100	200	300	400	500	750	1000		649	974
	UL deflection	.039	.077	.116	.154	.193	.289	.385			
	CL	200	300	400	600	800	1200	1600		1019	1529
	CL deflection	.049	.074	.098	.147	.196	.294	.393			
36	UL	100	150	200	300	400	500			328	492
	UL deflection	.076	.114	.153	.229	.305	.381				
	CL	100	200	300	500	700	900			617	926
	CL deflection	.041	.081	.122	.203	.284	.365				
42	UL	75	100	150	200	300				212	318
	UL deflection	.088	.118	.177	.236	.353					
	CL	100	150	300	450	600				391	586
	CL deflection	.064	.096	.192	.288	.384					
48	UL	75	100	125	150					107	161
	UL deflection	.175	.234	.292	.350						
	CL	100	150	200	400					265	398
	CL deflection	.094	.141	.188	.377						

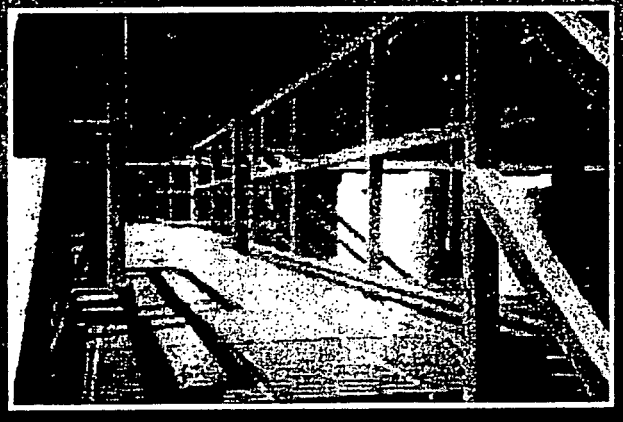
Load and deflection data was derived from lab tests conducted by Seasafe, Inc. Values tabled are for design selection and are approximate. Seasafe recommends selecting gratings based on a deflection of .25-inch or less. This deflection may be exceeded at the discretion of the designer. Deflections of .25-inch or less will give excellent pedestrian comfort. Deflections of .375-inch or less will give satisfactory pedestrian comfort. Loads for short spans in the .250 and .375 deflection columns have been omitted to allow for shear properties.

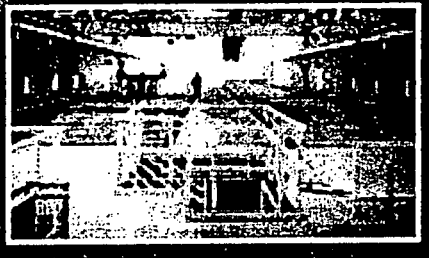
Seasafe, Inc. • 209 Glaser Drive • Lafayette, LA 70508 • Phone 337-406-2345 • Fax 337-406-8880 • 1-800-326-8842

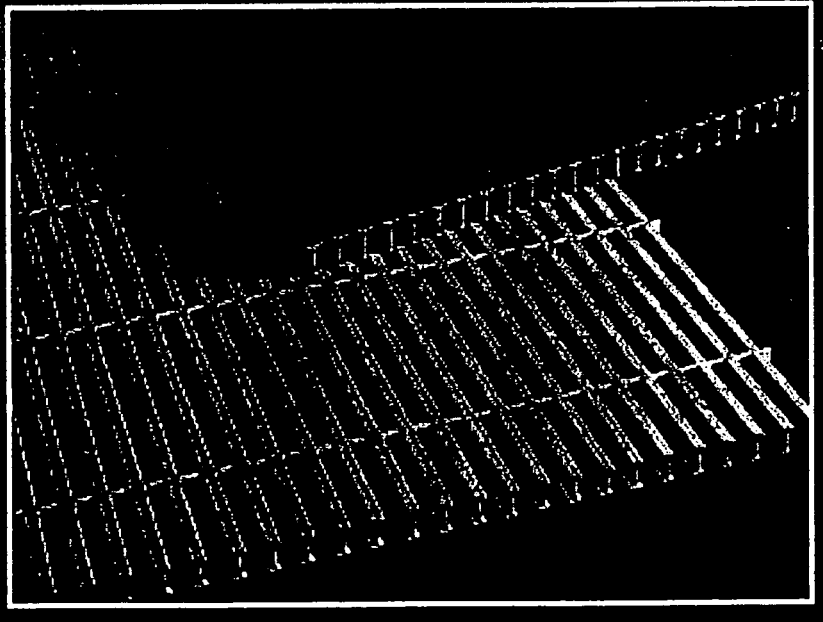
seasafe®

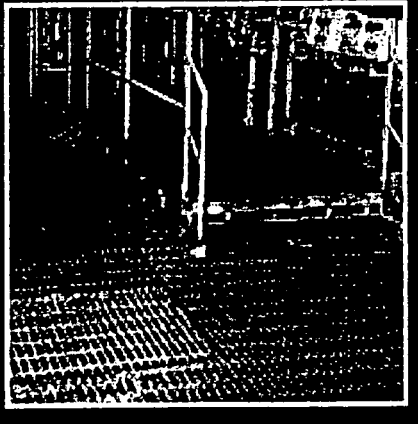
FIBERGLASS GRATING
& STRUCTURAL SYSTEMS

a subsidiary of AMICO







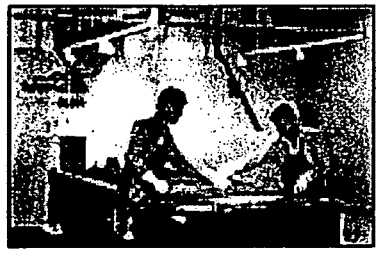


GatorDeck™ Pultruded Fiberglass Grating

seasafe®

FIBERGLASS GRATING & STRUCTURAL SYSTEMS

a subsidiary of AMICO



WHO ARE WE?

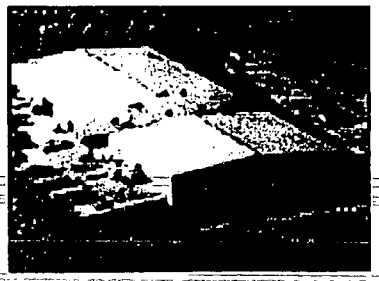
Seasafe is a manufacturer of molded and pultruded fiberglass reinforced plastic (FRP) products. These include grating, stair treads, floor plates, covered grating, hand-rails, ladders, cable tray, fiberglass struts and structural shapes. All are available through a network of stocking distributors and representatives. Founded in 1978, plants are in Lafayette, LA and Houston, TX. Capabilities include design and engineering assistance as well as custom manufacturing. Seasafe started in business as a fabricator, doing jobs no one else wanted to do or was incapable of doing. Seasafe is the world's only manufacturer of all three types of FRP grating: pultruded, open molded and compression molded.

AMICO (Alabama Metal Industries Corporation) acquired Seasafe in 1998. In 1999, AMICO/Seasafe acquired International Grating Inc., the exclusive manufacturer of compression-molded KorDek, the world's strongest molded FRP grating. Seasafe continues to grow and innovate, adding products and services to serve a diverse customer base.

THE EASY TO WORK WITH COMPANY...

Our position is very simple. People who pay attention to business and treat their customers the way they'd like to be treated themselves will always be winners. It's why we tell it like it is instead of beating around the bush. It's why customer satisfaction is one of our driving forces. And why improvement is our daily goal. We want you to enjoy doing business with us as much as we enjoy doing business with you.

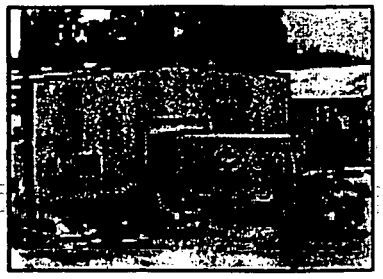
209 Glaser Dr.
Lafayette, LA 70508



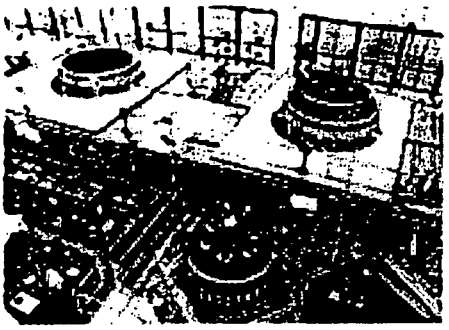
Plant Locations:

Toll Free: 1-800-326-8842
337-406-2345
Fax: 337-406-8880
www.seasafe.com

7625 Parkhurst
Houston, TX 77028



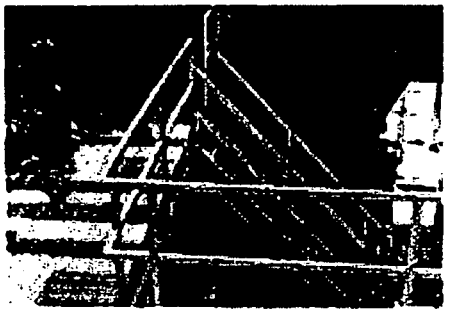
CUSTOMER SATISFACTION... from concept to installation.



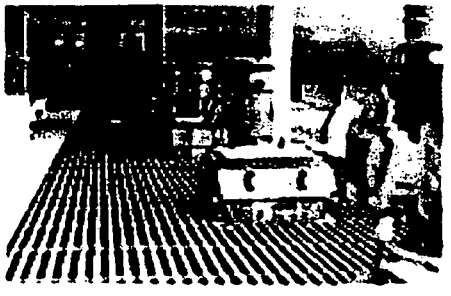
Electrical Generation
Turbine decking

Waste Water Treatment
Slip-resistant surfaces

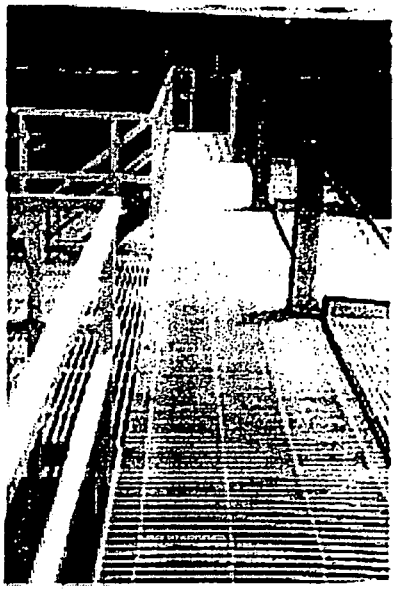
Oilfield Drilling
Mud Pit



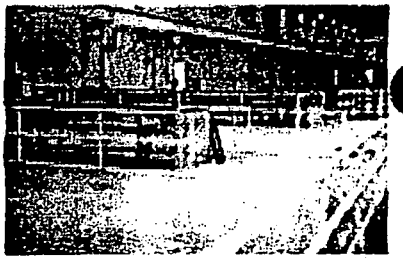
Offshore Production Platform
Mezzanine deck



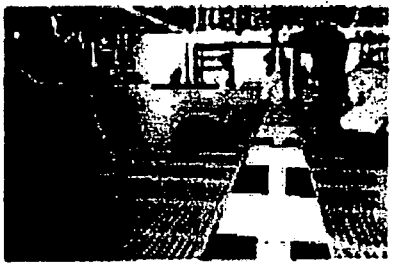
Drilling Industry
Pump access grating



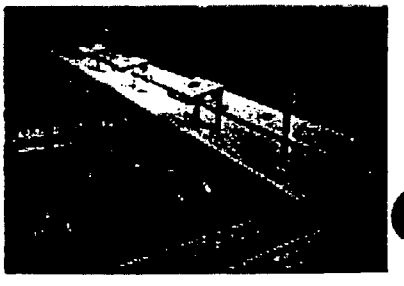
Chemical Storage
Tank truck loading platform



Copper Mining
Electrowinning Tankhouse



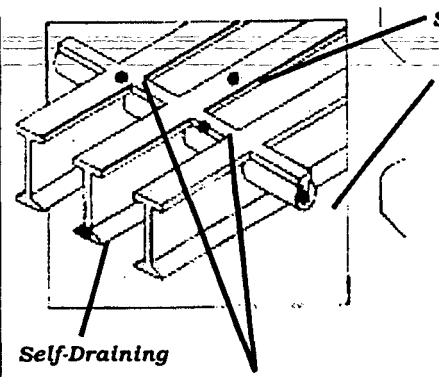
Electronics
Clean Room
Hard-disk drive manufacturing



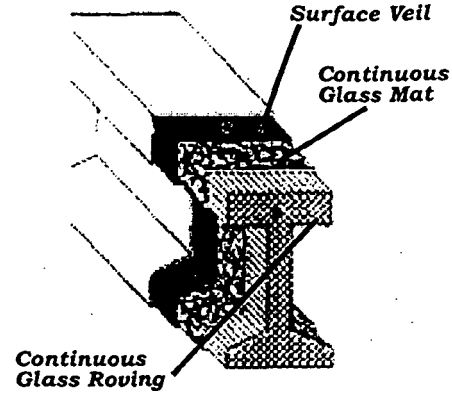
University Natatorium
Moveable Bulkhead

GATORDECK™ - PULTRUDED GRATING

Pultrusion is a continuous molding process in which glass roving, glass matting, and a synthetic surface veil are literally "pulled" sim-ultaneously through a flame-retardant polyester or vinylester resin bath. Desired geometric shapes are formed and solidified as they are pulled through a heated steel die. Seasafe's Gator-Deck® pultruded grating provides the ultimate combination of strength, corrosion resistance, and structural integrity as a result of the automated pultrusion process.



- *Corrosion Resistant*
- *Low Maintenance*
- *Fire Retardant*



STANDARD RESIN SYSTEMS

Standard Resins meet ASTM E-84 Class 1 flame rating, and include UV inhibitors for applications involving continuous exposure to the sun. Choose from the following standard resin systems. Or, call us about creating special resins for unique environments, such as low smoke, low toxicity, or extra low flame applications.

IFR - Made with a premium-grade isophthalic polyester flame-retardant resin system. Standard colors are yellow and gray for pultruded grating. WT grating and one inch I-bar grating are also available in white.

VFR - Made with a premium-grade vinylester flame-retardant resin system for added protection against corrosion. Standard colors are yellow and gray for pultruded grating.

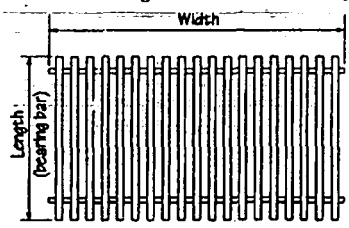
Special resins - Please call us to develop resin systems for your application.

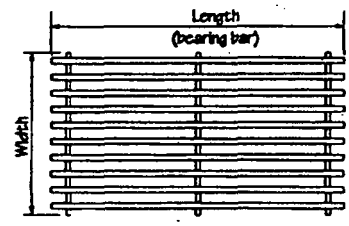
GatorDeck Pultruded Grating Selection

Series	Open Area	Depth	Top Flange Width	Bar Spacing	Bars/Ft.	Lbs/Ft²
I-6010	60%	1"	.6"	1-1/2"	8	2.35
I-4010	40%	1"	.6"	1"	12	3.41
I-6015	60%	1-1/2"	.6"	1-1/2"	8	2.83
I-4015	40%	1-1/2"	.6"	1"	12	4.13
T-2515	25%	1-1/2"	1-1/2"			
T-1215	12%	1-1/2"	1-1/2"			
T-5020	50%	2"	1"	2"	6	3.1
T-3320	33%	2"	1"		8	4.1
WT-3310	33%	1"	1-5/8"			
WT-1810	18%	1"	1-5/8"			

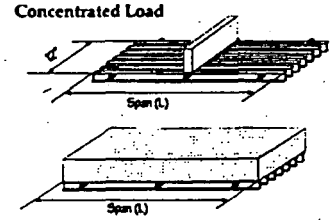
WIDTH X LENGTH

Grating sizes are specified using width (cross-rod dimension) and length (bearing bar dimension)





Concentrated Load



Clear span between grating supports

CL = concentrated load (lbs./ft of width)

SPAN INCHES	LOAD TYPE									LOAD FOR .25-inch deflection	LOAD FOR .375-inch deflection
12	UL	250	500	750	1000	1500	2000	2500	3000	13432	20148
	UL deflection	.005	.009	.014	.018	.028	.037	.046	.055		
	CL	250	500	750	1000	1500	2000	2500	3000	9731	13861
	CL deflection	.007	.014	.022	.029	.043	.057	.072	.086		
18	UL	133	250	500	750	1000	1500	2000	2500	3994	4981
	UL deflection	.014	.027	.043	.064	.084	.125	.167	.209		
	CL	125	250	500	750	1000	1500	2000	2500	3829	4229
	CL deflection	.041	.082	.164	.247	.329	.494	.659	.823		
24	UL	100	125	250	500	750	1000	1500	2000	1883	1884
	UL deflection	.025	.031	.062	.125	.187	.249	.374	.499		

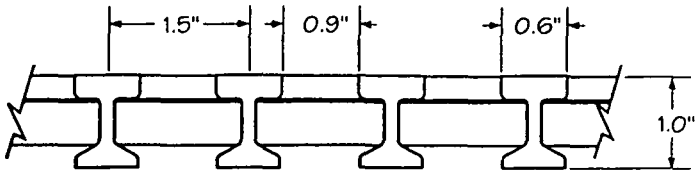
Uniform Load

Load deflection data was derived from laboratory tests conducted by Seasafe. Values tabled are for design selection only. A deflection of .25-inch is generally recommended as maximum for pedestrian comfort. It can be exceeded at the discretion of the specifying engineer.

Typical Physical Properties of Seasafe Pultruded Components

Property	Test Method	Units	I-Series 70-75% Glass	T-Series 65-70% Glass
Tensile Strength	ASTM D-638	PSI	125,000	100,000
Tensile Modulus	ASTM D-638	PSI	6.8 x 10⁶	5.6 x 10⁶
Flexural Strength	ASTM D-790	PSI	125,000	100,000
Flexural Modulus	ASTM D-790	PSI	6 x 10⁶	5.6 x 10⁶
Compressive Strength	ASTM D-695	PSI	65,000	60,000
Izod Impact Notch	ASTM D-256	Ft-Lbs/In	40	40
Barcol Hardness			50 (min)	50 (min)
Specific Gravity	ASTM D-792		2	2
Water Absorption	ASTM D-570	Max %	.03	.03
Flame Retardant	ASTM E-84		Less than 25	Less than 25
Flame Retardant	ASTM D-635		Self-Extinguishing	Self-Extinguishing

GATORDECK™ GD-I6010



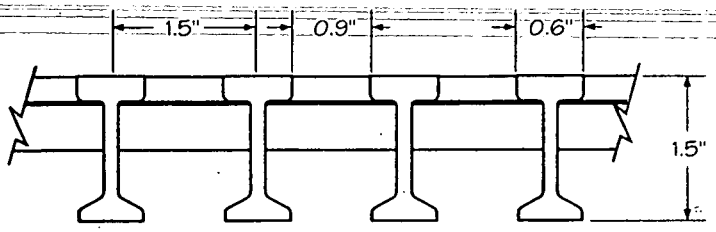
GATOR-DECK

Bearing Bar Type	I-Bar
Open Area	60%
Thickness	1.0"
Bearing Bar Centers	1.5"
Resin Systems	IFR, VFR
Colors	Yellow, Gray, or White
Approx. Weight	2.35 lbs/sq ft
Other Bar Spacing Avail.	40% & 50% Open Area

SPAN INCHES	LOAD TYPE									LOAD FOR .25-inch deflection	LOAD FOR .375-inch deflection
12	UL	250	500	1000	1500	2000	2400	2800	3200		
	UL deflection	.005	.010	.020	.029	.039	.047	.055	.063		
	CL	250	500	1000	1500	2000	2400	2800	3200		
	CL deflection	.007	.014	.029	.043	.058	.069	.081	.092		
18	UL	100	250	500	750	1000	1200	1500	1800	3012	4518
	UL deflection	.008	.021	.042	.062	.083	.100	.125	.149		
	CL	100	250	500	750	1000	1200	1500	1800	2778	4167
	CL deflection	.009	.023	.045	.068	.090	.108	.135	.162		
24	UL	100	200	300	400	600	800	1000	1200	1005	1508
	UL deflection	.025	.050	.075	.099	.149	.199	.249	.298		
	CL	100	200	400	600	800	1000	1200	1500	1225	1838
	CL deflection	.020	.041	.082	.122	.163	.204	.245	.306		
30	UL	100	200	300	400	500	600	800		434	650
	UL deflection	.058	.115	.173	.231	.288	.346	.461			
	CL	200	300	400	500	600	800	1000		677	1015
	CL deflection	.074	.111	.148	.185	.222	.295	.369			
36	UL	100	125	150	200	300	400			221	332
	UL deflection	.113	.141	.169	.226	.339	.452				
	CL	100	200	400	500	600	700			411	617
	CL deflection	.061	.122	.243	.304	.365	.426				
42	UL	75	100	125	150	250				139	209
	UL deflection	.135	.179	.224	.269	.449					
	CL	100	150	200	300	400				260	390
	CL deflection	.096	.144	.193	.289	.385					
48	UL	50	75	100	125					71	106
	UL deflection	.176	.265	.353	.441						
	CL	100	150	200	250					177	266
	CL deflection	.141	.212	.282	.353						

Load and deflection data was derived from lab tests conducted by Seasafe, Inc. Values tabled are for design selection and are approximate. Seasafe recommends selecting gratings based on a deflection of .25-inch or less. This deflection may be exceeded at the discretion of the designer. Deflections of .25-inch or less will give excellent pedestrian comfort. Deflections of .375-inch or less will give satisfactory pedestrian comfort. Loads for short spans in the .250 and .375 deflection columns have been omitted to allow for shear properties.

GATORDECK™ GD-I6015



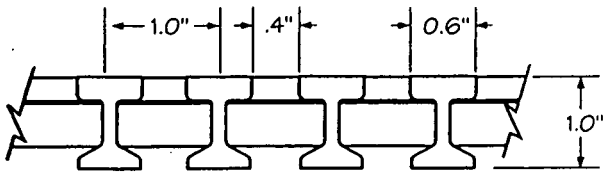
Bearing Bar Type	I-Bar
Open Area	60%
Thickness	1.5"
Bearing Bar Centers	1.5"
Resin Systems	IFR, VFR
Colors	Yellow or Gray
Approx. Weight	2.83 lbs/sq ft
Other Bar Spacing Avail.	40% & 50% Open Area

GATOR-DECK

SPAN INCHES	LOAD TYPE									LOAD FOR .25-inch deflection	LOAD FOR .375-inch deflection
12	UL	250	500	1000	1500	2000	2500	3500	4500		
	UL deflection	.002	.003	.007	.010	.013	.016	.023	.029		
	CL	250	500	1000	2000	3000	4000	5000	6000		
	CL deflection	.003	.006	.012	.024	.036	.048	.060	.072		
18	UL	250	500	1000	1500	2000	2500	3500	4500		
	UL deflection	.008	.015	.030	.045	.061	.076	.106	.136		
	CL	250	500	1000	2000	3000	4000	5000	6000		
	CL deflection	.008	.016	.031	.062	.093	.124	.155	.186		
24	UL	250	500	1000	1500	2000	2500	3000	3500	2737	4106
	UL deflection	.023	.046	.091	.137	.183	.228	.274	.320		
	CL	500	1000	1500	2000	2500	3000	3500	4500	3472	5208
	CL deflection	.036	.072	.108	.144	.180	.216	.252	.324		
30	UL	250	500	750	1000	1250	1500	1750	2000	1178	1768
	UL deflection	.053	.106	.159	.212	.265	.318	.371	.424		
	CL	250	500	1000	1500	2000	2300	2600	2900	1812	2717
	CL deflection	.035	.069	.138	.207	.276	.317	.359	.400		
36	UL	100	125	250	500	600	800	1000		631	947
	UL deflection	.040	.050	.099	.198	.238	.317	.396			
	CL	200	400	600	800	1000	1200	1400		1179	1769
	CL deflection	.042	.085	.127	.170	.212	.254	.297			
42	UL	100	125	200	300	400	600			315	473
	UL deflection	.079	.099	.159	.238	.317	.476				
	CL	100	200	300	400	600	1000			693	1039
	CL deflection	.036	.072	.108	.144	.217	.361				
48	UL	100	125	200	250	400				197	295
	UL deflection	.127	.159	.254	.317	.508					
	CL	100	200	300	400	600				508	762
	CL deflection	.049	.098	.148	.197	.295					
54	UL	75	100	125	250					140	210
	UL deflection	.134	.178	.223	.446						
	CL	100	200	300	600					335	502
	CL deflection	.075	.149	.224	.448						
60	UL	50	75	100						88	132
	UL deflection	.142	.213	.284							
	CL	100	200	300						247	370
	CL deflection	.101	.203	.304							

Load and deflection data was derived from lab tests conducted by Seasafe, Inc. Values tabled are for design selection and are approximate. Seasafe recommends selecting gratings based on a deflection of .25-inch or less. This deflection may be exceeded at the discretion of the designer. Deflections of .25-inch or less will give excellent pedestrian comfort. Deflections of .375-inch or less will give satisfactory pedestrian comfort. Loads for short spans in the .250 and .375 deflection columns have been omitted to allow for shear properties.

GATORDECK™ GD-I4010



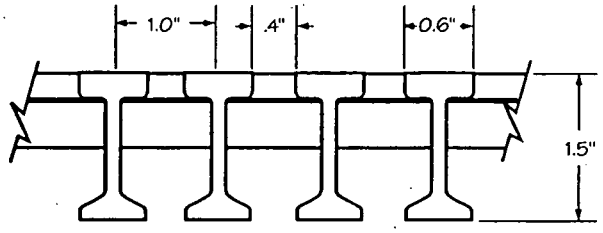
GATOR-DECK

Bearing Bar Type	I-Bar
Open Area	40%
Thickness	1.0"
Bearing Bar Centers	1.0"
Resin Systems	IFR, VFR
Colors	Yellow, Gray or White
Approx. Weight	3.41 lbs / sq ft

SPAN INCHES	LOAD TYPE									LOAD FOR .25-inch deflection	LOAD FOR .375-inch deflection
12	UL	250	500	1000	1500	2000	2500	3500	4500		
	UL deflection	.003	.006	.012	.018	.024	.030	.042	.054		
	CL	250	500	1000	1500	2000	2500	3500	4500		
	CL deflection	.005	.010	.019	.029	.039	.048	.068	.087		
18	UL	105	250	500	750	1000	1500	2250	3000	4464	6696
	UL deflection	.006	.014	.028	.042	.056	.084	.126	.168		
	CL	100	250	500	750	1500	2250	3000	4000	4198	6297
	CL deflection	.006	.015	.030	.045	.089	.134	.179	.238		
24	UL	100	200	300	400	600	800	1200	1600	1471	2206
	UL deflection	.017	.034	.051	.068	.102	.136	.204	.272		
	CL	100	200	400	600	1000	1400	1800	2200	1894	2841
	CL deflection	.013	.026	.053	.079	.132	.185	.238	.290		
30	UL	100	200	300	400	500	750	1000		649	974
	UL deflection	.039	.077	.116	.154	.193	.289	.385			
	CL	200	300	400	600	800	1200	1600		1019	1529
	CL deflection	.049	.074	.098	.147	.196	.294	.393			
36	UL	100	150	200	300	400	500			328	492
	UL deflection	.076	.114	.153	.229	.305	.381				
	CL	100	200	300	500	700	900			617	926
	CL deflection	.041	.081	.122	.203	.284	.365				
42	UL	75	100	150	200	300				212	318
	UL deflection	.088	.118	.177	.236	.353					
	CL	100	150	300	450	600				391	586
	CL deflection	.064	.096	.192	.288	.384					
48	UL	75	100	125	150					107	161
	UL deflection	.175	.234	.292	.350						
	CL	100	150	200	400					265	398
	CL deflection	.094	.141	.188	.377						

Load and deflection data was derived from lab tests conducted by Seasafe, Inc. Values tabled are for design selection and are approximate. Seasafe recommends selecting gratings based on a deflection of .25-inch or less. This deflection may be exceeded at the discretion of the design Deflections of .25-inch or less will give excellent pedestrian comfort. Deflections of .375-inch or less will give satisfactory pedestrian comfort. Loads for short spans in the .250 and .375 deflection columns have been omitted to allow for shear properties.

GATORDECK™ GD-I4015



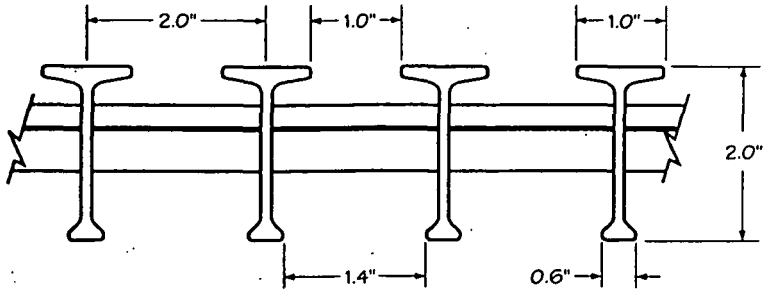
Bearing Bar Type	I-Bar
Open Area	40%
Thickness	1.5"
Bearing Bar Centers	1.0"
Resin Systems	Iso-Polyester FR Vinylester FR
Colors	Yellow & Gray
Approx. Weight	4.13 lbs/sq ft

GATOR-DECK

SPAN INCHES	LOAD TYPE									LOAD FOR .25-inch deflection	LOAD FOR .375-inch deflection
12	UL	250	500	1000	1500	2000	4000	5000	6000		
	UL deflection	.001	.002	.004	.007	.009	.017	.022	.026		
	CL	250	500	1000	2000	3000	4000	5000	6000		
	CL deflection	.002	.003	.007	.013	.020	.027	.033	.040		
18	UL	250	500	1000	1500	2000	2500	3500	4000		
	UL deflection	.006	.010	.020	.030	.041	.051	.071	.081		
	CL	250	500	1000	2000	3000	4000	5000	6000		
	CL deflection	.005	.011	.021	.043	.064	.085	.107	.128		
24	UL	250	500	800	1200	1600	2000	2500	3000	4121	6181
	UL deflection	.015	.030	.049	.073	.097	.121	.152	.182		
	CL	500	750	1000	1500	2000	3000	4500	6000	5137	7705
	CL deflection	.024	.037	.049	.073	.097	.146	.219	.292		
30	UL	250	500	750	1000	1200	1600	2200	2800	1759	2638
	UL deflection	.036	.071	.107	.142	.171	.227	313	.398		
	CL	250	500	1000	1500	2000	2800	3500	4200	2734	4102
	CL deflection	.023	.046	.091	.137	.183	.256	.320	.384		
36	UL	100	200	400	600	900	1200	1500		947	1420
	UL deflection	.026	.053	.106	.158	.238	.317	.396			
	CL	250	500	1000	1500	2000	2400	2800		1769	2653
	CL deflection	.035	.071	.141	.212	.283	.339	.396			
42	UL	100	200	300	450	600	750			474	711
	UL deflection	.053	.105	.158	.237	.316	.395				
	CL	100	200	400	800	1200	1600			1037	1556
	CL deflection	.024	.048	.096	.193	.289	.386				
48	UL	100	200	300	400	500				317	476
	UL deflection	.079	.158	.237	.315	.394					
	CL	200	400	600	800	1200				762	1143
	CL deflection	.066	.131	.197	.262	.394					
54	UL	100	125	200	300					213	320
	UL deflection	.117	.147	.235	.352						
	CL	100	250	500	750					501	752
	CL deflection	.050	.125	.249	.374						
60	UL	100	125	200						126	189
	UL deflection	.199	.248	.397							
	CL	100	250	600						399	598
	CL deflection	.063	.157	.376							

Load and deflection data was derived from lab tests conducted by Seasafe, Inc. Values tabled are for design selection and are approximate. Seasafe recommends selecting gratings based on a deflection of .25-inch or less. This deflection may be exceeded at the discretion of the designer. Deflections of .25-inch or less will give excellent pedestrian comfort. Deflections of .375-inch or less will give satisfactory pedestrian comfort. Loads for short spans in the .250 and .375 deflection columns have been omitted to allow for shear properties.

GATORDECK™ GD-T5020



Bearing Bar Type	T-Bar
Open Area	50%
Thickness	2.0"
Bearing Bar Centers	2.0"
Resin Systems	IFR, VFR
Colors	Yellow & Gray
Approx. Weight	3.10 lbs/sq ft
Other Bar Spacing Avail.	33% Open Area

GATOR-DECK

SPAN INCHES	LOAD TYPE									LOAD FOR .25-inch deflection	LOAD FOR .375-inch deflection
24	UL	500	750	1000	1250	1500	2000	3000	4000		
	UL deflection	.025	.038	.050	.063	.075	.100	.150	.200		
	CL	500	750	1000	1250	1500	2000	3000	4000		
	CL deflection	.021	.031	.042	.052	.062	.083	.125	.166		
30	UL	250	500	750	1000	1500	2000	2500	3000	1938	2907
	UL deflection	.032	.065	.097	.129	.194	.258	.323	.387		
	CL	250	500	750	1000	1500	2000	2500	3000	3000	4500
	CL deflection	.021	.042	.063	.083	.125	.167	.208	.250		
36	UL	100	250	500	750	1000	1250	1500	2000	999	1499
	UL deflection	.025	.063	.125	.188	.250	.313	.375	.500		
	CL	100	250	500	750	1000	1250	1500	2000	1800	2701
	CL deflection	.014	.035	.069	.104	.139	.174	.208	.278		
42	UL	100	125	250	500	750	1000	1250		550	825
	UL deflection	.045	.057	.114	.227	.341	.454	.568			
	CL	100	125	250	500	750	1000	1250		1166	1750
	CL deflection	.021	.027	.054	.107	.161	.214	.268			
48	UL	100	250	300	400	500	600			313	469
	UL deflection	.080	.200	.240	.320	.400	.480				
	CL	100	250	300	400	500	750			786	1179
	CL deflection	.032	.080	.095	.127	.159	.239				
54	UL	100	125	250	300	400				208	313
	UL deflection	.120	.150	.300	.360	.480					
	CL	100	250	300	400	500				561	841
	CL deflection	.045	.112	.134	.178	.223					
60	UL	75	100	200	250					129	193
	UL deflection	.146	.195	.389	.486						
	CL	100	250	500	750					400	600
	CL deflection	.062	.156	.312	.469						
66	UL	75	100	125	150					94	141
	UL deflection	.200	.267	.333	.400						
	CL	100	200	300	400					313	469
	CL deflection	.080	.160	.240	.320						
72	UL	75	100	125						67	100
	UL deflection	.281	.375	.469							
	CL	100	250	400						244	366
	CL deflection	.103	.256	.410							
78	UL	50	75							48	72
	UL deflection	.260	.390								
	CL	100	250							194	292
	CL deflection	.129	.322								

Load and deflection data was derived from lab tests conducted by Seasafe, Inc. Values tabled are for design selection and are approximate. Seasafe recommends selecting gratings based on a deflection of .25-inch or less. This deflection may be exceeded at the discretion of the designer. Deflections of .25-inch or less will give excellent pedestrian comfort. Deflections of .375-inch or less will give satisfactory pedestrian comfort. Loads for short spans in the .250 and .375 deflection columns have been omitted to allow for shear properties.

Accessories

GATOR-DECK

• For proper fit, maximum performance

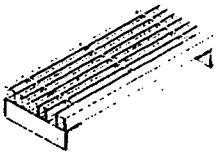
Gator-Deck® Treads

seasafe

• Strong, safe, and corrosion resistant

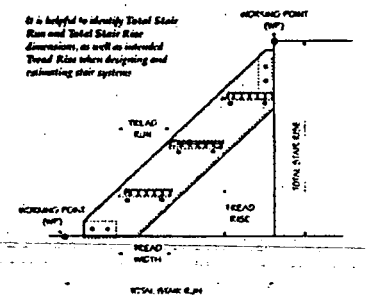
Stair Tread Series

Series	Flush Top	Resin	Color
I-6010	Yes	IFR/VFR	Y/G
I-6015	Yes	IFR/VFR	Y/G
T-5020	No	IFR/VFR	Y/G

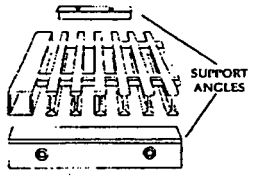


Resins
IFR = Isophthalic polyester flame-retardant
VFR = Vinylester flame-retardant

Colors
Y = Yellow
G = Gray



It is helpful to identify Total Stair Run and Total Stair Rise dimensions, as well as intended Tread Rise when designing and estimating stair systems



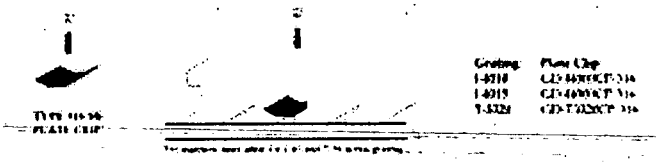
Stair treads are available with optional support angles

Accessories

GATOR DECK

• For proper fit, maximum performance

Clip Assemblies

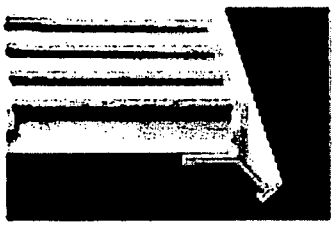


T-5020		I-6015		I-6010	
Span	Tread Deflection for the Concentrated Load of:				
	250 lbs.	500 lbs.	250 lbs.	500 lbs.	250 lbs.	500 lbs.
18"	0.009	0.018	0.010	0.019	0.029	0.069
24"	0.018	0.036	0.019	0.038	0.078	0.147
30"	0.027	0.054	0.038	0.076	0.137	
36"	0.036	0.081	0.057	0.105	0.216	
42"	0.054	0.108	0.086	0.171		
48"	0.081	0.162	0.124	0.247		

Standard Panels

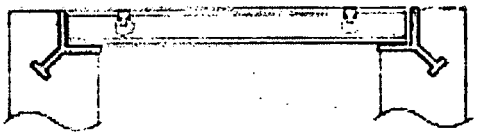
3'-0 x 24'-0	4'-0 x 24'-0	
3'-0 x 20'-0	4'-0 x 20'-0	4'-0 x 8'-0
3'-0 x 10'-0	4'-0 x 10'-0	4'-0 x 12'-0

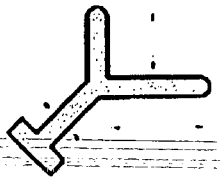
Custom Panel sizes available; up to 5' widths and 24' lengths. Call Seasafe (337-406-2345) for details.



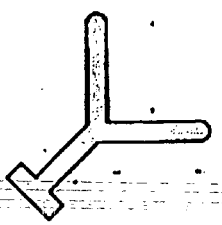
Embedment Angles

FRP pultruded embedment angles, with continuous integral anchor, provide corrosion resistant grating support in trenches and other concrete openings. Available for all thicknesses of Gator-Deck® grating.

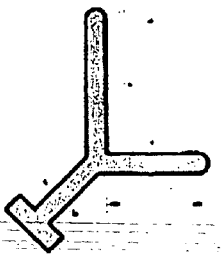




EBA-10-VFR



EBA-15-VFR



EBA-20-VFR

CHEMICAL COMPATIBILITY

The following information is based on full immersion laboratory tests and resin manufacturer's data. In some environments, splashing may lead to further corrosion than indicated due to the evaporation of water. Regular washdown is recommended in these situations. All data represents the best available information, is believed to be correct, and is not a warranty of product performance. User tests are recommended to determine actual suitability of service, for which Seasafe will gladly supply grating samples. Seasafe does not take responsibility for design or suitability of materials for service intended, nor will Seasafe be held liable for consequential or special damages due to defective material or workmanship including, without limitation, labor charge and/or other expense of damage to properties resulting from loss of materials or profits, or increased expenses of operation.

Chemical Environment	Max. Wt.%	Max. °F	Exposure IFR	Exposure VFR
Acetic Acid	50	Max.	C	C
Acetone	100	75	NR	I
Alum	All	Max.	C	C
Aluminum Chloride	All	Max.	C	C
Aluminum Nitrate	All	75	F	S
Ammonium Bicarbonate	15/Sat.	125/130	S	C
Ammonium Carbonate	NR/Sat.	NR	NR	F
Ammonium Chloride	Sat.	170/190	I	C
Ammonium Hydroxide	All	75	I	F
Ammonium Nitrate	Sat.	160/190	F	C
Ammonium Sulfate	Sat.	170/200	F	C
Aromatic Solvents	All	75	NR	T
Barium Salts	All	Max.	C	C
Benzene	100	140	NR	I
Boracic Acid	Sat.	150/200	F	C
Borax	Sat.	170/200	F	C
Calcium Carbonate	Sat.	170/200	C	C
Calcium Chloride	Sat.	170/200	C	C
Calcium Hydroxide	25	Max.	I	F
Calcium Hypochlorite	All	Max.	NR	F
Calcium Nitrate	Sat.	180/200	F	F
Calcium Salts	All	Max.	C	C
Carbon Tetrachloride	100	75	NR	F
Chlorinated Hydrocarbons	100	75	T	T
Chlorine, Dry Gas		140/170	T	I
Chlorine, Wet Gas	Sat.	Max.	NR	I
Chlorobenzene	100	75	NR	I
Citric Acid	All	Max.	C	C
Copper Salts	All	Max.	C	C
Crude Oil (Sweet or Sour)	All	Max.	C	C
Cyclohexane	NR	NR	NR	NR
Diesel Fuel	100	160/180	C	C
Ethanol	50	75/90	C	C
Ethylene Chloride	NR	NR	NR	NR
Ethylene Glycol	100	90/200	C	C
Fatty Acids	Sat.	180/200	C	C
Ferric Chloride	100	Max.	C	C
Ferric Nitrate	Sat.	170/200	C	C
Ferric Salts	All	Max.	C	C
Fluoboric Acid	NR/Sat.	NR/165	NR	I
Formaldehyde	37	150	F	I
Fuel (Diesel, Jet, Gasoline)	All	100	C	C
Glucose	100	170/200	C	C
Glycerine	100	Max.	C	C
Heptane	100	110/130	C	C
Hexane	100	90/130	C	C
Hydrochloric Acid	10	Max.	F	F
Hydrochloric Acid	30	Max.	F	F
Hydrofluoric Acid	20	75	NR	I
Hydrogen Bromide, Dry	100	160/200	F	F
Hydrogen Bromide, Wet	100	75/130	I	F
Hydrogen Peroxide	30	75	I	F
Hydrogen Sulfide, Dry	100	170/210	C	C
Hydrogen Sulfide, Wet	100	170/210	C	C
Hypochlorous Acid	20	80/150	F	F
Isopropyl Alcohol	NR/15	NR/60	NR	I
Kerosene	100	140/180	C	C
Lactic Acid	100	Max.	C	C
Lead Acetate	Sat.	170/200	C	C
Lead Chloride	Sat.	140/200	C	C
Lead Nitrate	Sat.	—/200	C	C
Lime Slurry	Sat.	Max.	C	C

Chemical Environment	Max. Wt.%	Max. °F	Exposure IFR	Exposure VFR
Linseed Oil	100	150/190	C	C
Lithium Chloride	Sat.	150/190	C	C
Lithium Salts	All	Max.	C	C
Magnesium Carbonate	Sat.	140/170	C	C
Magnesium Chloride	Sat.	170/200	C	C
Magnesium Hydroxide	Sat.	150/190	C	C
Magnesium Nitrate	Sat.	140/180	C	C
Magnesium Salts	All	Max.	C	C
Magnesium Sulfate	Sat.	170/190	C	C
Mercuric Chloride	Sat.	150/190	C	C
Mercurous Chloride	Sat.	140/160	C	C
Mineral Oils	100	170/200	C	C
Monochlorobenzene	NR	NR	NR	NR
Naptha	100	140/170	C	C
Nickel Chloride	Sat.	170/200	C	C
Nickel Nitrate	Sat.	170/200	C	C
Nickel Salts	All	Max.	C	C
Nickel Sulfate	Sat.	170/200	C	C
Nitric Acid	20	120	I	F
Nitric Acid	35	100	I	F
Nitrous Acid	100	75	C	C
Oxalic Acid	All	75/120	C	C
Ozone (Sewage Treatment)		300	C	C
Phosphoric Acid	85	Max.	S	C
Phosphoric Acid, Super	115	Max.	I	S
Potassium Aluminum Sulfate	Sat.	170/200	C	C
Potassium Chloride	Sat.	170/200	C	C
Potassium Dichromate	Sat.	170/200	C	C
Potassium Hydroxide	10	120	NR	I
Potassium Nitrate	Sat.	170/200	C	C
Potassium Permanganate	100	80/210	F	I
Potassium Salts	All	Max.	C	C
Potassium Sulfate	Sat.	170/200	C	C
Propylene Glycol	All	170/200	C	C
Sodium Acetate	Sat.	160/200	C	C
Sodium Benzoate	Sat.	170/200	C	C
Sodium Bicarbonate	Sat.	140/175	C	C
Sodium Bisulfate	All	170/200	C	C
Sodium Bromide	All	170/200	C	C
Sodium Carbonate	10/35	80/160	F	F
Sodium Chloride	Sat.	170/200	C	C
Sodium Cyanide	All	75	F	F
Sodium Hydroxide	50	Max.	NR	F
Sodium Hydroxide	25	Max.	NR	F
Sodium Monophosphate	Sat.	170/200	C	C
Sodium Nitrate	Sat.	170/200	C	C
Sodium Salts, Neutral	All	Max.	C	C
Sodium Sulfate	Sat.	170/200	C	C
Sodium Thiosulfate	All	100/120	C	C
Stannic Chloride	Sat.	160/180	C	C
Styrene	NR	NR	NR	NR
Sulfur Trioxide	100	80/200	F	C
Sulfuric Acid	25	Max.	I	F
Tartaric Acid	Sat.	170/200	I	C
Toluene	100	120	NR	I
Urea	Sat.	150/180	C	C
Vinegar	100	170/200	C	C
Water (Fresh, Salt, Mod. Oil)	100	Max.	C	C
Water, Sea	Sat.	170/190	C	C
Xylene	NR	NR	NR	NR
Zinc Chloride Plating	All	75	I	I
Zinc Salts	100	Max.	C	C

Number/Number = IFR/VFR; Sat. = saturated solution; C = continuous; F = frequent; I = infrequent; NR = not recommended; T = Test

SEASAFE FRP PRODUCTS

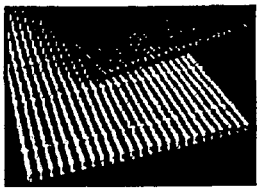
Fiberglass Structural Systems Seasafe structural systems offer a variety of high-strength, maintenance-free products. Ask about our custom capabilities including design and engineering, as well as manufacturing.

GRATING

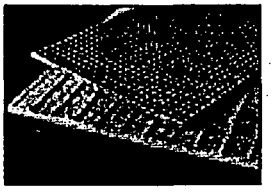
GatorDeck Pultruded Grating – Competitively priced – ideal for long spans

GatorGrate Molded Grating – Bi-directional strength – integral anti-slip top surface

KorDek Compression-Molded Grating – World's strongest FRP grating. Only Seasafe has it!



GatorDeck Pultruded Grating



GatorGrate Molded Grating

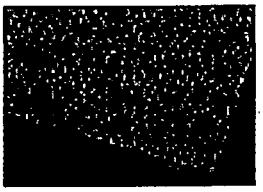
KorDek Compression-Molded Grating

FLOOR PLATE

GatorPlate Floor Plate – Anti-slip surface for slippery spots or large areas

KorPlate Floor Plate – Strong compression-molded diamond-plate flooring

GatorGrate Covered Grating – Combines grating and floor plate in one integral panel



GatorPlate Molded Floor Plate

KorPlate Compression-Molded Floor Plate

Seasafe Covered Grating

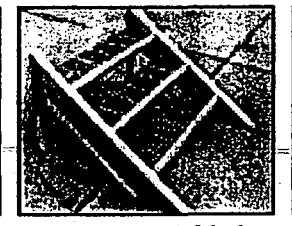
STAIR TREADS & COVERS

GatorDeck Pultruded Stair Treads – Economical – 6 span widths, 2 resins, 2 colors

GatorGrate Molded Stair Treads – Carries more load than other molded stair treads

Seasafe Stair Tread Covers – Overlay wooden, metal or concrete stairs for added safety

GatorDeck Pultruded Stair Treads



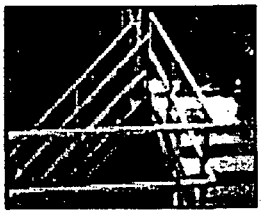
GatorGrate Molded Stair Treads

Seasafe Stair Tread Covers

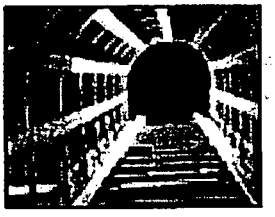
HANDRAILS – Seasafe Pultruded Handrails built to OSHA standards

LADDERS – Seasafe Safety Ladders & Caged Ladders – Positive traction and easy gripping for safety

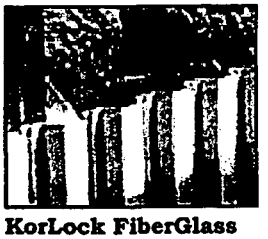
STRUCTURAL SHAPES – Seasafe Custom Shapes plus I-beams, wide flange beams, channels, bars, round and square tubes



Seasafe Pultruded Handrails



Seasafe Ladders & Caged Ladders



KorLock FiberGlass Sheet Pile

SEE US ON THE WEB

Site covers 50 pages and includes a complete set of model grating specifications for each of three types of grating, all in downloadable pdf format. Load and deflection tables (pdf) are provided, together with standard panel sizes and weights, plus resin color and surface options. Site includes details on full line of Seasafe products.

www.seasafe.com.

seasafe®

a subsidiary of

ALABAMA METAL INDUSTRIES CORPORATION

Seasafe, Inc.
209 Glaser Drive - Lafayette, LA 70508
Toll Free: 800-326-8842 **Fax:** 337-406-8880
e-mail: seasafe@seasafe.com - **Homepage:** www.seasafe.com

Represented by:

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For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other
(Read Instructions prior to initiating this form.)

Date: 3/23/05

X New Submittal

Resubmittal

Section I REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS *(This section to be initiated by the Subcontractor)*

To:	From:		
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026	Subcontract No: KH020577	Submittal No. 111 Previous Submittal No.

Specification Sec. No. (Cover only one section with each Submittal)

Project Title: Construction of the Present Landfill Accelerated Action

Item No.	Description of Item Submitted (Type, size, model number, etc.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8)	No. of Copies	Contract Reference Document: Spec. Paragraph No.	Contract Reference Document: Drawing Sheet No.	Deviation (See Instruction #6)	Contractor Action Code (See Instruction #9)
a.	b.	c.	d.	e.	f.	g.	h.
1	Track Loader for Use Installing 10" on 4 to 1 GDN – Weight and Ground Pressure	N/A	N/A	None	N/A	N/A	
	Weight = 33,200 pounds Ground Pressure = 12 psi						

Remarks:
Acknowledge Receipt of Information
Robert V. Davis
04/01/05

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.
Paul Kreitz 3/23/05
Signature of Subcontractor:

Section II Reviewed

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

CQAE J.H. Rale, Tt

For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)

Date: 3/23/05

X New Submittal

Resubmi

Section I REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS *(This section to be initiated by the Subcontractor)*

To:	From:	Subcontract No: KH020577	Submittal No. 112
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026		Previous Submittal No.

Specification Sec. No. 01310

Project Title: Construction of the Present Landfill Accelerated Action

Item No.	Description of Item Submitted (Type, size, model number, etc.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8)	No. of Copies	Contract Reference Document		Deviation (See Instruction #6)	Contractor Action Code (See Instruction #9)
				Spec. Paragraph No.	Drawing Sheet No.		
a.	b.	c.	d.	e.	f.	g.	h.
1	24-inch RFA Samples prior to Change in Sampling Strategy	N/A	6	N/A	N/A	N/A	

Remarks: One copy given to QA / Earth-Tech for review. This is an interim submittal only. It is not the final record survey and therefore is not stamped by the Licensed Surveyor. Final record survey for each layer will come at completion of that layer.

Acknowledge Receipt of Test Results

Robert Davis 04/02/05

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.

Signature of Subcontractor:

Section II Reviewed

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:
		3/23/05

CRAE J.H.R.L. TT

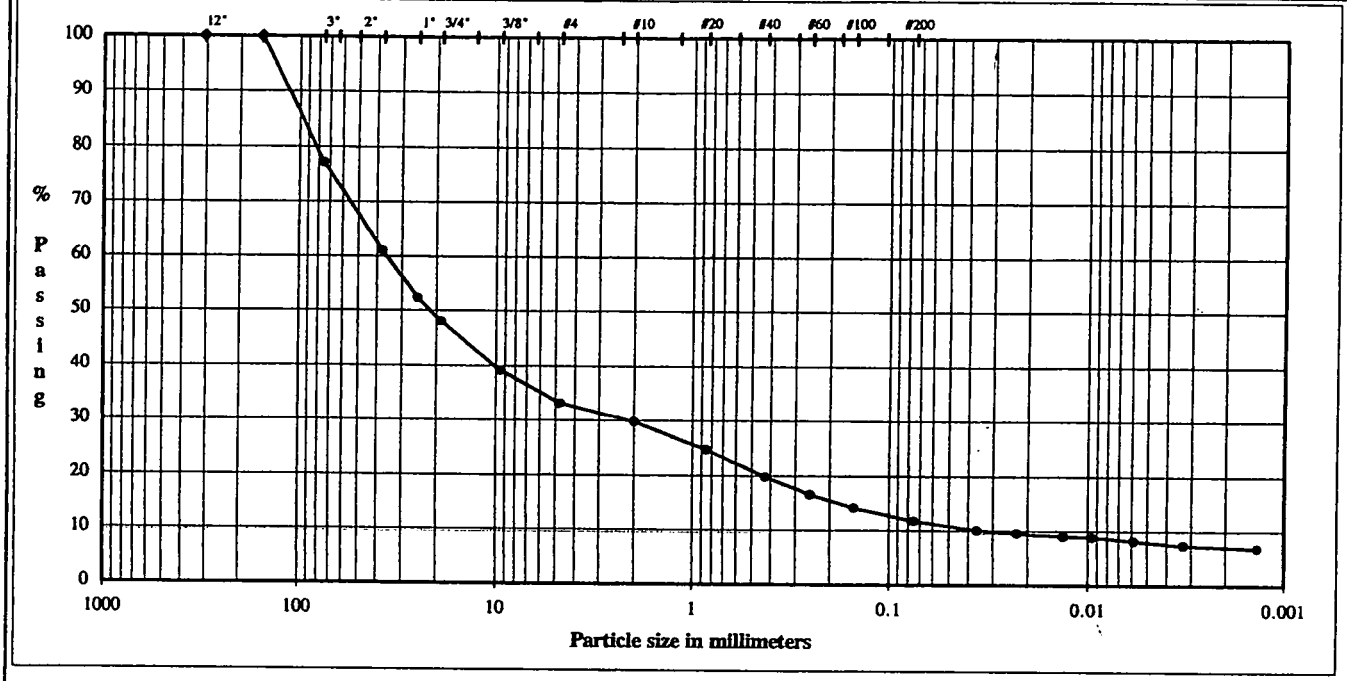
February-05

043-2246-0002

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: **Rocky Flats/Field & Lab Testing/CO**
SAMPLE ID: **AC22-1** Depth: -
TYPE: **Pail**



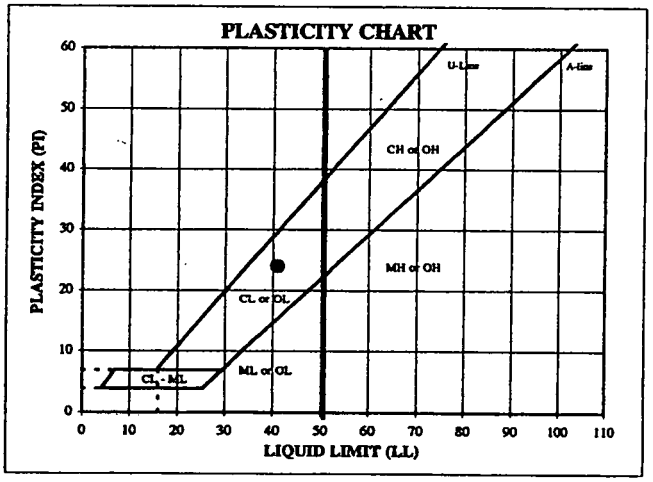
COBBLES	GRAVEL		SAND			FINES
	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0		
6.0"	154.2	100.0	Cobbles	22.86
6.0"	154.2	100.0		
6.0"	154.2	100.0		
3.0"	75.0	77.1		
1.5"	37.5	61.0		
1.0"	25.0	52.3	Coarse Gravel	29.17
0.75"	19.0	48.0		
0.375"	9.5	39.1		
#4	4.8	33.1	Fine Gravel	14.91
#10	2.00	29.8	Coarse Sand	3.26
#20	0.85	24.8		
#40	0.43	19.8	Medium Sand	9.99
#60	0.25	16.6		
#100	0.15	14.2		
#200	0.075	11.8	Fine Sand	8.04

Hydrometer Analysis

(mm)	%Finer		
0.036	10.1		
0.023	9.5		
0.013	9.0	Fines	
0.0095	8.9	Silt or Clay	11.78
0.0059	8.2		
0.0033	7.3		
0.0014	6.8		



ATTERBERG LIMITS

M_c	LL	PL	PI	SpG (assumed)
–	41	17	24	2.70

DESCRIPTION: Moderate yellowish brown (10YR 5/4) poorly graded gravel with clay and sand

USCS: GP-GC

TECH: MKS
DATE: 02/18/2005
REVIEW: MB

February-05

043-2246-0002

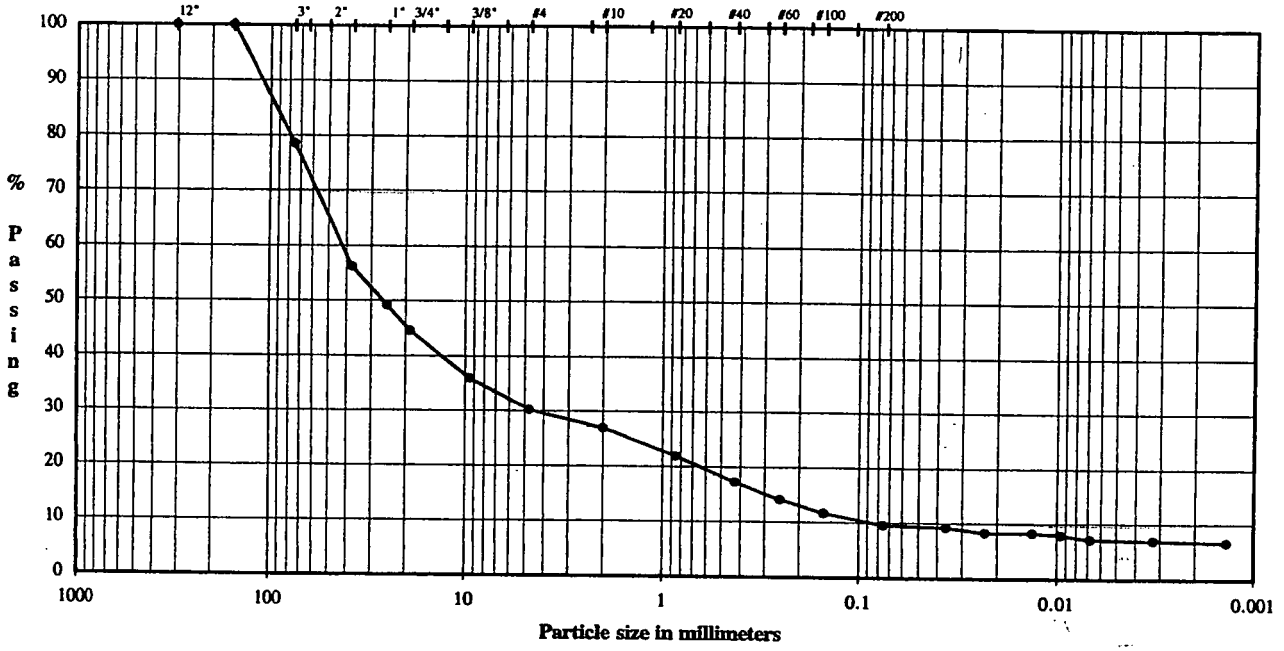
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: Rocky Flats/Field & Lab Testing/CO

SAMPLE ID: AC22-2 Depth: —

TYPE: Pail



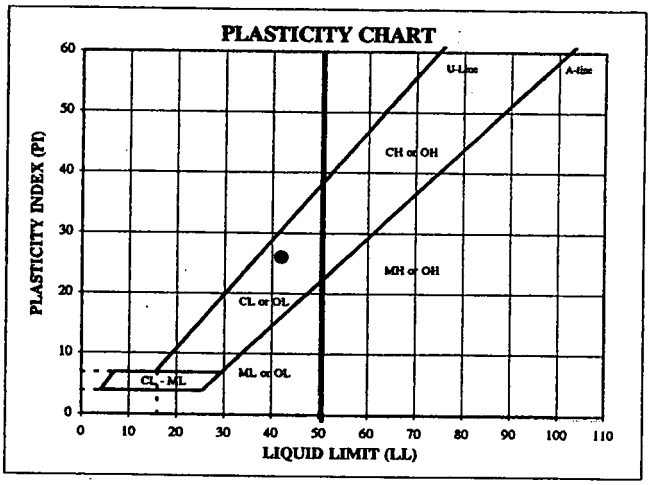
COBBLES	GRAVEL		SAND			FINES
	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0		
6.0"	154.2	100.0	Cobbles	21.41
6.0"	154.2	100.0		
6.0"	154.2	100.0		
3.0"	75.0	78.6		
1.5"	37.5	56.3		
1.0"	25.0	49.2	Coarse Gravel	34.09
0.75"	19.0	44.5		
0.375"	9.5	36.0		
#4	4.8	30.2	Fine Gravel	14.27
#10	2.00	27.0	Coarse Sand	3.28
#20	0.85	21.9		
#40	0.43	17.3	Medium Sand	9.71
#60	0.25	14.1		
#100	0.15	11.7		
#200	0.075	9.6	Fine Sand	7.67

Hydrometer Analysis

(mm)	%Finer		
0.036	9.2		
0.023	8.3		
0.013	8.3	Fines	
0.0095	8.0	Silt or Clay	9.58
0.0068	7.2		
0.0032	7.0		
0.0014	6.7		



ATTERBERG LIMITS

M_c	LL	PL	PI	SpG (assumed)
—	42	16	26	2.70

DESCRIPTION: Moderate yellowish brown (10YR 5/4) poorly graded gravel with clay and sand

USCS: GP-GC

TECH	PRH
DATE	02/20/2005
REVIEW	MB

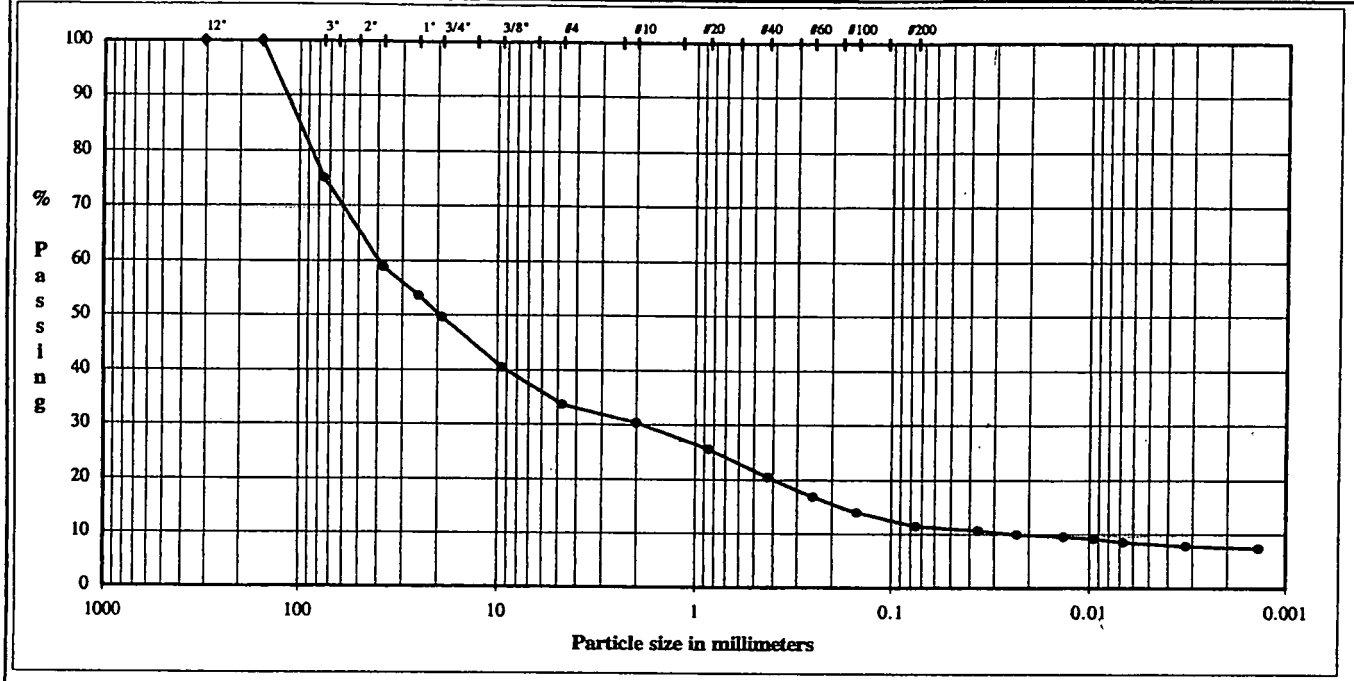
February-05

043-2246-0002

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: **Rocky Flats/Field & Lab Testing/CO**
SAMPLE ID: **AC22-3** Depth: -
TYPE: **Pail**



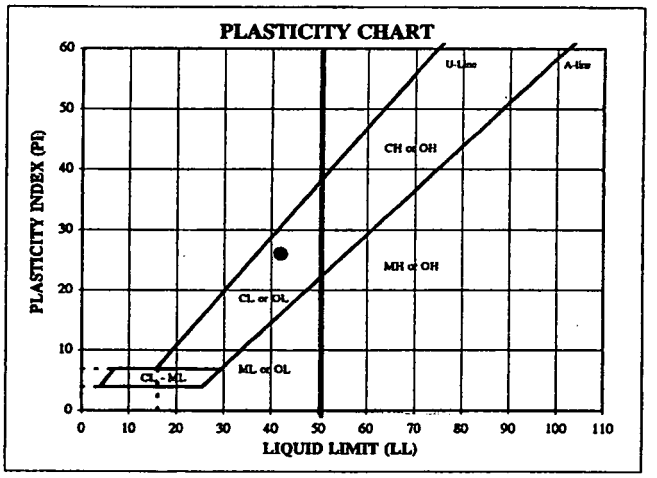
COBBLES	GRAVEL		SAND			FINES
	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Particle Size Percentage
12.0"	304.8	100.0		
6.0"	154.2	100.0	Cobbles	24.89
6.0"	154.2	100.0		
6.0"	154.2	100.0		
3.0"	75.0	75.1		
1.5"	37.5	58.9		
1.0"	25.0	53.5	Coarse Gravel	25.46
0.75"	19.0	49.7		
0.375"	9.5	40.5		
#4	4.8	33.7	Fine Gravel	15.93
#10	2.00	30.3	Coarse Sand	3.38
#20	0.85	25.6		
#40	0.43	20.5	Medium Sand	9.90
#60	0.25	16.9		
#100	0.15	14.0		
#200	0.075	11.4	Fine Sand	9.02

Hydrometer Analysis

(mm)	%Finer		
0.036	10.6		
0.023	9.9		
0.013	9.6	Fines	
0.0095	9.2	Silt or Clay	11.43
0.0067	8.5		
0.0032	7.8		
0.0014	7.4		



ATTERBERG LIMITS

M_c	LL	PL	PI	SpG (assumed)
--	42	16	26	2.70

DESCRIPTION: Moderate yellowish brown (10YR 5/4) poorly graded gravel with clay and sand

USCS: GP-GC

TECH	PRH
DATE	02/20/2005
REVIEW	MB

February-05

043-2246-0002

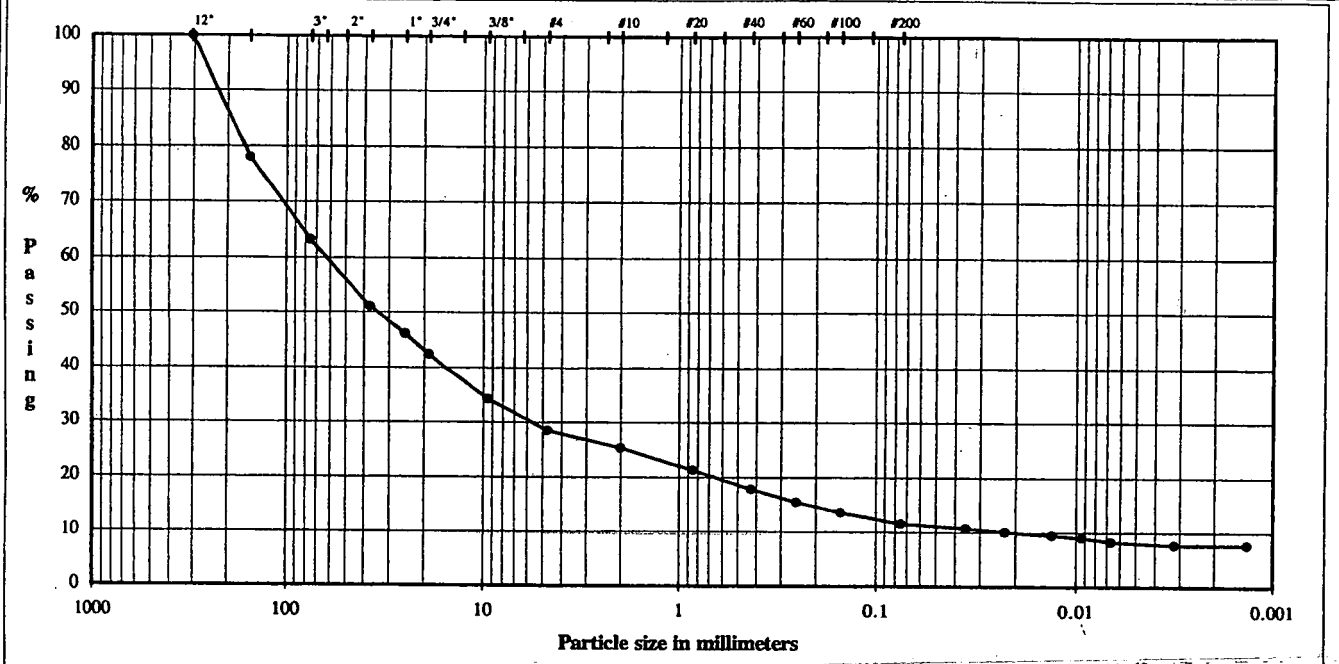
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: Rocky Flats/Field & Lab Testing/CO

SAMPLE ID: AC22-4 Depth: -

TYPE: Pail



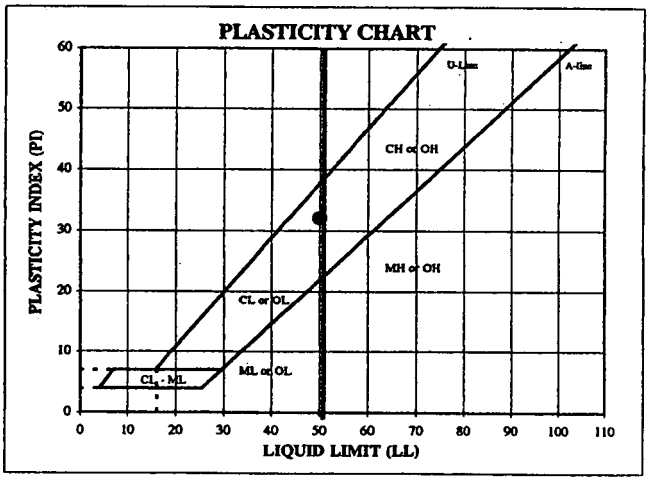
COBBLES	GRAVEL		SAND			FINES
	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Particle Size Percentage
12.0"	304.8	100.0		
6.0"	154.2	78.1	Cobbles	36.80
6.0"	154.2	78.1		
6.0"	154.2	78.1		
3.0"	75.0	63.2		
1.5"	37.5	51.0		
1.0"	25.0	46.1	Coarse Gravel	20.83
0.75"	19.0	42.4		
0.375"	9.5	34.3		
#4	4.8	28.5	Fine Gravel	13.85
#10	2.00	25.4	Coarse Sand	3.14
#20	0.85	21.3		
#40	0.43	17.8	Medium Sand	7.56
#60	0.25	15.5		
#100	0.15	13.6		
#200	0.075	11.6	Fine Sand	6.28

Hydrometer Analysis

(mm)	%Finer		
0.036	10.7		
0.023	10.1		
0.013	9.5	Fines	
0.0093	9.0	Silt or Clay	11.55
0.0067	8.3		
0.0032	7.7		
0.0014	7.7		



ATTERBERG LIMITS

M_c	LL	PL	PI	SpG (assumed)
--	50	18	32	2.70

DESCRIPTION: Moderate yellowish brown (10 YR 5/4) poorly graded gravel with clay and sand

USCS: GP-GC

TECH: AGE

DATE: 03/01/2005

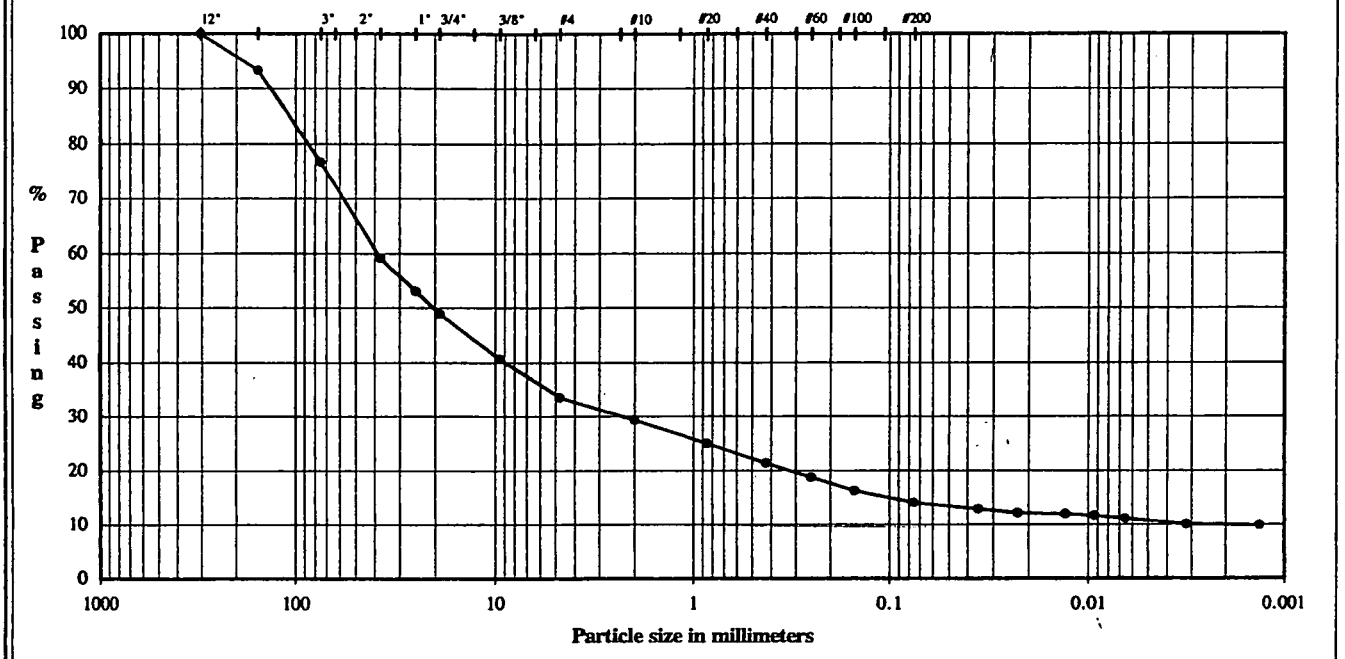
REVIEW: NG

March-05 043-2246-0002

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: Rocky Flats/Field & Lab Testing/CO
SAMPLE ID: AC22-5 Depth: -
TYPE: Pail



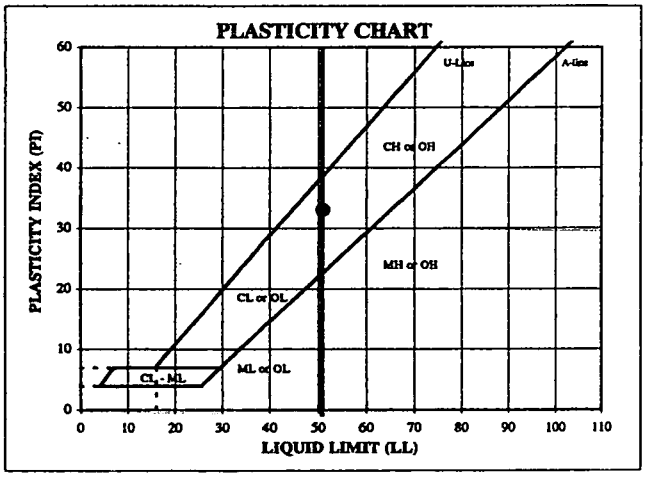
COBBLES	GRAVEL		SAND			FINES
	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0		
6.0"	154.2	93.3	Cobbles	23.32
6.0"	154.2	93.3		
6.0"	154.2	93.3		
3.0"	75.0	76.7		
1.5"	37.5	59.1		
1.0"	25.0	53.1	Coarse Gravel	27.77
0.75"	19.0	48.9		
0.375"	9.5	40.7		
#4	4.8	33.5	Fine Gravel	15.39
#10	2.00	29.3	Coarse Sand	4.19
#20	0.85	25.0		
#40	0.43	21.3	Medium Sand	8.00
#60	0.25	18.8		
#100	0.15	16.3		
#200	0.075	14.1	Fine Sand	7.28

Hydrometer Analysis

(mm)	%Finer		
0.036	12.8		
0.023	12.1		
0.013	12.0	Fines	
0.0093	11.6	Silt or Clay	14.06
0.0065	11.1		
0.0032	10.0		
0.0013	9.8		



ATTERBERG LIMITS

M_c	LL	PL	PI	SpG (assumed)
–	51	18	33	2.70

DESCRIPTION: Moderate brown (10 YR 4/6) clayey gravel with sand
USCS: GC

TECH: AGE
DATE: 03/01/2005
REVIEW: NG

February-05

043-2246-0002

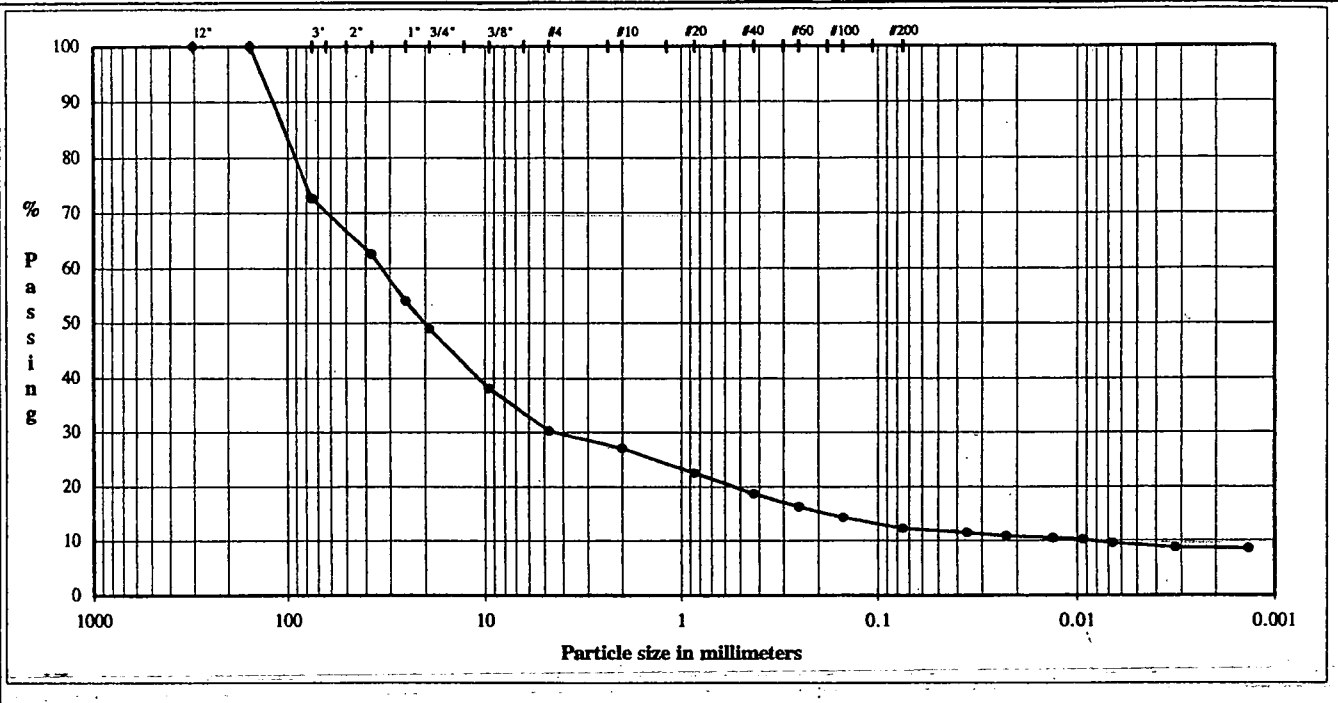
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: Rocky Flats/Field & Lab Testing/CO

SAMPLE ID: AC22-6 Depth: -

TYPE: Pail



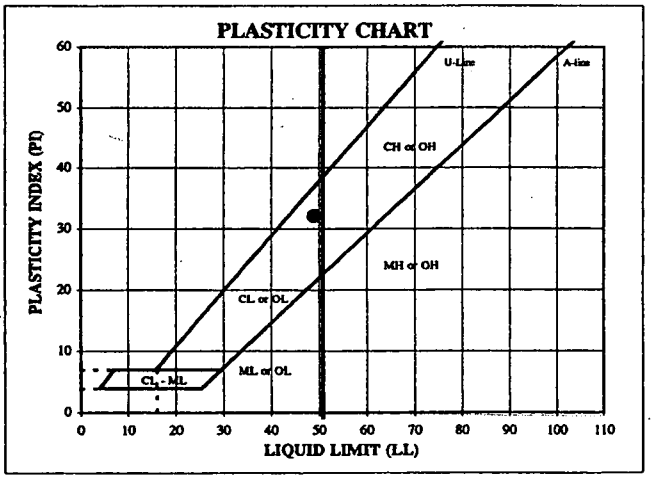
COBBLES	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
	GRAVEL		SAND			FINES

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0		
6.0"	154.2	100.0	Cobbles	27.37
6.0"	154.2	100.0		
6.0"	154.2	100.0		
3.0"	75.0	72.6		
1.5"	37.5	62.6		
1.0"	25.0	54.0	Coarse Gravel	23.70
0.75"	19.0	48.9		
0.375"	9.5	38.1		
#4	4.8	30.3	Fine Gravel	18.63
#10	2.00	27.1	Coarse Sand	3.19
#20	0.85	22.5		
#40	0.43	18.7	Medium Sand	8.38
#60	0.25	16.3		
#100	0.15	14.3		
#200	0.075	12.2	Fine Sand	6.53

Hydrometer Analysis

(mm)	%Finer		
0.036	11.4		
0.023	10.8		
0.013	10.5	Fines	
0.0093	10.2	Silt or Clay	12.20
0.0066	9.5		
0.0032	8.7		
0.0014	8.6		



ATTERBERG LIMITS

M_c	LL	PL	PI	SpG (assumed)
--	49	17	32	2.70

DESCRIPTION: Moderate brown (10YR 4/6) clayey gravel with sand

USCS: GC

TECH	JR
DATE	02/28/2005
REVIEW	NG

For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other
(Read Instructions prior to initiating this form.)

Date: 3/28/05

X New Submittal

Resubmittal

Section I REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS *(This section to be initiated by the Subcontractor)*

To:	From:	Subcontract No: KH020577	Submittal No. 114
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026		Previous Submittal No.

Specification Sec. No. 01310

Project Title: Construction of the Present Landfill Accelerated Action

Item No.	Description of Item Submitted (Type, size, model number, etc.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8)	No. of Copies	Contract Reference Document		Deviation (See Instruction #6)	Contractor Action Code (See Instruction #9)
				Spec. Paragraph No.	Drawing Sheet No.		
a.	b.	c.	d.	e.	f.	g.	h.
1	Particle Size Distribution and Atterberg Limits from 2-inch and 22-inch layer	N/A	4	N/A	N/A	N/A	

Remarks: One copy given to QA / Earth Tech for review. This is an interim submittal only. It is not the final record survey and therefore is not stamped by the Licensed Surveyor. Final record survey for each layer will come at completion of that layer.

Acknowledge Receipt of Test Results
Robert Davis 04/07/05

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted. J. Erickson

Signature of Subcontractor:

Section II Reviewed

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

CQAE J.H. Rule TT

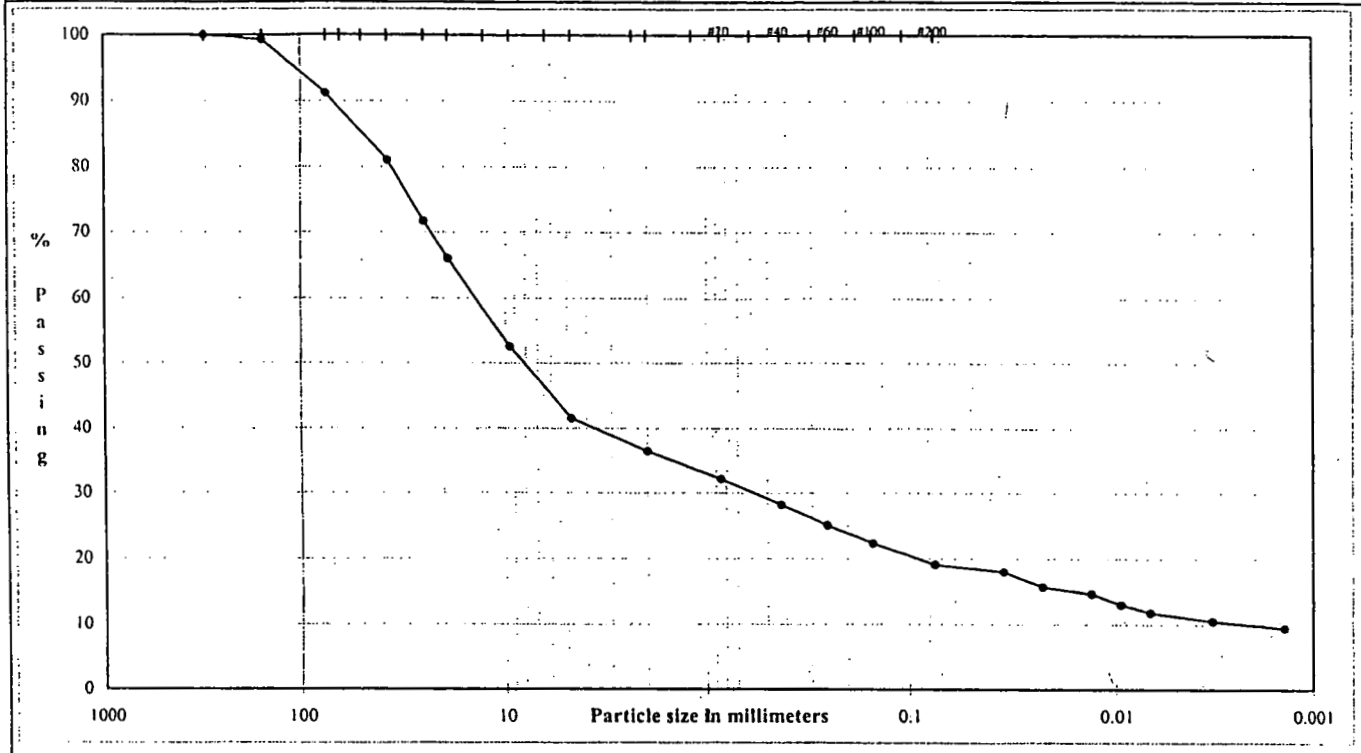
March-05

043-2246-0002

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318, D5519

PROJECT NAME: **Rocky Flats/Field & Lab Testing/CO**
SAMPLE ID: **AM 2-01** Depth: **0-2"**
TYPE: **Pail**



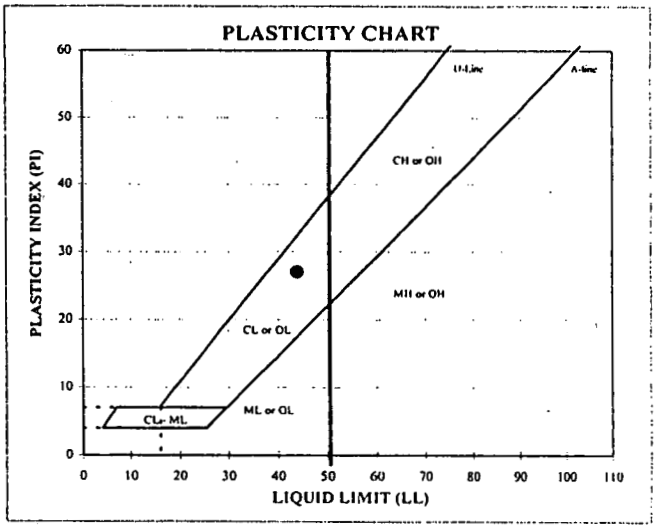
COBBLES	Coarse GRAVEL	Fine GRAVEL	Coarse SAND	Medium SAND	Fine SAND	Silt or Clay FINES

U.S. Standard Sieves Sizes and Numbers

Particle Size	(mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0		
12.0"	304.8	100.0	Cobbles	8.83
12.0"	304.8	100.0		
6.0"	154.2	99.3		
3.0"	75.0	91.2		
1.5"	37.5	81.0		
1.0"	25.0	71.7	Coarse Gravel	25.21
0.75"	19.0	66.0		
0.375"	9.5	52.5		
#4	4.8	41.5	Fine Gravel	24.46
#10	2.00	36.5	Coarse Sand	5.02
#20	0.85	32.1		
#40	0.43	28.2	Medium Sand	8.32
#60	0.25	25.1		
#100	0.15	22.4		
#200	0.075	19.1	Fine Sand	9.02

Hydrometer Analysis

(mm)	%Finer		
0.035	18.0		
0.023	15.7		
0.013	14.7	Fines	
0.0095	13.0	Silt or Clay	19.13
0.0067	11.7		
0.0033	10.5		
0.0014	9.4		



ATTERBERG LIMITS

M_c	LL	PL	PI	SpG (assumed)
–	44	17	27	2.70

DESCRIPTION: Dark yellowish brown (10 YR 4/2) clayey gravel with sand

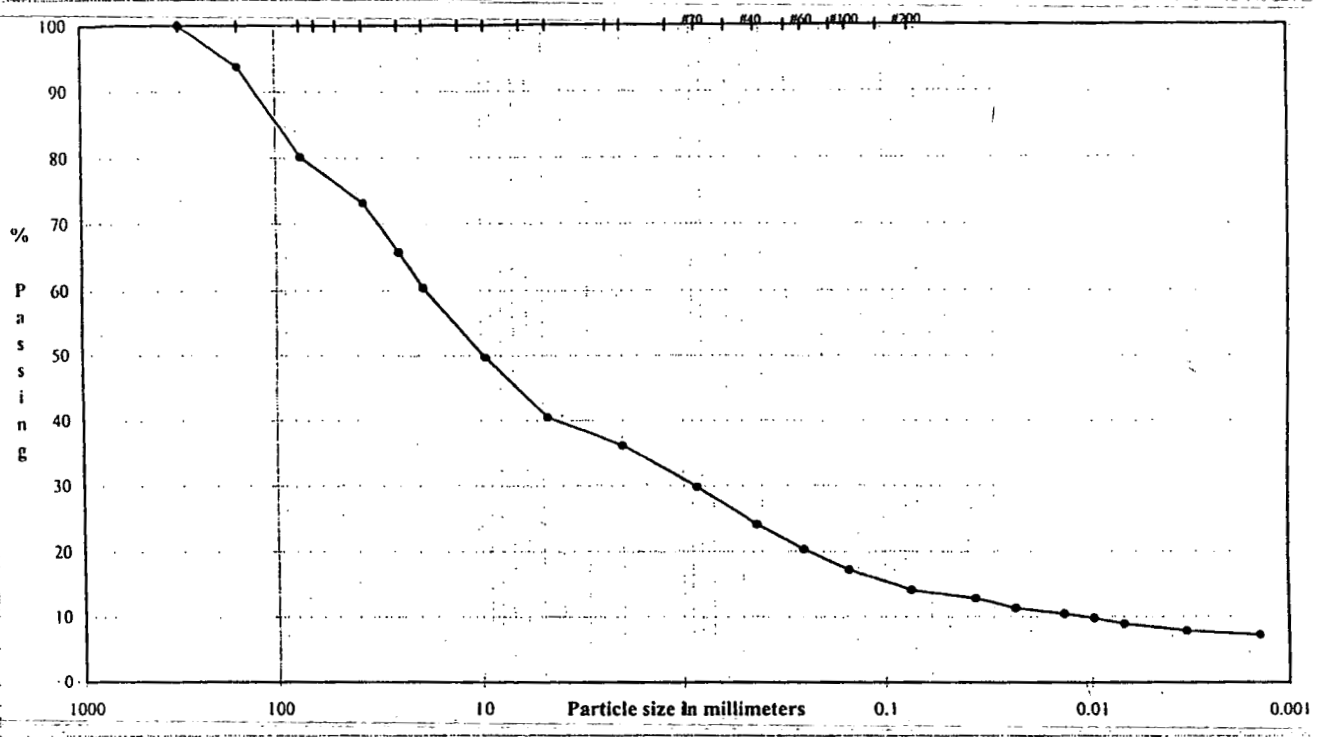
USCS: GC

TECH	MGC
DATE	3/14/2005
REVIEW	NG

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318, D5519

PROJECT NAME: Rocky Flats/Field & Lab Testing/CO
SAMPLE ID: AM 22-01 Depth: 0-22"
TYPE: Pail



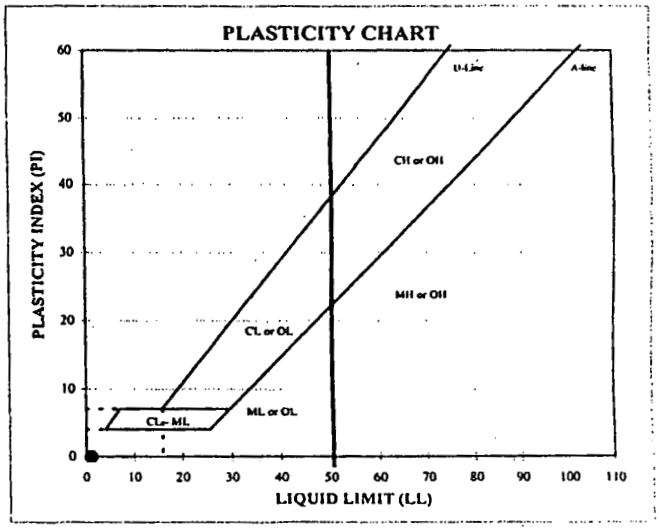
COBBLES	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
	GRAVEL		SAND			FINES

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0		
12.0"	304.8	100.0	Cobbles	19.87
12.0"	304.8	100.0		
6.0"	154.2	93.8		
3.0"	75.0	80.1		
1.5"	37.5	73.2		
1.0"	25.0	65.7	Coarse Gravel	19.76
0.75"	19.0	60.4		
0.375"	9.5	49.6		
#4	4.8	40.5	Fine Gravel	19.90
#10	2.00	36.2	Coarse Sand	4.31
#20	0.85	29.8		
#40	0.43	24.1	Medium Sand	12.06
#60	0.25	20.3		
#100	0.15	17.2		
#200	0.075	14.0	Fine Sand	10.09

Hydrometer Analysis

(mm)	%Finer		
0.037	12.7		
0.024	11.2		
0.014	10.4	Fines	
0.0097	9.8	Silt or Clay	14.01
0.0069	8.9		
0.0034	7.8		
0.0014	7.2		



ATTERBERG LIMITS

M_c	LL	PL	PI	SpG (assumed)
--	--	--	--	2.70

DESCRIPTION: Dark yellowish brown (10 YR 5/6)

USCS: --

TECH: JR
DATE: 3/12/2005
REVIEW: NG

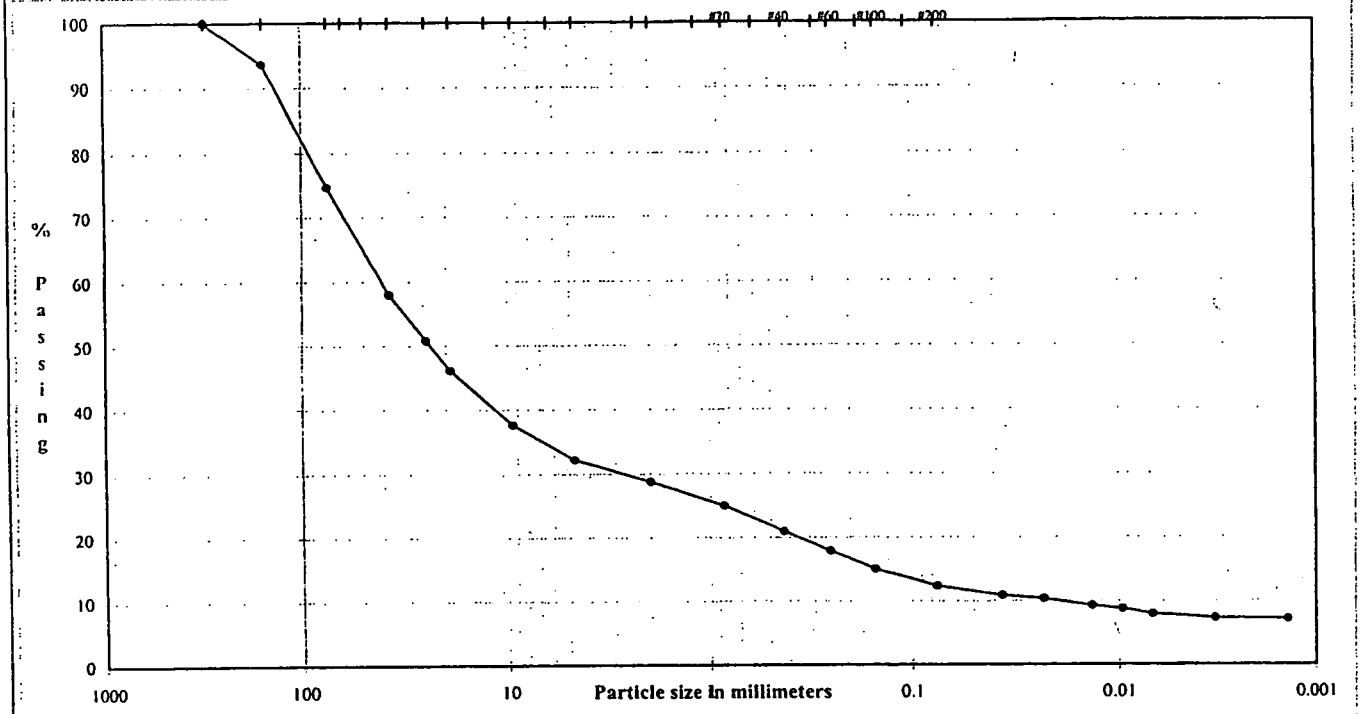
March-05

043-2246-0002

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318, D5519

PROJECT NAME: Rocky Flats/Field & Lab Testing/CO
SAMPLE ID: AM 22-02 Depth: 0-22"
TYPE: Pail



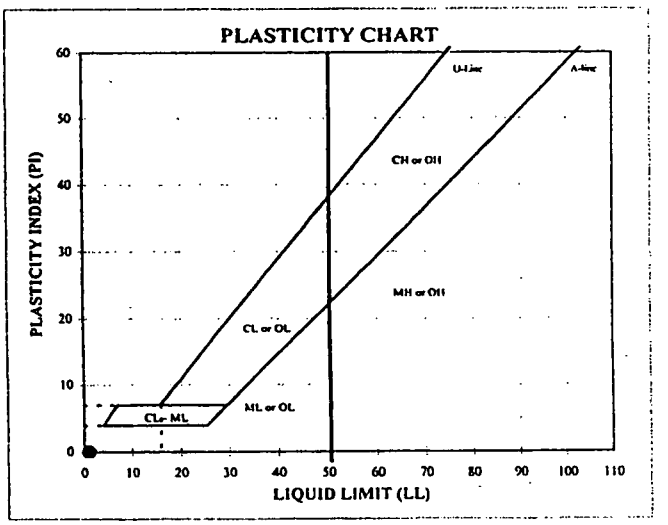
	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
COBBLES	GRAVEL		SAND			FINES

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0		
12.0"	304.8	100.0	Cobbles	25.34
12.0"	304.8	100.0		
6.0"	154.2	93.7		
3.0"	75.0	74.7		
1.5"	37.5	58.0		
1.0"	25.0	50.8	Coarse Gravel	28.55
0.75"	19.0	46.1		
0.375"	9.5	37.6		
#4	4.8	32.2	Fine Gravel	13.93
#10	2.00	28.7	Coarse Sand	3.43
#20	0.85	25.0		
#40	0.43	20.9	Medium Sand	7.82
#60	0.25	17.9		
#100	0.15	15.0		
#200	0.075	12.3	Fine Sand	8.57

Hydrometer Analysis

(mm)	%Finer		
0.037	10.9		
0.023	10.4		
0.013	9.2	Fines	
0.0096	8.8	Silt or Clay	12.35
0.0068	7.9		
0.0033	7.3		
0.0014	7.1		



ATTERBERG LIMITS

M_c	LL	PL	PI	SpG (assumed)
--	--	--	--	2.70

DESCRIPTION: Dark yellowish brown (10 YR 6/6)

USCS: --

TECH	MGC
DATE	3/14/2005
REVIEW	NG

March-05

043-2246-0002

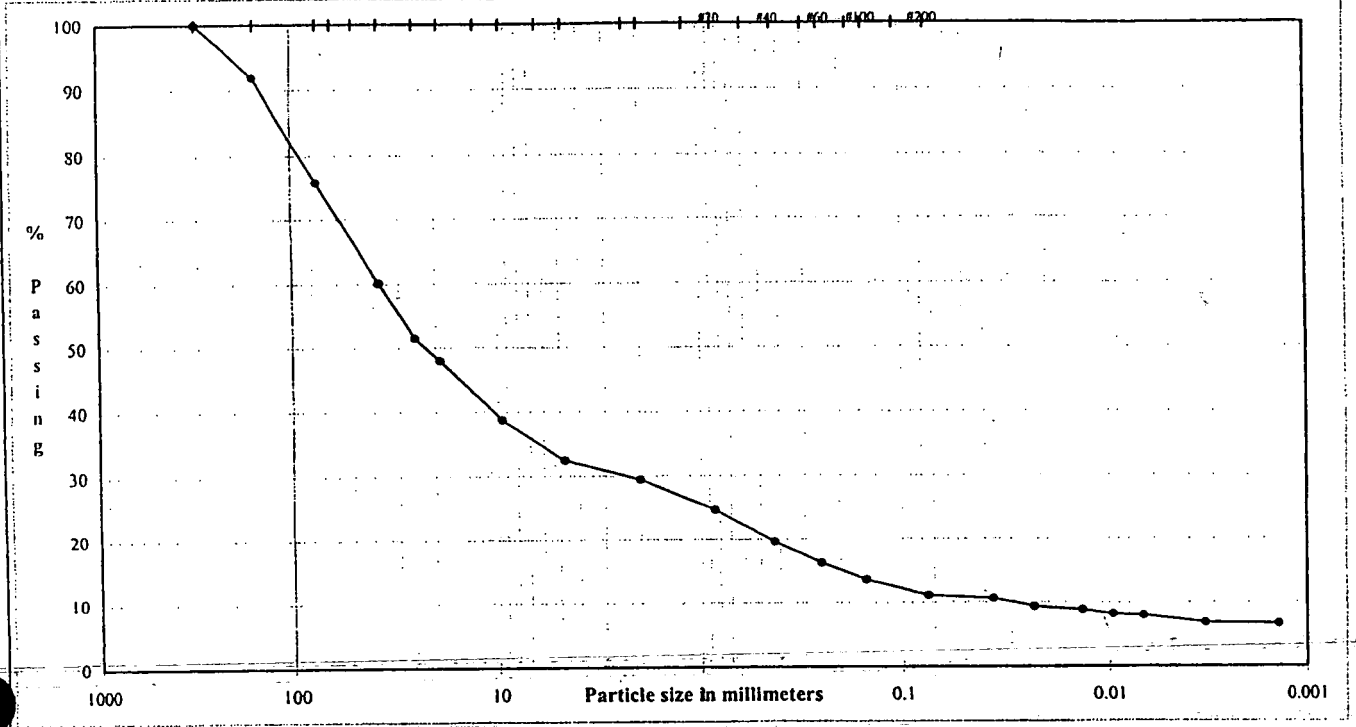
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318, D5519

PROJECT NAME: Rocky Flats/Field & Lab Testing/CO

SAMPLE ID: AM-22-03 Depth: 0-22"

TYPE: Pail



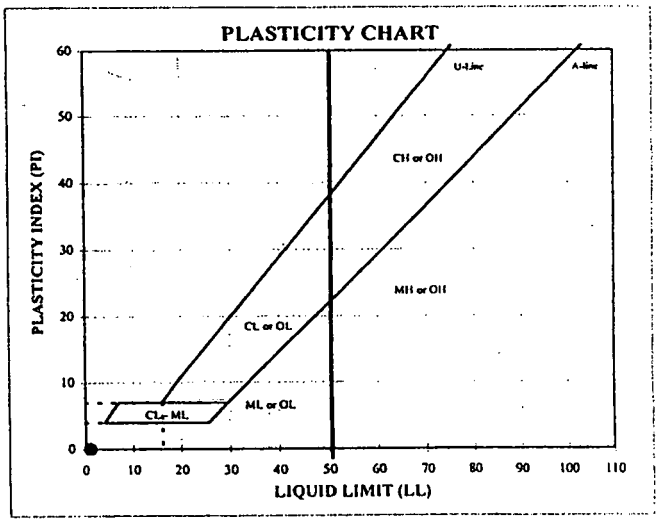
COBBLES	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
	GRAVEL		SAND			FINES

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0		
12.0"	304.8	100.0	Cobbles	24.28
12.0"	304.8	100.0		
6.0"	154.2	91.9		
3.0"	75.0	75.7		
1.5"	37.5	60.1		
1.0"	25.0	51.5	Coarse Gravel	27.76
0.75"	19.0	48.0		
0.375"	9.5	38.7		
#4	4.8	32.5	Fine Gravel	15.50
#10	2.00	29.4	Coarse Sand	3.04
#20	0.85	24.6		
#40	0.43	19.6	Medium Sand	9.83
#60	0.25	16.3		
#100	0.15	13.6		
#200	0.075	11.2	Fine Sand	8.41

Hydrometer Analysis

(mm)	%Finer		
0.037	10.6		
0.023	9.3		
0.014	8.8	Fines	
0.0096	8.1	Silt or Clay	11.17
0.0068	8.0		
0.0033	6.8		
0.0014	6.7		



ATTERBERG LIMITS

M_c	LL	PL	PI	SpG (assumed)
--	--	--	--	2.70

DESCRIPTION: Dark yellowish orange (10 YR 6/6)

USCS: --

TECH	MGC
DATE	3/14/2005
REVIEW	NG

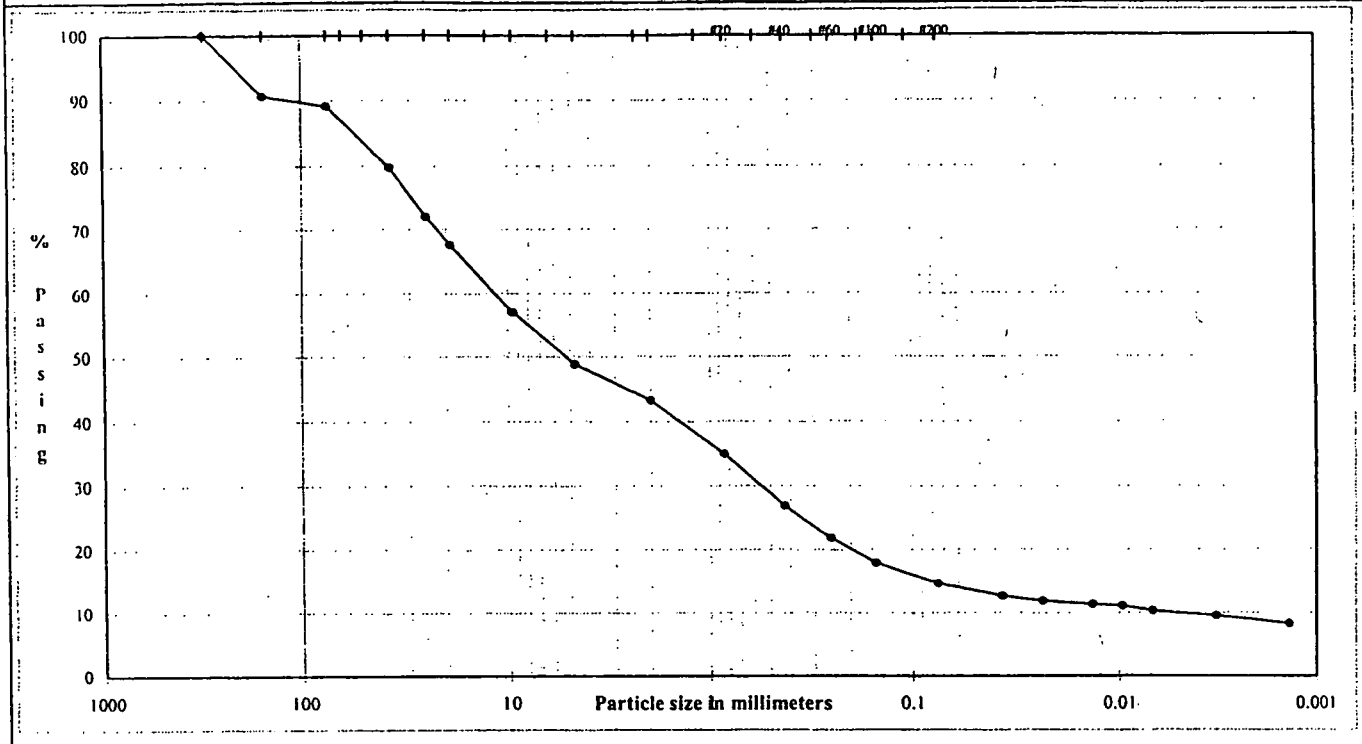
March-05

043-2246-0002

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318, D5519

PROJECT NAME: Rocky Flats/Field & Lab Testing/CO
SAMPLE ID: AM 22-04 Depth: 0-22"
TYPE: Pail



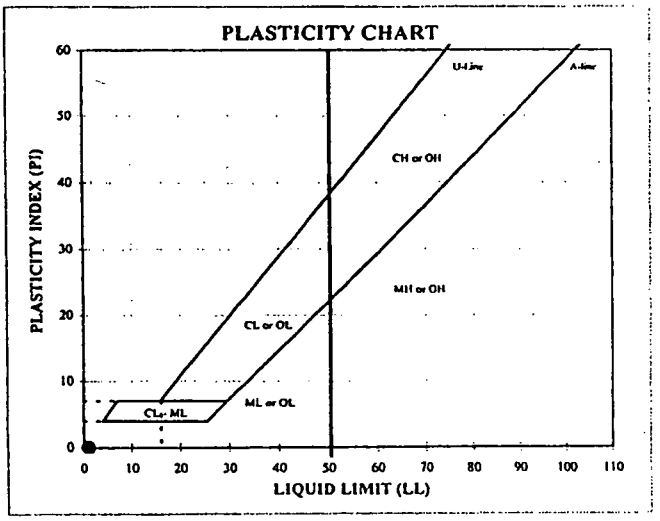
	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
COBBLES	GRAVEL		SAND			FINES

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0		
12.0"	304.8	100.0	Cobbles	10.86
12.0"	304.8	100.0		
6.0"	154.2	90.7		
3.0"	75.0	89.1		
1.5"	37.5	79.8		
1.0"	25.0	72.0	Coarse Gravel	21.57
0.75"	19.0	67.6		
0.375"	9.5	57.0		
#4	4.8	48.8	Fine Gravel	18.73
#10	2.00	43.2	Coarse Sand	5.63
#20	0.85	34.9		
#40	0.43	26.9	Medium Sand	16.31
#60	0.25	21.8		
#100	0.15	17.8		
#200	0.075	14.6	Fine Sand	12.34

Hydrometer Analysis

(mm)	%Finer		
0.037	12.6		
0.023	11.8		
0.014	11.3	Fines	
0.0096	11.1	Silt or Clay	14.57
0.0068	10.3		
0.0033	9.5		
0.0014	8.2		



ATTERBERG LIMITS

M_c	LL	PL	PI	SpG (assumed)
--	--	--	--	2.70

DESCRIPTION: Dark yellowish orange (10 YR 6/6)

USCS: --

TECH	MGC
DATE	3/15/2005
REVIEW	NG

March-05

043-2246-0002

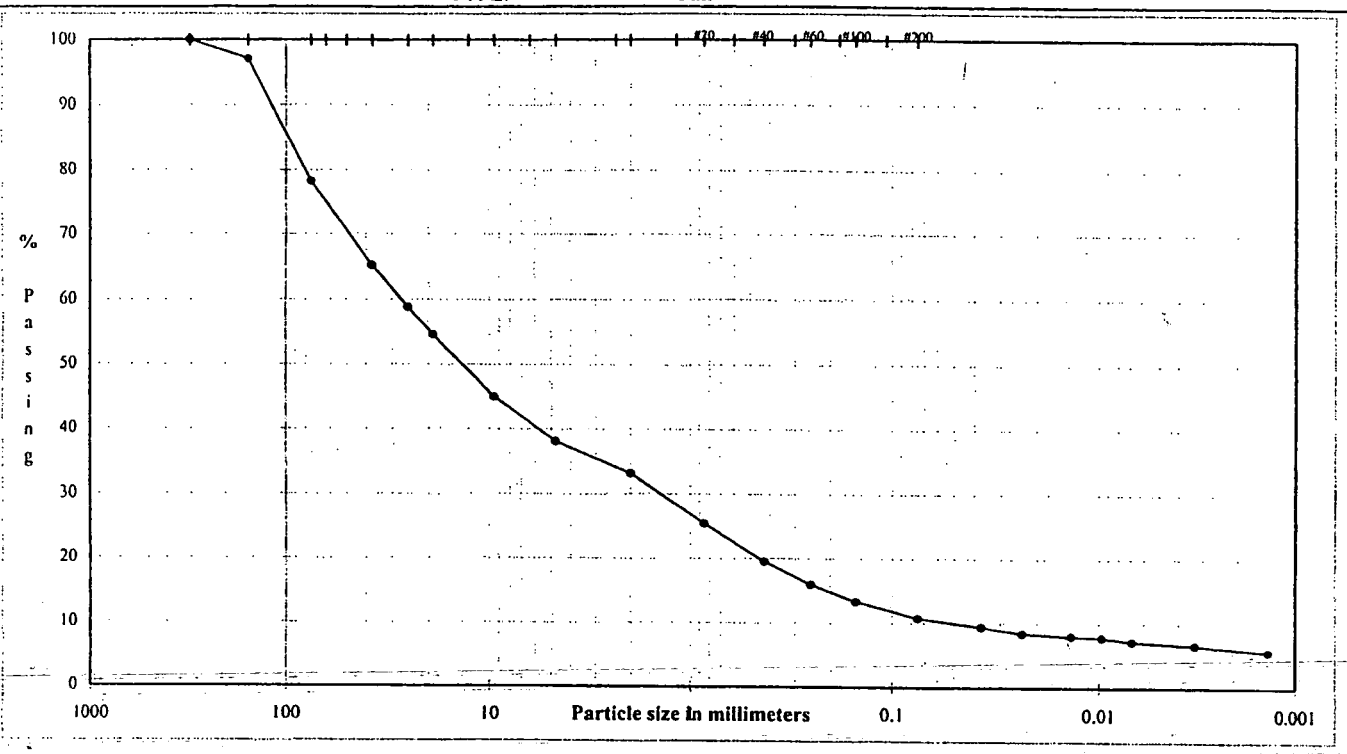
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318, D5519

PROJECT NAME: Rocky Flats/Field & Lab Testing/CO

SAMPLE ID: AM 22-05 Depth: 0-22"

TYPE: Pail



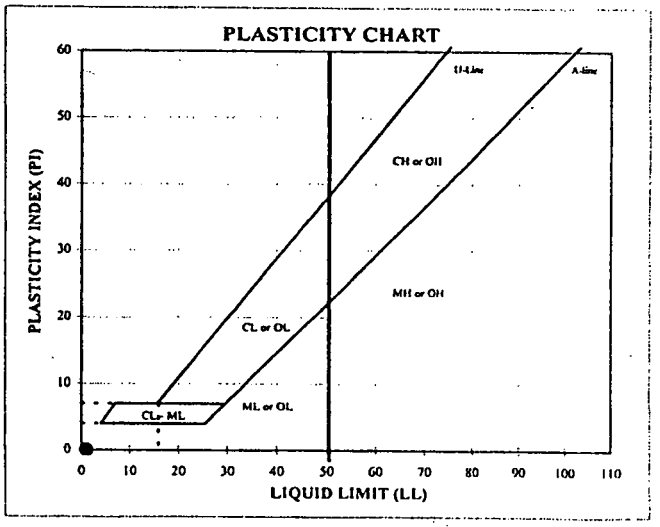
COBBLES	Coarse GRAVEL	Fine GRAVEL	Coarse SAND	Medium SAND	Fine SAND	Silt or Clay FINES

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0		
12.0"	304.8	100.0	Cobbles	21.78
12.0"	304.8	100.0		
6.0"	154.2	97.1		
3.0"	75.0	78.2		
1.5"	37.5	65.2		
1.0"	25.0	58.8	Coarse Gravel	23.68
0.75"	19.0	54.5		
0.375"	9.5	45.0		
#4	4.8	38.1	Fine Gravel	16.43
#10	2.00	33.1	Coarse Sand	4.95
#20	0.85	25.4		
#40	0.43	19.5	Medium Sand	13.64
#60	0.25	15.9		
#100	0.15	13.3		
#200	0.075	10.8	Fine Sand	8.75

Hydrometer Analysis

(mm)	%Finer		
0.037	9.4		
0.024	8.4		
0.014	8.0	Fines	
0.0097	7.8	Silt or Clay	10.76
0.0068	7.2		
0.0033	6.6		
0.0014	5.6		



ATTERBERG LIMITS

M_c	LL	PL	PI	SpG (assumed)
--	--	--	--	2.70

DESCRIPTION: Dark yellowish orange (10 YR 6/6)

USCS: --

TECH MGC

DATE 3/15/2005

REVIEW NG

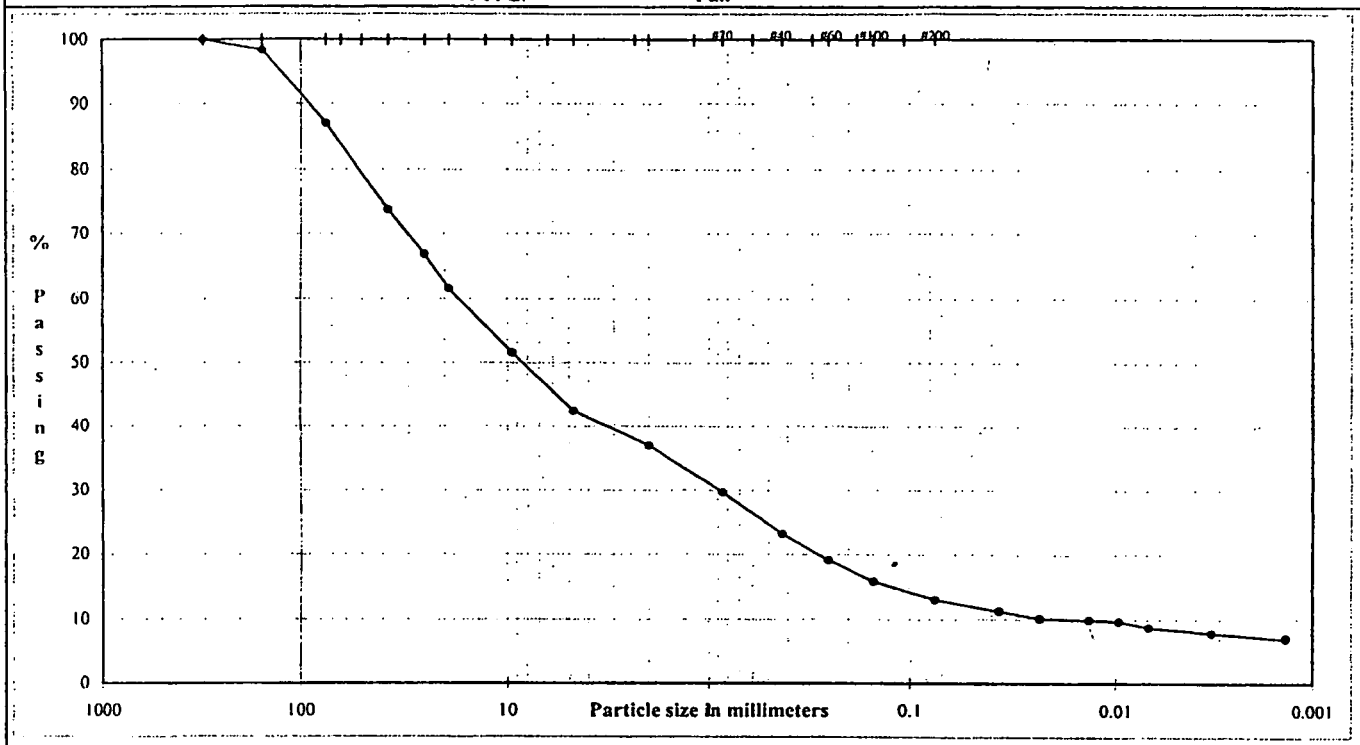
March-05

043-2246-0002

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318, D5519

PROJECT NAME: **Rocky Flats/Field & Lab Testing/CO**
SAMPLE ID: **AM 22-06** Depth: **0-22"**
TYPE: **Pail**



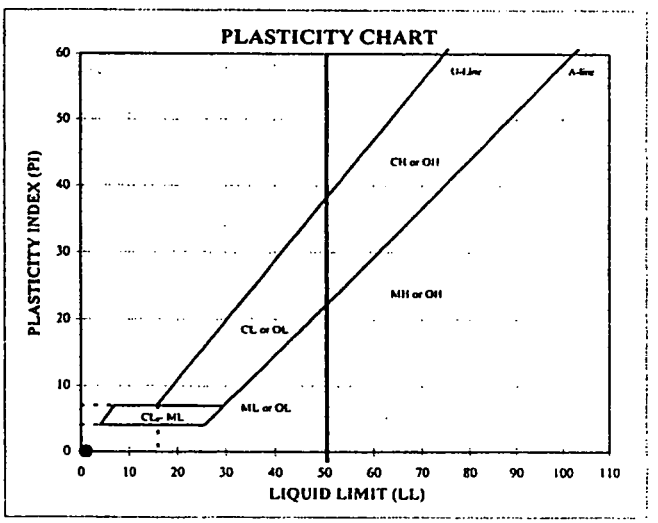
COBBLES	GRAVEL		SAND			FINES
	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0		
12.0"	304.8	100.0	Cobbles	12.98
12.0"	304.8	100.0		
6.0"	154.2	98.3		
3.0"	75.0	87.0		
1.5"	37.5	73.7		
1.0"	25.0	66.8	Coarse Gravel	25.49
0.75"	19.0	61.5		
0.375"	9.5	51.5		
#4	4.8	42.4	Fine Gravel	19.12
#10	2.00	37.0	Coarse Sand	5.43
#20	0.85	29.7		
#40	0.43	23.2	Medium Sand	13.82
#60	0.25	19.1		
#100	0.15	15.8		
#200	0.075	12.9	Fine Sand	10.21

Hydrometer Analysis

(mm)	%Finer		
0.037	11.3		
0.023	10.1		
0.014	9.9	Fines	
0.0096	9.7	Silt or Clay	12.94
0.0068	8.8		
0.0033	7.9		
0.0014	7.0		



ATTERBERG LIMITS

M_c	LL	PL	PI	SpG (assumed)
--	--	--	--	2.70

DESCRIPTION: Dark yellowish orange (10 YR 6/6)

USCS: --

TECH	MGC
DATE	3/15/2005
REVIEW	NG

March-05

043-2246-0002

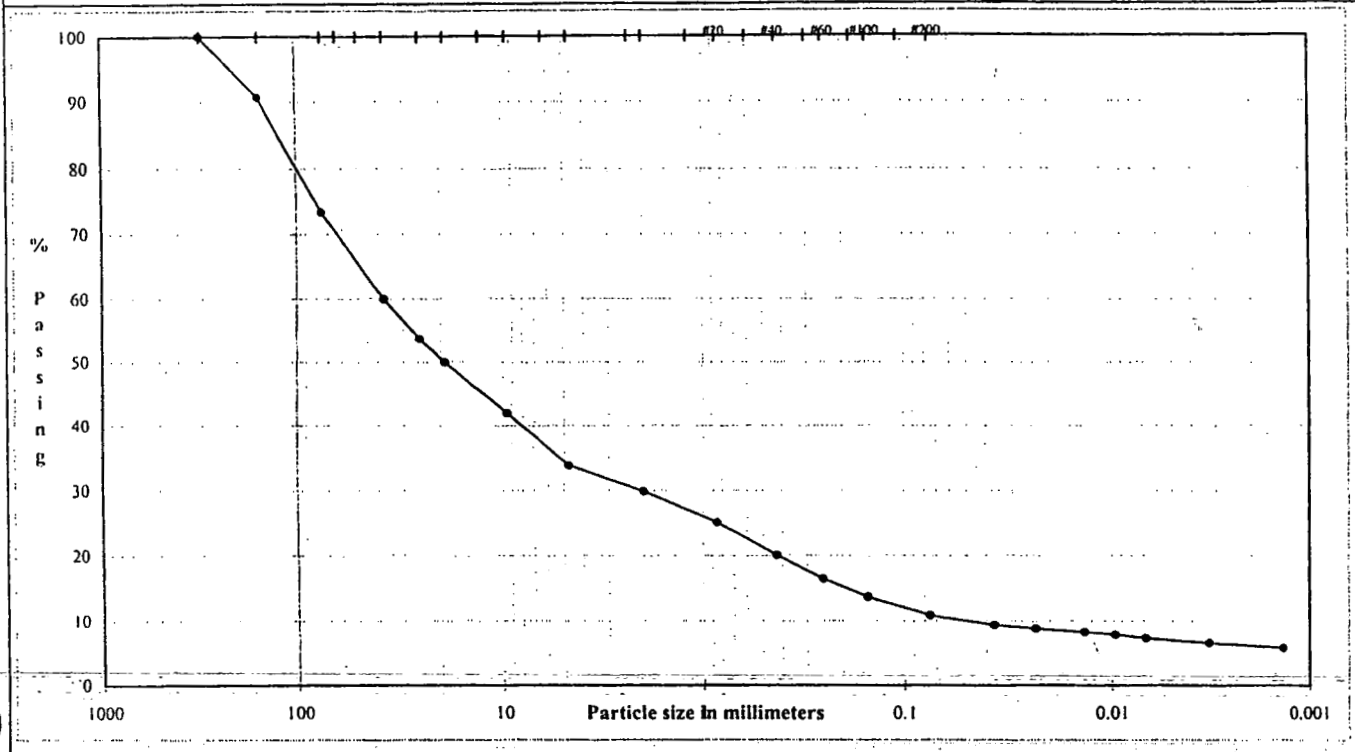
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318, D5519

PROJECT NAME: Rocky Flats/Field & Lab Testing/CO

SAMPLE ID: AM 22-07 Depth: 0-22"

TYPE: Pail



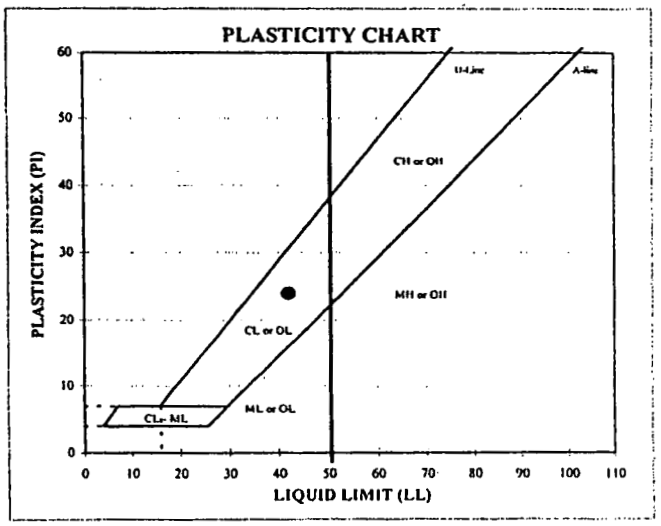
COBBLES	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
	GRAVEL		SAND			FINES

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0		
12.0"	304.8	100.0	Cobbles	26.70
12.0"	304.8	100.0		
6.0"	154.2	90.7		
3.0"	75.0	73.3		
1.5"	37.5	59.9		
1.0"	25.0	53.6	Coarse Gravel	23.36
0.75"	19.0	49.9		
0.375"	9.5	41.9		
#4	4.8	33.9	Fine Gravel	16.08
#10	2.00	29.9	Coarse Sand	3.97
#20	0.85	25.1		
#40	0.43	20.0	Medium Sand	9.87
#60	0.25	16.4		
#100	0.15	13.6		
#200	0.075	10.8	Fine Sand	9.18

Hydrometer Analysis

(mm)	%Finer		
0.037	9.4		
0.023	8.8		
0.014	8.3	Fines	
0.0096	7.9	Silt or Clay	10.84
0.0068	7.3		
0.0033	6.6		
0.0014	5.9		



ATTERBERG LIMITS

M_c	LL	PL	PI	SpG (assumed)
--	42	18	24	2.70

DESCRIPTION: Moderate yellowish orange (10 YR 5/4) well-graded gravel with clay and sand

USCS: GW-GC

TECH	MGC
DATE	3/15/2005
REVIEW	NG

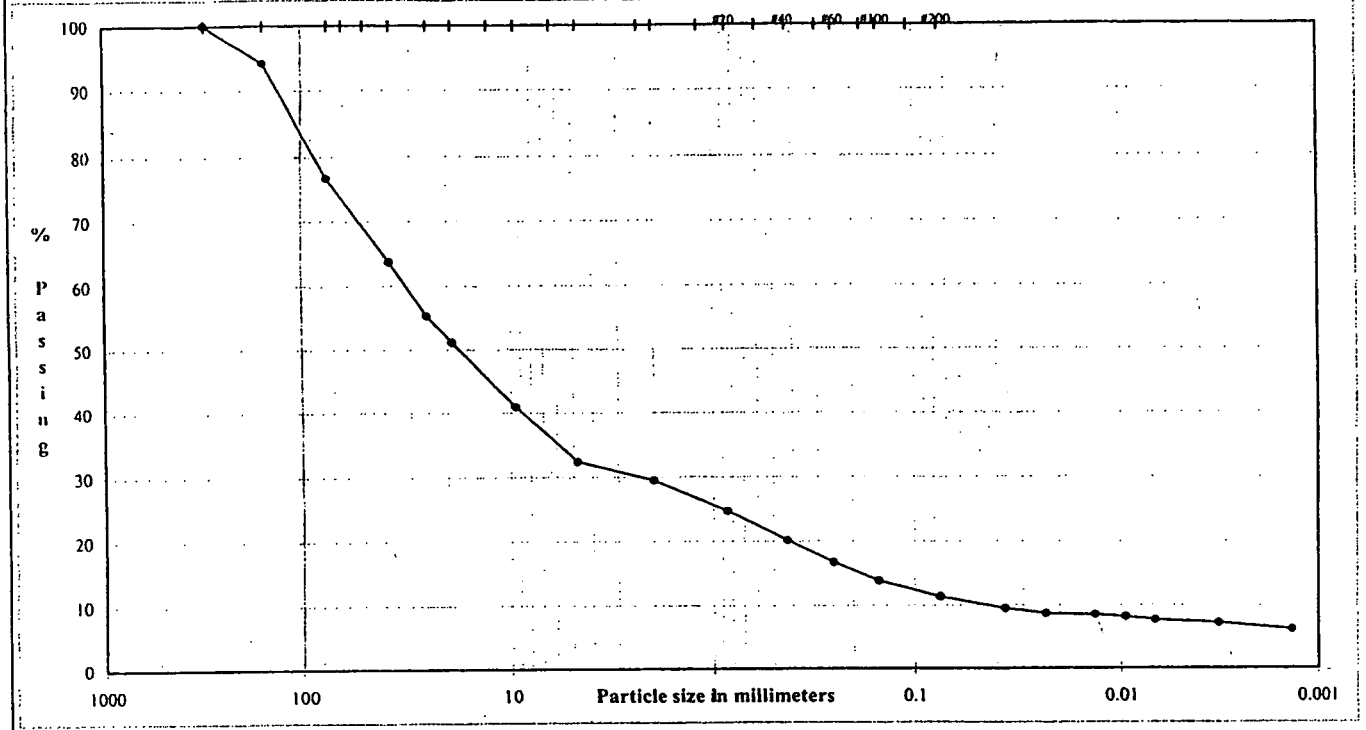
March-05

043-2246-0002

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318, D5519

PROJECT NAME: Rocky Flats/Field & Lab Testing/CO
SAMPLE ID: AM 22-08 Depth: 0-22"
TYPE: Pail



	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
COBBLES	GRAVEL		SAND			FINES

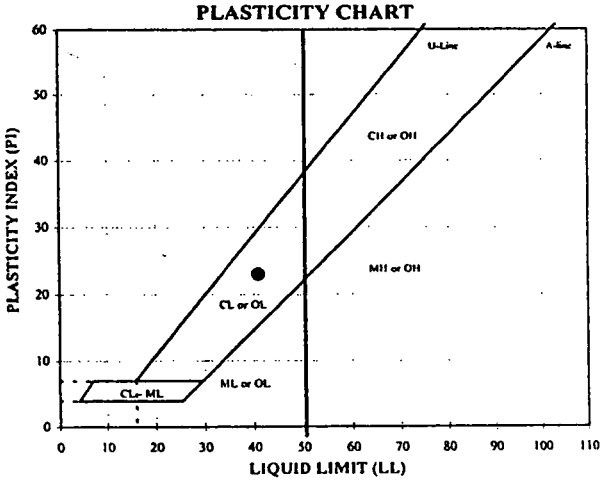
U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0		
12.0"	304.8	100.0	Cobbles	23.35
12.0"	304.8	100.0		
6.0"	154.2	94.2		
3.0"	75.0	76.7		
1.5"	37.5	63.7		
1.0"	25.0	55.3	Coarse Gravel	25.57
0.75"	19.0	51.1		
0.375"	9.5	41.0		
#4	4.8	32.4	Fine Gravel	18.67
#10	2.00	29.5	Coarse Sand	2.90
#20	0.85	24.7		
#40	0.43	20.1	Medium Sand	9.39
#60	0.25	16.7		
#100	0.15	13.8		
#200	0.075	11.3	Fine Sand	8.79

Hydrometer Analysis

(mm)	%Finer		
0.036	9.5		
0.023	8.7		
0.013	8.5	Fines	
0.0095	8.2	Silt or Clay	11.32
0.0068	7.7		
0.0033	7.2		
0.0014	6.2		

PLASTICITY CHART



ATTERBERG LIMITS

M_c	LL	PL	PI	SpG (assumed)
--	41	18	23	2.70

DESCRIPTION: Dark yellowish orange (10 YR 6/6/) well-graded gravel with clay and sand

USCS: GW-GC

TECH	MGC
DATE	3/15/2005
REVIEW	NG

March-05

043-2246-0002

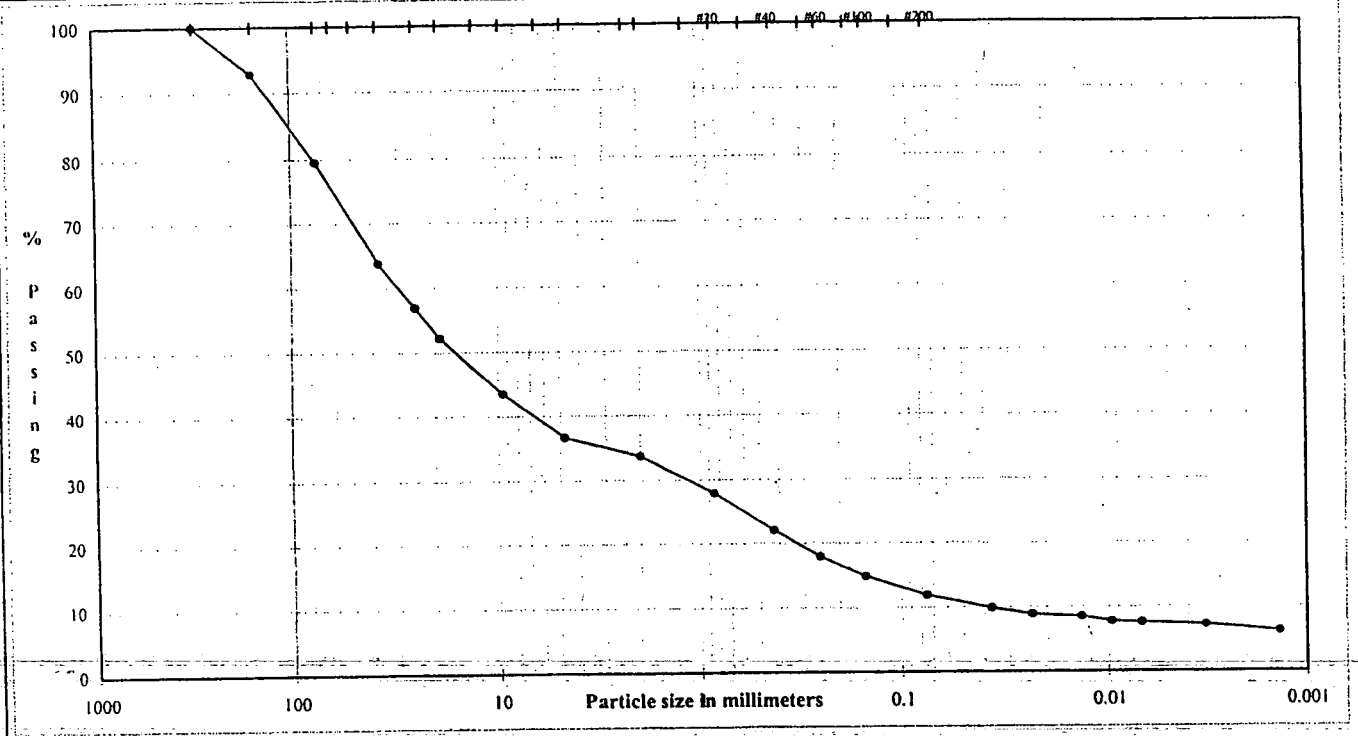
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318, D5519

PROJECT NAME: Rocky Flats/Field & Lab Testing/CO

SAMPLE ID: AM 22-09 Depth: 0-22"

TYPE: Pail



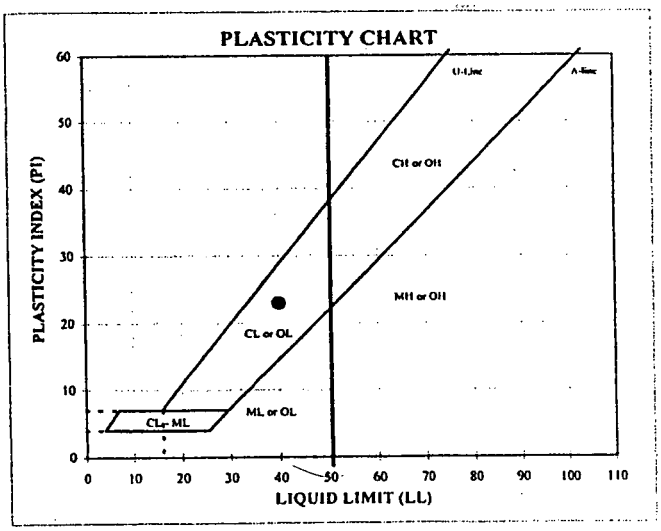
COBBLES	GRAVEL		SAND			FINES
	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0		
12.0"	304.8	100.0	Cobbles	20.46
12.0"	304.8	100.0		
6.0"	154.2	92.8		
3.0"	75.0	79.5		
1.5"	37.5	63.8		
1.0"	25.0	56.9	Coarse Gravel	27.40
0.75"	19.0	52.1		
0.375"	9.5	43.5		
#4	4.8	36.7	Fine Gravel	15.49
#10	2.00	33.7	Coarse Sand	2.93
#20	0.85	27.9		
#40	0.43	22.1	Medium Sand	11.67
#60	0.25	17.9		
#100	0.15	14.8		
#200	0.075	11.9	Fine Sand	10.19

Hydrometer Analysis

(mm)	%Finer		
0.037	9.9		
0.023	8.9		
0.014	8.5	Fines	
0.0096	7.7	Silt or Clay	11.86
0.0068	7.5		
0.0033	7.2		
0.0014	6.2		



ATTERBERG LIMITS

M_c	LL	PL	PI	SpG (assumed)
—	40	17	23	2.70

DESCRIPTION: Dark yellowish orange (10 YR 6/6)well-graded gravel with clay and sand

USCS: GW-GC

TECH	MGC
DATE	3/15/2005
REVIEW	NG

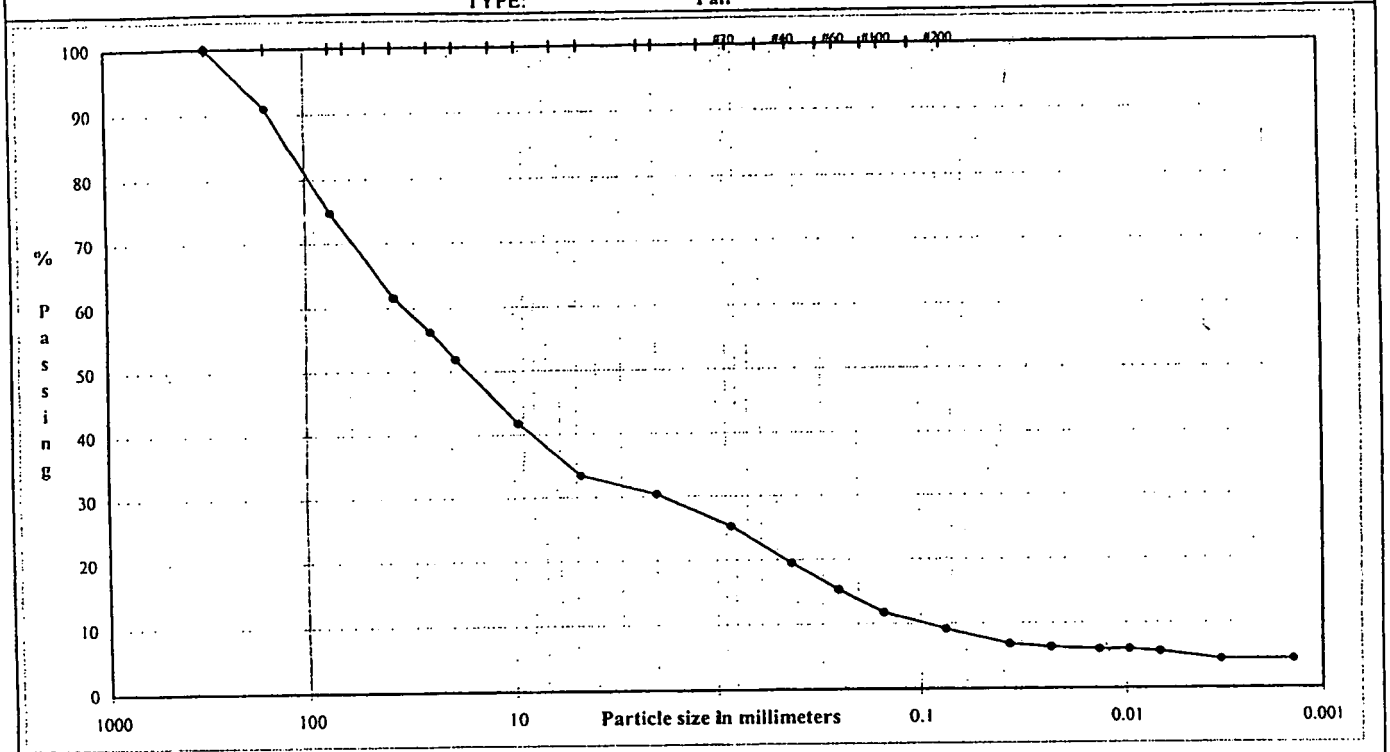
March-05

043-2246-0002

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318, D5519

PROJECT NAME: Rocky Flats/Field & Lab Testing/CO
SAMPLE ID: AMV-1 Depth:
TYPE: Pail



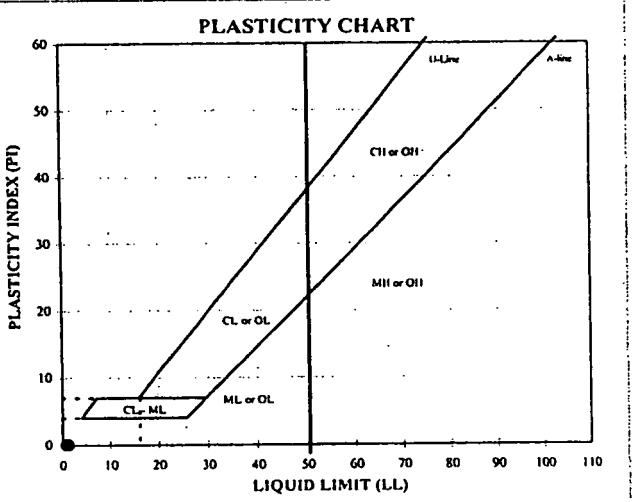
	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
COBBLES	GRAVEL		SAND			FINES

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0		
12.0"	304.8	100.0	Cobbles	25.31
12.0"	304.8	100.0		
6.0"	154.2	90.9		
3.0"	75.0	74.7		
1.5"	37.5	61.6		
1.0"	25.0	56.1	Coarse Gravel	22.93
0.75"	19.0	51.8		
0.375"	9.5	41.8		
#4	4.8	33.4	Fine Gravel	18.37
#10	2.00	30.4	Coarse Sand	3.00
#20	0.85	25.3		
#40	0.43	19.5	Medium Sand	10.91
#60	0.25	15.3		
#100	0.15	11.8		
#200	0.075	9.1	Fine Sand	10.33

Hydrometer Analysis

(mm)	%Finer		
0.037	6.8		
0.023	6.3		
0.014	5.9	Fines	
0.0096	5.9	Silt or Clay	9.14
0.0068	5.6		
0.0033	4.4		
0.0014	4.4		



ATTERBERG LIMITS

M_c	LL	PL	PI	SpG (assumed)
--	--	--	--	2.70

DESCRIPTION: Moderate yellowish brown (10 YR 5/4)

USCS: --

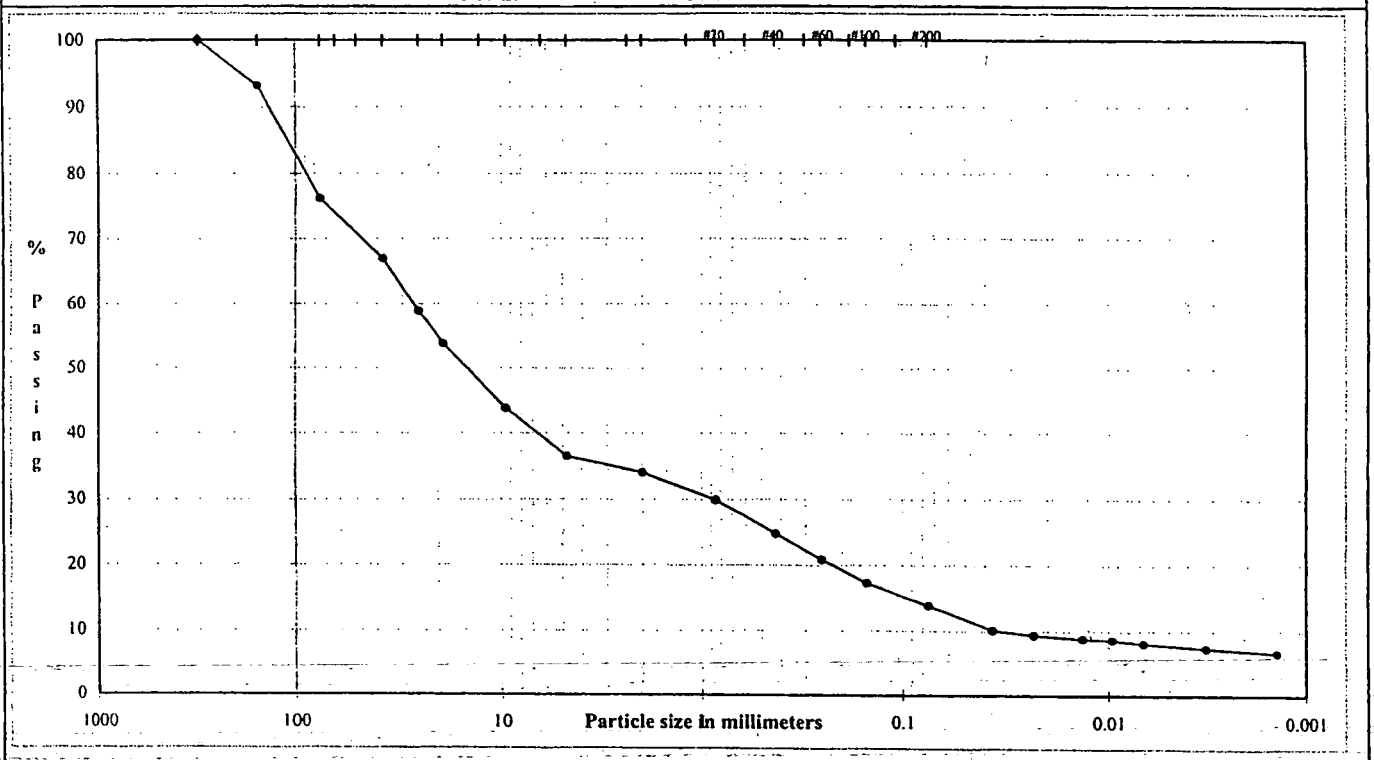
TECH	MKS
DATE	3/18/2005
REVIEW	NG

March-05 043-2246-0002

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318, D5519

PROJECT NAME: Rocky Flats/Field & Lab Testing/CO
SAMPLE ID: AMV-2 Depth:
TYPE: Pail



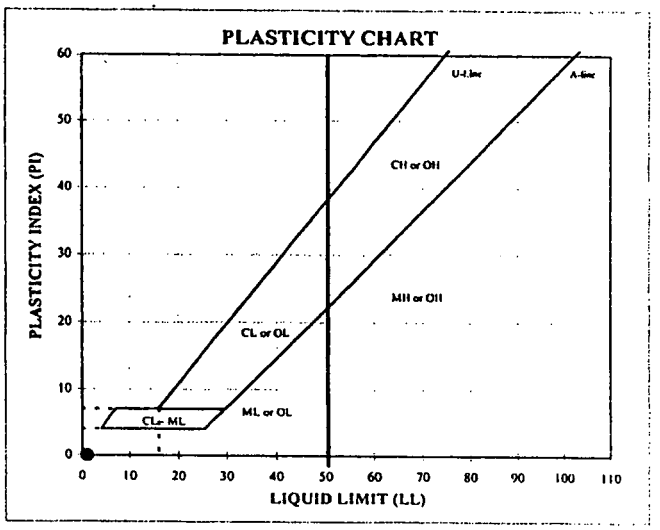
COBBLES	GRAVEL		SAND			FINES
	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay

U.S. Standard Sieves Sizes and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0		
12.0"	304.8	100.0	Cobbles	23.82
12.0"	304.8	100.0		
6.0"	154.2	93.2		
3.0"	75.0	76.2		
1.5"	37.5	66.9		
1.0"	25.0	58.9	Coarse Gravel	22.44
0.75"	19.0	53.7		
0.375"	9.5	43.8		
#4	4.8	36.4	Fine Gravel	17.30
#10	2.00	34.0	Coarse Sand	2.48
#20	0.85	29.9		
#40	0.43	24.8	Medium Sand	9.19
#60	0.25	20.8		
#100	0.15	17.3		
#200	0.075	13.9	Fine Sand	10.86

Hydrometer Analysis

(mm)	%Finer		
0.037	10.1		
0.023	9.4		
0.013	8.8	Fines	
0.0096	8.6	Silt or Clay	13.92
0.0067	8.1		
0.0033	7.4		
0.0014	6.6		



ATTERBERG LIMITS

M_c	LL	PL	PI	SpG (assumed)
--	--	--	--	2.70

DESCRIPTION: Moderate yellowish brown (10 YR 5/4)

USCS: --

TECH MKS
DATE 3/18/2005
REVIEW NG

SUBMITTAL TRANSMITTAL FORM

For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 4/7/05	X	New Submittal
			Resubmittal

Section I — **REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS** *(This section to be initiated by the Subcontractor)*

To:	From:	Subcontract No: KH020577	Submittal No. 119
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026		Previous Submittal No.
Specification Sec. No. (Cover only one section with each Submittal)		Project Title: Construction of the Present Landfill Accelerated Action	

Item No. (a.)	Description of Item Submitted (Type, size, model number, etc.) (b.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8) (c.)	No. of Copies (d.)	Contract Reference Document: Spec. Paragraph No. (e.)	Contract Reference Document: Drawing Sheet No. (f.)	Deviation (See Instruction #6) (g.)	Contractor Action Code (See Instruction #9) (h.)
1	Re-bar Reinforcement – Seep Treatment System	N/A	6		N/A	N/A	

Provide Reinforcing Drawings per ACI SP-66.
Add corner reinforcing as shown on Dwg 018.
Reference Bent Bars to Design Drawing.

Rocky Flats Plant

☐ APPROVED ☐ APPROVED AS CORRECTED
☐ NOT APPROVED ☒ REVISE AND RESUBMIT

APPROVAL IS FOR CONFORMANCE WITH THE DESIGN CONCEPT OF THE PLANS AND SPECIFICATIONS AND FOR COMPLIANCE WITH THE INFORMATION GIVEN THEREIN. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMATION AND CORRELATION OF ALL DIMENSIONS AT THE CONSTRUCTION SITE; FOR INFORMATION THAT PERTAINS SOLELY TO FABRICATION PROCESSES OR TO TECHNIQUES OF CONSTRUCTION; AND FOR COORDINATION OF THE WORK OF ALL CRAFTS.

BY: Robert Davis DATE: 05/02/2005

Remarks: Bend List & Details

Additional Bent Bar Information Provided on 05/13/2005 RWD OK

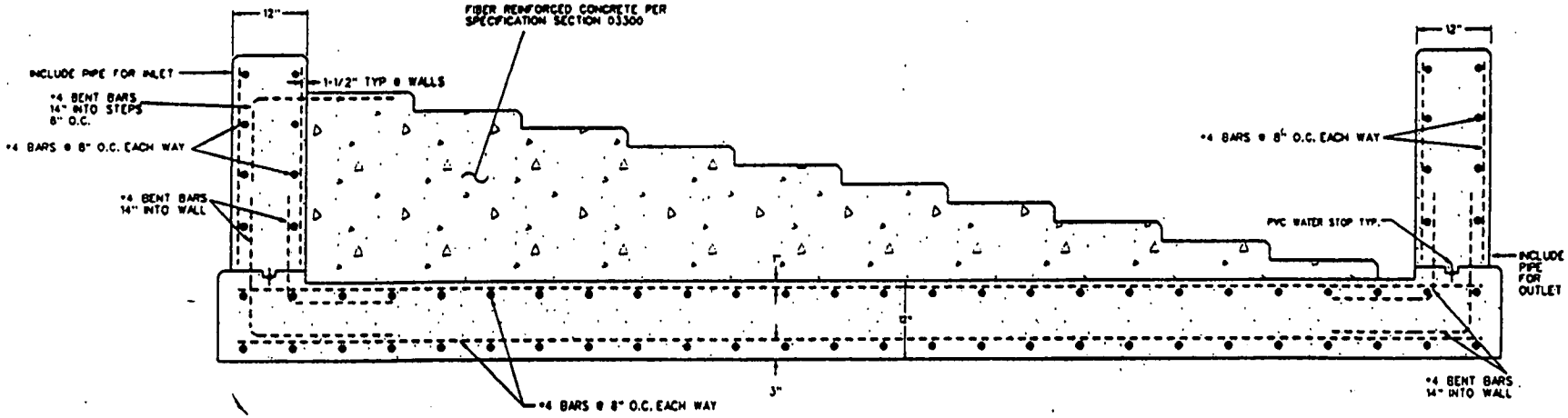
OK CGAE J.H. Rule TX

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.

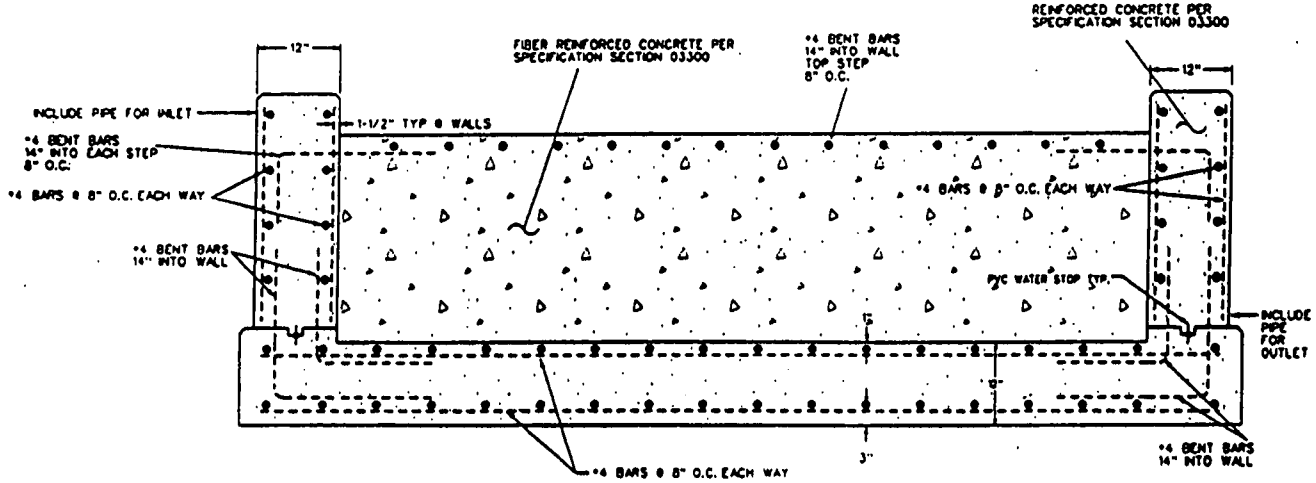
Signature of Subcontractor: Paul Kreitz, 4/7/05

Section II — Reviewed

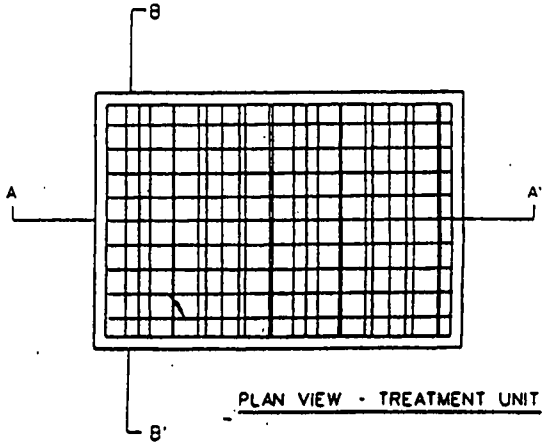
Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:



CROSS - SECTION A - A ' (1 / 17 | 18)



CROSS - SECTION B - B ' (TYPICAL STEP SECTION) (2 / 17 | 18)



PLAN VIEW - TREATMENT UNIT

KEYWORDS

U.S. DEPARTMENT OF ENERGY

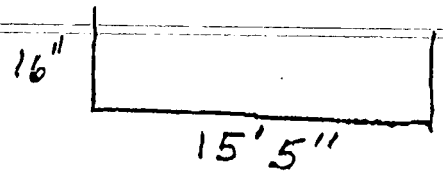
Rocky Flats Environmental Technology Site

NEW SEEP PASSIVE TREATMENT SYSTEM DETAIL

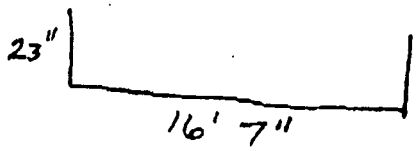
PRESENT LANDFILL ACCELERATED ACTION 100% DESIGN

DWG.	DRAWING NUMBER	REV.
B	51781-018	0

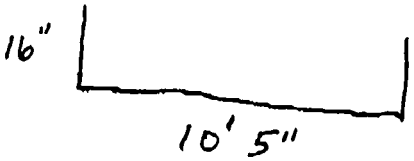
QTY



16" – WALLS
- 16



23" – WALLS
16

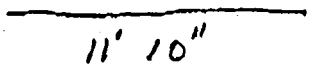


16" – BASE 26 – BASE

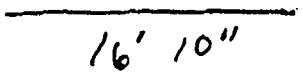
ALL
#4 Rebar

23" – BASE 26 – BASE

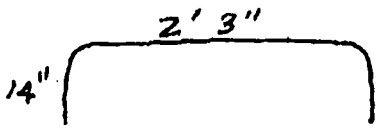
If possible include unit price vs. Lump



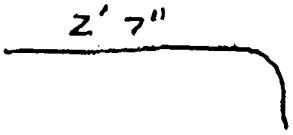
16 – BASE



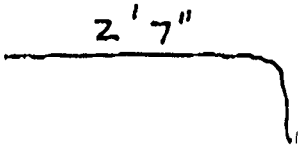
16 – BASE



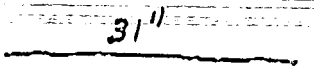
16 – CORNERS



16 – CORNERS



16 – CORNERS



32 – Walls

RIO GRANDE CO.
BUILDING MATERIALS DIVISION

Mailing Address: P.O. Box 17227, Denver, CO 80217-0227
2nd and Santa Fe (303) 825-2211

DOCUMENT: Pick Ticket/Packing List

CUST #: 7768

ORDER NO.	TAX CODE

P.O. DATE	P.O. NO.	PAGE #
03/26/05	12611	

BILL TO: GASH ELECTRIC CO. INC.
10201 W 43RD AVENUE
WHEATRIDGE, CO 80033

CORRESPONDENCE TO: RIO GRANDE CO./BUILDING MATERIALS DIV.
201 SANTA FE DRIVE
DENVER, CO 80223

SHIP TO: ROCKEY FLATS LAND FILL

INSTRUCTIONS	SALES REP	TAKEN BY
	House Account	

SHIP POINT	VIA	REQUEST	SHIPPED	TERMS
Rio Grande Co.	Pickup	04/01/05	04/05/05	1%10px/n25

LINE NO.	PRODUCT AND DESCRIPTION	BIN LOCATION	QUANTITY ORDERED	QUANTITY B.O.	QUANTITY SHIPPED	QTY U/M	RECEIVED	PRICE U/M	AMOUNT (NET)
3	741 4"x3/16"x100' Dumbell Water Stop	S2/ /	1.00	0.00	1.00	RL			
1	76460xx 13M/#4 GR 420 (60) BLK Per fax dated 2/24/05 26 #4 x 18'-1 bent type 17, B=1'-4, C=15'-5, D=1'-4 26 #4 x 20'-5 bent type 17, B=1'-11, C=16'-7, D=1'-11 16 #4 x 13'-1 bent type 17, B=1'-4, C=10'-5, D=1'-4 16 #4 x 15'-5 bent type 17, B=1'-11, C=11'-7, D=1'-11 16 #4 x 11'-10 16 #4 x 16'-10 16 #4 x 4'-7 bent type 17, B=1'-2, C=2'-3, D=1'-2 16 #4 x 3'-9 bent type 17, B=1'-4, C=2'-7 16 #4 x 3'-1 bent type 17, B=6", C=2'-7 [illegible] #4 x 2'-7	R3/07/ /	14.57	0.00	14.57	CWT			
2	DOBY 3"x3"x3" CONCRETE DOBY W/ WIRE THIS PRODUCT COMES ON NON-CHARGE PALLETS	Y2/05/ /	40.00	0.00	40.00	EA			

55.57 Total

◄ LINES TOTAL		QTY SHIPPED TOTAL ►	

DRIVER	TRUCK #	MILEAGE	TIME	WEIGHT	FREIGHT CHARGES

PICKED BY:

RECEIVED BY

PALLETS OUT _____ PALLETS IN _____ DRIVER _____

Thank You For Your Ord

SUBMITTAL TRANSMITTAL FORM

For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 5/10/05		New Submittal / Resubmittal
		X	

Section I — **REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS** *(This section to be initiated by the Subcontractor)*

To:	From:	Subcontract No: KH020577	Submittal No. 122 A
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026		Previous Submittal No. 122
Specification Sec. No. (Cover only one section with each Submittal)		Project Title: Construction of the Present Landfill Accelerated Action	

Item No. a.	Description of Item Submitted (Type, size, model number, etc.) b.	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8) c.	No. of Copies d.	Contract Reference Document: Spec. Paragraph No. e.	Contract Reference Document: Drawing Sheet No. f.	Deviation (See Instruction #6) g.	Contractor Action Code (See Instruction #9) h.
1	Reinforced Concrete – Seep System Steps, includes letter of dosage rate of fiber added in mix design	N/A	6		N/A	N/A	

☒ APPROVED ☐ APPROVED AS CORRECTED
☐ NOT APPROVED ☐ REVISE AND RESUBMIT

Remarks: APPROVAL IS FOR CONFORMANCE WITH THE DESIGN CONCEPT OF THE PLANS AND SPECIFICATIONS AND FOR COMPLIANCE WITH THE INFORMATION GIVEN THEREIN. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMATION AND CORRELATION OF ALL DIMENSIONS AT THE CONSTRUCTION SITE; FOR INFORMATION THAT PERTAINS SOLELY TO FABRICATION PROCESSES OR TO TECHNIQUES OF CONSTRUCTION; AND FOR COORDINATION OF THE WORK OF ALL CRAFTS.

BY: Robert Dan DATE: 05/16/05

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.

Signature of Subcontractor: Paul Kreitz 5/10/05

Section II Reviewed

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

OK CQAE
J.H. Rule TA

CENTRAL
READY MIX & CONCRETE PUMPING

CONCRETE MIX DESIGN

New Mix ID #406000 | 4000 PSI | 04/12/05

CONTRACTOR:	The Stoller Company
PROJECT:	Present Landfill
CONCRETE SOURCE:	Central Ready Mix
CONSTRUCTION TYPE:	Exterior Concrete
PLACEMENT:	Chute/Pump

WEIGHTS PER CUBIC YARD (SATURATED, SURFACE-DRY)

	WEIGHT	YIELD
Cement, Type I – II ASTM C 150 (lb. – US)	565	2.87
Fly ash, Type C, ASTM C 618 (lb. – US)	0	0
Aggregate, (#57/#67)ASTM C 33 (lb. – US)	1790	10.95
Sand, ASTM C 33 (lb. – US)	1258	7.76
Water (lbs - Gal – US)	254 (30.5 gals)	4.07
Entrained Air (ozs. - US)	5.5ozs.	1.35
Water Reducer, ASTM C 494 (ozs. – US)	20 ozs.	
Fibers	1.5# / cy	

The above weights are based upon aggregates in a saturated surface dry condition. Batch plant corrections will be made for moisture in aggregates. Adjustments may be made in accordance with ACI 301.

Physical Properties of Mix:

Slump, in.	2"- 4"
Air Content, %	5%-8%
Water Cement Ratio lbs/lbs.	.45

This is a 4000-psi exterior mix. Please order concrete using Central Ready Mix #406000. ** ASTM C 94 requires testing labs to send copies of compressive strength reports to ready mix supplier.

PREPARED BY:

_____

Tim Pike

SUBMITTAL TRANSMITTAL FORM

For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 4/13/05	X	New Submittal
			Resubmittal

Section I — **REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS** *(This section to be initiated by the Subcontractor)*

To:	From:	Subcontract No: KH020577	Submittal No. 122
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026		Previous Submittal No.

Specification Sec. No. (Cover only one section with each Submittal)

Project Title: Construction of the Present Landfill Accelerated Action

Item No. (a.)	Description of Item Submitted (Type, size, model number, etc.) (b.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8) (c.)	No. of Copies (d.)	Contract Reference Document: Spec. Paragraph No. (e.)	Contract Reference Document: Drawing Sheet No. (f.)	Deviation (See Instruction #6) (g.)	Contractor Action Code (See Instruction #9) (h.)
1	Reinforced Concrete – Seep System Steps	N/A	6		N/A	N/A	

Provide Dosage Rate of Fiber Added in Mix Design

Rocky Flats Plant

☐ APPROVED ☐ APPROVED AS CORRECTED

☐ NOT APPROVED ☒ REVISE AND RESUBMIT

Remarks: APPROVAL IS FOR CONFORMANCE WITH THE DESIGN CONCEPT OF THE PLANS AND SPECIFICATIONS AND FOR COMPLIANCE WITH THE INFORMATION GIVEN THEREIN. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMATION AND CORRELATION OF ALL DIMENSIONS AT THE CONSTRUCTION SITE; FOR INFORMATION THAT PERTAINS SOLELY TO FABRICATION PROCESSES OR TO TECHNIQUES OF CONSTRUCTION; AND FOR COORDINATION OF THE WORK OF ALL CRAFTS.

BY: Robert K. Davis DATE: 05/02/05

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted. Paul Kreitz, 4/13/05

Signature of Subcontractor:

Section II Reviewed

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

OK CQAE
Ft. Collins TX

CENTRAL
READY MIX & CONCRETE PUMPING

CONCRETE MIX DESIGN

New Mix ID #406000 | 4000 PSI | 4/12/05

CONTRACTOR:	The Stoller Company
PROJECT:	Present Landfill
CONCRETE SOURCE:	Central Ready Mix
CONSTRUCTION TYPE:	Exterior Concrete
PLACEMENT:	Chute/Pump

WEIGHTS PER CUBIC YARD (SATURATED, SURFACE-DRY)

	WEIGHT	YIELD
Cement, Type I – II ASTM C 150 (lb. – US)	565	2.87
Fly ash, Type C, ASTM C 618 (lb. – US)	0	0
Aggregate, (#57/#67)ASTM C 33 (lb. – US)	1790	10.95
Sand, ASTM C 33 (lb. – US)	1258	7.76
Water (lbs - Gal – US)	254 (30.5 gals)	4.07
Entrained Air (ozs. - US)	5.5ozs.	1.35
Water Reducer, ASTM C 494 (ozs. – US)	20 ozs.	

The above weights are based upon aggregates in a saturated surface dry condition. Batch plant corrections will be made for moisture in aggregates. Adjustments may be made in accordance with ACI 301.

Physical Properties of Mix:

Slump, in.	2"- 4"
Air Content, %	5%-8%
Water Cement Ratio lbs/lbs.	.45

This is a 4000-psi exterior mix. Please order concrete using Central Ready Mix #406000. ** ASTM C 94 requires testing labs to send copies of compressive strength reports to ready mix supplier.

PREPARED BY:

Tim Pike

ARROW-NET™

FORTA®

FACT-DATA®

MANUFACTURER

FORTA CORPORATION, 100 FORTA Drive, Grove City, PA, U.S.A. 16127-6399
TELEPHONE: 1-800-245-0306; (724) 458-5221; FACSIMILE: (724) 458-8331

GENERAL DESCRIPTION

FORTA® ARROW-NET™ fiber is a fully oriented, 100% virgin polypropylene fibrous reinforcement in a collated fibrillated (network) form. ARROW-NET™ is used to reduce cracking caused by plastic shrinkage of concrete, and to improve impact resistance and concrete toughness. ARROW-NET™ fibers are non-corrosive, non-magnetic, chemically inert, and 100% Alkali Proof!

APPLICATIONS

ARROW-NET™ fibers are mainly used in applications such as driveways, sidewalks, house slabs, floor slabs, curbs, and various precast products – anywhere that crack control and added durability are desirable.

INSTALLATION

Recommended dosage rate of ARROW-NET™ fiber is 1.5 pounds per cubic yard (0.9 kg. per cubic meter) of concrete. ARROW-NET™ is added directly to the concrete mixing system during or after the batching of the other ingredients, and mixed at the time and speed recommended by the mixer manufacturer (usually four to five minutes).

PHYSICAL PROPERTIES

Material	Virgin Polypropylene
Form	Fibrillated Fiber
Specific Gravity	0.91
Tensile Strength	90-110 ksi. (620-758 MPa)
Length	3/4" (19 mm)
Color	White
Acid/Alkali Resistance	Excellent
Absorption	Nil
Compliance	A.S.T.M. C-1116

AVAILABILITY

ARROW-NET™ can be purchased from FORTA Corporation or an authorized FORTA® products distributor, dealer or representative. Orders are shipped within 24 hours by small package services, commercial carrier, or air freight.

PACKAGING	Standard	Metric
Bags	1.5 lbs.	0.9 kg.
Cartons	25 bags	20 bags
Pallets	20 cartons/500 bags	20 cartons/400 bags

WARRANTY

ARROW-NET™ fiber is warranted to be free of defects and to meet all quality control standards set by the manufacturer. FORTA® has no control over the design, production, placement, or testing of the concrete products in which ARROW-NET™ is incorporated, therefore FORTA Corporation assumes no responsibility for the end products.

SUBMITTAL TRANSMITTAL FORM

For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 4/21/05	X	New Submittal
			Resubmittal

Section I — **REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS** *(This section to be initiated by the Subcontractor)*

To:	From:	Subcontract No: KH020577	Submittal No. 124
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026		Previous Submittal No.

Specification Sec. No. 02221

Project Title: Construction of the Present Landfill Accelerated Action

Item No.	Description of Item Submitted (Type, size, model number, etc.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8)	No. of Copies	Contract Reference Document: Spec. Paragraph No.	Contract Reference Document: Drawing Sheet No.	Deviation (See Instruction #6)	Contractor Action Code (See Instruction #9)
a.	b.	c.	d.	e.	f.	g.	h.
1	Bell and Spigot Pipe for GWIS	N/A	1	N/A	N/A	N/A	

Rocky Flats Plant

☒ APPROVED ☐ APPROVED AS CORRECTED
☐ NOT APPROVED ☐ REVISE AND RESUBMIT

Remarks:

APPROVAL IS FOR CONFORMANCE WITH THE DESIGN CONCEPT OF THE PLANS AND SPECIFICATIONS AND FOR COMPLIANCE WITH THE INFORMATION GIVEN THEREIN. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMATION AND CORRELATION OF ALL DIMENSIONS AT THE CONSTRUCTION SITE; FOR INFORMATION THAT PERTAINS SOLELY TO FABRICATION PROCESSES OR TO TECHNIQUES OF CONSTRUCTION; AND FOR COORDINATION OF THE WORK OF ALL CRAFTS.

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.

Paul Kreitz, 4/21/05

Signature of Subcontractor:

Section II Robert K. Davis DATE: May 2, 2005 Reviewed

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

OK CQAE
J.H. Rale Tt

BLUE BRUTE

CLASS 100, 150 and 200
RING-TITE JOINTS
4" THRU 12"

Meets AWWA C900

DR 14 / DR 18 / DR 25

JMPIPE.com

For use in Municipal water Systems, firelines and other critical services

STRENGTH

Class 100, 150 and 200 Blue Brute water pipes have long-term hydrostatic strength that meet the commonly accepted high safety requirements of municipal water systems. Blue Brute conforms to cast iron O.D.'s and is available in 4", 6", 8", 10" and 12" sizes in Class 100, 150, and 200.

LONG LAYING LENGTHS

A standard laying length of Blue Brute PVC water pipe is 20 feet. That means you can cover a lot of ground during installation. At the same time, you eliminate the cost of unnecessary joints.

PURPLE RECLAIM AND GREEN SEWER FORCE MAIN

J-M also manufactures this pipe in Purple color specifically for reclaimed water systems and Green for sewer forced main applications. These pipe are made and tested to the same requirements as our standard product, except that the pigment used is purple or green. These products will not be marked with the UL, or NSF listing marks. Additionally, the purple pipe will be marked : " Reclaimed Water... Do Not Drink"

MEETS AWWA C900 UNDERWRITERS LABORATORIES AND NSF 61 LISTED

J-M Manufacturing's Blue Brute water pipes are designed for critical use in firelines and water mains.

CORROSION RESISTANCE

Blue Brute is unaffected by electrolytic or galvanic corrosion, or any known soil or water condition. You don't have to worry about tuberculation, or the need for costly lining, wrapping, coating or cathodic protection.

FLOW CAPACITY

This PVC water pipe has a smooth interior that stays smooth over long years of service with no loss in carrying capacity. Its coefficient of flow is C = 150 (H&W)-the best available in common use in water systems. This capacity often allows savings in pumping costs as well as savings on the size of pipe required.

FIELD CUTTING

You can cut Blue Brute with a power-saw or an ordinary handsaw. It eliminates the need to invest in costly cutting equipment.

SERVICE LIFE

Because it is nonmetallic, the pipe does not lose strength due to either potable water corrosion or external galvanic or soil corrosion. And its design includes a surge allowance for a 2Ft./Sec. stoppage of flow.

LIGHT WEIGHT

A 20 foot length of Class 150, 8" Blue Brute water pipe weighs approximately 181 pounds. That makes it easy to load, easy to transport and easy to handle. Installers prefer it because it goes into the ground quickly — thus saving on installation costs.

QUALITY CONTROL

Without exception, each length of pipe is hydrostatically tested and subject to inspection by our quality control inspectors throughout every step of the manufacturing process.

INSTALLATION

Product should be installed in accordance with J-M Publication TR-704B, "Blue Brute PVC Class Water Pipe, Installation Guide."

CAST IRON O.D.

Available in 4", 6", 8", 10" and 12" sizes, this pipe can be connected directly into cast and ductile iron fittings without adaptors or complicated procedures.

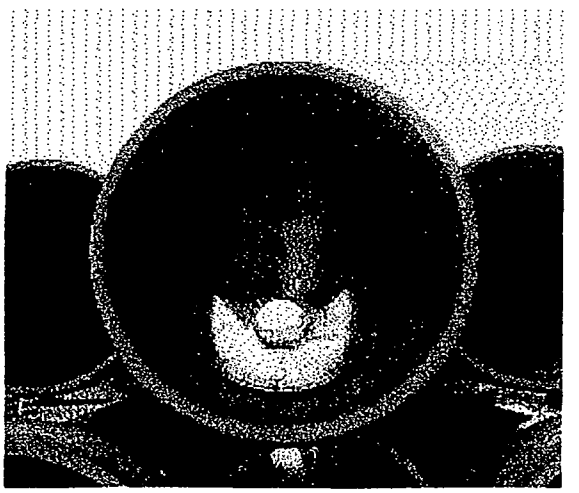
ACCESSORIES

Blue Brute is backed up by all the items it takes for smooth installation of water pipe. Direct taps can be made with proper tapping tools. (See detailed instructions on tapping in the "Blue Brute Installation Guide", TR-704B.)

RING-TITE JOINTS WITH FACTORY INSTALLED RINGS

Blue Brute's Ring-Tite joint can be assembled quickly. Seated in a deep groove, the flexible elastomeric ring provides a tight seal that protects the line from shock, vibration, earth movement and compensates for expansion and contraction of pipe lengths. And there's no field mixing or application of cement. It's a simple push-together joint that remains tight under normal operating conditions.

Factory installed rubber sealing ring provides tight, flexible seal. Spigot pipe ends are supplied from factory with bevels. The bell is an integral part of the pipe length with the same strength.



Flow Characteristics and Dimensions

FLOW CHART

CLASS 100 (DR25)

	Velocity Ft./ Sec.	Head loss PSI /100'	Velocity Ft./ Sec.	Head loss PSI /100'	Velocity Ft./ Sec.	Head loss PSI /100'	Velocity Ft./ Sec.	Head loss PSI /100'	Velocity Ft./ Sec.	Head loss PSI /100'
Gals./ Min.	Pipe size (in.) 4	4.39 I.D.	6	6.30 I.D.	8	8.28 I.D.	10	10.16 I.D.	12	12.08 I.D.
100	2.12	0.16								
200	4.24	0.57	2.05	0.10						
300	6.35	1.21	3.07	0.21						
400	8.47	2.07	4.10	0.35	2.38	0.09				
500			5.12	0.53	2.98	0.14				
600			6.15	0.75	3.57	0.20	2.38	0.07		
700			7.17	0.99	4.17	0.27	2.77	0.10		
800			8.20	1.27	4.76	0.34	3.17	0.13	2.24	0.05
900			9.22	1.58	5.36	0.42	3.56	0.16	2.52	0.07
1,000					5.96	0.51	3.96	0.19	2.80	0.08
1,500					8.93	1.09	5.94	0.40	4.20	0.17
2,000							7.92	0.69	5.60	0.29
2,500							9.90	1.04	7.00	0.45
3,000									8.40	0.62
3,500									9.80	0.83

CLASS 150 (DR18)

	Velocity Ft./ Sec.	Head loss PSI /100'	Velocity Ft./ Sec.	Head loss PSI /100'	Velocity Ft./ Sec.	Head loss PSI /100'	Velocity Ft./ Sec.	Head loss PSI /100'	Velocity Ft./ Sec.	Head loss PSI /100'
Gals./ Min.	Pipe size (in.) 4	4.23 I.D.	6	6.09 I.D.	8	7.98 I.D.	10	9.79 I.D.	12	11.65 I.D.
100	2.28	0.19								
200	4.57	0.69	2.20	0.12						
300	6.85	1.46	3.30	0.25						
400	9.13	2.48	4.41	0.42	2.57	0.11				
500			5.51	0.64	3.21	0.17	2.13	0.06		
600			6.61	0.89	3.85	0.24	2.56	0.09		
700			7.71	1.18	4.49	0.32	2.98	0.12	2.11	0.05
800			8.81	1.52	5.13	0.41	3.41	0.15	2.41	0.06
900			9.91	1.89	5.77	0.51	3.84	0.19	2.71	0.08
1,000					6.41	0.61	4.26	0.23	3.01	0.10
1,500					9.62	1.30	6.39	0.48	4.51	0.21
2,000							8.52	0.82	6.02	0.35
2,500									7.52	0.53
3,000									9.03	0.74

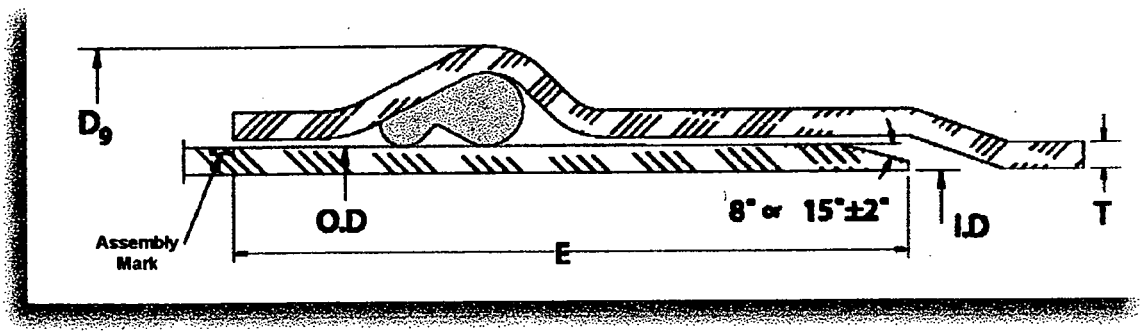
Dimensions (Average)

"D" Ring

*Class 100 (DR 25)**

Pipe Size	Outside Dia. (In.)	Nom. Inside Dia. (In.)	T (Min.) Thick. (In.)	Wt. Lbs./Ft. Approx.	E Min.	D_9 Approx.
4	4.80	4.39	0.192	1.9	4.75	6.4
6	6.90	6.30	0.276	3.9	5.50	8.8
8	9.05	8.28	0.362	6.7	6.25	11.4
10	11.10	10.16	0.444	10.1	7.00	13.8
12	13.20	12.08	0.528	14.4	7.80	15.9
Class 150 (DR 18)*						
4	4.80	4.23	0.267	2.6	4.75	6.5
6	6.90	6.09	0.383	5.3	5.50	9.0
8	9.05	7.98	0.503	9.2	6.25	11.6
10	11.10	9.79	0.617	13.9	7.00	14.1
12	13.20	11.65	0.733	19.7	7.80	16.7
Class 200 (DR 14)*						
4	4.80	4.07	0.343	3.2	4.75	6.8
6	6.90	5.86	0.493	6.7	5.50	9.4
8	9.05	7.68	0.646	11.6	6.25	12.1
10	11.10	9.42	0.793	17.6	7.00	14.3
12	13.20	11.20	0.943	25.1	7.80	16.9

*Standardized casing size available in installation guide : TR- 704B



Short form Specification

SCOPE

This specification designates general requirements for unplasticized polyvinyl chloride (PVC) plastic class water pipe with integral bell and spigot joints for the conveyance of water and other fluids.

MATERIALS

Pipe shall meet the requirements of AWWA Standard C900. " Polyvinyl Chloride (PVC) Water Distribution Pipe ". All Class 100 pipe shall meet the requirements of DR 25, Class 150 pipe shall meet the requirements of DR 18 and Class 200 the requirements of DR 14.

HYDRO TESTING

Each pipe shall be tested to four times the pressure class of the pipe for a minimum of 5 seconds. The integral bell should be tested with the pipe.

STANDARD LAYING LENGTHS

Standard laying lengths shall be 20 feet (± 1") for all sizes.

QUICK BURST TEST

Randomly selected samples tested in accordance with ASTM D 1599 shall withstand, without failure, pressures listed below when applied in 60 - 70 seconds.

Class	Minimum burst pressure at 73°F (PSI)
100	535
150	755
200	985

PIPE

All pipe shall be suitable for use as pressure conduit. Provisions must be made for expansion and contraction at each joint with an elastomeric ring. The bell shall consist of an integral wall section with a factory installed, solid cross section elastomeric ring which meets the requirements of ASTM F 477. The bell section shall be designed to be at least as hydrostatically strong as the pipe wall and meet the requirements of AWWA C 900. Sizes and dimensions shall be as shown in this specification. Joint design meets qualification requirements of ASTM D 3139.

PIPE STIFFNESS

The pipe stiffness using F/ΔY for PVC class water pipe is contained in the table below:

Class	DR	F/ΔY (PSI)
100	25	129
150	18	364
200	14	815

DROP IMPACT TEST

Pipe shall withstand, without failure at 73°F, an impact of a falling missile, Tup C, at the following levels. (Per ASTM D 2444).

Pipe Size (In.)	Impact (Ft./ Lbs.)
4	100
6	100
8	100
10	120
12	120

There shall be no visible evidence of shattering or splitting when the energy is imposed.

WARRANTY

The physical (or chemical) properties of J-M products described herein represent typical average values obtained in accordance with accepted test methods and are subject to normal manufacturing variations. They are supplied as a technical service and are subject to change without notice.

J-M warrants that its standard products are manufactured in accordance with its applicable material specifications and are free from defects in workmanship and materials, using J-M's specifications as a standard. Every claim under this warranty shall be deemed waived unless in writing and received by J-M within thirty (30) days of the date the defect was discovered, and within one (1) year of the date of the shipment. Claims for product appearance defects, such as sunbleached pipe etc., however, must be made within thirty (30) days of the date of the shipment. J-M must first be given an opportunity to inspect the product alleged to be defective in order to determine if it meets J-M specifications and if the handling, installation, and operating conditions have been satisfactory and in accordance with J-M recommended practices. Products sold by J-M which are manufactured by others are warranted only to the extent and limits of the warranty of the manufacturer. The limited and exclusive remedy for breach of the above warranty by J-M shall be the resupply of a like quantity of non-defective product. J-M shall not be liable for any Incidental, consequential, or other damages of any kind, including, without limitation, any expenses for removal or reinstallation resulting from any defect. J-M makes no other representation or warranty of any kind, express or implied, in fact or in law, including, without limitation, the warranty of merchantability and warranty of fitness for a particular purpose, other than the limited warranty set forth herein.

the only name you need to know in

J-M MANUFACTURING CO., INC.

PIPE

9 Peach Tree Hill Road, Livingston, NJ 07039

Sales & Marketing 973-535-1633

Customer Service 800-621-4404, 888-567-4730 **Fax:** 800-451-4170, 800-637-1109

www.jmpipe.com

Revised 11/01

For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 5/9/05	X	New Submittal
			Resubmittal

Section I — **REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS** *(This section to be initiated by the Subcontractor)*

To:	From:	Subcontract No: KH020577	Submittal No. 128
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026		Previous Submittal No.

Specification Sec. No. 02225

Project Title: Construction of the Present Landfill Accelerated Action

Item No. (a.)	Description of Item Submitted (Type, size, model number, etc.) (b.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8) (c.)	No. of Copies (d.)	Contract Reference Document: Spec. Paragraph No. (e.)	Contract Reference Document: Drawing Sheet No. (f.)	Deviation (See Instruction #6) (g.)	Contractor Action Code (See Instruction #9) (h.)
1	Pea Gravel Bulk Gradation		4	NA	N/A	N/A	

Rocky Flats Plant

☒ APPROVED ☐ APPROVED AS CORRECTED
☐ NOT APPROVED ☐ REVISE AND RESUBMIT

Remarks:

APPROVAL IS FOR CONFORMANCE WITH THE DESIGN CONCEPT OF THE PLANS AND SPECIFICATIONS AND FOR COMPLIANCE WITH THE INFORMATION GIVEN THEREIN. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMATION AND CORRELATION OF ALL DIMENSIONS AT THE CONSTRUCTION SITE; FOR INFORMATION THAT PERTAINS SOLELY TO FABRICATION PROCESSES OR TO TECHNIQUES OF CONSTRUCTION; AND FOR COORDINATION OF THE WORK OF ALL CRAFTS.

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted. Paul Kreitz 5/9/05

Signature of Subcontractor:

BY: Robert K. Davis DATE: 05/09/05

Section II Reviewed

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

OK For culv. bedding & fill to springline
CQAE J.H. Rale TX

ASTM GRAIN SIZE ANALYSIS
ASTM D 421, D 2217, D 1140, C 117, D 422, C 136

PROJECT TITLE	Rocky Flats/Field and Lab Testing/CO	**SAMPLE ID**	PDG-1
PROJECT NO.	043-2246-0002	**SAMPLE TYPE**	Bulk
REMARKS		**SAMPLE DEPTH (ft)**	NR

WATER CONTENT (Delivered Moisture)

Wt Wet Soil & Tare (gm)	(w1)	
Wt Dry Soil & Tare (gm)	(w2)	
Weight of Tare (gm)	(w3)	
Weight of Water (gm)	(w4=w1-w2)	
Weight of Dry Soil (gm)	(w5=w2-w3)	
Moisture Content (%)	(w4/w5)*100	0.00

Hygroscopic Moisture For Sieve Sample

Wet Soil & Tare (gm)	318.33
Dry Soil & Tare (gm)	314.70
Tare Weight (gm)	33.34
Moisture Content (%)	1.3

Total Weight Of Sample Used For Sieve Corrected For Hygroscopic Moisture

Weight Of Sample (gm)		1197.30
Tare Weight (gm)		100.48
Total Dry Weight (gm)	(W6)	1082.85

SIEVE ANALYSIS

Tare Weight: 0.00

	Wt Ret +Tare	(Wt-Tare)	Cumulative (%Retained) ((wt ret/w6)*100)	% PASS (100-%ret)	SIEVE	
12.0"	0.00	0.00	0.00	100.00	12.0"	cobbles
6.0"	0.00	0.00	0.00	100.00	6.0"	cobbles
3.0"	0.00	0.00	0.00	100.00	3.0"	coarse gravel
2.5"	0.00	0.00	0.00	100.00	2.5"	coarse gravel
2.0"	0.00	0.00	0.00	100.00	2.0"	coarse gravel
1.5"	0.00	0.00	0.00	100.00	1.5"	coarse gravel
1.0"	0.00	0.00	0.00	100.00	1.0"	coarse gravel
0.75"	0.00	0.00	0.00	100.00	0.75"	fine gravel
0.375"	54.93	54.93	5.07	94.93	0.375"	fine gravel
#4	821.20	821.20	75.84	24.16	#4	coarse sand
#8	960.10	960.10	88.66	11.34	#8	coarse sand
#16	1006.00	1006.00	92.90	7.10	#16	medium sand
#30	1029.30	1029.30	95.05	4.95	#30	medium sand
#50	1042.90	1042.90	96.31	3.69	#50	fine sand
#100	1053.00	1053.00	97.24	2.76	#100	fine sand
#200	1060.50	1060.50	97.94	2.06	#200	fines
PAN	1061.80	1061.80			PAN	

% COBBLES	0.00
% C GRAVEL	0.00
% F GRAVEL	75.84
% C SAND	13.84
% M SAND	6.00
% F SAND	2.26
% FINES	2.06
% TOTAL	100.00

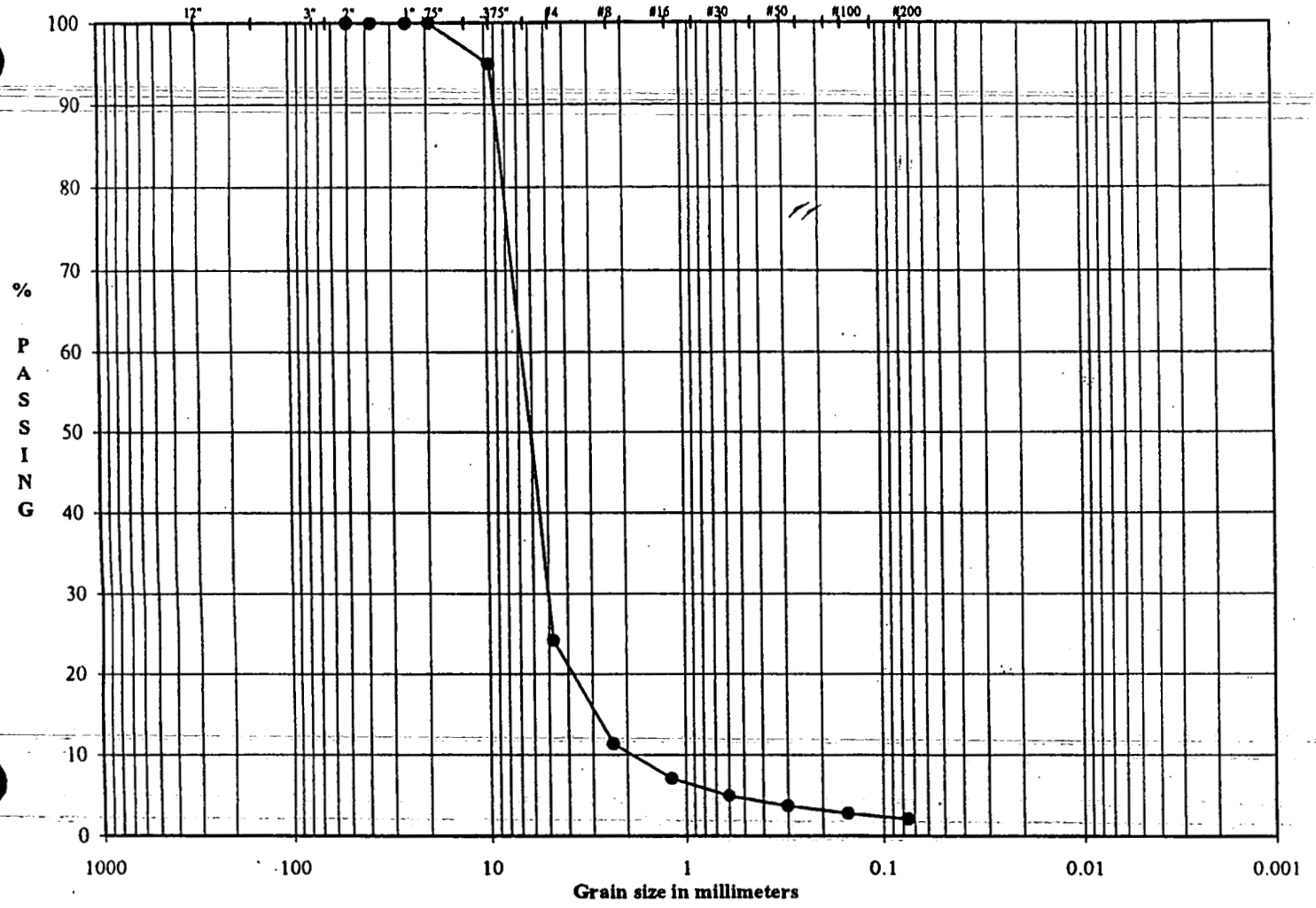
LL	-
PL	-
PI	-
Gs	-

DESCRIPTION Pink

USCS --

TECH	PRH
DATE	4/27/2005
REVIEW	MB

PARTICLE SIZE DISTRIBUTION
US STANDARD SIEVE OPENING SIZES



Boulders	Cobbles	Coarse	Fine	Cor	Med	Fine	SILT OR CLAY
		Gravel		SAND			FINES

SAMPLE ID	PDG-1
SAMPLE TYPE	Bulk
SAMPLE DEPTH (ft)	NR

LL	-
PL	-
PI	-

DESCRIPTION	Pink
USCS	--

Rocky Flats/Field and Lab Testing/CO
043-2246-0002

TECH	PRH
DATE	4/27/20(
REVIEW	MB

Davis, Robert W.
From: Powell, Scott [Scott.Powell@earthtech.com]
Sent: Wednesday, April 06, 2005 10:27 AM
To: Davis, Robert W.; Jack Woo (E-mail)
Cc: Thompson, Randy; Calderon, Marco T.; Archibald, Ryan
Subject: Rocky Flats culvert details

Hey Bob and Jack,

Here is some information for using corrugated HDPE culvert piping in place of concrete:

Structure #5 (southeastern culvert): Two each 20-foot long, 36-inch diameter single-wall corrugated HDPE culvert pipes sloped at 4%.

Also, for review,
Structure #12 (northern culvert): Two each 80-foot long, 36-inch diameter single-wall corrugated HDPE culvert pipes sloped at 2%.

All culverts must have 2 feet of cover soil over top of them. Culverts must have flared end sections. When using multiple culverts, they must be spaced no less than 2 feet apart. Culvert excavation and backfill should be done in accordance with CDOT Specification Section 206.03. Bedding material must conform to AASHTO M 43 Coarse Aggregate No. 8 (also in CDOT Specification Table 703-1):

Pea Gravel Tested (From site)

Sieve Size	Percent Passing	
½"	100	100 % ✓
3/8"	85-100	94.9 % ✓
#4	10-30	24.2 % ✓
#8	0-10	11.3 % ± say OK
#16	0-5	2.1 % ± ✓

CQAE Arvada TX

Structure backfill must meet the requirements of CDOT specification Section 703.08 for Class I backfill.

Thanks,
-Scott

Scott Powell, P.E.
Project Engineer
Earth Tech, Inc.
303-804-2435
303-589-8511 (Cell)

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SUBMITTAL TRANSMITTAL FORM

For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 5/17/05	X	New Submittal
			Resubmittal

Section I — **REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS** *(This section to be initiated by the Subcontractor)*

To:	From:	Subcontract No: KH020577	Submittal No. 129
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026		Previous Submittal No.
Specification Sec. No. 02225		Project Title: Construction of the Present Landfill Accelerated Action	

Item No. a.	Description of Item Submitted (Type, size, model number, etc.) b.	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8) c.	No. of Copies d.	Contract Reference Document: Spec. Paragraph No. e.	Contract Reference Document: Drawing Sheet No. f.	Deviation (See Instruction #6) g.	Contractor Action Code (See Instruction #9) h.
1	Drain pipe and culvert data		4	NA	N/A	N/A	

Rocky Flats Plant

☒ APPROVED ☐ APPROVED AS CORRECTED

☐ NOT APPROVED ☐ REVISE AND RESUBMIT

APPROVAL IS FOR CONFORMANCE WITH THE DESIGN CONCEPT OF THE PLANS AND SPECIFICATIONS AND FOR COMPLIANCE WITH THE INFORMATION GIVEN THEREIN. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMATION AND CORRELATION OF ALL DIMENSIONS AT THE CONSTRUCTION SITE; FOR INFORMATION THAT PERTAINS SOLELY TO FABRICATION PROCESSES OR TO TECHNIQUES OF CONSTRUCTION; AND FOR COORDINATION OF THE WORK OF ALL CRAFTS.

BY: Robert Davis DATE Reviewed 05/19/05

Remarks: ADS Culvert

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.

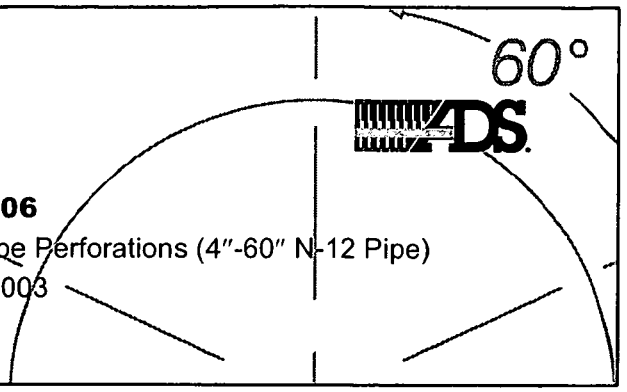
Signature of Subcontractor:

Section II

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

OK CQAE
J.H. Rabe TT

Product Notes



Product Note 3.106
Re: Standard Pipe Perforations (4"-60" N-12 Pipe)
Date: December 2003

Introduction
Perforated pipe plays an integral role in many applications of ADS HDPE pipe. Generally, perforated pipe is used to accelerate the removal of subsurface water in soils or to allow storm water to percolate into the soil. Currently, two classifications of perforations are specified in the AASHTO material specifications for HDPE pipe: Class I, and Class II. Class I perforations are commonly used in combination storm/underdrain systems while Class II incorporates subsurface drainage and detention/retention systems. Both classes are explained in more detail in the AASHTO materials specifications (M294 and M252) . AASHTO M252 covers pipe size 3 - 10 inch (75 - 250 mm) while M294 covers 12 – 60 inch (300 - 1500 mm). ADS manufactures pipe to meet the perforations specified for the project using the patterns indicated as follows.

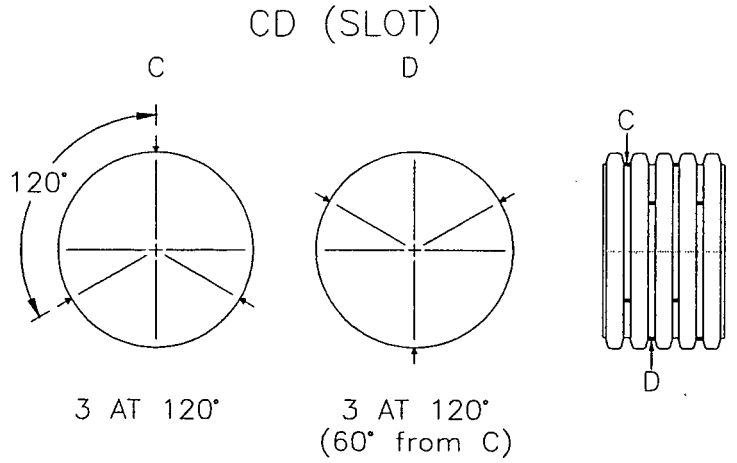
ADS STANDARD PERFORATION PATTERN (AASHTO Class II Perforation)
The following terminology for perforations is derived from the applicable AASHTO specification. Differences between the specifications are covered in Table I. The perforations shall be circular and/or slotted. The perforations shall be located in the outside valleys of the corrugations. The water inlet area shall be no less than 0.945 in^2/ft (20 cm^2/m) for pipe sizes 4 - 10 inch (100 - 250mm), 1.42 in^2/ft (30 cm^2/m) for pipe sizes 12 - 18 inch (300 - 450 mm) and 1.89 in^2/ft (40 cm^2/m) for pipe sizes larger than and equal to 24 inches (450 mm). Table 1 and Figure A below represent ADS standard perforation patterns for AASHTO Class II. Patterns indicated with an asterisk are a made-to-order product and additional lead-time should be allowed when ordering.

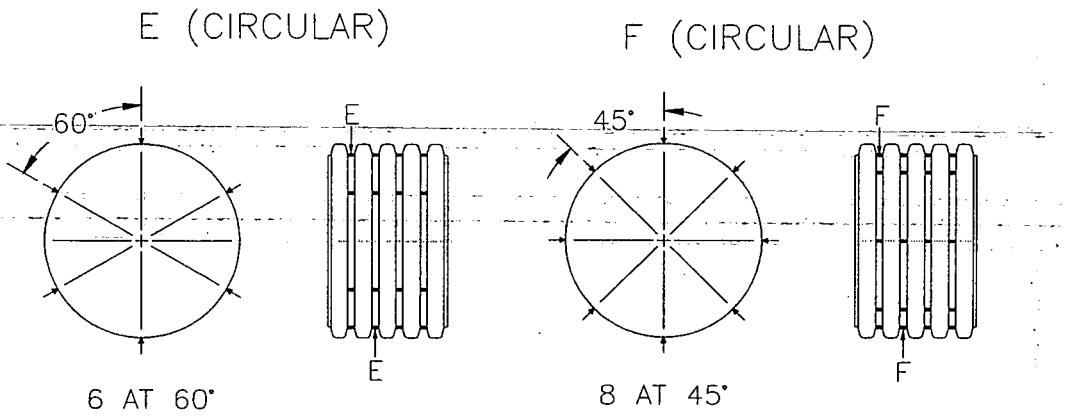
Table I

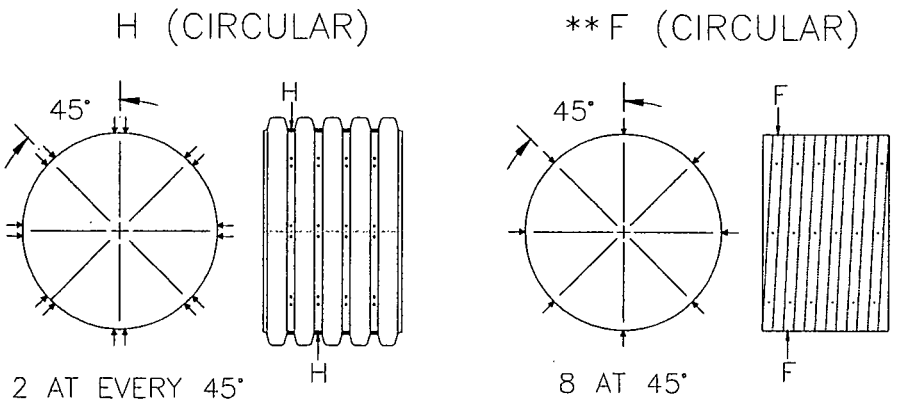
Nominal I.D.		Perforation Type	Maximum Slot Length or Diameter		Maximum Slot Width		Perforation Config	Minimum Inlet Area	
in	mm		in	mm	in	mm		in^2/ft	cm^2/m
*4	100	Slot	0.984	25	0.118	3	CD	1.0	20
*6	150	Slot	0.984	25	0.118	3	CD	1.0	20
*8	200	Slot	1.18	30	0.118	3	CD	1.0	20
*10	250	Slot	1.18	30	0.118	3	CD	1.0	20
12	300	Circular	0.394	10	-	-	E	1.5	30
15	375	Circular	0.394	10	-	-	E	1.5	30
18	450	Circular	0.394	10	-	-	E	1.5	30
24	600	Circular	0.394	10	-	-	F	2.0	40
30	750	Circular	0.394	10	-	-	H	2.0	40
36	900	Circular	0.394	10	-	-	H	2.0	40
42 Type S	1050	Circular	0.394	10	-	-	H	2.0	40
*42 Type D	1050	Circular	0.394	10	-	-	**F	2.0	40
48 Type S	1200	Circular	0.394	10	-	-	H	2.0	40
*48 Type D	1200	Circular	0.394	10	-	-	**F	2.0	40
60 Type S	1500	Circular	0.394	10	-	-	H	2.0	40
*60 Type D	1500	Circular	0.394	10	-	-	**F	2.0	40

* Denotes perforation pattern made to order
** Spaced at 5" longitudinally for 42" and 48" and 5.5" longitudinally for 60" diameter

Figure A – Class II Perforation Configurations







AASHTO Class I Perforations

The following terminology is derived from the applicable AASHTO specification. ADS manufactures 12 - 24 inch (300 – 600 mm) Class I perforation as a standard product (ADS designation 'C' perforation). However, other sizes may be ordered as a made-to-order, with sufficient lead time. Please contact your local ADS representative when ordering 4" – 10" and 30" – 60" Class 1 perforated pipe. The perforations shall be approximately circular and arranged in rows parallel to the axis of the pipe. The locations of the perforations shall be in the valley of the outside corrugation and also in each corrugation. The perforations shall be arranged in two equal groups placed symmetrically on either side of the lower half of the pipe. Please note that certain perforation patterns are not available in various parts of the United States. **Please contact your local ADS representative for availability and ordering of Class I perforations.**

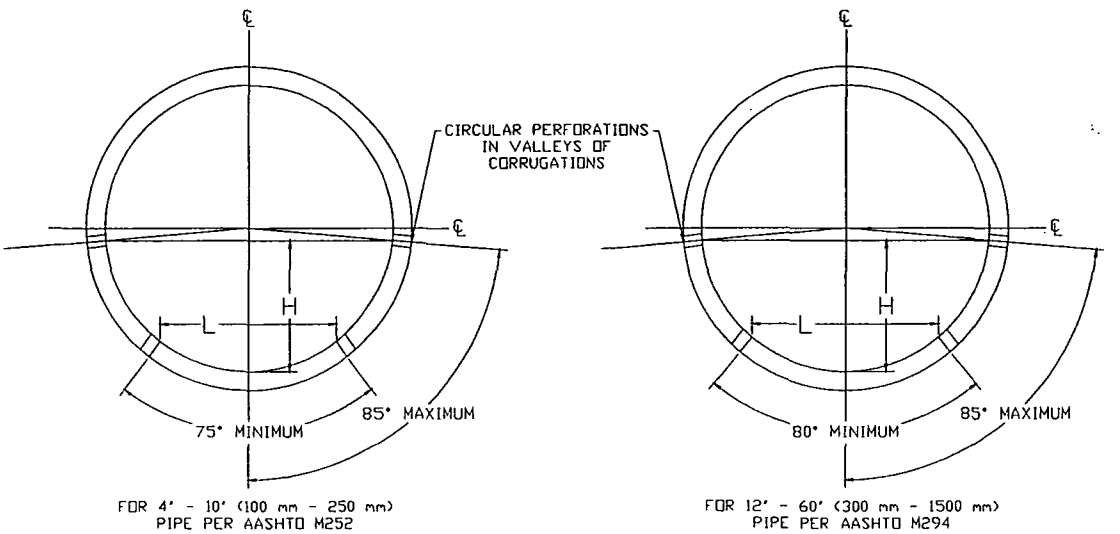
TABLE II

Nominal I.D.		Min. No. of Rows of Perforations	Maximum Perforation Hole Diameter		Minimum Perforation Hole Diameter		"H" Maximum		"L" Minimum		Nominal Inlet Area	
in	mm		in	mm	in	mm	in	mm	mm	mm	in^2/ft	cm^2/m
12	300	6	0.40	10	0.20	5	5.4	138	7.6	192	2.65	56
15	375	6	0.40	10	0.20	5	7.2	184	10.1	256	1.97	42
18	450	6	0.40	10	0.20	5	8.1	207	11.3	288	1.90	40
24	600	8	0.40	10	0.20	5	10.9	276	15.1	384	2.15	46
*30	750	8	0.40	10	0.20	5	13.6	345	18.9	480	1.65	35
*36	900	8	0.40	10	0.20	5	16.3	414	22.7	576	1.32	28
*42 Type S	1050	8	0.40	10	0.20	5	19.0	483	26.5	672	1.31	28
*42 Type D	1050	**8	0.40	10	0.20	5	19.0	483	26.5	672	1.36	29
*48 Type S	1200	8	0.40	10	0.20	5	21.7	552	30.2	768	1.29	27
*48 Type D	1200	**8	0.40	10	0.20	5	21.7	552	30.2	768	1.36	29
*60 Type S	1500	12	0.40	10	0.20	5	27.2	690	37.8	960	1.70	36
*60 Type D	1500	**8	0.40	10	0.20	5	27.2	690	37.8	960	1.85	39

* Denotes perforation pattern made to order

** Spaced at 5" longitudinally for 42" and 48" and 5.5" longitudinally for 60" diameter

Figure B – Class I Requirements for Perforations



Product Notes

Product Note 3.108
Re: Specification for Smooth Interior Corrugated N-12® Polyethylene Pipe for Leachate
Date: December, 1999

This specification applies to high-density polyethylene corrugated pipe with an integrally formed smooth interior for leachate collection.

This specification is applicable to nominal sizes 4-36 inch diameter. Leachate collection pipe shall meet or exceed all the requirements of AASHTO M 252 or AASHTO M 294, current edition.

Minimum parallel plate pipe stiffness values for leachate pipe shall be as specified in the table below.

Diameter		Pipe Stiffness ASTM D 2412 (5% Deflection)	
in	mm	psi	kN/m^2
4"	100	70	485
6"	150	65	450
8"	200	60	415
10"	250	50	345
12"	300	50	345
15"	375	42	290
18"	450	40	275
24"	600	34	235
30"	750	28	195
36"	900	22	150

The nominal size for the pipe and fittings is based on the nominal inside diameter of the pipe. Corrugated fittings may be either molded or fabricated by the manufacturer. Fittings supplied by manufacturers other than the supplier of the pipe shall not be permitted without the approval of the Project Engineer.

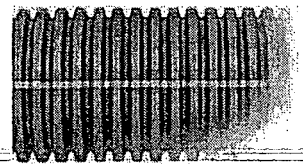
Installation shall be in accordance with ASTM Recommended Practice D 2321, or as shown on the project plans.

A manufacturer's certification that the product complies with the requirement of the applicable specification shall be furnished to the Project Engineer upon request.

LEACHATE GRADE ADS N-12 PRODUCT INFORMATION SHEET

Nominal Diameter	Inside Diameter, Average	Outside Diameter, Average	Inner Liner Thickness, Minimum	Minimum Pipe Stiffness @ 5% Deflection	Weight kg./6m (lbs./20 ft.)	Area mm^2/mm	"I" cm^4/cm	"C" mm
100 mm	104 mm	120 mm	0.635 mm	485 kN/m^2	5.10 kg	2.87	0.026	3.56
(4")	(4.10")	(4.78")	(0.025")	70 psi	(11.24 lbs)	(0.113 in^2/in)	(0.0016 in^4/in)	(0.14 in)
150 mm	152 mm	176 mm	0.635 mm	450 kN/m^2	9.90 kg	5.363	0.062	5.08
(6")	(6.00")	(6.92")	(0.025")	65 psi	(21.88 lbs)	(0.211 in^2/in)	(0.0038 in^4/in)	(0.20 in)
200 mm	200 mm	233 mm	0.9 mm	415 kN/m^2	15.80 kg	4.22	0.128	6.35
(8")	(7.90")	(9.11")	(0.035")	60 psi	(34.83 lbs)	(0.166 in^2/in)	(0.0078 in^4/in)	(0.25 in)
250 mm	251 mm	287 mm	0.6 mm	345 kN/m^2	20.50 kg	5.345	0.134	7.36
(10")	(9.90")	(11.36")	(0.024")	50 psi	(45.20 lbs)	(0.211 in^2/in)	(0.0082 in^4/in)	(0.30 in)
300 mm	308 mm	367 mm	0.9 mm	345 kN/m^2	28.96 kg	5.50	0.574	10.92
(12")	(12.15")	(14.45")	(0.035")	50 psi	(63.80 lbs)	(0.217 in^2/in)	(0.035 in^4/in)	(0.43 in)
375 mm	380 mm	448 mm	1.0 mm	290 kN/m^2	42.00 kg	6.51	0.190	13.21
(15")	(14.98")	(17.57")	(0.039")	42 psi	(92.30 lbs)	(0.272 in^2/in)	(0.055 in^4/in)	(0.52 in)
450 mm	459 mm	536 mm	1.3 mm	275 kN/m^2	58.38 kg	6.93	1.327	14.48
(18")	(18.07")	(21.20")	(0.051")	40 psi	(128.60 lbs)	(0.273 in^2/in)	(0.081 in^4/in)	(0.57 in)
600 mm	612 mm	719 mm	1.5 mm	235 kN/m^2	101.97 kg	8.25	2.245	18.80
(24")	(24.08")	(27.60")	(0.059")	34 psi	(224.60 lbs)	(0.324 in^2/in)	(0.137 in^4/in)	(0.74 in)
750 mm	762 mm	892 mm	1.5 mm	195 kN/m^2	139.97 kg	9.60	4.539	21.84
(30")	(30.00")	(35.10")	(0.059")	28 psi	(308.30 lbs)	(0.378 in^2/in)	(0.277 in^4/in)	(0.86 in)
900 mm	914 mm	1059 mm	1.5 mm	150 kN/m^2	163.95 kg	10.19	8.535	25.10
(36")	(36.00")	(41.70")	(0.059")	22 psi	(361.20 lbs)	(0.401 in^2/in)	(0.400 in^4/in)	(1.00 in)

Date: December, 1999



Advanced Drainage Systems, Inc.
4640 Trueman Boulevard
Hillard, OH 43026
(800) 733-7473

ADS N-12 CORRUGATED HDPE PIPE SPECIFICATION/PRODUCT DESCRIPTION

SCOPE

ADS N-12™ pipe is smooth inside and available in 4" – 60" diameters, in nominal 20-ft. lengths. Pipe can be solid or perforated/slotted. Configuration is N-12™ (corrugated outside/smooth inside) in 4" – 60" diameters.

APPLICATION

General gravity drainage, storm, sub-drainage, and/or sewer.

SPECIFICATIONS

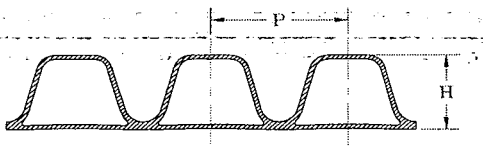
Pipe and fittings meet the requirements of AASHTO M-252 (3" – 10"), M-294 (12" and larger), Type S (corrugated outside-smooth inside, 4" – 60"), and MP7 (60" Type S).

JOINT OPTIONS & PERFORMANCE

1. Non-gasketed joints are internal or external couplers covering a minimum of two corrugations at each end.
2. Gasketed non-water tight joints (Soil tight per AASHTO section 26): Gaskets may be architectural weather-stripping material per ASTM D-1056, or rubber per ASTM F-477.
3. Gasketed, integral bell/spigot with a rubber gasket meeting ASTM F-477 installed on the spigot end.
4. Gasketed, lab test certified 10.8 psi joints: bell/spigot with a rubber gasket meeting ASTM F-477 installed on the spigot end.
5. Repair or Adapter Coupler: 5.0 psi tested HDPE wrap-around sleeve with self-contained tightening straps, furnished by the pipe manufacturer.

INSTALLATION

Installation shall be per local agency requirements or manufacturer's published recommendations with a minimum cover for H-25 loading shall be one foot through 48 and two feet for diameters greater than 60".



N-12 PROPERTIES

PIPE SIZE	INSIDE DIA.	OUTSIDE DIA	PITCH, P	CORRUGATION HEIGHTS, H
4" 100 mm	4.10" 104 mm	4.78" 120 mm	0.66" 17 mm	0.34 9 mm
6" 150 mm	6.00" 152 mm	6.92" 176 mm	0.77" 20 mm	0.46" 12 mm
8" 200 mm	7.90" 200 mm	9.11" 233 mm	0.96" 24 mm	0.61" 15 mm
10" 250 mm	9.90" 251 mm	11.36" 287 mm	1.26" 32 mm	0.73" 19 mm
12" 300 mm	12.15" 308 mm	14.45" 367 mm	1.92" 49 mm	1.15" 29 mm
15" 375 mm	14.98" 380 mm	17.57" 448 mm	2.59" 60 mm	1.30" 33 mm
18" 450 mm	18.07" 459 mm	21.20" 536 mm	2.66" 68 mm	1.57" 40 mm
24" 600 mm	24.08" 612 mm	27.80" 719 mm	3.15" 80 mm	1.86" 47 mm
30" 750 mm	30.00" 762 mm	35.10" 892 mm	4.12" 105 mm	2.55" 65 mm
36" 900 mm	36.00" 914 mm	41.70" 1059 mm	5.14" 131 mm	2.85" 72 mm

PIPE SIZE	INSIDE DIAMETER	OUTSIDE DIAMETER	PITCH, P	CORRUGATION HEIGHTS, H
42" 1050 mm	41.40" 1052 mm	447.70" 1212 mm	5.19" 132 mm	3.15" 80 mm
48" 1200 mm	47.60" 1209 mm	53.60" 1361 mm	5.25" 133 mm	3.00" 76 mm
60" 1500 mm	59.50" 1511 mm	66.30" 1684 mm	6.00" 152 mm	3.40" 86 mm

Product Notes

Product Note 3.115

Re: Installing N-12 Storm, Sanitary Sewer and Culvert Pipe

Date: Revised November 5, 2003

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1. INTRODUCTION

This handbook is intended to provide guidance for the proper installation of Advanced Drainage Systems (ADS) high density polyethylene (HDPE) pipe used in storm drain applications. This handbook is not intended to replace standard industry or project specifications, but to provide guidance based on our experience, research and recommendations for proper product performance.

It is recognized that installation practices vary from region to region, however, the following recommended guidelines are generally applicable to most installations.

2. WARRANTY

Advanced Drainage Systems, Inc. warranties its products as described in the Terms and Conditions of Sale that are provided on the back of each invoice and bill of lading.

3. PRE-CONSTRUCTION

3.1. Precautions

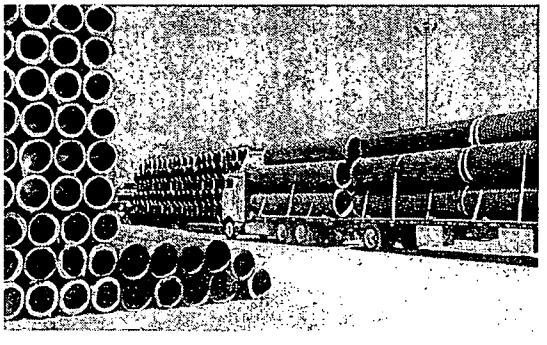
Federal regulations covering safety for construction are published in the Safety and Health Regulations for Construction under the Department of Labor, Occupational Safety and Health Administration (OSHA). These regulations define practices which must be followed.

3.2. Ordering

Pipe should be ordered from an ADS sales representative or authorized distributor. ADS representatives can assist in placing an order by reviewing project plans and specifications to insure proper quantities and components are ordered. Any certification which may be required should be noted at the time of order so the ADS representative can arrange for proper certifications to be supplied with pipe deliveries.

3.3. Receiving and Unloading

ADS pipe is shipped to the job site on dropside or flat bed trailers. Upon arrival at the jobsite, the pipe should be inspected for quantity and shipping damage. Any discrepancies or damage should be noted on the delivery receipt and the supplier notified. Most deliveries arrive on self



unloading ADS dropside trailers. However, for 1500 mm (60" pipe) and some flatbed deliveries, the contractor may be required to unload the pipe.

The pipe is designed to withstand normal field handling and can be easily unloaded by hand or with equipment. To avoid damage, the pipe should not be dropped. Additionally, tie down straps or bands should not be removed until the pipe has been secured, to prevent rolling or dropping the pipe.

Handling should be accomplished by hand, lifting tongs or nylon slings. When using slings, two pick points are recommended.

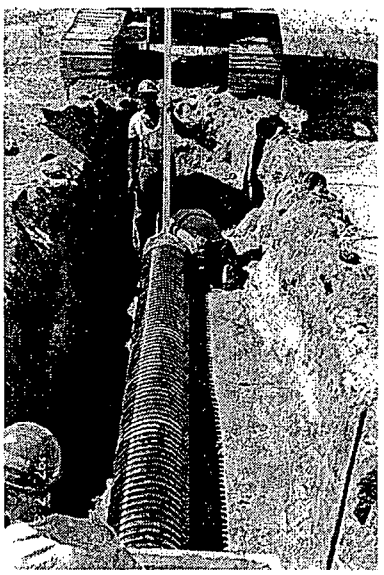
3.4. Stockpiling

Stockpile pipe as close as possible to its final location but away from construction traffic and activities. Pipe should be stockpiled on level ground. If stacked, blocking should be provided to prevent rolling. Stacked pipe should be placed with bells alternated on successive layers and the bells should overhang the layer below to prevent deforming and damaging the bell.

The protective wrap on the gaskets of the spigot end should be left on the pipe until it is ready for installation. Lube, couplers and fittings should be stored with the pipe. Couplers and fittings should be stored flat to prevent damage and misshape.

4. INSTALLATION

4.1. Line and Grade



Storm drain pipe systems are designed to provide hydraulic capacity based on pipe size and slope. The alignment or line of the pipe is the horizontal location of the pipe, while the grade is the vertical slope of the pipe. In order for a storm drain system to function as designed, it is important to install the pipe to the proper line and grade.

Generally, no special practices are required to maintain line and grade; however, certain installation techniques can greatly increase the system performance and rate of installation.

Alignment is established by a field survey. Once the trench is excavated on line, the pipe bedding should be placed to proper thickness. The top of the bedding should be adjusted to allow for the difference between the plan invert (flowline) and pipe profile wall thickness. The following table gives the dimension to be subtracted from the pipe inverts indicated on the plans when checking bedding elevations.

Table 1 – Invert Adjustment for Wall Thickness

Pipe Diameter in. (mm)	Wall Thickness		
	Inches	feet	mm
12" (300 mm)	1.15"	0.10'	29 mm
15" (375 mm)	1.30"	0.11"	33 mm
18" (450 mm)	1.57"	0.13'	40 mm
24" (525 mm)	1.86"	0.16'	47 mm
30" (600 mm)	2.55"	0.21'	65 mm
36" (750 mm)	2.85"	0.24'	72 mm
42" (1050 mm)	3.15"	0.26'	80 mm
48" (1200 mm)	3.00"	0.25'	79 mm
60" (1500 mm)	3.40"	0.28'	86 mm

4.2. Trench Widths

References for trenching practice are in AASHTO Section 30 and ASTM D2321. Both of these specifications provide guidelines for trench widths applicable to a variety of installation conditions. Trench widths may be varied based on the competency of the in-situ soil, backfill materials, compaction levels and loads. In general, the following table provides recommended trench widths for most installations, to permit proper placement and compaction of backfill material in the haunches and around the pipe. However, the design engineer may modify the trench widths based on an evaluation of the competency of the in-situ materials, the quality and compaction level of the backfill, the design loads and the compaction equipment to be used. In lieu of the engineer's recommendations or governing agency specifications, the following trench widths are suggested.

Table 2 – Suggested Minimum Trench Widths

Nominal Pipe Diameter, inches (mm)	Pipe OD, inches (mm)	Minimum Trench Width, inches (mm)
4" (100 mm)	4.78" (120 mm)	21" (530 mm)
6" (150 mm)	6.92" (176 mm)	23" (580 mm)
8" (200 mm)	9.11" (233 mm)	25" (630 mm)
10" (250 mm)	11.36" (287 mm)	28" (710 mm)
12" (300 mm)	14.45" (367 mm)	31" (790 mm)
15" (375 mm)	17.57" (448 mm)	34" (860 mm)
18" (450 mm)	21.2" (536 mm)	39" (990 mm)
24" (600 mm)	27.8" (719 mm)	48" (1220 mm)
30" (750 mm)	35.1" (892 mm)	66" (1680 mm)
36" (900 mm)	41.7" (1059 mm)	78" (1980 mm)
42" (1050 mm)	47.7" (1212 mm)	83" (2110 mm)
48" (1200 mm)	53.6" (1361 mm)	89" (2260 mm)
60" (1500 mm)	66.3" (1684 mm)	102" (2590 mm)

Trenching should be completed in existing soils with sidewalls reasonably vertical to the top of the pipe. For positive projection embankment installations, the embankment material should be placed and compacted to a minimum of one (1') foot above the pipe and the trench excavated into the embankment. When excavation depths or soil conditions require shoring or use of a trench box, the bottom of the shoring or trench box should be placed no lower than the top of the pipe. This prevents disruption of the backfill envelope when removing the shoring or trench box. If this practice cannot be followed, consideration should be given to leaving the shoring in place.

4.3. Dewatering

Excessive groundwater hinders proper placement and compaction of bedding and backfill. ADS N-12 pipe will float in standing water, therefore, it is imperative that a dry trench be provided. It may be necessary to provide sump pumps, well points, deep wells, geofabrics, underdrains or a diversion ditch to insure a dry trench. A qualified engineer should be consulted to determine dewatering methods.

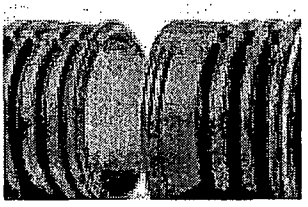
4.4. Joints

ADS offers a variety of joint options to satisfy specific project requirements. Three performance levels are commonly required for storm drain applications.

4.4.1. Soil Tight Joints

Soil tight joints are specified as a function of opening size, coupler length and backfill particle size. Split couplers may be used for pipe sizes up to 60" to provide a soil tight connection. The sides of the split couplers are "hinged" so they easily open to accept each end of the adjacent pipe sections. There are matching holes at the ends of the split coupler which allow securing the coupler with nylon ties.

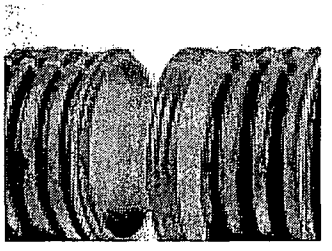
4.4.2. Silt Tight Joints



Silt tight joints are specified where there is a high percentage of fines and groundwater potential. These joints are designed to guard against infiltration of soil at the joint. A bell and spigot design with an elastomeric rubber gasket meeting ASTM F-477 is generally specified for silt tight applications. The ADS N-12 ST IB pipe joint is designed to meet the silt tight requirements.

4.4.3. Water Tight Joints

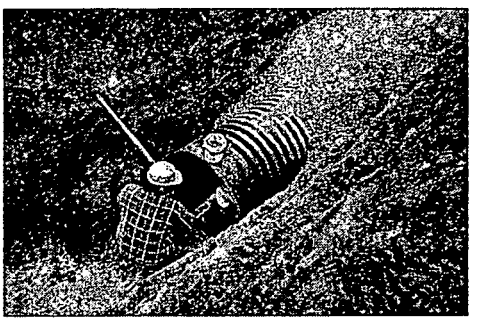
Watertight joints are specified to meet a laboratory pressure test of 10.8 psi per ASTM D-3212. These joints are designed to prevent infiltration of soil and exfiltration of storm water. The joints have a bell and spigot or bell–bell design and incorporate an ASTM F-477 elastomeric rubber gasket. ADS Pro-Link WT and ADS N-12 WT IB pipe joints satisfy the requirements of watertight installations.



4.5. Joint Assembly

Split couplers are easily installed by laying the adjoining sections of pipe in the open split coupler and wrapping the coupler around the pipe. Nylon ties may then be fed through the holes in the end of the coupler to secure the coupler to the pipe. The pipe and the inside of the coupler should be clean and free of dirt prior to securing the coupler.

Bell and spigot or bell – bell couplers incorporating an elastomeric rubber gasket are either an in-line bell (N-12 ST or WT IB), a welded bell (Pro-Link ST or WT) or a bell-bell (Pro-Link WT). These couplers are easily installed by the following procedure which will insure the specified performance:



1. Thoroughly clean the bell and spigot ends, making sure they are free of mud and grit. Remove the protective shrink-wrap from the gasket. If the gasket has been removed, make sure the gasket seat is clean and reinstall the gasket by stretching it over the pipe and nesting it in the seat. Gaskets should be installed with the marking facing the coupler.
2. Remove shipping collars (where provided) prior to lowering the pipe in the trench. Properly dispose of shipping collars outside the pipe trench. Do not install pipe with shipping collars on the pipe and do not dispose of shipping collars in the trench.
3. Lubricant is supplied for gasketed joint installation in the form of tubs. The lubricant should be liberally applied to both the bell and spigot ends of the pipe. Care should be taken to insure lubricant is applied to the chamfered leading edge of the bell.
4. Align the pipe and push the spigot home on grade. Joints should be installed with bells facing upstream for proper installation. Generally, pipes should be laid starting at the downstream end and working upstream. Small diameter pipe (below 24") can usually be installed by pushing the joint home by hand. Larger diameters may necessitate using a bar or equipment to push home. If a bar or equipment is utilized, a wood block should be used to prevent damage to the bell. When pushing the joint home, make sure bedding material is not pulled into the bell by the spigot. Material such as small stones and sand pulled into the bell as the pipe is joined can cause leaks.

5. EMBEDMENT MATERIALS

Embedment materials are those used for bedding, haunching and initial backfill as illustrated in Figure 1. AASHTO Section 30 and ASTM D-2321 classify soils using AASHTO and Unified soil classification, respectively. The following will describe soils using the ASTM D-2321 nomenclature with AASHTO designations noted.

Class I – Angular crushed stone or rock, dense or open graded with little or no fines (¼ inch to 1½ inches in size)

Class II – (GW, GP, SW, SP, GW-GC, SP-SM) Clean, coarse grained materials, such as gravel, coarse sands and gravel/sand mixtures (1 ½ inches in size). (AASHTO classifications A1 & A3).

Class III – (GM, GC, SM, SC) Coarse grained materials with fines including silty or clayey gravels or sands. Gravel or sand must comprise more than 50 percent of Class III materials (1½ inches maximum size). (AASHTO classifications A-2-4 & A-2-5).

Class IV – (ML, CL, MH, CH) Fine grained materials, such as fine sand and soils containing 50 percent or more clay or silt. Soils classified as Class IVa (ML or CL) have medium to low plasticity and are not recommended in the embedment zone. Soils classified as Class IVb (MH or CH) have high plasticity and are not recommended for embedment materials.

Class V – (OL, OH, PT) These materials include organic silts and clays, peat and other organic materials. They are not recommended for embedment materials.

Note: All embedment materials should be free from lumps of frozen soil or ice when placed. Additionally, embedment materials should be placed and compacted at optimum moisture content.

AASHTO SECTION 30 *

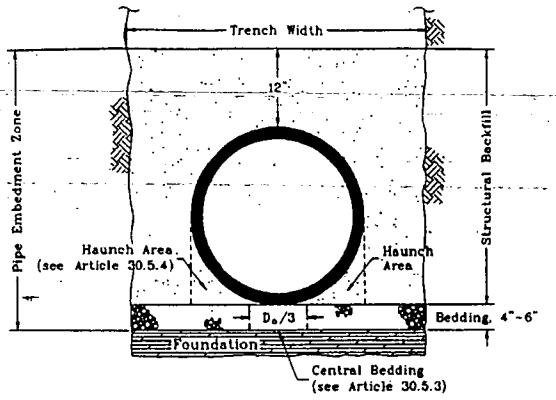


FIGURE 30.5.1

ASTM D-2321 *

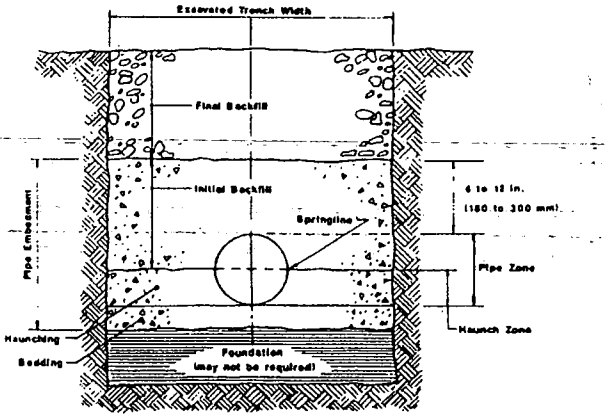


FIG. 1 Trench Cross Section Showing Terminology

These specifications are presented as a guide and are not a substitute for local agency/designer standards. Both specifications are illustrated to show similarities and ADS's recommendations are presented in the text. Embedment materials should be specified with consideration given to design loads and the classification and suitability of native soils. For normal installations without live loads or deep cover heights, many native soils will be applicable. Also, using native soils minimizes the potential for migration of fines into the embedment material. Where native soils are not appropriate for embedment materials or the loading conditions, an imported material should be considered.

5.1. Foundation

A stable foundation must be provided to insure proper line and grade is maintained. Unsuitable foundations must be stabilized at the engineer's direction. Unsuitable or unstable foundations may be undercut and replaced with a suitable bedding material, placed in 6" lifts. Other methods of stabilization, such as geotextiles may be appropriate based on the engineer's judgement.

5.2. Bedding

A stable and uniform bedding shall be provided for the pipe and any protruding features of its joints and/or fittings. The middle of the bedding equal to 1/3 of the pipe OD should be loosely placed, with the remainder compacted to a minimum of 90 percent standard proctor density. Class I, II and III materials are suitable for use as bedding.

5.3. Haunching

Proper haunching provides a major portion of the pipe's strength and stability. Care must be exercised to insure placement and compaction of the embedment material in the haunches. For larger diameter pipes (> 30"), embedment materials should be worked under the haunches by hand. Haunching materials may be Class I, II or III and must be placed and compacted in 8 inch maximum lifts, compacted to 90 percent standard proctor density.

5.4. Initial Backfill

Initial backfill materials are required to a minimum of ¾ of the pipe diameter for proper structural performance of the pipe. The AASHTO and ASTM specifications extend the initial backfill from the springline to 6 inches to 12 inches above the pipe to provide protection for the pipe from construction operations during placement of the final backfill, and to protect the pipe from stones or cobbles in the final backfill. For proper structural performance of the pipe, the initial backfill need only extend to ¾ of the pipe diameter. Class I, II, III or low plasticity Class IV materials may be used as initial backfill. However:

Class I materials must be used in wet trenches if Class I bedding and haunching materials are used.

Class II materials must be compacted in 6 inch lifts to 90 percent standard proctor density.

Class III materials must be compacted in 6 inch lifts to 90 percent standard proctor density. See note.

Class IVa low plasticity materials (CL-ML) are not recommended since they must be compacted in thin lifts while at or near optimum moisture content to provide proper pipe support. These materials may only be used under the direction of the Engineer.

Class IVb high plasticity clays and silts and all Class V materials are not recommended for initial backfill.

Note: Flooding or jetting as a procedure for compaction should only be used with the Engineer's approval and never with initial backfill material such as aggregate base or Class IV materials.

Controlled Low Strength Materials (CLSM) or flowable fills are acceptable backfill materials. Several considerations should be accounted for when using CLSM backfill. Provisions to prevent floatation of the pipe during placement of the CLSM must be used. This can include anchoring the pipe by placing flowable fill at each joint and allowing the fill to partially cure prior to placing the flowable fill along the entire length of the pipe. Also, mechanical anchors such as bent rebar driven into competent soil or precast weights, may be used at each joint to prevent floatation. When using CLSM, the fill should always be placed to completely encase the pipe.

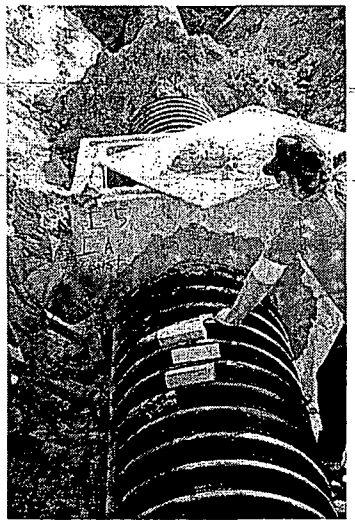
5.5. Final Backfill

The final backfill should be the same material as the proposed embankment. Generally, the excavated material may be used as final backfill. Placement should be as specified for the embankment. In lieu of a specification, the final backfill should be placed in 12 inch maximum lifts and compacted to a minimum 85 percent standard proctor density to prevent excessive settlement at the surface. Compaction should be performed at optimum moisture content.

6. VEHICULAR AND CONSTRUCTION LOADS

ADS N-12 pipes are designed to carry H-25 live loads (40,000 lbs. Axle – legal load) with 12 inches of cover. This assumes a well compacted embedment and includes the subbase material for installations under pavement. For 60" N-12 the minimum cover for H-25 loads is 2'-0".

During construction, avoid heavy equipment loads (> 40,000 lbs. per axle) over the pipe. An additional 12 inches of temporary cover should be placed over the pipe for heavy construction load crossings. Hydrohammers or hoe-pak compactors may not be used over the pipe until at least 48 inches of cover have been provided.



7. MANHOLE CONNECTIONS

Consideration should be given to the project performance specified when selecting manhole connections. When connecting to concrete manholes or inlets, grouting the pipe to the manhole or inlet using non-shrink grout provides a soil tight installation. A gasket placed in a pipe corrugation at the approximate center of the manhole or inlet wall will act as a water barrier. This water barrier should provide a silt tight installation. An ADS WaterStop(Gasket can be used in a similar way to achieve a water tight installation. Other water tight installations may require flexible rubber connections such as rubber boots, "A-Loks", etc. ADS N-12/SDR- 35 adapters or the smooth exterior ADS manhole adapter pipe should be used with flexible rubber connections. Insert the ADS N-12/SDR-35 or ADS manhole adapter into the flexible connector using a lubricant as recommended by the manufacturer of the flexible connector. The flexible connector should be sized to the OD of SDR-35 PVC pipe. When connecting to manholes, insure backfill is placed under the pipe adjacent to the manhole to prevent differential settlement.

8. TAP CONNECTIONS

Tap connections may be accomplished using fabricated reducing fittings, saddle tees or "Insert-A-Tees". Fabricated reducing fittings are installed using normal installation procedures for the joints specified. Saddle tees are split couplers with an N-12 stub welded onto the center of the coupler. A half circle approximately 1" larger than the nominal stub diameter should be cut into each pipe end of the main line. The pipes should be aligned with the saddle tee wrapped around the pipe and secured with nylon ties. "Insert-A-Tee" connections may be made at locations along the length of the pipe. Installation of an "Insert-A-Tee" should follow the manufacturer's recommendations. In general, the installation involves marking the location of the tap. A hole is cored using a core drill sized for the "Insert-A-Tee". Then, a neoprene boot and PVC stub are inserted in the hole and a gasketed ADS N-12 pipe is inserted.

9. FITTINGS

ADS offers a full complement of fittings. ADS standard fittings include tees, bends, wyes, reducers and end caps. Additionally, a full line of manifold fittings and components are available for underground storm

water management systems. All fittings are available with joints which are compatible with the pipe used on the project, to provide a complete system. For a complete list of ADS standard fittings, contact your ADS representative for a fittings manual.

Special fittings not included in ADS's fittings manual may be made by special order and an ADS representative should be contacted for details.

10. FIELD CONNECTIONS

Field connections may be necessary to complete pipe runs for short pipe lengths or for repairs to pipe damaged during construction. Field connections and repairs should be performed with couplers compatible to the overall system. The following methods are applicable to both field connections and repairs. See Product Note 3.105 for more details on field cuts and connections.

10.1 Soil Tight Systems

If the damage is a hole or crack in the corrugation wall only and is less than one-quarter of the pipe diameter in area, and the pipe is not under pavement, clean the pipe, center a split coupler over the damaged area and secure snugly with nylon ties.

If the damage exceeds the above criteria or if the pipe is under pavement, cut out the damaged pipe, cut a replacement piece to fit, lay a split coupler under each exposed end, place the new pipe section in the trench and secure the coupling with nylon ties.

10.2 Water Tight Systems

For watertight systems, any damaged pipe should be removed and repaired using an ADS field repair coupler. The vent tubes should be sealed appropriately. The pipe should be cut beyond the damaged area and removed. A new section of pipe, cut to fit should be inserted with a field repair coupler placed beneath each cut end of the pipe. The ends of the pipe should be clean and free of debris. The protective film over the field coupler may then be peeled back while adhering the coupler to the pipe. Once the coupler is in place, the tie-down bands may be ratcheted tight to provide a watertight seal. The protective film on the overlap seal can then be removed to complete the installation.

NOTE: The above are guidelines. The final repair decision should be reviewed and determined by the project engineer.

11. CURVILINEAR INSTALLATIONS

ADS N-12 pipe can be laid on a curved alignment as a series of tangent (straight sections) deflected horizontally at each joint. However, the amount of deflection is dependent on the type of joint selected. Typically, ADS N-12 ST and WT IB (in-line bell) pipe joints can only accommodate small deflection angles (< 1°) and maintain the silt-tight or water tight joint performance for which they are designed. Split couplers will also permit small deflection angles (approximately 1° to 3°). The ADS Pro-Link WT and ST joints (welded bells or bell-bell couplers) can accommodate deflection angles (approximately 3°), however; water-tightness may be affected at larger deflection angles. The following table may be used as a guide in determining the radius of ADS pipe with a given joint type. The designer should contact an ADS representative before using any ADS pipe for curvilinear installations to insure proper joint selection and performance.

*Limited availability.

Diameter	Joint Type	Max. D @ joint	Radius (ft) per pipe length (ft)		
			*10' Pipe	13' Pipe	20' Pipe
4"-36"	Pro-link ST or WT (Welded Bells or Bell-Bell Couplers)	3 degree	197 ft	257 ft	395 ft
42"-60"	Pro-link ST (Welded Bells or Bell-Bell Couplers)	3 degree	197 ft	257 ft	395 ft
4"-60"	N-12 ST & WT IB	1 degree	X	753 ft	1159 ft

12. POST –CONSTRUCTION

Generally, no post construction is necessary for ADS pipe installations; however it is good practice to perform a visual inspection to insure proper line and grade have been achieved. It is important to understand that under normal conditions, any deflection will be realized within the first thirty (30) days after installation and generally within 2-3 days most deflection (approximately 90-95%) will be realized. This affords the inspector the opportunity to inspect the pipe shortly after installation; with the ability to note deficiencies before the project is complete. The inspection should be performed after the pipe has been laid and backfilled, but may be before final paving has been placed.

The following outlines various inspection methods commonly specified for flexible pipes (plastic and metal).

12.1. Visual Inspection

A visual inspection will usually reveal improper line and grade as well as excessive deflection. For most projects, which specify a soil tight or silt tight joint performance, a visual inspection is sufficient to insure a successful installation. Caution is advised when inspecting pipe or entering manhole or inlet structures to insure compliance with all OSHA regulations.

12.2. Infiltration/Exfiltration

For systems designed for watertight applications without specifying any ASTM specification for testing, an infiltration/exfiltration test is a simple and easy method of insuring proper joint performance. For an infiltration/exfiltration test, a run of piping is tested by filling the system with water from structure to structure (manhole or inlets) and measuring the water level immediately after filling and at a later period of time (generally 24 hours). The drop in water level can then be converted to gallons/ inch diameter/ mile /day and compared to the permissible level established for the project. In the absence of a specified level, 200-gal/ in. dia./ mi./ day may be considered watertight. An acceptable ASTM specification for testing infiltration/exfiltration is ASTM C969.

12.3. Air Testing

After the pipe has been laid and backfilled, each section of pipeline between manholes may be tested by a low pressure air test. Individual joints may also be tested with appropriate equipment. This test is usually for systems where performance standards require watertight joints. ASTM F-1417 may be used for air testing these systems and should be completed from structure to structure or for individual joints. Fabricated structures and fittings should not be tested to avoid damaging these components.

ASTM F-1417 specifies a 3.5 psi air pressure be held for a specified length of time based on the pipe diameter with a maximum 0.5 psi pressure drop. Although the diameters listed in ASTM F-1417 only include up to 36", linear interpolation for larger diameters is generally acceptable.

13. SPECIFICATIONS

The following is a list of common material, design and performance specifications for ADS N-12 pipe. This list is not all inclusive, but does include the most common applicable specifications.

AASHTO M-252	Standard Specification for Corrugated Polyethylene Drainage Tubing
AASHTO M-294	Standard Specification for Corrugated Polyethylene Pipe, 300 to 1500-mm Diameter
AASHTO Section 18	Soil-Thermoplastic Pipe Interaction Systems
AASHTO Section 12	LRFD Specifications – Buried Structures and Tunnel Liners
AASHTO Section 30	Thermoplastic Pipe
ASTM F 405	Standard Specification for Corrugated Polyethylene (PE) Tubing and Fittings
ASTM F 667	Standard Specification for Large diameter corrugated Polyethylene Tubing and Fittings
ASTM D 2321	Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
ASTM F 477	Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
ASTM F 1417	Standard Test Method for Installation Acceptance of Plastic Gravity Sewer Lines Using Low-Pressure Air
ASTM C 969	Standard Practice for Infiltration and Exfiltration Acceptance Testing of installed Precast Concrete Pipe Sewer Lines

14. APPENDIX

The following related documents should be consulted for additional information regarding the use of ADS N-12. These documents may be obtained from your ADS representative or by viewing our Web Site: www.ads-pipe.com.

ADS Technical Notes

Technical Note 2.107 – Pipe Floatation

Technical Note 2.108 – Chemical Resistivity

Technical Note 2.109 – Flow Capacity

Technical Note 2.115 – Comparative Pipe Stiffness

Technical Note 2.116 – Abrasion Resistance

Technical Note 2.120 – Storm Water Detention/Retention System Design

Technical Note 2.130 – Structural Performance of Corrugated PE Pipe using the Burns & Richard Solution

Technical Note 2.160 – Installation of ADS N-12 Pipe In Flowable Fill

Technical Report 4.103 – Plastic Pipe Design

Product Notes

Product Note 3.105 – Integral Bell Transition

Product Note 3.106 – Standard Pipe Perforations, N-12

Product Note 3.107 – N-12 Specification and Product Information

Product Notes

Product Note 3.105
Re: Integral Bell Transition
Date: Updated July 22, 2002

Advanced Drainage Systems, Inc. offers a wide variety of coupler systems to meet the specific project requirements specified by the Engineer. When ADS became the first manufacturer of HDPE pipe to offer an in-line integral bell (N-12 IB), end users realized faster, easier installations with superior joint performance.

N-12 IB is an in-line integral bell which maintains a constant pipe outside diameter. This constant OD eliminates the need for bell holes and makes it easier to maintain line and grade. The gasketed bell and spigot design, with an electromeric rubber gasket meeting ASTM F477, is for silt-tight, gravity-flow storm sewer applications.

In 2001, ADS added to the Integral Bell product line with the addition of N-12 Watertight IB. N-12 WT IB enables the end user to gain a joint with watertight performance (tested in accordance with ASTM D 3212) with the same ease of use associated with N-12 IB. The use of N-12 WT IB provides the ultimate performance in storm sewer applications.

With the variety of couplers available, connecting to existing pipe runs or to fabricated fittings may necessitate a transition to other ADS joints. This product note will give guidance in selecting the proper method of making these connections.

Whenever using integral bell products with other ADS pipe systems, always position the integral bell pipe lengths at the end of the project.

Following is a brief summary of the possible combinations of ADS products and the recommended method of transitioning.

I. Soil / Silt Tight Applications

- **12" through 60" Integral Bell pipe to plain end pipe (Series 95)**

  Remove the mini-corrugations from the spigot end of the pipe, or the bell from the bell end, depending on flow direction. Utilize a split coupler to make the connection. (See Figure 1)

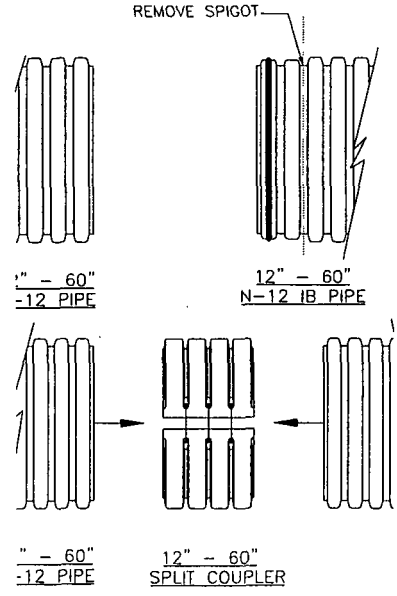


FIGURE 1

- **12" through 24" Integral Bell pipe to cleated bell - bell couplers (Series 85)**

  Remove the mini-corrugation from the spigot end or bell from the bell end, depending on flow direction. Insert this end into the female end of the cleated bell – bell coupler. (See Figure 2)

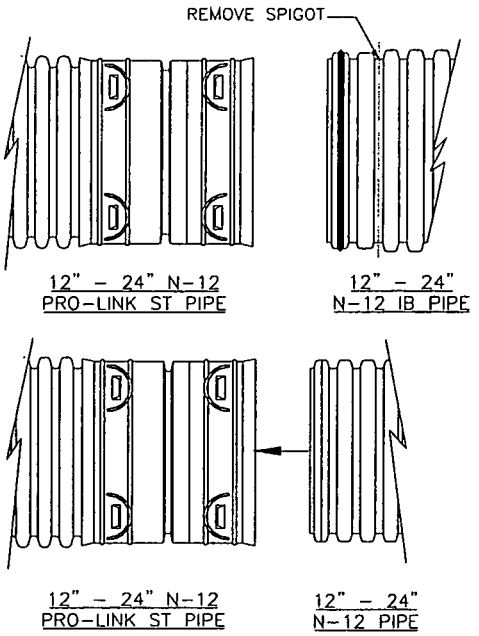


FIGURE 2

- **30" – 36" Integral Bell pipe to 30" – 36" welded bell pipe**

  For field connections of integral bell pipe to welded pipe two possibilities exist.

  Option 1 (integral bell to existing welded bell): Remove mini corrugations on spigot end of pipe. Install valley gasket provided by ADS on the first full valley corrugation. Lube joint and insert into welded bell of existing pipe. (See Figure 3)

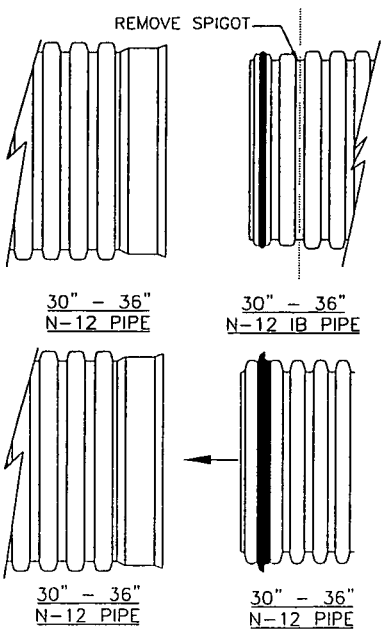


FIGURE 3

- **30" – 36" Integral Bell pipe to 30" – 36" welded bell pipe, continued**

Option 2 (integral bell to existing spigot end of welded bell):
For bell and spigot joint, remove bell from integral bell pipe and install a valley gasket provided by ADS on the first full valley corrugation. Install valley gasket provided by ADS on the first full valley corrugation on the spigot end of the welded bell pipe. Lube Series 65 bell-bell coupler and join pipe. If a non-gasketed connection is allowed, then a split coupler can be used on the pipe after the mini corrugations and bells have been removed. (See Figure 4)

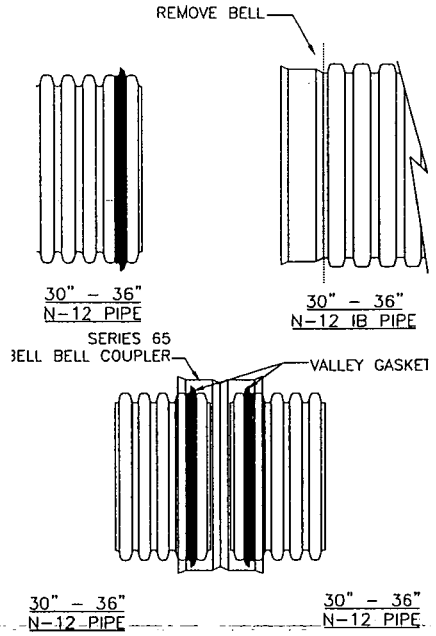


FIGURE 4

- **42" – 60" Integral Bell pipe to 42" – 60" N-12 HC pipe.**

For field connections of integral bell pipe to N-12 HC pipe three options exist to perform a soil tight connection.

Option 1 (spigot end of integral bell pipe to bell end of HC pipe):
Remove mini corrugations from spigot end of integral bell pipe. Install shoulder gasket provided by ADS on the first corrugation on the spigot end of the pipe. Lube joint and insert integral bell pipe into the bell of the HC pipe. (See Figure 5)

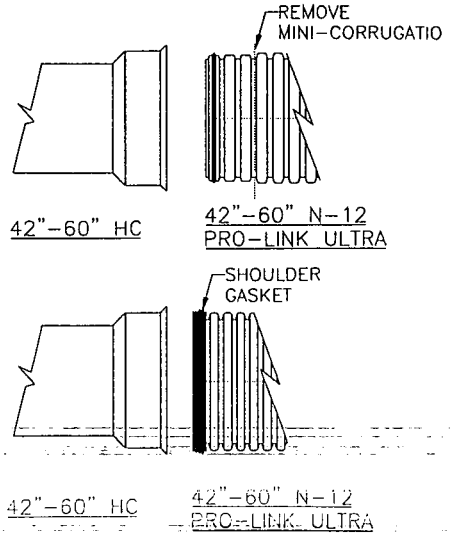


FIGURE 5

- **42" – 60" Integral Bell pipe to 42" – 60" N-12 HC pipe, continued.**

Option 2 (bell end of integral bell pipe to spigot end of HC pipe):
Remove bell from integral bell pipe. Install shoulder gasket provided by ADS on the first corrugation on the bell end of the integral bell pipe. Use bell bell coupler provided by ADS to join the pipes. Lube HC side of bell and push bell onto spigot of HC pipe. Lube integral bell side of bell-bell coupler and push integral bell pipe into bell-bell coupler. (See Figure 6.)

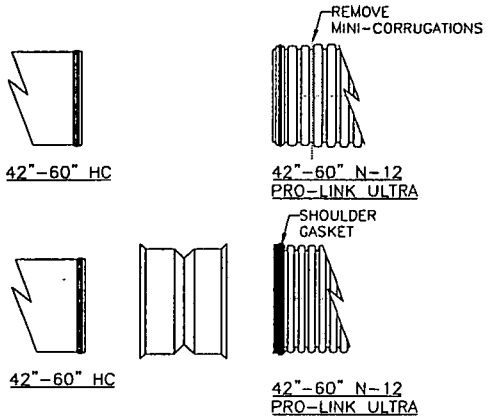


FIGURE 6

Option 3 (plain end HC pipe to bell or spigot end of integral bell pipe):
Remove bell or spigot from integral bell pipe. Use appropriately sized field repair coupler provided by ADS. Place coupler centered on joint between HC and integral pipe. Push pipes ends together. Wrap field repair coupler around the joint and install in accordance with instructions.

II. Water Tight Joint Applications:

- **12" – 36" N-12 WT IB to 12" – 36" Series 35 or Series 65 N-12 WT**

Remove mini corrugations or bell end of N-12 WT IB depending on flow direction. Install water tight valley gasket on the first full valley corrugation. Install valley gasket on the first full valley corrugation of the existing pipe. Obtain Series 35 or 65 bell-bell coupler from ADS. Lube bell-bell coupler on one side and install on existing pipe. Lube remaining side of bell-bell coupler and insert remaining pipe side into bell. (See Figure 7.)

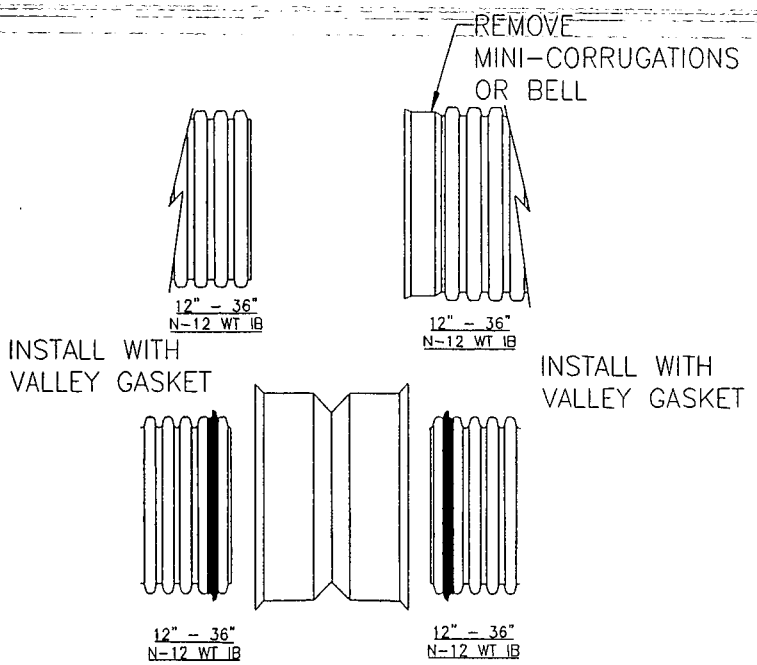


FIGURE 7

- **42" and 48" N-12 WT IB to 42" and 48" N-12 HC WT**

  To obtain a leak resistant joint a field repair coupler must be utilized. Remove bell or spigot from integral bell pipe. Use field repair coupler provided by ADS. Place coupler centered on joint between HC pipe and IB pipe. Push pipe ends together. Wrap field repair coupler around the joint and install in accordance with instructions. In order to obtain a testable joint it may be necessary to also use internal seals. Contact your ADS sales rep for information on this process.

Should further instructions be necessary, please contact your local ADS salesperson for additional information.

Technical Notes

Technical Note 2.140

Re: Corrugated Polyethylene Pipe HDPE Resins
Date: November 19, 1996
By: J. B. Goddard

Introduction:

Corrugated polyethylene pipe has been manufactured in the United States for over 30 years. During that time, resin requirements have changed considerably to satisfy the concerns of the engineering community; particularly as available diameters increased from the original 4" (100 mm) to the 4' (1200 mm) produced today. Resin quality in general has improved because of improved process control and higher efficiency by the resin manufacturer. Resin specifications have also been improved over time, providing more information and improved testing.

The AASHTO Materials Specifications have undergone a steady evolution over the past 15 years, with changes voted on in 1996 reconciling the AASHTO Materials Specifications and the AASHTO Standard Specifications for Highway Bridges (Section 18). These changes to the Materials Specifications are shown in Table 1:

Table 1:

Polyethylene Resin Changes in AASHTO Specifications (by Year)

	Year											
	1981	1983	1985	1986	1988	1989	1990	1991	1993	1995	1996	1997?
Property												
Density	>0.941	>0.941	>0.941	>0.941	>0.941	>0.941	>0.941	>0.941	>0.941	>0.941	>0.941	>0.945
												<0.955
Melt Index	<10	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.4
Flexural Modulus	na	na	na	na	na	na	na	80,000	80,000	80,000	80,000	110,000
Tensile Strength	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,000	3,000	3,000	3,000	3,000
ESCR								B 24/50	B 24/50	B 24/50	B 24/50	B 24/50
HDB								NPR	NPR	NPR	NPR	NPR
UV/Color	>2%	>2%	>2%	>2%	>2%	>2%	>2%	>2%	>2%	>2%	>2%	>2%
Elongation	100%	100%	100%	100%	100%	100%	100%					
Brittleness Temp.	-70	-70	-70	-70	-70	-70	-70					

During the same period of time the AASHTO PVC pipe specifications have also changed, but resin requirements in each standard have been fairly constant. Table 2 provides the resin requirements given in AASHTO M264, M278, and M304. Because AASHTO M264 includes both ABS and PVC resins, ABS requirements are also included.

Table 2:

ABS and PVC Resin Requirements in AASHTO Materials Specifications (by Specification)

	AASHTO MATERIALS SPECIFICATION					
Property	M264 - ABS	M264 - PVC	M278	M304	M304	
ASTM Spec	D3965	D4396	D1784	D1784	D1784	
Cell Class	10223	11432	12454B	12454C	12364C	
Izod Impact (73F)	2	0.65	<0.65	<0.65	<0.65	
(-22F)	N.R.					
Deflection Temp.	180F	140F	158F	158F	158F	
Tensile Stress	4,500psi	6,500psi	7,000psi	7,000psi	6,000psi	
Mod. of Elas. (Ten.)	280,000	380,000	400,000	400,000	440,000	
Resin Type	ABS	PVC	PVC	PVC	PVC	
HDB	NPR	NPR	4,000psi	NPR	NPR	
Chemical Resist.	NR	NR	B	C	C	

NOTES:
1. Only M278 requires a pressure rated compound.
2. Only M278 requires a Class B chemical resistance. M304 requires a lower Class C; while M264 has no requirement listed for PVC.
3. Modulus values are Tensile Modulus values, while HDPE Modulus values a Flexural.
4. Except for M278, there are now "long term" property tests required for these PVC resins.
5. Initial tensile and modulus values vary by 15%.
6. ABS fittings in AASHTO M264 may be made from cell class 42222 resin per ASTM D3965.

A careful look at both Table 1 and Table 2 provides a history of PE resin changes and a point of comparison of the differences in properties given for HDPE, PVC, and ABS. It is interesting to note that the only AASHTO Materials specification requiring an HDB test is M278. HDB testing is not required for M252, M294, M304, or M264. ASTM D 4396, "Rigid Poly(Vinyl Chloride) (PVC) and Related Plastic Compounds for Nonpressure Piping Products," referenced in AASHTO M264, specifically states that these resins are intended for non-pressure use; contains no "long-term" tests; and contains no chemical resistance tests.

Resin Specification:

In May of 1996, the AASHTO Subcommittee on Bridges and Structures voted to change the listed resin in the AASHTO Standard Specifications for Highway Bridges, Section 18 for corrugated polyethylene pipe to 335420C. The AASHTO Subcommittee on Materials voted in August of 1996 to change the resin requirements in AASHTO M294 to 335420C as well. Both these votes place these issues on the written ballot for both committees this fall. Since both votes were unanimous it would be unprecedented for them not to pass the written ballot as well. The effect of the changes in HDPE resin requirements can be shown graphically by plotting the density and melt index relationships. Figure 1 shows the range of resins included in the cell classification listed in the current Section 18, 315412C; while Figure 2 indicates the range permitted if the interpretation that any resin with a cell classification higher than 315412C is permitted. Figure 3 represents the range of resins covered by the cell classification in the current AASHTO M294 specification. Note that there is no agreement in materials between Figure 1 and Figure 3. Figure 4 presents the interpretation that resins with a cell classification equal to or higher than 324420C would be permitted. This is a smaller universe of available materials than shown in Figure 2, and again has no materials in common with Figure 1. Figure 5 represents the materials included under the 335420C resin cell classification as approved by the AASHTO Bridge Engineers in May. This is again a much smaller universe of available resins representing restricted density range and increased molecular weight. The density range is further restricted in Figure 6, as balloted by the Materials Engineers. Again, compare the resin ranges shown in Figures 5 & 6 with that shown in Figure 1; this is a significant change in permitted materials. Figure 7 was presented by the PPI at last year's TRB (Jan., 1996) meeting showing the range of the highest stress crack resistant resins. Note that the areas shown in Figures 5 & 6 correspond with these requirements; providing resins with excellent stress crack resistance. Figure 8 was also presented in the same presentation at TRB showing the range of HDB rated materials. Note that it bisects the ranges shown in Figures 5 & 6, indicating a high probability of an HDB stress ratable material within the limits shown, without the cost and time required to run the HDB test. The combination of high stress crack resistance, a probability of high long term constant stress resistance (long term modulus and tensile strength), and a high molecular weight (as required by the most recent specification changes) provides outstanding long term pipe performance.

Figure 1: Specified Resin in Current Section 18 (315412C) (by Density and Melt Index)

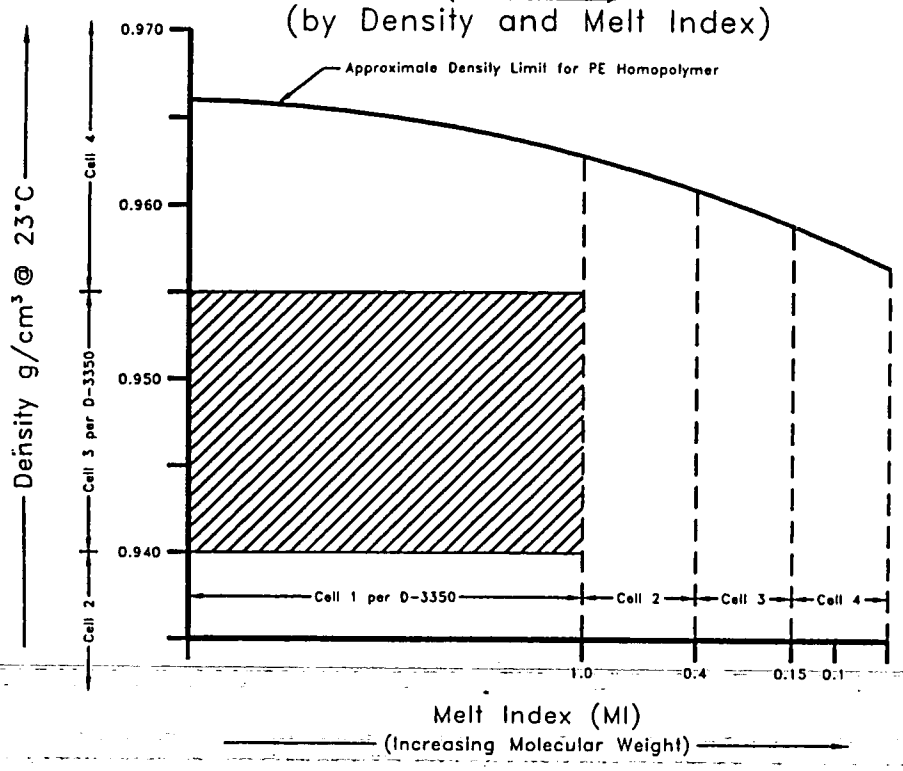


Figure 2: Allowable Resin in Current Section 18 (315412C or Higher Class) (by Density and Melt Index)

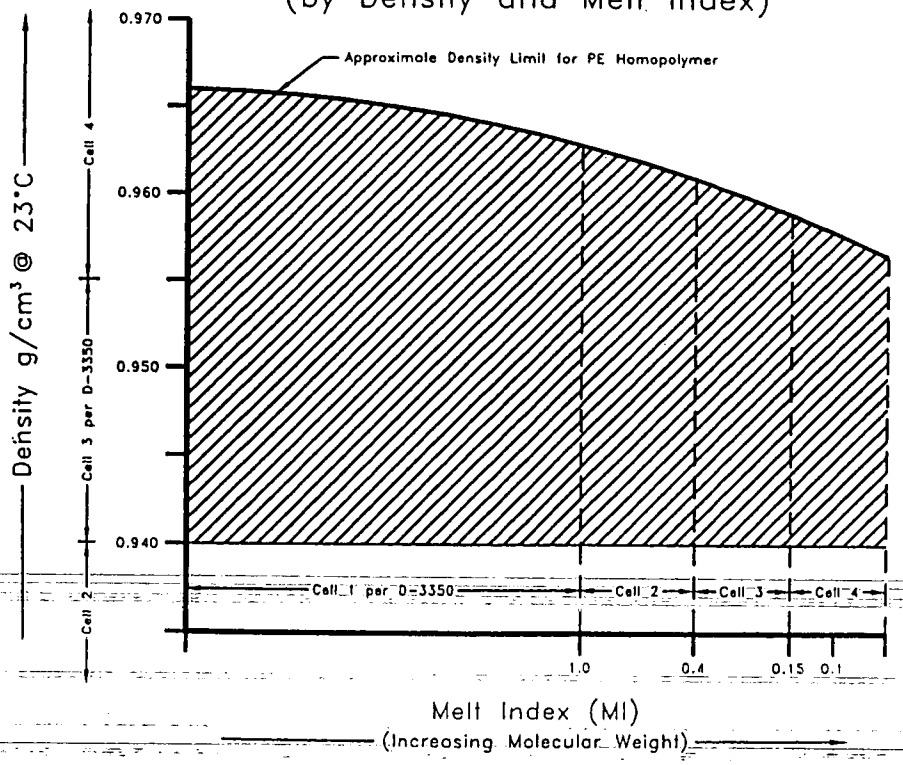


Figure 3:

Specified Resin in Current AASHTO M-294
(324420C)
(by Density and Melt Index)

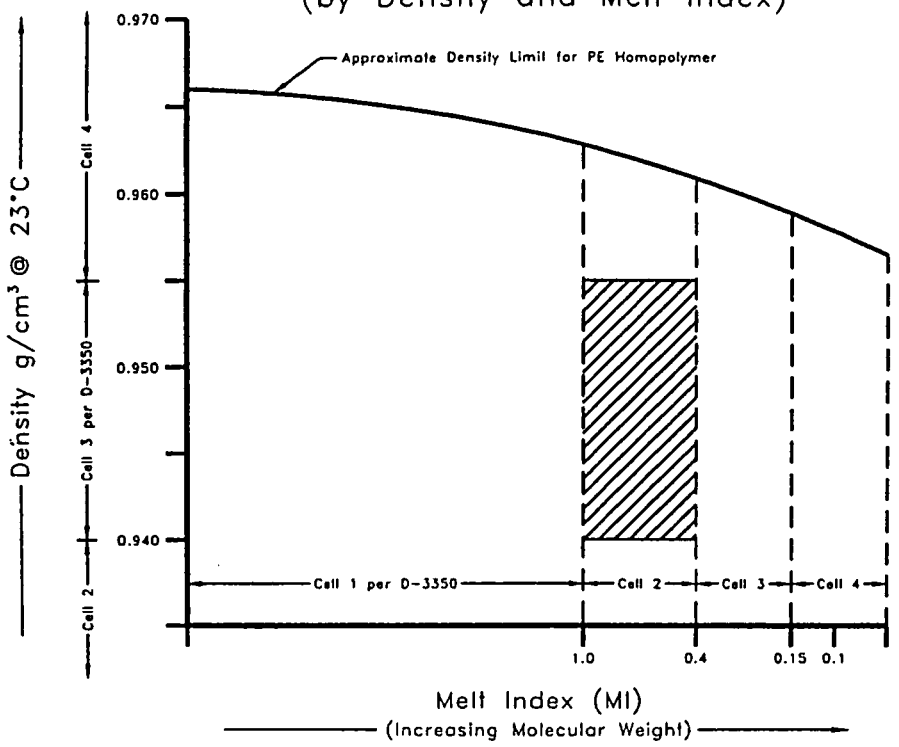


Figure 4:

Allowable Resins in Current AASHTO M-294
(325420C or Higher Class)
(by Density and Melt Index)

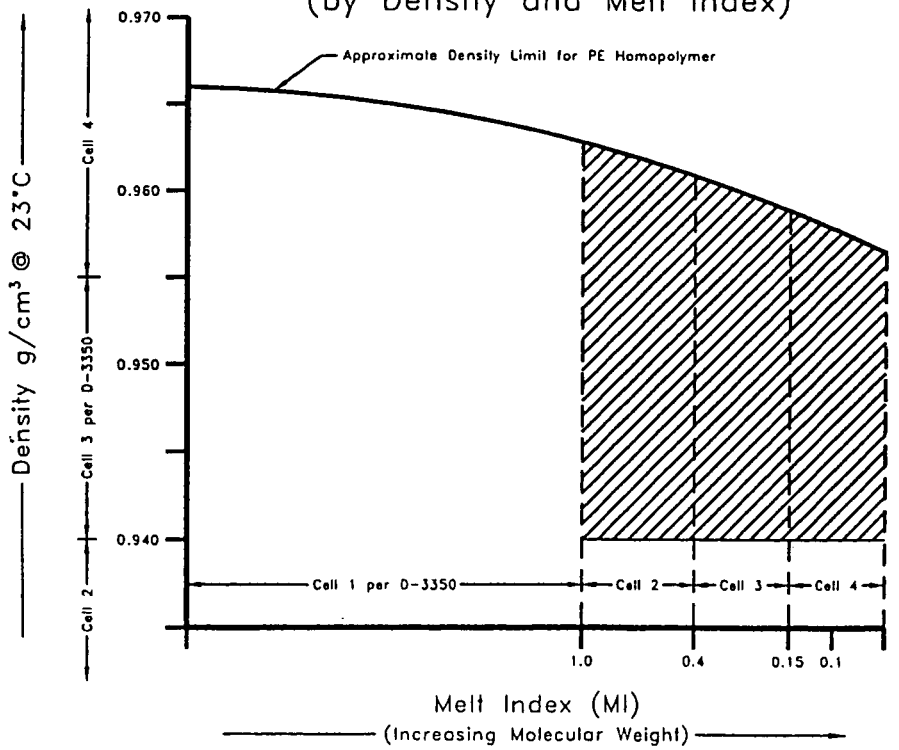


Figure 5:

AASHTO Bridge Committee Ballot
Proposed Resin Requirement (335420C)
(by Density and Melt Index)

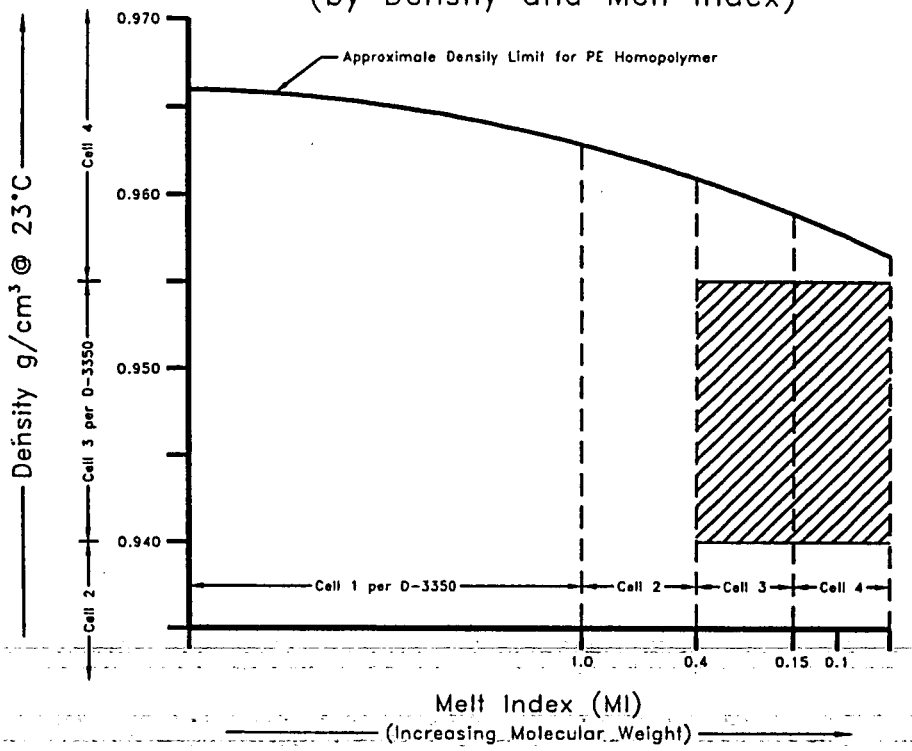


Figure 6:

Proposed M-294 Modification to PE Resin
(335420C with 0.945 ≤ Density ≤ 0.955)
Allowable Resins

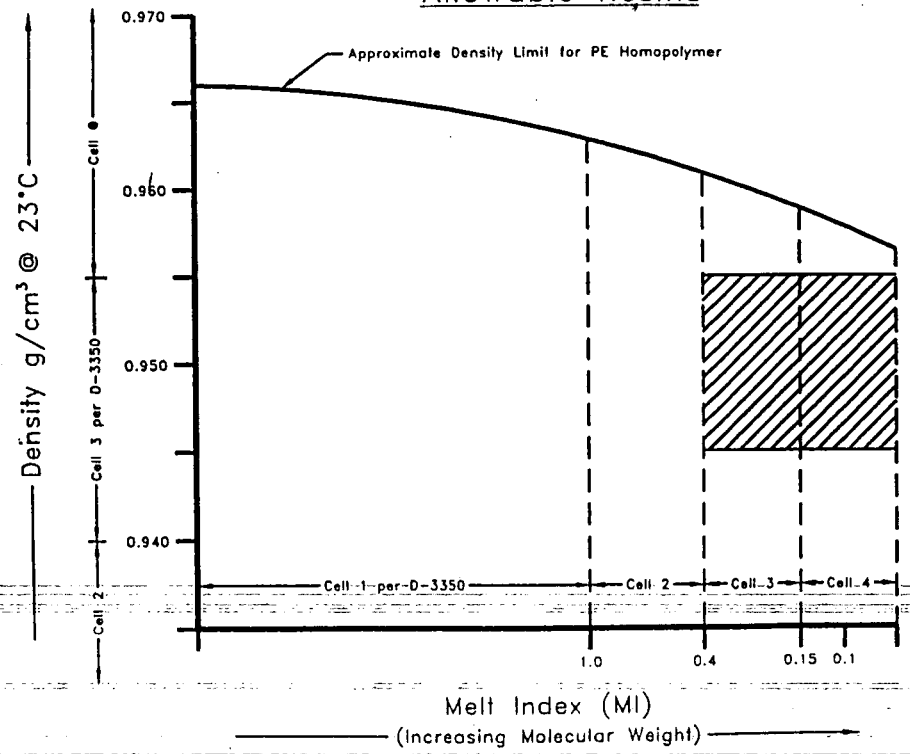


Figure 7:

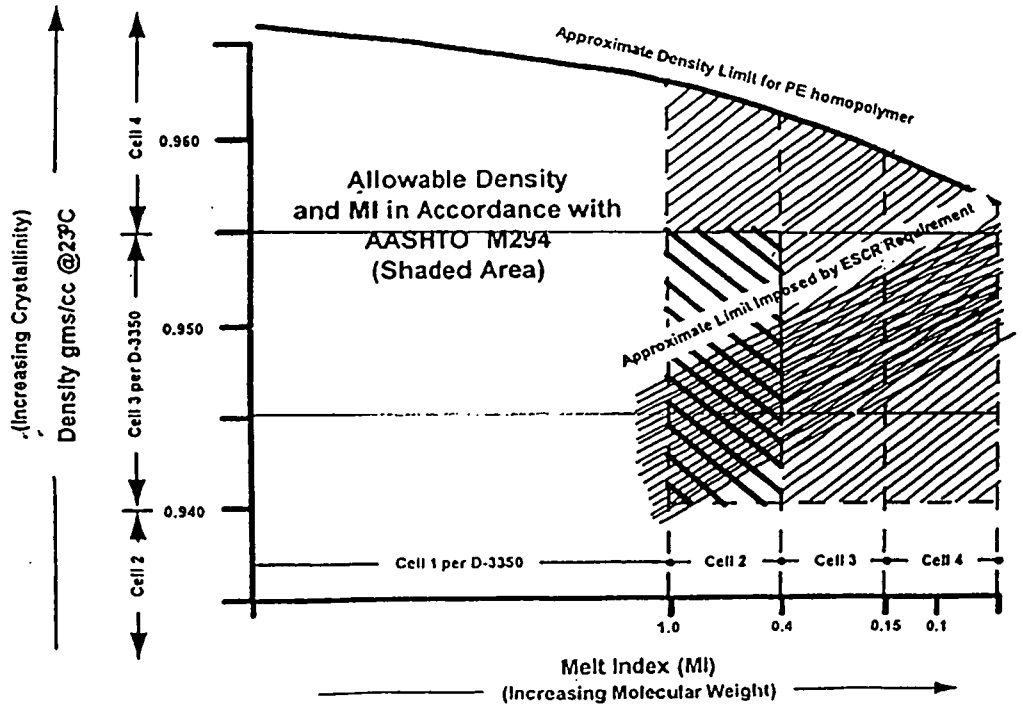
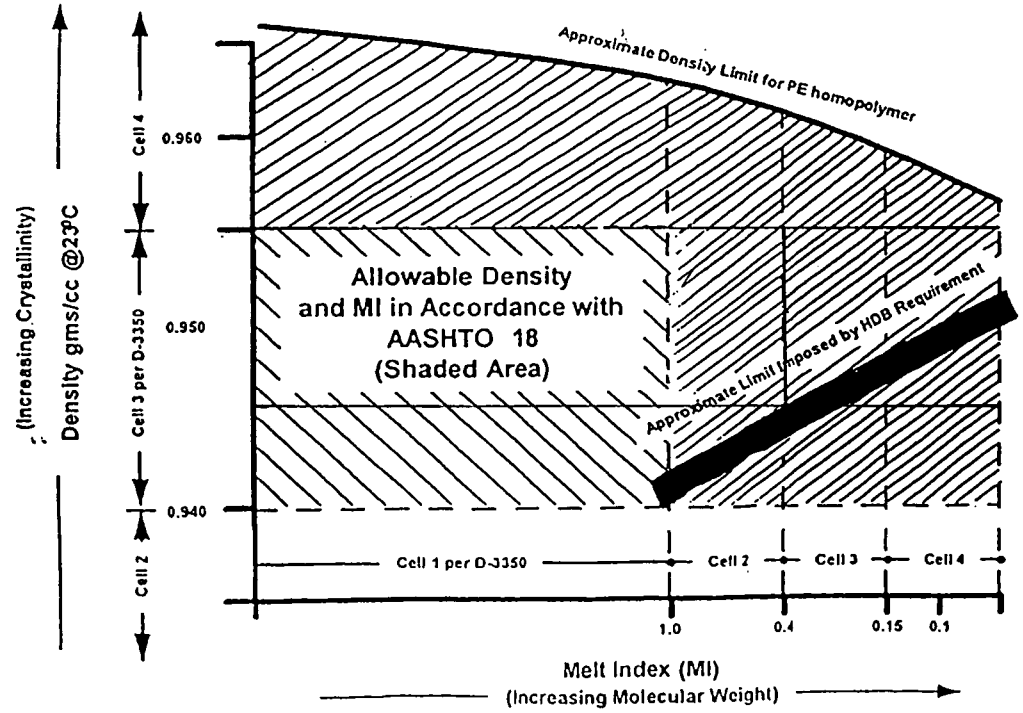


Figure 8:



Material Properties:

The issue with resin selection is (or at least should be) the performance of the finished product, in this case non-pressure pipe, in the load regime anticipated by the designer. For non-pressure, buried pipe the load regime is dominated by compression forces, primarily ring compression. The design of these products should be dominated by the reaction of these pipe types to the anticipated loads; both short term and long term; both resin specification and wall design. The resin selected and the wall design must withstand the compression forces from the soil loads and the live loads. These loads are more complex than the simple models typically used in design. Live loads (vehicle loads) are instantaneous forces carried by the soil structure interaction system. The pipe wall and the resin must be stiff enough to withstand these impact forces yet not so stiff as to be brittle. Temperature effects on shallow buried pipe must be considered, both elevated temperatures causing a reduction in stiffness and cold temperatures causing brittleness. Deeply buried pipe must withstand high soil pressures. These soil pressures are not constant, but tend to decrease with time, with the rate of that decrease dependent on the soil type and the pipe reaction to those loads. In the case of thermoplastic pipe installed in acceptable backfill, the stresses on the pipe tend to decrease at a rate greater than the stress regression rate of the thermoplastic.

The stress relaxation rate of thermoplastics under constant stress is the primary resin selection issue raised by engineers unfamiliar with buried non-pressure pipe performance. Thermoplastics do have declining tensile stress and modulus values over time with constant tensile stress. For a buried non-pressure pipe, however, the loads are not constant, except for possible long term hydrostatic loads. To many, this is not comparable to the "well behaved" response of a steel pipe, an elastic material. Yet, if studied with a different perspective, the buried pipe performance is quite comparable. If the steel pipe is analyzed using the design corrosion rate of 1 mil per year uniform thickness loss, the reduction in load carrying ability is significant. This is the design corrosion rate used by the NYSDOT for the least corrosive part of the State of New York. Loss of wall area based on that corrosion rate for a 16 gage corrugated steel pipe is shown in Figure 9. This loss in wall area leads to a progressive loss in load carrying capability based on wall thrust with time. The reduction in buckling resistance occurs even faster in this case. Yet after installation and an initial consolidation period (typically in days, not years), deflection tends to stabilize, wall thrust stabilizes for elastic materials and reduces in viscoelastic materials.

The most referenced long-term values for HDPE are developed from a pressure test which places a 2" diameter pipe in hoop stress or hoop tension in accordance with ASTM D 2837, "Standard Method for Obtaining Hydrostatic Design Basis for Thermoplastic Materials." The test is conducted at a controlled temperature and static pressure and in such a way that failures occur between 10 and 100,000 hours. The failure points are plotted on a log scale and typically form a straight line. Figure 10 presents the plot of a resin ADS has used with a density of 0.952 and a melt index of 0.4 gm./10 min. This is called a regression curve for HDPE pipe.

Figure 9: Cross-sectional Area versus Thickness

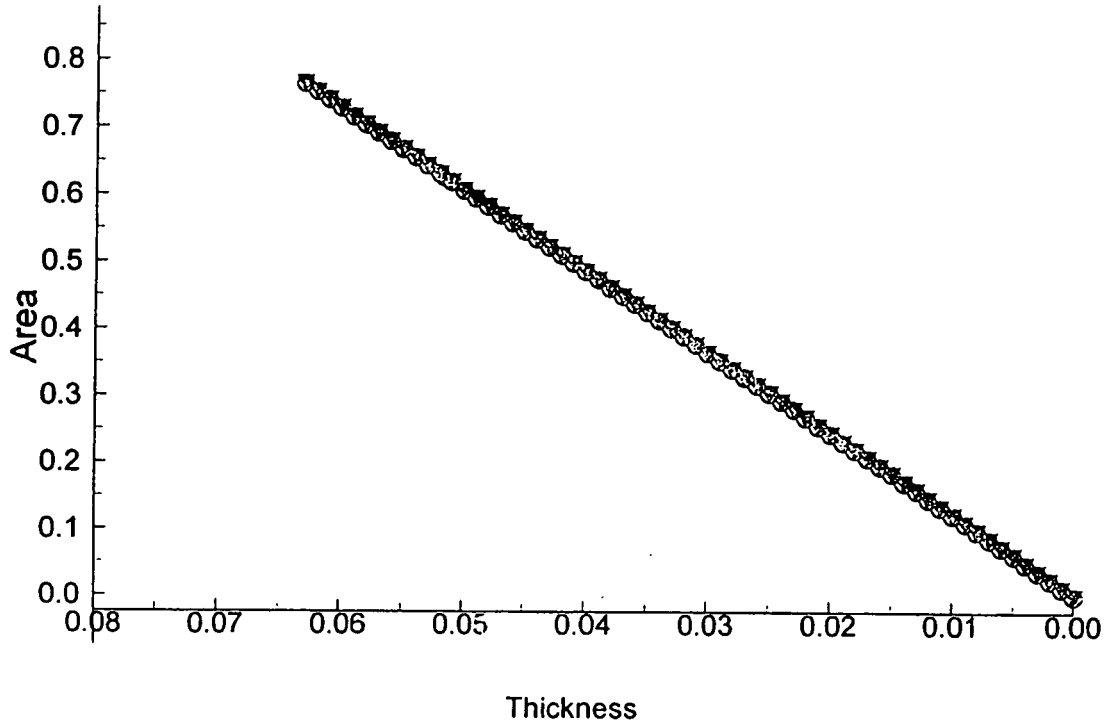


Figure 10:

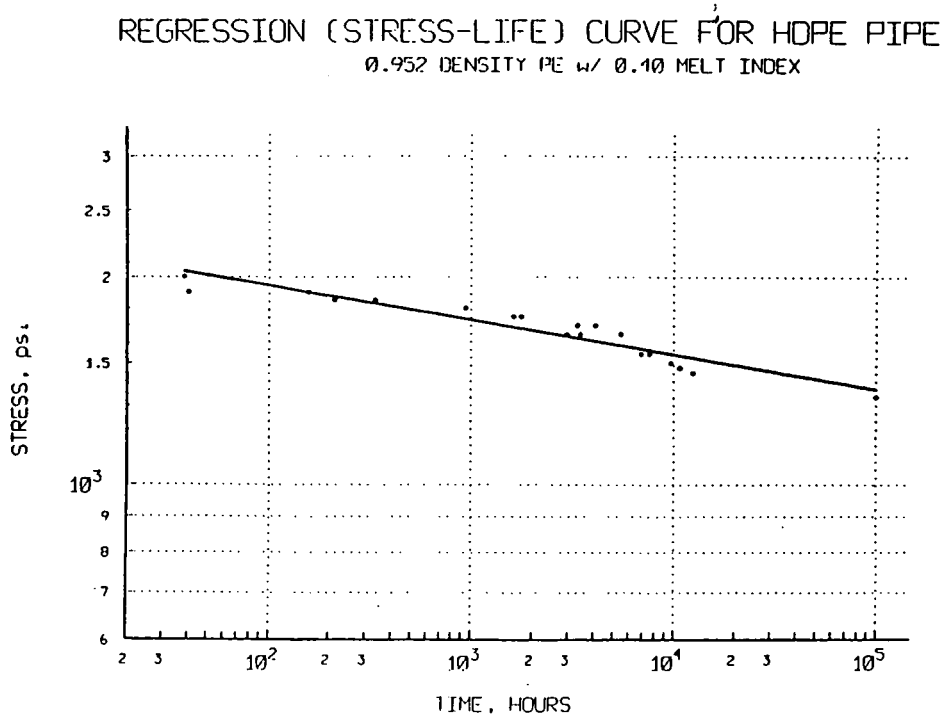
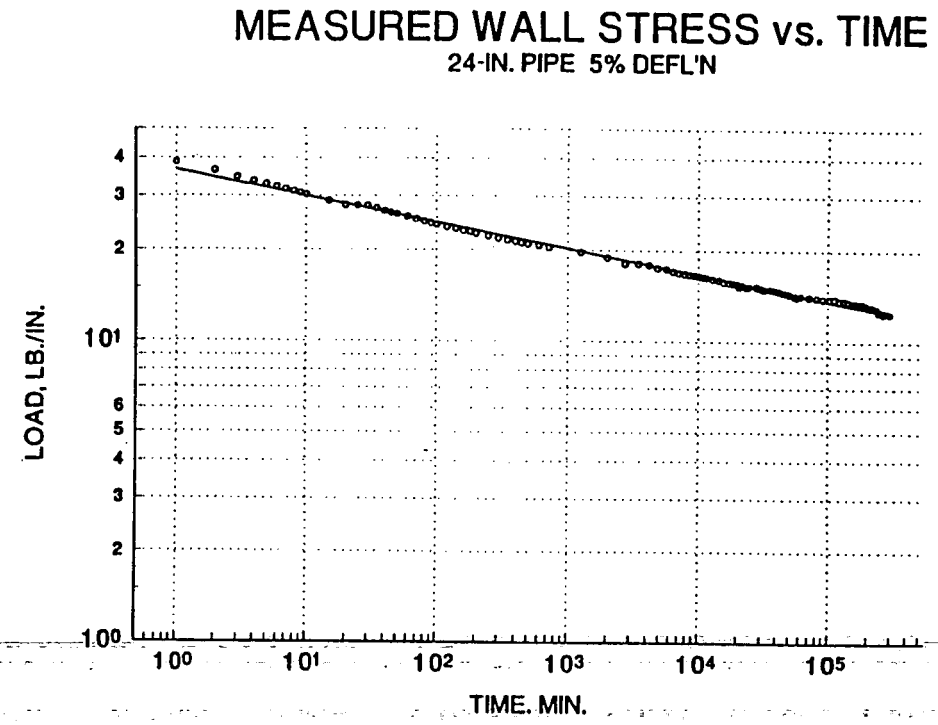


Figure 11:


MEASURED WALL STRESS vs. TIME
24-IN. PIPE 5% DEFL'N
LOAD, LB./IN.
4
3
2
10¹
6
5
4
3
2
10⁰
10⁰
10¹
10²
10³
10⁴
10⁵
TIME. MIN.

This declining line does not represent a loss of strength with time but does show that the higher the constant tensile stress, the shorter the service life. The line is a collection of discreet failure points which relate to the life of the pipe at a given level of tensile stress in the pipe wall due to internal pressure. If, during the test, individual samples were removed from the test and the pressure increased instantaneously to burst, the burst pressure would be equal to the initial burst pressure. The thermoplastic material's tensile strength is not decreasing with time but is relatively constant.

A similar analysis can be made with a "pipe stiffness" test where the pipe sample is held at a constant deflection (strain), and the force exerted by the pipe resisting that strain is measured over time as shown in Figure 11. Many engineers believe that the modulus decreases with time, but this is not true. If the sample under load for a long period of time is deflected further, the indicated instantaneous modulus will be roughly equal to the initial modulus. This has been done at the University of Massachusetts on samples held at a constant 5% deflection for over two years. Clearly, the modulus has not decreased with time.

The idea of a decreasing modulus comes from the concept of a creep modulus, where initial stress is divided by the long-term strain. The actual modulus is the short term stress divided by the short term strain. As reported by Dr. Reynold Watkins and Dr. Lars-Eric Janson, the short term values should be used in design, particularly for wall thrust and cover heights. Long term pipe deflection and buckling resistance for buried plastic pipe can be determined using short term material property values. It is more accurate to use the change in soil stiffness with time than to use the stress relaxation of the pipe material.

In referring to Figures 10 and 11, the curves shown reflect as much as 300,000 hours of testing; over two years. If these regression lines are extended three orders of magnitude, the indicated stress on Figure 10 will be in excess of 1,000 PSI (that's in 200 years!), and the load in Figure 11 will be 8 lb./in. In the case of Figure 10, this represents a distinct failure point in constant tensile stress. In the case of Figure 11, this represents a shedding of load through stress relaxation, not a weakening of the pipe or a reduction in modulus; any increase in load would be resisted by the initial modulus. In a buried pipe, this shedding of load is a transfer of load to the surrounding soil.

HDPE resin properties are important to the manufacturer and the user, but the focus should be on how they interrelate to each other and how they effect specific properties. The most recent cell classification, 335420C, was selected to provide the desired physical and chemical properties for a gravity flow pipe. The limiting of the density range and lowering the melt index (increasing molecular weight) is intended to reduce cracking potential, increase chemical resistance, and increase toughness. This density and melt index range will inherently increase the modulus. Table 3 outlines the relationship of density and melt index and other properties.

Table 3: Effects of Physical Properties on Mechanical Properties

Property	Melt Index Decreases	Density Increases
Chemical Resistance	Same	Increases
Stress Crack Resistance	Increases	Decreases
Impermeability	Same	Increases
Elongation at Break	Increases	Decreases
Heat Resistance	Same	Increases
Low Temperature Flexibility	Increase	Decreases
Tensile Strength at Break	Increases	Increases
Tensile Strength at Rupture	Increases	Increases
Flexibility	Same	Decreases
Abrasion Resistance	Increases	Increases
Resistance to Creep	Increases	Increases
Flexural Stiffness	Increases	Increases

Summary:

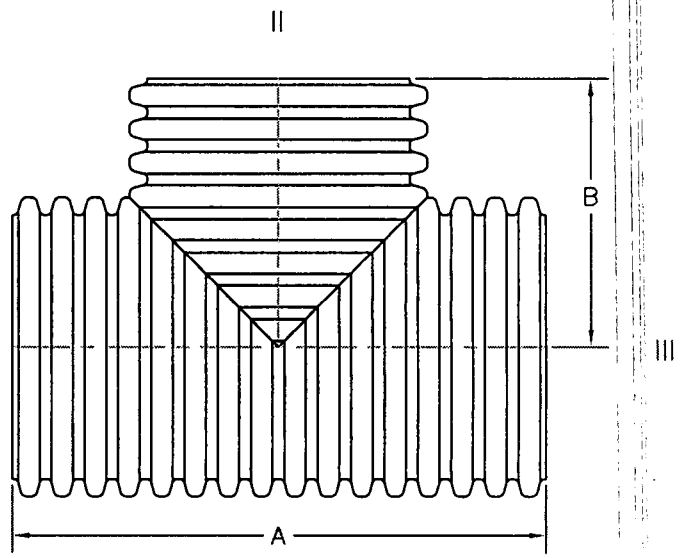
As with all pipe products, there are still things to learn about HDPE pipe. Manufacturing processes continue to evolve and improve, providing better toughness, reducing residual manufacturing stresses, improving joint integrity, increasing efficiency and improving durability. Additional lab tests are being developed to further qualify pipe designs and resins, but these tests must be calibrated with field performance to be meaningful. As these tests are perfected, they will be added to the standards. Standards continue to change for RCP, CSP, and PVC as well.

Current standards are intended to provide a reliable, durable, structurally competent pipe based on the current state of the technology. The resins are selected to meet those goals. Resins applicable to one application will not necessarily be appropriate or efficient for another application; sheet liner material should not be used to make pressure pipe, pressure pipe resin should not be used to make gravity flow pipe. Resins should be selected based on the loading and environmental conditions they will face in service. The 335420C cell classification represents that approach to resin selection.

Page containing possible Proprietary information removed.

N-12 FABRICATED TEES
4"-18" DIAMETERS

PART #	PIPE SIZE	A	B	I	II	III	JOINT
0460AN	4 in (100 mm)	12.75 in (324 mm)	6.23 in (158 mm)	P	P	P	*
0661AN	6 in (150 mm)	16.50 in (419 mm)	8.13 in (207 mm)	P	P	P	*
0862AN	8 in (200 mm)	21.00 in (533 mm)	10.56 in (268 mm)	P	P	P	*
1063AN	10 in (250 mm)	26.00 in (660 mm)	12.60 in (320 mm)	P	P	P	*
1264AN	12 in (300 mm)	30.72 in (780 mm)	15.36 in (390 mm)	P	P	P	*
1264AN85	12 in (300 mm)	30.72 in (780 mm)	15.36 in (390 mm)	P	B	B	ST
1264AN85B	12 in (300 mm)	30.72 in (780 mm)	15.36 in (390 mm)	B	B	B	ST
1264AN65	12 in (300 mm)	30.72 in (780 mm)	15.36 in (390 mm)	S	B	B	WT
1264AN65B	12 in (300 mm)	30.72 in (780 mm)	15.36 in (390 mm)	B	B	B	WT
1565AN	15 in (375 mm)	41.44 in (1053 mm)	20.72 in (526 mm)	P	P	P	*
1565AN85	15 in (375 mm)	41.44 in (1053 mm)	20.72 in (526 mm)	P	B	B	ST
1565AN85B	15 in (375 mm)	41.44 in (1053 mm)	20.72 in (526 mm)	B	B	B	ST
1565AN65	15 in (375 mm)	41.44 in (1053 mm)	20.72 in (526 mm)	S	B	B	WT
1565AN65B	15 in (375 mm)	41.44 in (1053 mm)	20.72 in (526 mm)	B	B	B	WT
1866AN	18 in (450 mm)	42.88 in (1089 mm)	21.44 in (545 mm)	P	P	P	*
1866AN85	18 in (450 mm)	42.88 in (1089 mm)	21.44 in (545 mm)	P	B	B	ST
1866AN85B	18 in (450 mm)	42.88 in (1089 mm)	21.44 in (545 mm)	B	B	B	ST
1866AN65	18 in (450 mm)	42.88 in (1089 mm)	21.44 in (545 mm)	S	B	B	WT
1866AN65B	18 in (450 mm)	42.88 in (1089 mm)	21.44 in (545 mm)	B	B	B	WT



P = PLAIN END
B = BELL END
S = SPIGOT END

ST = SILT TIGHT JOINT
WT = WATER TIGHT JOINT

NOTE: ALL DIMENSIONS ARE NOMINAL

ADS
ADVANCED DRAINAGE SYSTEMS, INC.

DRAWN BY		APPROVED BY		DRAWING #
JDP	07.16.02	AWM	10.05.02	2400

REVISIONS	
BY	DATE

SUBMITTAL TRANSMITTAL FORM

For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 5/18/05	X	New Submittal
			Resubmittal

Section I — **REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS** *(This section to be initiated by the Subcontractor)*

To:	From:		
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026	Subcontract No: KH020577	Submittal No. 135-B Previous Submittal No.

Specification Sec. No. 02225

Project Title: Construction of the Present Landfill Accelerated Action

Item No.	Description of Item Submitted (Type, size, model number, etc.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8)	No. of Copies	Contract Reference Document: Spec. Paragraph No.	Contract Reference Document: Drawing Sheet No.	Deviation (See Instruction #6)	Contractor Action Code (See Instruction #9)
a.	b.	c.	d.	e.	f.	g.	h.
1	Vent cap cut sheet		4	NA	N/A	N/A	

Remarks:. Re-submit Vent-cap cut-sheets

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted. Paul Kreitz, 7/6/05

Signature of Subcontractor:

Rocky Flats Plant

☒ APPROVED ☐ APPROVED AS CORRECTED

☐ NOT APPROVED ☐ REVISE AND RESUBMIT

APPROVAL IS FOR CONFORMANCE WITH THE DESIGN CONCEPT OF THE PLANS AND SPECIFICATIONS AND FOR COMPLIANCE WITH THE INFORMATION GIVEN THEREIN. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMATION AND CORRELATION OF ALL DIMENSIONS AT THE CONSTRUCTION SITE; FOR INFORMATION THAT PERTAINS SOLELY TO FABRICATION PROCESSES OR TO TECHNIQUES OF CONSTRUCTION; AND FOR COORDINATION OF THE WORK OF ALL CRAFTS.

BY: Robert N. Davis DATE: 07/07/2005

Section II — Reviewed

Enclosures Returned (List by Item No.) — Title and Signature of Accepting Authority: — Date:

OK CQAE
J.H. Pale TA

ROOF ITEMS

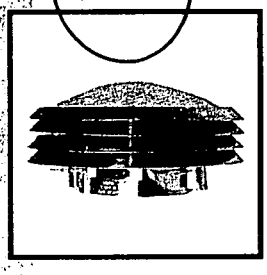
7d VENT CAPS

- To cap pipes through roof for rain, snow and debris protection.
- 30 gauge galvanized steel.

- SPECIFIED .013 TO .015

Locator Code	Model #	Fits Pipe Diameter	Factory Pack (Wgt. - lbs.)	UPC Item Code (050206)
7d	VC3	3"	15 (8.7)	93510 1
7d	VC4	4"	10 (7.5)	93520 0
7d	VC5	5"	10 (7.5)	93530 9
7d	VC6	6"	7 (7.5)	93540 8
7d	VC7	7"	6 (6.6)	93550 7
7d	VC8	8"	6 (12.3)	93560 6

7e ADJUSTABLE VERSA CAPS

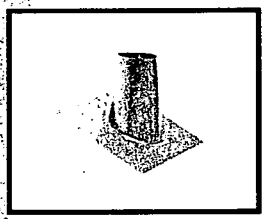


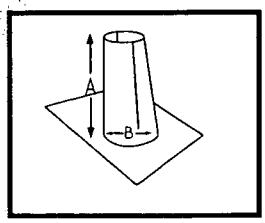
- Recommended for flue, hot stack or B-vent installations.
- Non-clogging positive draft design.
- Clamp fittings adjustable for all standard sizes.
- Aluminum or galvanized construction.

UL® **UL Listed for aluminum models.**

Locator Code	Model #	Const.	For Pipe w/ Outside Diameter	Double Wall Metal Pipe	Single Wall Metal Pipe	J-M Trans- site	Overall Height	Overall Diameter	Factory Pack (Wgt. - lbs.)	UPC Item Code (050206)
7e	3050	aluminum	2 7/8" - 5"	3" & 4"	3" & 4"	3" & 4"	4 1/2"	6 5/8"	12 (6.5)	17200 1
7e	5070	aluminum	4 7/8" - 7"	5" & 6"	5" & 6"	5" & 6"	4 3/4"	9 1/2"	12 (10.7)	17210 0
7e	7090	aluminum	6 7/8" - 9"	7" & 8"	7" & 8"	7" & 8"	5 7/8"	11 5/8"	12 (16.5)	17220 9
7e	9011	aluminum	8 7/8" - 11"	9" & 10"	9" & 10"	9" & 10"	6 1/2"	12 3/4"	6 (12.0)	17230 8
7e	1200	aluminum	11 7/8" - 14 1/2"	12"	12" & 14"	12"	8 11/16"	17 9/16"	2 (7.0)	17240 7
7e	3050G	galvanized	2 7/8" - 5"	3" & 4"	3" & 4"	3" & 4"	4 1/2"	6 5/8"	12 (13.0)	17250 6
7e	5070G	galvanized	4 7/8" - 7"	5" & 6"	5" & 6"	5" & 6"	4 3/4"	9 1/2"	12 (20.5)	17260 5
7e	7090G	galvanized	6 7/8" - 9"	7" & 8"	7" & 8"	7" & 8"	5 7/8"	11 5/8"	12 (31.0)	17270 4

7f ROOF FLASHING WITH TAPERED STACKS





- Used as boot flashings around pipes extending through roof.
- Tapered stack adapts to roof pitches from 3/12 to 5/12.
- Built-in roof flashing – press sealed design for maximum leak protection.

- SPECIFIED .013 to .015

Locator Code	Model #	Fits Pipe Diameter	Base Size	Dimensions		Factory Pack (Wgt. - lbs.)	UPC Item Code (050206)
				A	B		
7f	RFTS1/2	1/2"	12"x12"	4.625"	6.625"	6 (5.0)	93432 6
7f	RFTS3/4	3/4"	12"x12"	3.875"	3.625"	6 (5.0)	93430 2
7f	RFTS1	1"	12"x12"	4.25"	3.625"	6 (5.0)	93440 1
7f	RFTS3	3"	12"x12"	6.125"	5.125"	12 (16.0)	93450 0
7f	RFTS4	4"	13"x13"	6.375"	6.125"	12 (17.5)	93460 9
7f	RFTS5	5"	15"x15"	6.25"	7.125"	6 (11.0)	93470 8
7f	RFTS6	6"	15"x15"	6.75"	8.125"	6 (12.0)	93480 7
7f	RFTS7	7"	15"x15"	6.5"	8.125"	6 (16.0)	93482 1

SUBMITTAL TRANSMITTAL FORM

For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 5/20/05	X	New Submittal
			Resubmittal

Section I — **REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS** *(This section to be initiated by the Subcontractor)*

To:	From:	Subcontract No: KH020577	Submittal No. 137
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026		Previous Submittal No.

Specification Sec. No. 02225

Project Title: Construction of the Present Landfill Accelerated Action

Item No.	Description of Item Submitted (Type, size, model number, etc.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8)	No. of Copies	Contract Reference Document		Deviation (See Instruction #6)	Contractor Action Code (See Instruction #9)
				Spec. Paragraph No.	Drawing Sheet No.		
a.	b.	c.	d.	e.	f.	g.	h.
1	Seep System Rebar Mill Cert.		4	NA	N/A	N/A	

Remarks:.
Acknowledge Receipt of Listed Certification.

Robert M. Davis 06/20/05

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.

Paul Kreitz 5/20/05

Signature of Subcontractor:

Section II — **Reviewed**

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

OK CQAE
Jeff Rale TA

MAY-19-05 THU 08:44 AM FAX NO. GASH ELECTRIC CO 3037226483 P. 01
PAGE 01 P. 1
12/20/2004 08:04:2 Page 1 of 1
MAY 19 05 11:52a CLIFF 303-431-0351 P. 01
Type:61-303-722-0193 Mach27S144.0.1

NUCOR
BAR MILL GROUP
PLYMOUTH DIVISION

MILL TEST REPORT

NUCOR - PLYMOUTH IS AN I.S.O. 9001 AND AS A.B.S. CERTIFIED MILL

SOLD TO: RIO GRANDE CO. REBAR SERVICES
201 SANTA FE DR.
DENVER, CO 80223

SHIP TO: RIO GRANDE CO./REBAR SERVICES
140 SO. SANTA FE
DENVER, CO 80217

INVOICE NUMBER: 70357
CUSTOMER PO#: 77905
BILL OF LADING: 22329
SHIP DATE: 12/17/04

Item Description / Grade	Heat#	Bend	Yld PSI / Yld MPa	Ten PSI / Ten MPa	Elng % / T/Y Ratio	C	Mn	P	S	Si	Cu	Ni	Cr	V	Mo	Nb	Cb
NO. 4 REBAR / #13 METRIC	248876		67,660	105,925	12.0	.40	1.34	.023	.041	.72	.38	.11	.17	.038	.009	.001	.42
A615-04aGR60S/420MPA		PASS	466.50	729.64	1.56												
NO. 4 REBAR / #13 METRIC	248933		71,525	110,469	10.0	.41	1.19	.017	.035	.20	.37	.09	.15	.007	.012	.001	.65
A615-04aGR60S/420MPA		PASS	493.15	761.63	1.54												
NO. 4 REBAR / #13 METRIC	248934		67,865	107,025	13.0	.43	1.31	.012	.036	.20	.34	.10	.14	.007	.009	.001	.54
A615-04aGR60S/420MPA		PASS	467.91	737.91	1.58												

THE ABOVE HEATS OF REINFORCING STEEL CONFORM TO ASTM SPEC. DEFINED ABOVE. ACTUAL TEST SAMPLES AND RESULTS DERIVED ARE OF THESE HEATS AND CONFORM TO THIS SPECIFICATION FOR SAMPLING, CHEMICAL ANALYSIS, PHYSICAL TESTING AND MEASUREMENT.

WE CERTIFY THAT ALL MANUFACTURING PROCESSES, INCLUDING MELTING OCCURRED IN THE UNITED STATES. ALL OF THE MATERIAL INCLUDED IS MADE FROM SCRAP MELTED AND MANUFACTURED AND MILLED HERE.

PLANT METALLURGIST OR QUALITY ASSURANCE MANAGER

SUBMITTAL TRANSMITTAL FORM

For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 7/6/05	X	New Submittal
			Resubmittal

Section I — **REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS** *(This section to be initiated by the Subcontractor)*

To:	From:	Subcontract No: KH020577	Submittal No 145
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026		Previous Submittal No.

Specification Sec. No. (Cover only one section with each Submittal)

Project Title: Construction of the Present Landfill Accelerated Action

Item No. a.	Description of Item Submitted (Type, size, model number, etc.) b.	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8) c.	No. of Copies d.	Contract Reference Document: Spec. Paragraph No. e.	Contract Reference Document: Drawing Sheet No. f.	Deviation (See Instruction #6) g.	Contractor Action Code (See Instruction #9) h.
1	Shop Drawings – Gator –grate support beams	Precision Industrial Mfgs	1				

Remarks: Dwgs. Delivered directly to K-H CTR. on 05/25/05

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.

Signature of Subcontractor:

Section II — **Reviewed**

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

Rocky Flats Plant

☒ APPROVED ☐ APPROVED AS CORRECTED

☐ NOT APPROVED ☐ REVISE AND RESUBMIT

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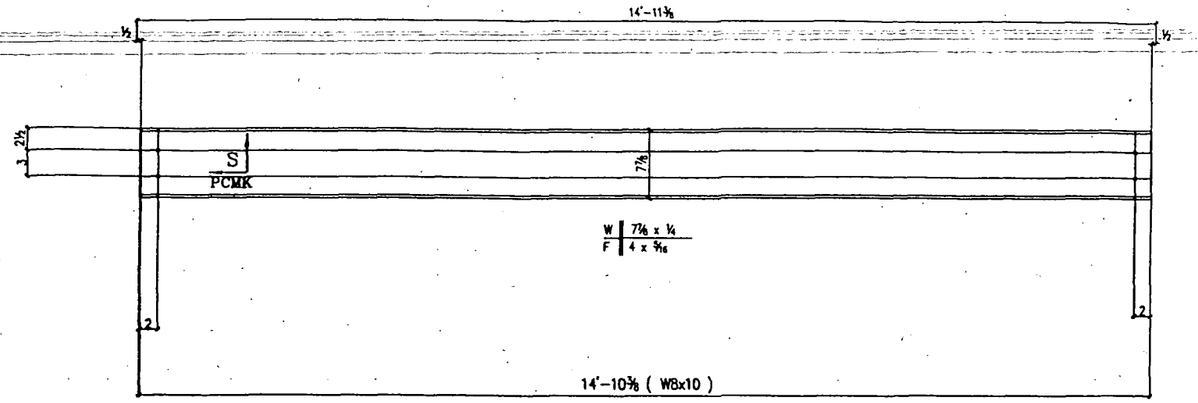
BY: Robert Davis DATE: 05/25/05

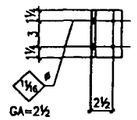
Approved for Fabrication

OK CQAE
J.H. Rabett



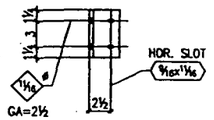
2 – BEAMS – 1B1

REF: A/ONE



4 – ANGLES – 1A2

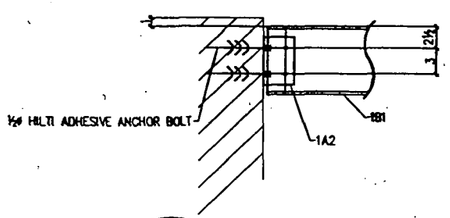
REF: A/ONE



4 – ANGLES – 1A3

REF: A/ONE

Approved for Fabrication
Robert. Davis
05/25/2005



A
ONE
SECTION

BILL OF MATERIAL

ITEM NO.	SHIP MARK	PIECE MARK	NO. OF PIECES	DESCRIPTION	LENGTH FEET	LENGTH INCHES	REMARKS	WEIGHT
	1B1		2	W 8 x 10	14	10⅜	S2E A36	
	1A2		4	∠ 4 x 4 x ¼	0	5½		
	1A3		4	∠ 4 x 4 x ¼	0	5½		
				FIELD FASTENERS				
			~~10~~	~~½ø HILTI ADHESIVE ANCHOR ROD~~			~~HIT HY150 WITH NUT & WASHER~~ By Others	
			8	½ø H.B. A325	0	1½	WITH NUT & WASHER	

GENERAL NOTES:
1. ALL WELDS ARE 3/16" UNLESS NOTED
2. FIELD BOLTS ARE FOR SUPPORTED MEMBERS
3. ALL WELDS ARE E70XX OR E7TXX ELECTRODE

DUE TO SHOP PROCESS, SPLICES MAY OCCUR OTHER THAN SHOWN.

MOLES: 9/16ø U.N.O. WELDS

PAINT: ONE STD SHOP COAT

MATERIAL: ASTM A36

REV.	DESCRIPTION	BY	DATE
1	•	•	•
2			
3			
4			
5			

FOR APPROVAL: | TO SHOP: | TO FIELD:
R & R APPROVAL: | AS BUILT:

PRECISION INDUSTRIAL CONSTRUCTION INC.
10275 E. 106th AVE. BRIGHTON, CO 80601
PH 303-287-4400 FAX 303-287-4464

JOB NAME: SEED TREATMENT BOX
LOCATION: RFETS PLF
PROJECT # 573784020
DRAWN BY: LDR
CHECKED BY: RR
DATE:
SCALE: 1½" = 1'-0"
CONTRACTOR: KAISER HILL
DESCRIPTION: BEAMS
JOB NUMBER: 4552.05
SHEET: ONE

NATIONAL INSTITUTE OF STEEL DETAILING
RANDALL SERVICES Inc. 307-634-2201

R0227 ONE

SUBMITTAL TRANSMITTAL FORM

For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 7/7/05	X	New Submittal
			Resubmittal

Section I — REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS *(This section to be initiated by the Subcontractor)*

To:	From:		
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026	Subcontract No: KH020577	Submittal No 147 Previous Submittal No.

Specification Sec. No. (Cover only one section with each Submittal)

Project Title: Construction of the Present Landfill Accelerated Action

Item No.	Description of Item Submitted (Type, size, model number, etc.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8)	No. of Copies	Contract Reference Document		Deviation (See Instruction #6)	Contractor Action Code (See Instruction #9)
				Spec. Paragraph No.	Drawing Sheet No.		
a.	b.	c.	d.	e.	f.	g.	h.
1	Schedule 80 PVC Pipe and Fittings	United States Plastic Corp.	4				

Remarks:

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.

Signature of Subcontractor: Paul Kreitz 7/7/05

Section II — Reviewed

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:
	Rocky Flats Plant	

☒ APPROVED ☐ APPROVED AS CORRECTED

☐ NOT APPROVED ☐ REVISE AND RESUBMIT

APPROVAL IS FOR CONFORMANCE WITH THE DESIGN CONCEPT OF THE PLANS AND SPECIFICATIONS AND FOR COMPLIANCE WITH THE INFORMATION GIVEN THEREIN. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMATION AND CORRELATION OF ALL DIMENSIONS AT THE CONSTRUCTION SITE; FOR INFORMATION THAT PERTAINS SOLELY TO FABRICATION PROCESSES OR TO TECHNIQUES OF CONSTRUCTION; AND FOR COORDINATION OF THE WORK OF ALL CRAFTS.

BY: Robert N. Davis DATE: 07/07/2005

OK CRAE
J.H. Kelly TX

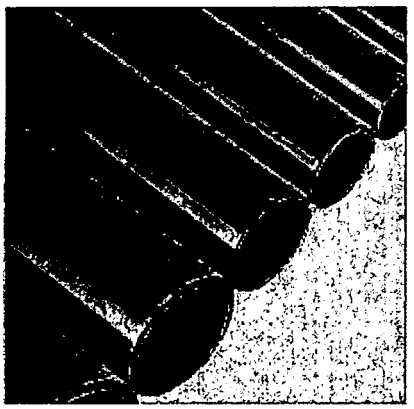
Cart Contains:
Items = 0 Total = $0.00

Live Chat Support!
>>> Online <<<

Product Categories:
- Bags & Packaging
- Bottles & Labware
- Buckets & Barrels
- Carts
- CD/DVD Storage
- Duct/Blowers/Tools
- Facility Products
- Food Industry
- Personal Safety
- Pipe & Fittings
- Pumps
- Rubbermaid
- Screws & Knobs
- Sheet, Rod, Shapes
- Tanks & Accessories
- Totes/Bins/Trays
- Trash Containers
- Trucks
- Tubing & Fittings
- Valves

Express Order Form
Item
Qty
Bulk Express Order Form

Extreme Savings
Clearance Products



PVC Pipe

This is schedule 40 and schedule 80 pvc pipe. Sch is available in gray and white, and is for socket fittir is NSF listed, but can't be threaded. Schedule 80 is in gray and is for socket or threaded fittings. It can threaded and is NSF listed. Both have a wide varie in the chemical field and resistance, also in industri just to name a couple. For UV resistance of PVC pi fittings, paint with a white water based latex paint. I chemical, the service temp is 33-140° F. Pipe is no recommended for use with compressed air or gase material is Type 1 according to the American Socie Testing Material D-1784. For industrial plants, the F based on water at 73° F. Derate 50% at 110° F anc 140° F. Pipe is round and smooth on the inside anc resistant to cracking, and made from premium virgi Goodrich gray PVC resin. Is superior to regular cor grade used for regular plumbing. Round and smoot and out. Resistant to cracking. This pipe is manufa harvel plastics and is superior in quality to commer grades of PVC pipe used for regular plumbing. Sch socket fitting ASTM D-2466; Sch. 80 socket fitting / 2467; Sch 80 threaded fittings ASTM D-2464. Pipe D-1785. PSI is based on water at 73°F. Derate 50% and 78% at 140°F. Schedule 40 is for socket fitting threading is not a recommended practice. Schedul can be threaded. NSF listed. **Standard lengths: 2 sell in 5', 10' and 20' sections only. 10' is too lo UPS. Please note how you would like this cut. F be smaller then 8 feet to ship UPS. If you do no pipe cut we must ship via Motor Freight.**

Other Information

Catalog Page Number: P-120
Manufacturer: Harvel Plastics
PDF: Spec Sheet for OD, ID, Wall, and Max. Pres

This product is available in following variations:

Item No.	Description	Sold By	In Stock	List Price	Qty
26301	3/8" Gray PVC Schedule 40 Pipe Qty 100: 5% off; Qty 200: 10% off; Qty 600: 15% off;	Foot	Yes	$0.71	0
26321	3/8" Gray PVC Schedule 80 Pipe Qty 100: 5% off; Qty 200: 10% off; Qty 600: 15% off;	Foot	Yes	$0.89	0
26302	1/2" Gray PVC Schedule 40 Pipe Qty 100: 5% off; Qty 200: 10% off; Qty 600: 15% off;	Foot	Yes	$0.32	0
26502	1/2" White PVC Schedule 40 Pipe Qty 100: 5% off; Qty 200: 10% off; Qty 600:	Foot	Yes	$0.32	0

Cart Contains:
Items = 0 Total = $0.00

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>>> Online <<<

Product Categories:

- Bags & Packaging
- Bottles & Labware
- Buckets & Barrels
- Carts
- CD/DVD Storage
- Duct/Blowers/Tools
- Facility Products
- Food Industry
- Personal Safety
- Pipe & Fittings
- Pumps
- Rubbermaid
- Screws & Knobs
- Sheet, Rod, Shapes
- Tanks & Accessories
- Totes/Bins/Trays
- Trash Containers
- Trucks
- Tubing & Fittings
- Valves

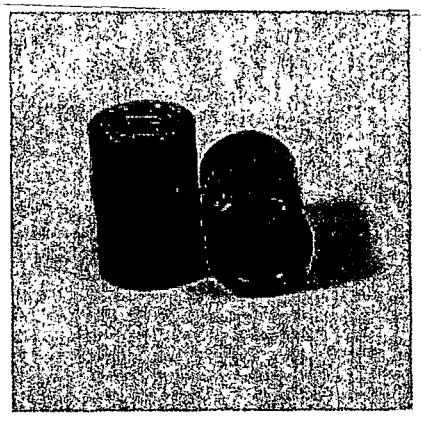
Express Order Form

Item

Qty

Bulk Express Order Form

Extreme Savings
Clearance Products



Coupling PVC Threaded Pipe Fittings

These couplings are threaded pipe fittings in sched (polyvinyl chloride). Schedule 80 is also NSF listed F working temp, and is available in gray. For UV re pipe and fittings, paint with a white water based lat

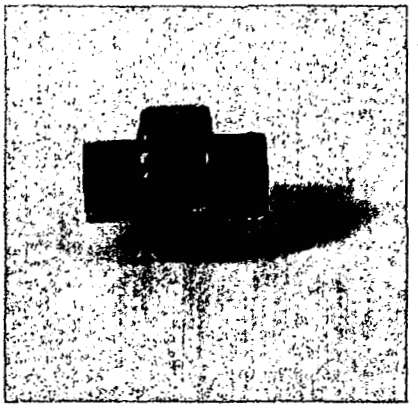
Other Information

Catalog Page Number: P-121

Manufacturer: Lasco

This product is available in following variations:

Item No.	Description	Sold By	In Stock	Size	List Price	
27234	Schedule 80; Gray Coupling PVC Threaded Qty 12: 5% off; Qty 24: 10% off; Qty 72: 15% off;	Each	Yes	1/2" Pipe Size	$1.45	0
27247	Schedule 80; Gray Coupling PVC Threaded Qty 12: 5% off; Qty 24: 10% off; Qty 72: 15% off;	Each	Yes	3/4" Pipe Size	$2.05	0
27273	Schedule 80; Gray Coupling PVC Threaded Qty 12: 5% off; Qty 24: 10% off; Qty 72: 15% off;	Each	Yes	1-1/4" Pipe Size	$2.70	0
27286	Schedule 80; Gray Coupling PVC Threaded Qty 12: 5% off; Qty 24: 10% off; Qty 72: 15% off;	Each	Yes	1-1/2" Pipe Size	$6.05	0
27299	Schedule 80; Gray Coupling PVC Threaded Qty 12: 5% off; Qty 24: 10% off; Qty 72: 15% off;	Each	Yes	2" Pipe Size	$6.34	0
27312	Schedule 80; Gray Coupling PVC Threaded Qty 12: 5% off; Qty 24: 10% off; Qty 72: 15% off;	Each	Yes	2-1/2" Pipe Size	$15.01	0
27325	Schedule 80; Gray Coupling PVC Threaded Qty 12: 5% off; Qty 24: 10% off; Qty 72: 15% off;	Each	Yes	3" Pipe Size	$17.56	0
27337	Schedule 80; Gray Coupling PVC Threaded Qty 12: 5% off; Qty 24: 10% off; Qty 72: 15% off;	Each	Yes	4" Pipe Size	$30.48	0
27260	Schedule 80; Gray Coupling PVC Threaded Qty 12: 5% off; Qty 24: 10% off; Qty 72: 15% off;	Each	Yes	1" Pipe Size	$2.19	0



Union PVC Threaded Pipe Fittings

These unions are threaded pipe fittings in schedule (polyvinyl chloride). Schedule 80 is also NSF listed F working temp, and is available in gray. For UV re pipe and fittings, paint with a white water based lat

Other Information

Catalog Page Number: P-121

Manufacturer: Lasco

This product is available in following variations:

Item No.	Description	Sold By	In Stock	Size	List Price	
27235	Schedule 80; Gray Threaded Union Qty 12: 5% off; Qty 24: 10% off; Qty 72: 15% off;	Each	Yes	1/2" Pipe Size	$3.02	0
27248	Schedule 80; Gray Threaded Union Qty 12: 5% off; Qty 24: 10% off; Qty 72: 15% off;	Each	Yes	3/4" Pipe Size	$4.26	0
27261	Schedule 80; Gray Threaded Union Qty 12: 5% off; Qty 24: 10% off; Qty 72: 15% off;	Each	Yes	1" Pipe Size	$5.70	0
27274	Schedule 80; Gray Threaded Union Qty 12: 5% off; Qty 24: 10% off; Qty 72: 15% off;	Each	Yes	1-1/4" Pipe Size	$10.82	0
27287	Schedule 80; Gray Threaded Union Qty 12: 5% off; Qty 24: 10% off; Qty 72: 15% off;	Each	Yes	1-1/2" Pipe Size	$13.33	0
27300	Schedule 80; Gray Threaded Union Qty 12: 5% off; Qty 24: 10% off; Qty 72: 15% off;	Each	Yes	2" Pipe Size	$20.36	0
27313	Schedule 80; Gray Threaded Union Qty 12: 5% off; Qty 24: 10% off; Qty 72: 15% off;	Each	Special Order	2-1/2" Pipe Size	$87.26	0
27326	Schedule 80; Gray Threaded Union Qty 12: 5% off; Qty 24: 10% off; Qty 72: 15% off;	Each	Yes	3" Pipe Size	$51.49	0
27207	Schedule 80; Gray Threaded Union Qty 12: 5% off; Qty 24: 10% off; Qty 72: 15% off;	Each	Yes	1/4" Pipe Size	$6.56	0
27221	Schedule 80; Gray Threaded Union Qty 12: 5% off; Qty 24: 10% off; Qty 72: 15% off;	Each	Yes	3/8" Pipe Size	$6.02	0

SUBMITTAL TRANSMITTAL FORM

For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 7/7/05	X	New Submittal
			Resubmittal

Section I — **REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS** *(This section to be initiated by the Subcontractor)*

To:	From:	Subcontract No: KH020577	Submittal No 148
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026		Previous Submittal No.
Specification Sec. No. (Cover only one section with each Submittal)		Project Title: Construction of the Present Landfill Accelerated Action	

Item No. a.	Description of Item Submitted (Type, size, model number, etc.) b.	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8) c.	No. of Copies d.	Contract Reference Document: Spec. Paragraph No. e.	Contract Reference Document: Drawing Sheet No. f.	Deviation (See Instruction #6) g.	Contractor Action Code (See Instruction #9) h.
1	HDPE Pipe	WL Plastics	4				

Remarks:

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.

Signature of Subcontractor: Paul Kreitz 7/7/05

Section II — Reviewed

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

Rocky Flats Plant

☒ APPROVED ☐ APPROVED AS CORRECTED
☐ NOT APPROVED ☐ REVISE AND RESUBMIT

APPROVAL IS FOR CONFORMANCE WITH THE DESIGN CONCEPT OF THE PLANS AND SPECIFICATIONS AND FOR COMPLIANCE WITH THE INFORMATION GIVEN THEREIN. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMATION AND CORRELATION OF ALL DIMENSIONS AT THE CONSTRUCTION SITE; FOR INFORMATION THAT PERTAINS SOLELY TO FABRICATION PROCESSES OR TO TECHNIQUES OF CONSTRUCTION; AND FOR COORDINATION OF THE WORK OF ALL CRAFTS.

BY: Robert K. Davis DATE: 07/07/2005

OK CQAE
J.H. Fole TX

PE 3408 HDPE PIPE RESIN

WL PLASTICS

Typical Physical Properties

- Black, High Density Polyethylene Pipe is manufactured in accordance with the following pressure-rated ASTM specifications; D2513, API15LE, F714, D3035, NSF61, and/or AWWA C901/C906.
- Cell Classification: D3350, 345464C Grade P34

PROPERTIES	ASTM [1]	TYPICAL VALUES [2]
Flow Rate[3]	D1238	0.1 g/10 min.
Density With 2% Minimum Carbon Black	D792	BLK .955 g/cm^3
Tensile Strength @ Yield[4]	D638	3000<3500 psi
Ultimate Elongation[4]	D638	850%
Secant Flexural Modulus @ 2-1/2% strain	D3350	125000 psi<160000 psi
Izod Impact Resistance @ 23°C / 75°F	D268	7 FT - lb/in
Hardness, Shore D	D2240	60
SCG Resistance, ESCR, F_o [5]	D1693	> 5000 hr
SCG Resistance, PENT	F1473	> 100 hr
Thermal Stability	D3350	500°F
Vicat Softening Point	D1525	255°F
Melting Point	D3417	262°F
Brittleness Temperature	D746	<-150°F
Coefficient of Linear Thermal Expansion	D696	0.8 x 10^{-4} in/in/°F
Hydrostatic Design Basis[6]	D2837	
HDB @ 23°C / 73°F		1600 psi
HDB @ 60°C / 140°F		800 psi

(1) Properties designated have been determined in accordance with the methods of the American Society for Testing and Materials (ASTM) are used wherever applicable.
(2) Typical labratory values for resin represent average laboratory values and are intended for guidelines only, not as specifications. Test values from pipe may vary.
(3) Condition 190/2.16. (4) Extension rate 2 in/min. (5) Environmental stress crack resistance. Condition C. 100% Igepal. (6) 1 in. Nominal Diameter laboratory pipe. SDR 13.5.

NSF

American Water Works Association
Dedicated to Safe Drinking Water

PPI PLASTICS PIPE INSTITUTE

CASPER PLANT: 2075 Pyrite Road • P. O. Box 1120 • Mills, WY 82644 • 307-472-6000 • Fax: 307-472-6200
CEDAR CITY PLANT: 4660 W. Highway 56 • P.O. Box 627 • Cedar City, UT 84720 • 435-867-8908 • Fax: 435-865-2703
WL106-0904 Supersedes all previous editions. © 2004 WL Plastics Corp.

PE 3408 HDPE PIPE DATA & PRESSURE RATINGS - IPS PIPE SIZES

WL PLASTICS

IPS SIZE	AVG OD	DR / PR	7 / 267	7.3 / 254	9 / 200	11 / 160	13.5 / 128	15.5 / 110	17 / 100	21 / 80	26 / 64	32.5 / 51
1	1.315	min wall	0.188	0.180	0.146	0.120						
		avg ID	0.917	0.933	1.005	1.062						
		lb/ft	0.287	0.276	0.231	0.194						
1 1/4	1.660	min wall	0.237	0.227	0.184	0.151						
		avg ID	1.157	1.178	1.269	1.340						
		lb/ft	0.456	0.440	0.367	0.308						
1 1/2	1.900	min wall	0.271	0.260	0.211	0.173						
		avg ID	1.325	1.348	1.452	1.534						
		lb/ft	0.597	0.577	0.482	0.404						
2	2.375	min wall	0.339	0.325	0.264	0.216	0.176	0.153	0.140			
		avg ID	1.656	1.685	1.816	1.917	2.002	2.050	2.079			
		lb/ft	0.934	0.901	0.754	0.631	0.524	0.460	0.423			
3	3.500	min wall	0.500	0.479	0.389	0.318	0.259	0.226	0.206	0.167		
		avg ID	2.440	2.484	2.676	2.825	2.950	3.021	3.064	3.147		
		lb/ft	2.029	1.957	1.637	1.369	1.135	1.001	0.918	0.753		
4	4.500	min wall	0.643	0.616	0.500	0.409	0.333	0.290	0.265	0.214	0.173	0.138
		avg ID	3.137	3.193	3.440	3.633	3.793	3.885	3.939	4.046	4.133	4.206
		lb/ft	3.355	3.236	2.705	2.263	1.877	1.652	1.518	1.241	1.013	0.814
6	6.625	min wall	0.946	0.908	0.736	0.602	0.491	0.427	0.390	0.315	0.255	0.204
		avg ID	4.619	4.701	5.064	5.348	5.585	5.719	5.799	5.956	6.085	6.193
		lb/ft	7.267	7.022	5.863	4.905	4.074	3.580	3.289	2.689	2.197	1.772
7	7.125	min wall							0.419	0.339	0.274	0.219
		avg ID							6.236	6.406	6.544	6.660
		lb/ft							3.80	3.11	2.54	2.05
8	8.625	min wall	1.232	1.182	0.958	0.784	0.639	0.556	0.507	0.411	0.332	0.265
		avg ID	6.013	6.120	6.593	6.963	7.271	7.445	7.549	7.754	7.922	8.062
		lb/ft	12.32	11.90	9.94	8.32	6.90	6.07	5.57	4.57	3.72	3.00
10	10.750	min wall	1.536	1.473	1.194	0.977	0.796	0.694	0.632	0.512	0.413	0.331
		avg ID	7.494	7.628	8.218	8.678	9.062	9.280	9.409	9.665	9.873	10.049
		lb/ft	19.14	18.48	15.43	12.92	10.72	9.44	8.65	7.09	5.77	4.67
12	12.750	min wall	1.821	1.747	1.417	1.159	0.944	0.823	0.750	0.607	0.490	0.392
		avg ID	8.889	9.047	9.747	10.293	10.748	11.006	11.160	11.463	11.710	11.918
		lb/ft	26.92	26.00	21.72	18.17	15.08	13.28	12.17	9.97	8.13	6.55
14	14.000	min wall	2.000	1.918	1.556	1.273	1.037	0.903	0.824	0.667	0.538	0.431
		avg ID	9.760	9.934	10.702	11.302	11.801	12.085	12.254	12.587	12.858	13.087
		lb/ft	32.46	31.35	26.19	21.92	18.18	16.00	14.69	12.03	9.80	7.91
16	16.000	min wall	2.286	2.192	1.778	1.455	1.185	1.032	0.941	0.762	0.615	0.492
		avg ID	11.154	11.353	12.231	12.916	13.487	13.812	14.005	14.385	14.695	14.956
		lb/ft	42.41	40.94	34.21	28.63	23.75	20.90	19.17	15.71	12.80	10.32

IPS SIZE	AVG OD	DR	7	7.3	9	11	13.5	15.5	17	21	26	32.5
		PR	267	254	200	160	128	110	100	80	64	51
18	18.000	min wall	2.571	2.466	2.000	1.636	1.333	1.161	1.059	0.857	0.692	0.554
		avg ID	12.549	12.773	13.760	14.531	15.173	15.538	15.755	16.183	16.532	16.826
		lb/ft	53.66	51.82	43.29	36.21	30.05	26.45	24.27	19.87	16.20	13.07
20	20.000	min wall	2.857	2.740	2.222	1.818	1.481	1.290	1.176	0.952	0.769	0.615
		avg ID	13.943	14.192	15.289	16.145	16.859	17.265	17.506	17.981	18.369	18.695
		lb/ft	66.25	63.97	53.44	44.71	37.10	32.65	29.94	24.53	20.00	16.13
22	22.000	min wall	3.143	3.014	2.444	2.000	1.630	1.419	1.294	1.048	0.846	0.677
		avg ID	15.337	15.611	16.818	17.760	18.545	18.991	19.256	19.779	20.206	20.565
		lb/ft	80.17	77.41	64.65	54.11	44.91	39.50	36.24	29.70	24.21	19.53
24	24.000	min wall	3.429	3.288	2.667	2.182	1.778	1.548	1.412	1.143	0.923	0.738
		avg ID	16.731	17.030	18.347	19.375	20.231	20.717	21.007	21.577	22.043	22.434
		lb/ft	95.42	92.12	76.96	64.40	53.45	47.01	43.14	35.34	28.81	23.22
26	26.000	min wall			2.889	2.364	1.926	1.677	1.529	1.238	1.000	0.800
		avg ID			19.876	20.989	21.917	22.444	22.758	23.375	23.880	24.304
		lb/ft			92.05	77.04	63.93	56.24	51.59	42.26	34.47	27.79
28	28.000	min wall			3.111	2.545	2.074	1.806	1.647	1.333	1.077	0.862
		avg ID			21.404	22.604	23.603	24.170	24.508	25.173	25.717	26.174
		lb/ft			106.75	89.32	74.13	65.22	59.84	49.01	39.98	32.25
30	30.000	min wall			3.333	2.727	2.222	1.935	1.765	1.429	1.154	0.923
		avg ID			22.933	24.218	25.289	25.897	26.259	26.971	27.554	28.043
		lb/ft			122.54	102.54	85.10	74.87	68.71	56.29	45.89	37.00
32	32.000	min wall				2.909	2.370	2.065	1.882	1.524	1.231	0.985
		avg ID				25.833	26.975	27.623	28.009	28.770	29.391	29.913
		lb/ft				116.67	96.82	85.23	78.15	64.03	52.22	42.12
34	34.000	min wall				3.091	2.519	2.194	2.000	1.619	1.308	1.046
		avg ID				27.447	28.661	29.350	29.760	30.568	31.228	31.782
		lb/ft				131.72	109.33	96.21	88.24	72.28	58.96	47.52
36	36.000	min wall				3.273	2.667	2.323	2.118	1.714	1.385	1.108
		avg ID				29.062	30.347	31.076	31.511	32.366	33.065	33.652
		lb/ft				147.68	122.57	107.86	98.94	81.02	66.10	53.30
42	42.000	min wall					3.111	2.710	2.471	2.000	1.615	1.292
		avg ID					35.404	36.255	36.762	37.760	38.575	39.260
		lb/ft					166.80	146.80	134.67	110.30	89.92	72.51
48	48.000	min wall							2.824	2.286	1.846	1.477
		avg ID							42.014	43.154	44.086	44.869
		lb/ft							175.89	144.08	117.47	94.74
54	54.000	min wall							3.176	2.571	2.077	1.662
		avg ID							47.266	48.549	49.597	50.478
		lb/ft							222.55	182.30	148.69	119.93

1. IPS sizes below 4" IPS per ASTM D 3035. IPS sizes 4" IPS and larger per ASTM F714. 2. Pressure rating (PR) in psi for water at 73°F. Pressure rating will vary for other fluids and temperatures. 3. Avg ID = Avg OD - (2.12 x min wall), and is for flow estimation only. Actual ID will vary depending on specification dimensions and tolerances. Consult specifications or measure pipe to determine actual pipe ID for devices such as stiffeners that install in the pipe bore. 4. All dimensions in inches. 5. Contact WL Plastics Customer Service for sizes and DR's not shown.

CASPER PLANT: 2075 Pyrite Road • P. O. Box 1120 • Mills, WY 82644 • 307-472-6000 • Fax: 307-472-6200
CEDAR CITY PLANT: 4660 W. Highway 56 • P.O. Box 627 • Cedar City, UT 84720 • 435-867-8908 • Fax: 435-865-2703
WL102-0904 Supersedes all pr[illegible]itions. © 2004 WL Plastics Corp.

SUBMITTAL TRANSMITTAL FORM

For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 7/7/05	X	New Submittal
			Resubmittal

Section I — **REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS** *(This section to be initiated by the Subcontractor)*

To:	From:	Subcontract No: KH020577	Submittal No 149
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026		Previous Submittal No.

Specification Sec. No. (Cover only one section with each Submittal)

Project Title: Construction of the Present Landfill Accelerated Action

Item No.	Description of Item Submitted (Type, size, model number, etc.)	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8)	No. of Copies	Contract Reference Document		Deviation (See Instruction #6)	Contractor Action Code (See Instruction #9)
				Spec. Paragraph No.	Drawing Sheet No.		
a.	b.	c.	d.	e.	f.	g.	h.
1	MQC Data – Additional Bentomat ST		4				
2	MQC Data – Additional smooth 60-mil LLDPE		4				

Remarks:

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.

Signature of Subcontractor: Paul Kreitz, 7/7/05

Section II — **Reviewed**

Enclosures Returned (List by Item No.):

Rocky Flats Plant

Title and Signature of Accepting Authority:

Date:

☒ APPROVED ☐ APPROVED AS CORRECTED
☐ NOT APPROVED ☐ REVISE AND RESUBMIT

APPROVAL IS FOR CONFORMANCE WITH THE DESIGN CONCEPT OF THE PLANS AND SPECIFICATIONS AND FOR COMPLIANCE WITH THE INFORMATION GIVEN THEREIN. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMATION AND CORRELATION OF ALL DIMENSIONS AT THE CONSTRUCTION SITE; FOR INFORMATION THAT PERTAINS SOLELY TO FABRICATION PROCESSES OR TO TECHNIQUES OF CONSTRUCTION; AND FOR COORDINATION OF THE WORK OF ALL CRAFTS.

BY: Robert Davis DATE: 07/08/2005

Bentomat ST MQC data received on 7/08/2005 Robert Davis

GCL MQC data is for Bentomat DN, not Bentomat ST req'd. CAAE JH Kale TK

PROJECT NAME: Rocky Flats
CUSTOMER P.O.: 31198
PREPARED FOR: Colorado Lining Company

Order Number: 000197349
Ship Date: 1/23/2005

GCL MANUFACTURER'S NEEDLE REMOVAL AND DETECTION PROCEDURE

CETCO hereby affirms that all BENTOMAT geosynthetic clay liner material for this project is continually passed under a magnet for needle removal and then screened with a metal detection device.
Any detected needles, if protruding, are removed from the product.

DAILY GCL PRODUCTION CERTIFICATION

CETCO affirms that these products meet the physical and chemical criteria listed on the attached GCL property specification sheet.

Roger B. Wilkerson
Quality Assurance Coordinator
Colloid Environmental Technologies Co. (CETCO)

LINING TECHNOLOGIES
800.527.9948 www.cetco.com

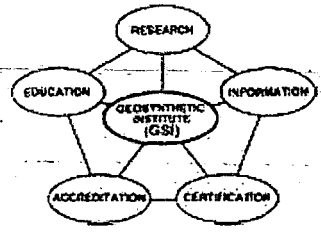
GCL PROPERTY SPECIFICATIONS FOR BENTOMAT ST

Test Method	Test Method Property	Test Frequency	Certified Value
ASTM D 5891	Bentonite Fluid Loss	1 per 50 Tons	18 ml Max
ASTM D 5993	Bentonite Mass/Area	40,000 sq ft (4000 sq m)	0.75 lb /sq ft (3.6 kg/sq m) Min
ASTM D 5890	Bentonite Swell Index	1 per 50 Tons	24 ml/2g Min
ASTM D 4632	GCL Grab Strength	200,000 sq ft (20,000 sq m)	90 lbs (400 N) MARV
ASTM D 6768	GCL Grab Strength	200,000 sq ft (20,000 sq m)	22.5 lbs/in (40 N/cm) MARV
ASTM D 6243	GCL Hydrated Internal Shear Strength	Periodic	6500 psf (311 kPa) typ @ 10,800 psf
ASTM D 5321	GCL Hydrated Internal Shear Strength	Periodic	500 psf (24 kPa) typ @ 200 psf
ASTM D 5887	GCL Hydraulic Conductivity	Weekly	5 x 10^-9 cm/ sec Max
ASTM D 5887	GCL Index Flux	Weekly	1 x 10^-8 m^3/m^2/sec Max
ASTM D 6496	GCL Peel Strength	40,000 sq ft (4000 sq m)	2.5 lbs/in (4.4 N/cm) Min
ASTM D 4632	GCL Peel Strength	40,000 sq ft (4000 sq m)	15 lbs (65 N) Min

Bentonite property tests are performed at a bentonite processing facility before shipment to CETCO's production facility.

All tensile testing is in the machine direction.

CETCO's MQA laboratory is GAI-accredited (www.geosynthetic-institute.org/gai/lab.html).



FABRIC SUPPLIER REQUIREMENTS FOR BENTOMAT ST

Raw Material	test method	mass per area	units
Nonwoven Cover Fabric	ASTM D 5261	6.0	oz/yd2
Bentomat ST Woven Base Fabric	ASTM D 5261	3.2	oz/yd2

Fabric certifications from our raw material suppliers are on file at our production facility.

GCL ORDER PACKING LIST

GCL shipped for certification package number 000197349

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
000197349	LO-BENTOMAT ST	200504LO	00000701	150	15	2250	2673
000197349	LO-BENTOMAT ST	200504LO	00000702	150	15	2250	2670
000197349	LO-BENTOMAT ST	200504LO	00000703	150	15	2250	2669
000197349	LO-BENTOMAT ST	200504LO	00000704	150	15	2250	2675
000197349	LO-BENTOMAT ST	200504LO	00000705	150	15	2250	2670
000197349	LO-BENTOMAT ST	200504LO	00000706	150	15	2250	2665
000197349	LO-BENTOMAT ST	200504LO	00000707	150	15	2250	2663
000197349	LO-BENTOMAT ST	200504LO	00000708	150	15	2250	2671
000197349	LO-BENTOMAT ST	200504LO	00000709	150	15	2250	2672
000197349	LO-BENTOMAT ST	200504LO	00000710	150	15	2250	2683
			Totals:	**1500**	**150**	**22500**	**26711**
						Total Number of Rolls Certified: **10**	

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LINING TECHNOLOGIES
800.527.9948 www.cetco.com

GCL MQA TRACKING FORM

Listing of finished and raw materials used to produce certification package number 000197349

GCL			Geotextiles				Clay
LO-BENTOMAT ST			LO-N/W-WHITE-ST			LO-WOVEN-ST	LO-CG 50-ST
GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200504LO	00000701	00000701	200502VR	00000052	00000048	2002744744	011405D
200504LO	00000702	00000701	200502VR	00000052	00000048	2002744744	011405D
200504LO	00000703	00000701	200502VR	00000052	00000048	2002744744	011405D
200504LO	00000704	00000701	200502VR	00000043	00000041	2002744744	011405D
200504LO	00000705	00000701	200502VR	00000043	00000041	2002744744	011405D
200504LO	00000706	00000701	200502VR	00000043	00000041	2002744744	011405D
200504LO	00000707	00000701	200502VR	00000043	00000041	2002744744	011405D
200504LO	00000708	00000701	200502VR	00000043	00000041	2002744744	011405D
200504LO	00000709	00000701	200502VR	00000043	00000041	2002744744	011405D
200504LO	00000710	00000701	200502VR	00000043	00000041	2002744744	011405D

GCL MANUFACTURING QUALITY CONTROL TEST DATA

The following rolls in GCL certification package number 000197349 have been tested in our production facility lab.

Product	Lot # Tested	Roll # Tested	Mass Area	Grab Strength	Peel Strength
		Standard Test Method:	ASTM D 5993	ASTM D 4632	ASTM D 4632
		Standard Specification:	0.75 lb/sq ft MARV	90lbs MARV	15lbs MARV
LO-BENTOMAT ST	200504LO	00000701	0.88	242.6	49.6

ASTM test methods and property specifications per CETCO standard unless non-standard specifications were requested.
Any non-standard property specifications requested for this order are noted on the attached GCL property specifications sheet.

AMERICAN COLLOID COMPANY

BENTONITE CLAY CERTIFICATION

The bentonite clay used to produce certification package 000197349 has been tested by American Colloid Co. with the following results.

Clay Type	Clay Lot #	Swell	Fluid Loss	Moisture	% Passing 200m	% Retained 8m
Test Method:		ASTM D 5890	ASTM D 5891	ASTM D 2216	ASTM C 136	ASTM C 136
Specification:		24ml/2g Min	18ml Max	12% Max	1% Max	0%
LO-CG 50-ST	011405D	27	15.4	11.2	0.9	0

Tests approved by
Moses Briseno
American Colloid Company
Quality Assurance Coordinator

CETCO
LINING TECHNOLOGIES
800.527.9948 www.cetco.com

GEOTEXTILE TEST RESULTS FOR MATERIAL SUPPLIED BY OUR VILLA RICA, GA FACILITY

The GCL in certification package number 000197349 was manufactured using these geotextiles:

Material	Lot #	Roll #	Mass Area	Grab Strenth
VR-NON-WOVEN	200502VR	00000041	8.3	106.4
VR-NON-WOVEN	200502VR	00000048	6.4	55.8

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GEOTEXTILE TEST RESULTS FROM MATERIAL SUPPLIERS

The GCL in certification package number 000197349was manufactured with geotextiles which were tested with the following results.

BASE			
Material Supplier	Roll Number	Mass Area oz/yd2	Grab Strenth lbs
SI 82TEX	2002744744	3.6	142.0

SUBMITTAL TRANSMITTAL FORM

For Submittal of Shop Drawings, Equipment Data, Material Samples, Manufacturer's Certificates of Compliance, or Other (Read Instructions prior to initiating this form.)	Date: 7/11/05	X	New Submittal
			Resubmittal

Section I — **REQUEST FOR ACCEPTANCE OF THE FOLLOWING ITEMS** *(This section to be initiated by the Subcontractor)*

To:	From:	Subcontract No: KH020577	Submittal No 150
Mr. Bob Davis RFETS 10808 Highway 93, Unit B Bldg 116 Golden, CO 80403-8300	Paul Kreitz S.M. Stoller Corporation 990 South Public Road, Suite A Lafayette, CO 80026		Previous Submittal No.

Specification Sec. No. (Cover only one section with each Submittal)

Project Title: Construction of the Present Landfill Accelerated Action

Item No. a.	Description of Item Submitted (Type, size, model number, etc.) b.	MFG. Or Contr. Cat., Curve Drawing or Brochure No. (See Instruction #8) c.	No. of Copies d.	Contract Reference Document: Spec. Paragraph No. e.	Contract Reference Document: Drawing Sheet No. f.	Deviation (See Instruction #6) g.	Contractor Action Code (See Instruction #9) h.
1	Man-hole Concrete Certifications	Front Range Pre-cast Concrete	4				
2	Aluminum Man-hole Cut-sheets	Front Range Pre-cast Concrete	4				

Remarks:

I certify that the above submittal items have been received in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise noted.

Signature of Subcontractor: Paul Kreitz 7/11/05

Section II — **Reviewed**

Enclosures Returned (List by Item No.):	Title and Signature of Accepting Authority:	Date:

Rocky Flats Plant

☒ APPROVED ☐ APPROVED AS CORRECTED

☐ NOT APPROVED ☐ REVISE AND RESUBMIT

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BY: Robert K. Davis DATE: 7/12/2005

OK
CQAE
J.H. Rale TA

MANUFACTURER'S CERTIFICATION

Project: RFETS Present Landfill

Front Range Precast Concrete, Inc., herein certifies that the precast concrete manhole structures provided for the above-referenced project conform to the ASTM C 478 standard specification for precast water and wastewater structures.

Front Range Precast Concrete, Inc., also certifies that the tanks conform to the applicable related standards including, but not limited to:

MEETS AASHTO STANDARD SPECIFICATION HS-20 (Full Traffic Loading)

A 82 Specification for Cold-Drawn Steel Wire for Concrete Reinforcement

A 184 Specification for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement

A 185 Specification for Welded Steel Wire Fabric for Concrete Reinforcement

C 33 Specification for Concrete Aggregates

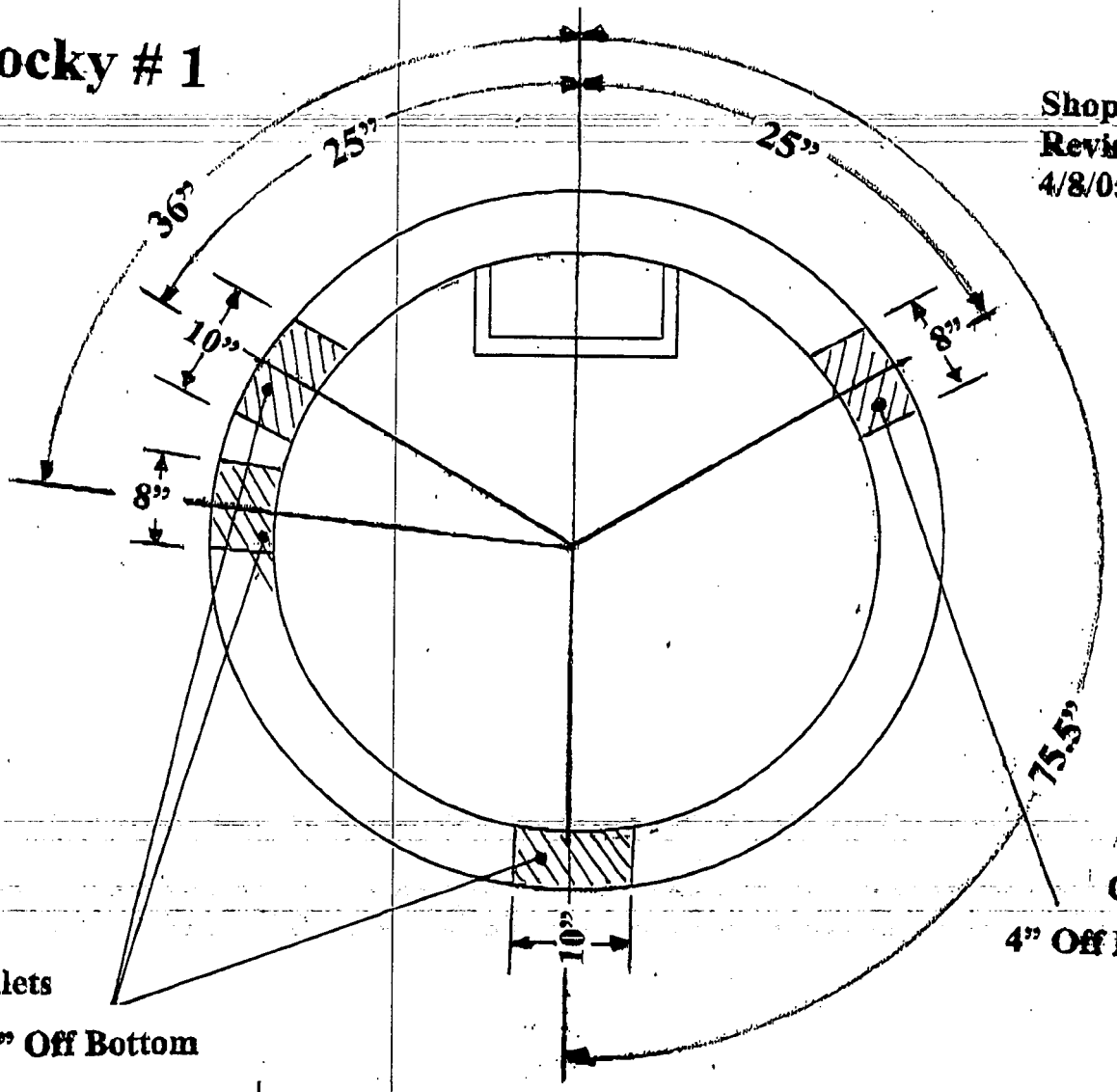
C 150 Specifications for Portland Cement

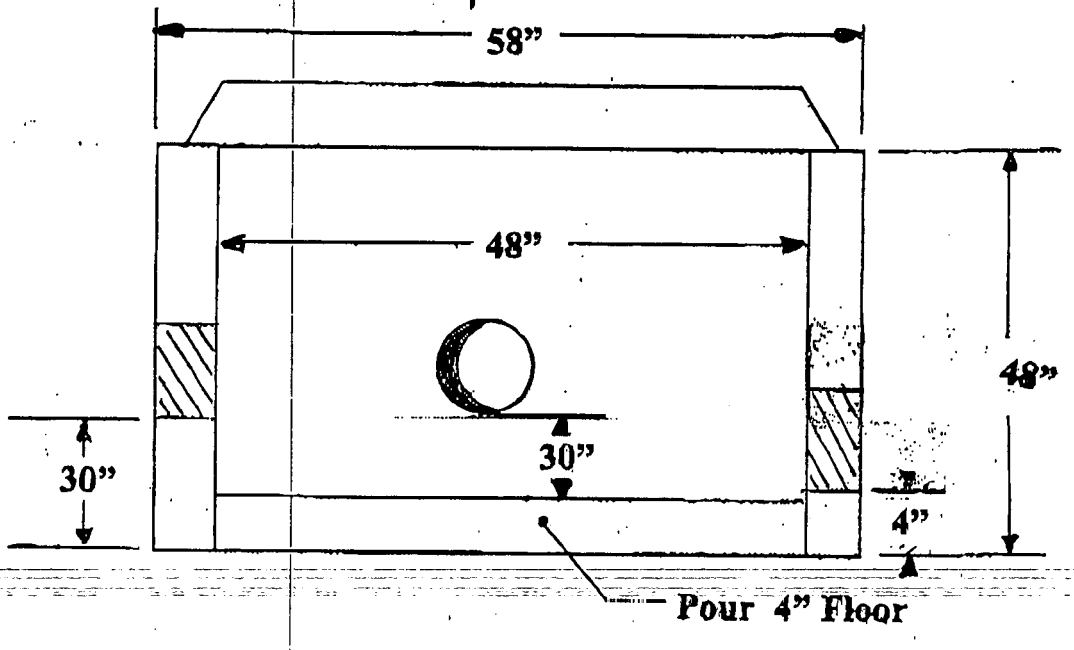
Front Range Precast Concrete, Inc., further certifies that the tanks are, in fact, watertight when installed in accordance with ASTM C 891 standard specification for installation of underground precast concrete utility structures.

Louis C. Médal
Technical Sales

Rocky # 1

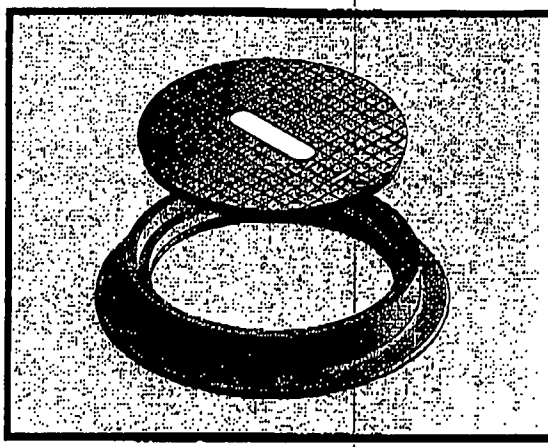
Shop Drawing
Revision # 2
4/8/05





Approved_____ Date_____

ALUMINUM **MANHOLE RING AND COVER** **MH-550-32 R-AL**

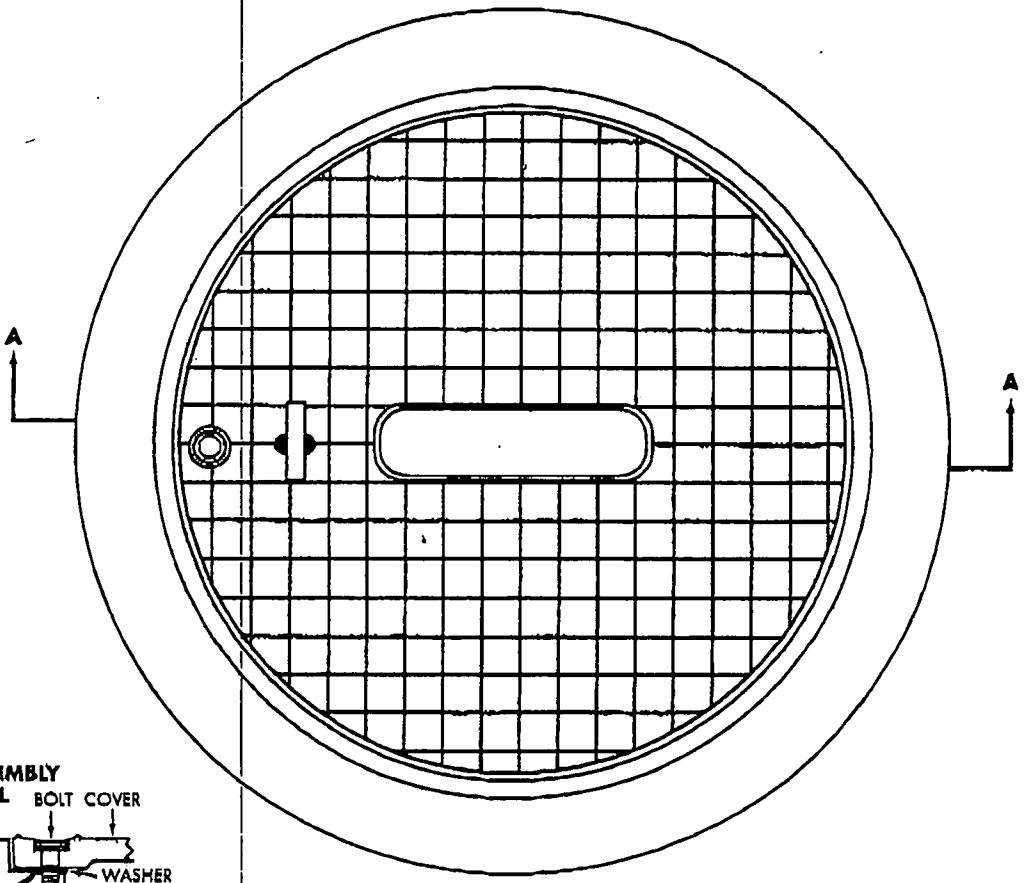


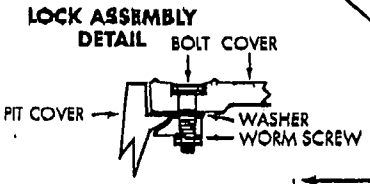
MH55032RAL

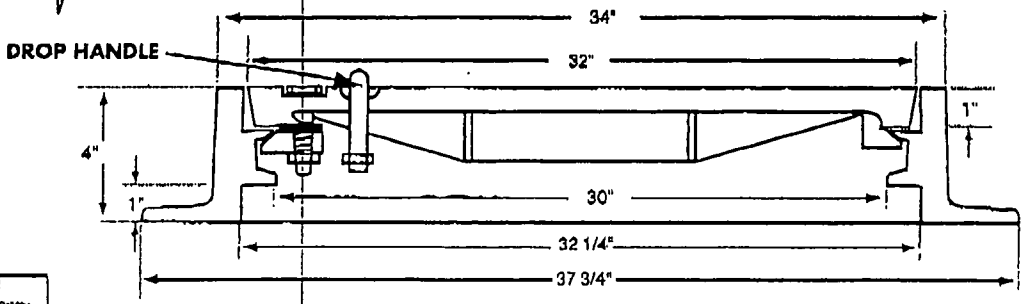
APPROXIMATE WEIGHT

COVER	**88 lb**
RING	**75 lb**

NOTE:
NAMEPLATES—OPTIONAL
MACHINED LID AND RING SEAT







SECTION A–A

ROCKY FLATS
Closure
Site Services,
L.L.C.

A Jacobs Engineering Group Company

Present Landfill Accelerated Action Submittal

DATE: February 28, 2005

TO: Mr. Bob Davis
Kaiser Hill Company, LLC
Rocky Flats Environmental Technology Site
10808 Highway 93, Unit B, Building MV72
Golden, CO 80403-8200

FROM: Karl Shuler
RFCSS
Rocky Flats Environmental Technology Site
10808 Highway 93, Unit B, Building T130D
Golden, CO 80403-8200

SUBJECT: **Submittal No. GR201400-1 – List of Proposed Equipment**

This submittal includes three (3) copies of catalog and descriptive data.

I certify that the accompanying submittal complies with the Kaiser Hill Company, LLC, RISS Work Authorization.

Karl W. Shuler

Rocky Flats Plant

☒ APPROVED ☐ APPROVED AS CORRECTED
☐ NOT APPROVED ☐ REVISE AND RESUBMIT

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BY: Robert K. Davis DATE: 03/22/05

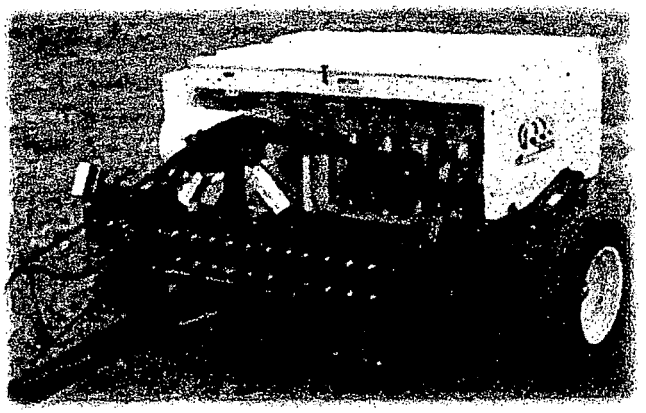
Project No. GR201400	**Specification No.** SPEC-02900-0952, Paragraph 1.03A
Submittal No. GR201400-1 – List of Proposed Equipment	
Submitted By Rocky Flats Closure Site Services (RFCSS)	
Requirements	

Quality Control Item	CQAP Section	Specification Section	QA/QC Item	Method	Requirements	QA Action	QC Action
Seeding	4.11	02900	Submittal	List of proposed equipment	Submit prior to use	Review	Review and Approve

1. RFCSS proposes to use a Truax Company, Inc., FLEXII Series, Model 818, Grass Drill to apply seed. Descriptive data is attached as part of this submittal. The manufacturer's Operator's Manual (including calibration instructions) was submitted in RFCSS' *Submittal No. GR201400-2 – Manufacturer's Instructions*.
2. The FLEXII grass drill comes standard with 2 seeder boxes; a fluffy seed (or warm season) box with an auger agitator, and a legume box for small seeds. A cool season seed box is available as an option. and will be used!
3. The FLEXII grass drill is equipped with double disc furrow openers.
4. The FLEXII grass drill is equipped with depth bands on all disc openers. The standard size is 11-½ inches in diameter, allowing 1 inch of penetration of the blade. Seeds will drop into the seed slot about half the distance of the blade penetration (i.e., ½ inch).
5. Model 818 is capable of planting 18 rows, with 8-inch row (or furrow) spacing.

FLEXII Series Grass Drill

Truax drills are designed with many features for planting grasses and legumes on a variety of site conditions.



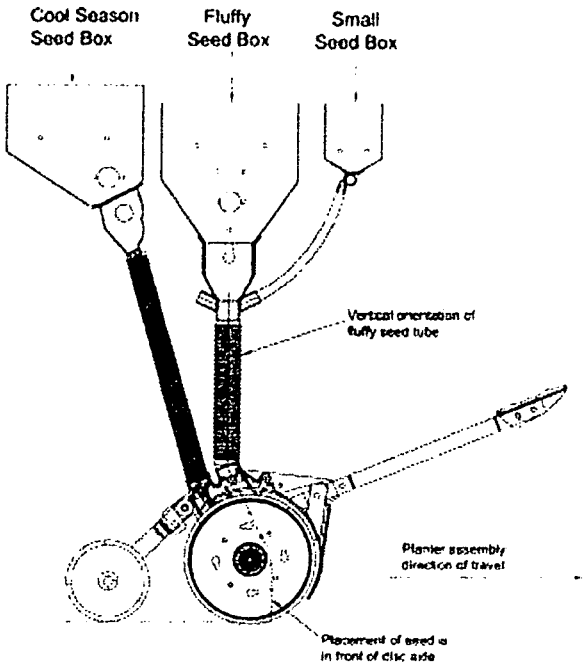
- Double disc furrow openers and depth bands optimize seed placement and seed to soil contact.
- Multiple seed boxes give you the flexibility to seed native fluffy seeds, cool season species, small grains, legumes, and wildflowers.
- Planting can be accomplished as no-till and interseeding in most conditions, from hard pastures and roadsides to crop residue and cover crops, as well as on a prepared seedbed.
- **New in 2003** a lock out hub is standard equipment on all drill models.

The Straight Shot ...Trouble Free Seed Flow

The Truax straight line drop design keeps the seeds moving from the seed boxes to the drill openers.

- Consistent delivery of seed to the openers.
- Eliminates plugged seed boots.

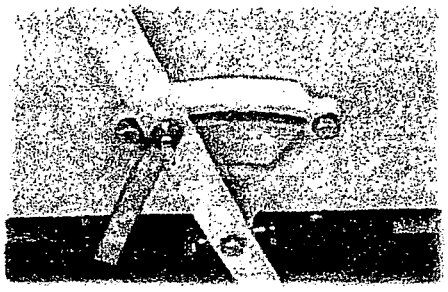
Truax Seed Delivery System



Truax drillls offer maximum control of seeding rate.

- Independent adjustment for fine tuning each seed box output.
- Simple derailleur speed changer sets output of fluffy seed.
- Slide lever sets openings for fluted feed cups of small seed box and cool season/grain box.
- Optional output reduction kit for low seeding rates from all boxes.

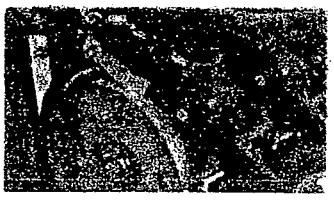
Derailleur style speed changer controls output from the fluffy seed box



Independent slide levers set openings for both the small seed and cool season/grain boxes.

Ground Zero...
...Where the seed meets the soil

Uniform planting depth gives you the most consistent seedling emergence, getting your crop off to a good start under most site conditions.



- Seed from all boxes is delivered between

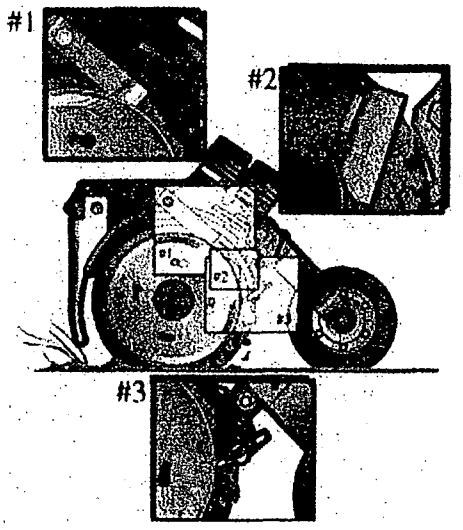
the double disc openers. The rolling disc opener carries the seed into the soil for proper placement and optimal seed-to-soil contact.

- A guard in front of the disc openers reduces plugging problems.
- Truax EZ-Off Depth Bands on every disc control planting depth. Four sizes are available to accommodate planting depths of different crops.

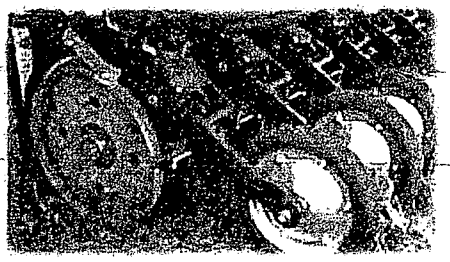
Scrapers on the disc openers and the depth bands prevent moist soil from building up, compromising planting depth and seed placement.

Scrapers are located:

1. On the outside surface of the discs.
2. Inside between the double discs.
3. On the face of the depth band.



Plus ... ...Great seed-to-soil contact



Indepndent movement of Truax press wheels firms soil around the seed without affecting operating depth of the planting units. Press wheel frame provides clearance to pass residue through without bunching or plugging.

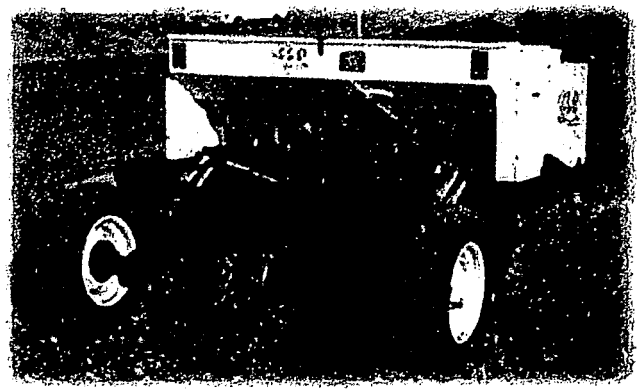
No-Till and Interseeding... ...Into Sod or Other Residue Cover

Drilling into residue cover or interseeding into sod presents no problem for a Truax Drill equipped with our specially designed no-till attachment.

Truax No-Tills:

- Prevent hair pinning and crimping residue.
- Create a micro-seedbed for smooth operation of disc openers.
- Styles available
  - 13-1/2 inch concave, notched blade for interseeding or no-till in light residue cover.
  - 18 inch concave, notched blade is designed for loose or heavy residue.
  - Caster Style Wavy Blade. This 25 wave 17 inch blade is an option for light residue conditions.

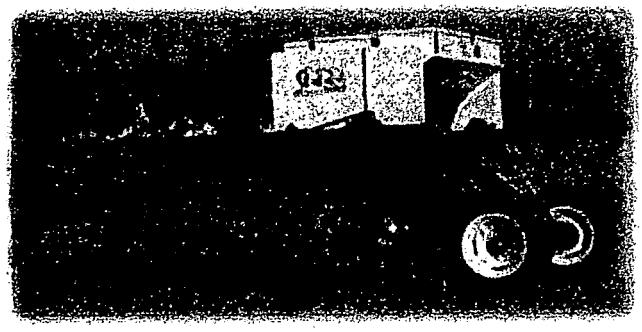
Truax FLEXII Series Grass Drills With Rear Wheel Drive



Bold Solutions For... ...Different Planting Problems

Rear drive drills offer an option for seeding ditch bottoms, next to guard rails, between the rows in orchards or vineyards, or other restricted areas.

The rear wheel configuration provides extra ground clearance when the drill is in the transport position.



The same high ground clearance on end wheel drive drills can be achieved with optional rear transport wheels.

SPECIFICATIONS

FLEXII Series End Wheel Drive Drills

Description	FLXII-86	FLXII-88	FLXII-812	FLXII-816	FLXII-818	FLXII-822
Row Spacing (# of Openers)	8" (6)	8" (8)	8" (12)	8" (16)	8" (18)	8" (22)
Seeding Width (ft)	4.0	5.3	8.0	10.5	12.0	15.0
Weight (lbs)	2000	2440	2940	3965	4545	5430
Weight (w/ no-till)	2200	3000	3780	5085	5800	6970
HP Required (w/o no-till)	25	30	40	50	60	75
HP Required (w/ no-till)	30	40	50	60	75	100
Seed Box Capacity (Bushels/Foot):						
Legume (small seed)	0.25	0.25	0.25	0.25	0.25	0.25
Fluffy Seed (Warm Season)	1.01	1.01	1.01	1.01	1.01	1.01
Cool Season/Grain (Optional)	1.1	1.1	1.1	1.1	1.1	1.1

SPECIFICATIONS

FLEXII Series Rear Wheel Drive Drills

FLXII-	FLXII-	FLXII-	FLXII-	FLXII-	FLXII-

Page deleted due to copyright material

The Truth About... Seed Boxes...

It's what's inside that counts!

All Truax planting equipment features multiple seed box design that has the ability to handle a variety of seeds.

The seed boxes allow the versality to seed several crops with the same planter.

Introduced Grasses

Native Grasses

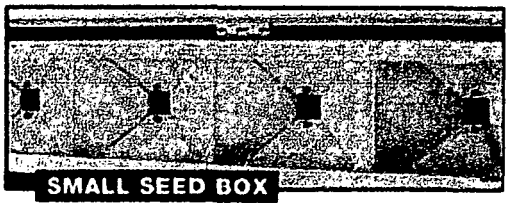
Legumes

Wild Flowers

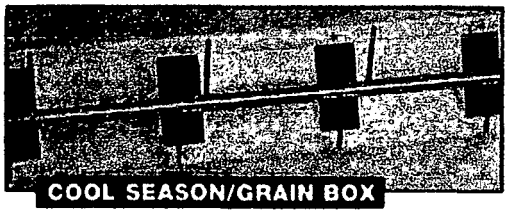
Small Grain

Soybeans

The auger/agitator prevents seed bridging and the picker wheels feed the seed to oversized feed hoses.



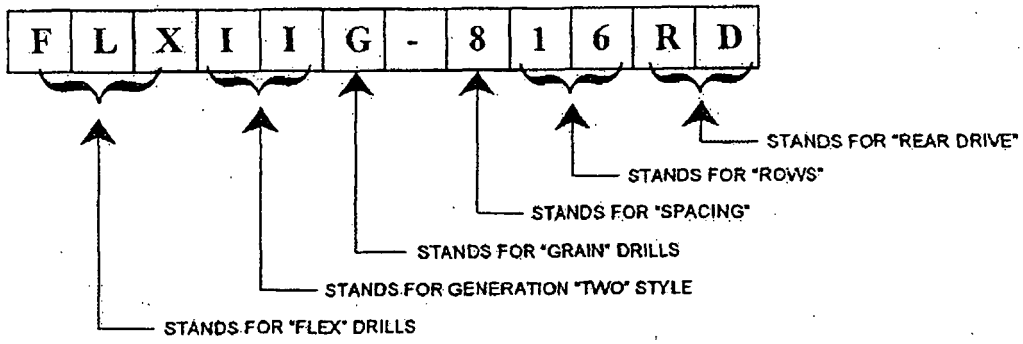
Row dividers keep seed distributed acress the drill width.



Agitators keep the seed flowing while optional row dividers keep seed distribution uniform.

Close Window

KEY FOR MODEL IDENTIFICATION



DRILL SIZE DESIGNATIONS

FLEX MODEL	NO. OF ROWS	ROW SPACING	PLANTING WIDTH	MACHINE WIDTH
FLXII-86	6	8 Inch	4 ft.	7 ft.
FLXII-88	8	8 Inch	5.3 ft.	8.3 ft.
FLXII-812	12	8 Inch	8 ft.	11 ft.
FLXII-816	16	8 Inch	10.7 ft.	13.7 ft.
FLXII-818	18	8 Inch	12 ft.	15 ft.
FLXII-822	22	8 Inch	14.7 ft.	17.7 ft.
FLXII-86RD	6	8 Inch	4 ft.	5 ft.
FLXII-88RD	8	8 Inch	5.3 ft.	6.3 ft
FLXII-812RD	12	8 Inch	8 ft.	9 ft.
FLXII-816RD	16	8 Inch	10.7 ft.	11.7 ft.
FLXII-818RD	18	8 Inch	12 ft.	13 ft.
FLXII-822RD	22	8 Inch	14.7 ft.	15.7 ft.
FLXIIG-88	8	8 Inch	5.3 ft.	8.3 ft.
FLXIIG-812	12	8 Inch	8 ft.	11 ft.
FLXIIG-816	16	8 Inch	10.7 ft.	13.7 ft.
FLXIIG-818	18	8 Inch	12 ft.	15 ft.
FLXIIG-822	22	8 Inch	14.7 ft.	17.7 ft.

ROCKY FLATS
Closure
Site Services,
L.L.C.

A Jacobs Engineering Group Company

Present Landfill Accelerated Action Submittal

DATE: March 10, 2005

TO: Mr. Bob Davis
Kaiser Hill Company, LLC
Rocky Flats Environmental Technology Site
10808 Highway 93, Unit B, Building MV72
Golden, CO 80403-8200

FROM: Karl Shuler
RFCSS
Rocky Flats Environmental Technology Site
10808 Highway 93, Unit B, Building T130D
Golden, CO 80403-8200

SUBJECT: **Submittal No. GR201400-4 – Seed Mixing; Revision 1**

This submittal includes three (3) copies of catalog and descriptive data.

This document is being resubmitted as Revision 1 because:

1. The seed mixture was changed:
   a. The big bluestem – champ component seed species was unavailable. It was determined acceptable to substitute big bluestem - kaw component species for the big bluestem – champ component species.
   b. The side-oats grama and blue grama species were switched to the fluffy seed box.
2. The substitution of the seed species required new recipes for the seed boxes on the seed driller.
3. All component seeds will be mixed together in bags labeled *Broadcast*, for use in areas that require broadcasting instead of drilling.

RFCSS requests that Kaiser Hill approve this revised submitted procedure.

I certify that the accompanying submittal complies with the Kaiser Hill Company, LLC, RISS Work Authorization.

Karl W. Shuler

Rocky Flats Plant

☒ APPROVED ☐ APPROVED AS CORRECTED
☐ NOT APPROVED ☐ REVISE AND RESUBMIT

APPROVAL IS FOR CONFORMANCE WITH THE DESIGN CONCEPT OF THE PLANS AND SPECIFICATIONS AND FOR COMPLIANCE WITH THE INFORMATION GIVEN THEREIN. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMATION AND CORRELATION OF ALL DIMENSIONS AT THE CONSTRUCTION SITE; FOR INFORMATION THAT PERTAINS SOLELY TO FABRICATION PROCESSES OR TO TECHNIQUES OF CONSTRUCTION; AND FOR COORDINATION OF THE WORK OF ALL CRAFTS.

BY [signature] 03/22/05

Project No. GR201400	**Specification No.** SPEC-02900-0952, Paragraph 2.01
Submittal No. GR201400-4 – Seed Mixing; Revision 1	
Submitted By Rocky Flats Closure Site Services (RFCSS)	
Requirements None	

Quality Control Item	CQAP Section	Specification Section	QA/QC Item	Method	Requirements	QA Action	QC Action

1. *Table 4.2, Earthwork QA/QC Summary, 100% Design – Present Landfill Design, RFETS, Golden, Colorado* is attached. Quality Control Item Seeding requires submittal of Certified Copy of Seed Analysis, and submittal of Seed Bag Tickets. There is no requirement to submit a procedure for seed mixing. RFCSS does not plan to mix the seeds on Site. Instead, RFCSS intends to purchase seed mixtures from a seed vendor. The mixtures will be prepared for use in RFCSS' proposed seed driller's seed boxes (see *Submittal No. GR201400-1 – List of Proposed Equipment*). Fluffy seeds will be mixed at the seed vendor for use in the fluffy seeder box, and round seeds will be mixed at the seed vendor for use in the round seed box. Nevertheless, RFCSS requests approval of this submittal so that RFCSS may purchase seed mixtures for use in the seed driller's seed boxes.
2. RFCSS proposed to use a Truax Company, Inc., FLEXII, Model 818 grass drill to apply the seed. This was submitted in RFCSS' *Submittal No. GR201400-1 – List of Proposed Equipment.*
3. The *Present Landill Seed Mix Agreed to 9/22/04* is attached.
4. The proposed *Seed Mixtures for use in 3 Seed Driller Boxes; Revision 1, March 10, 2005* document is attached. It is a modified version of *Present Landill Seed Mix Agreed to 9/22/04* document. Similar seeds have been grouped together in order for the RFCSS seed vendor to prepare seed mixtures for introduction into the proposed seed driller's seed boxes.
5. An example of a *Seeding Specifications Sheet* is attached. Since the seeds used in the mixtures are not 100% pure and have different germination rates, those factors are accounted for on this sheet. Those factors are then used to determine the bulk pounds of seed mixture that need to be applied per acre in order to achieve the seeding mix agreed to on 9/22/04. Information (e.g., purity and germination) will be entered on the *Seeding Specifications Sheet* from data taken from the component seed bags actually used in the mixture.
6. The seed supplier will be Arkansas Seed Company. They have reviewed the specification and are prepared to provide the following:
   a. Component seeds (to be used in the mixture) as specified in the *Present Landill Seed Mix Agreed to 9/22/04*, except that big bluestem - kaw component species will be substituted for the big bluestem – champ component species.
   b. State of Colorado certified component seeds whenever possible. Some of the seeds specified in the *Present Landill Seed Mix Agreed to 9/22/04* are not available as certified seeds.
   c. Arkansas Seed Company papers certifying the lot number, purity of the crop, inert weed content, origin and test date of each bag of component seeds.
   d. Computer generated tags for each bag of seed mixture.
   e. Bags of seed mixture where each bag is packaged to cover approximately one acre.
   f. Bags of a broadcast mixture, consisting of all component species mixed together.

7. The CQA Manager or his designee and other interested parties will be requested to observe the seed mixing at the seed vendor's place of business.
8. RFCSS will submit the seed bag tickets from the seed mixture bags prior to use on Site.
9. RFCSS will submit Arkansas Seed Company papers certifying the lot number, purity of the crop, inert weed content, origin and test date of each bag of component seeds.

TABLE 4.2

EARTHWORK QA/QC SUMMARY
100% DESIGN - PRESENT LANDFILL DESIGN, RFETS, GOLDEN, COLORADO

Quality Control Item	CQAP Section	Specification Section	QA/QC Item	Method	Requirements	QC Action	QA Action
			Placement Documentation	Visual inspection	Underlying cushion soil is clean, free of all foreign debris, not disturbed by traffic or other operations, and maintained in a satisfactory condition.	Continuous	Oversight of QC
			Placement Documentation	Visual inspection	Underlying materials is accepted by the SQAM and has not changed detrimentally.	Continuous	Oversight of QC
Seeding	4.11	02900	Submittal	List of proposed equipment	Submit prior to use.	Review	Review and Approve
			Submittal	Certified copy of seed analysis	Submit prior to use.	Review	Review and Approve
			Submittal	Seed bag tickets	Submit prior to use.	Review	Review and Approve
			Submittal	Documentation of seed calibration	Submit prior to use.	Review	Review and Approve
			Topsoil Sieve Analysis	USDA	Report	Review	Review and Approve
			Topsoil Organic Content	USDA	Report	Review	Review and Approve
			Topsoil N,P,K	USDA	Report	Review	Review and Approve
			Surface Inspection	Visual inspection	Topsoil is free from hard lumps, plants, roots, gravel, cinders, and stones over 1-inch in any dimension.	Continuous	Oversight of QC
As-Built Surveys	4.12	01310	Top of regrade	See requirements in Specification 01310	Verify elevations required by design.	As required	As required, at the discretion of the CQAE.
			Top of subgrade		Verify elevations required by design.		
			Gas management system (trench alignments)		Verify trench locations required by design.		
As-Built Surveys Cont.	4.12	01310	Geosynthetics panel layout	See requirements in Specification 01310	Obtain as-built survey of all geosynthetic panel layouts.	As required	As required, at the discretion of the CQAE.
			Anchor trench alignment		Verify location and slope required by design.		
			Top of 10-inch cushion layer		Verify elevations required by design.		
			Top of rock layer		Verify elevations required by design.		
			Top of final surface		Verify elevations required by design.		
			Perimeter drainage channel (slope and width)		Verify slope and width of channel required by design		
			Diversion berm toe of slope		Verify slope required by design.		
			Seep treatment system layout		Verify location and elevations required by design.		
			Final project completion site topographic map		Verify compliance with design.		

Notes:

Present Landfill

Seed Mix Agreed to 9/22/04

Fluffy/ Round	Species	Common Name – Variety	Sd/sq ft*	% PLS[t]	Lb/ac	Role
F	Andropogon gerardii	Big bluestem – Champ	2	5.3	0.7	Deep-rooted, warm-season; accessing deep moisture when shallow moisture is deficient
F	Andropogon gerardii	Big bluestem – Kaw	2	5.3	0.7	Ditto
R	Bouteloua curtipendula	Sideoats grama – Vaughn	2	5.3	0.7	Moderately deep-rooted, warm-season; establishes well on restoration sites
R	Buchloe dactyloides	Buffalograss – Cody	3	7.9	2.3	Warm-season turfgrass of short stature that can be expected to provide important ground cover when drought restricts cover of other species
R	Buchloe dactyloides	Buffalograss – Native**	1	2.8	0.8	Ditto
R	Chondrosum gracile	Blue grama – Bad River	4	10.5	0.2	Ditto except blue grama is a wide-spreading bunchgrass
R	Elymus lanceolatus var. psammophilus	Streambank wheatgrass - Sodar	5	13.2	1.4	Native cool-season turfgrass that can be expected to dependably establish and provide important erosion control
R	Elymus lanceolatus var. lanceolatus	Thickspike wheatgrass-Critana	5	13.2	1.4	Ditto
R	Koeleria pyrimidata	Prairie Junegrass – Native**	1	2.8	0.2	Native bunchgrass of the plains, slow to establish but then durable.
R	Elymus trachycaulus	Slender wheatgrass – San Luis	3	7.9	0.8	Native bunchgrass of moderate to tall stature that establishes vigorously, providing early cover; can be expected to fade as slower-growing natives progress after the first few years
R	Pascopyrum smithii	Western wheatgrass – Arriba	3	7.9	01.2	Native cool-season turfgrass that can be expected to dependably establish and provide important erosion control
R	Poa canbyi (P. secunda)	Canby bluegrass – Canbar	1	2.8	0.5	Native bunchgrass of the plains, slow to establish but then durable.
F	Sorghastrum nutans	Yellow Indiangrass – Holt	2	5.3	0.5	Deep-rooted, warm-season; accessing deep moisture when shallow moisture is deficient
R	Sporobolus cryptandrus	Sand dropseed - Native	2	5.3	0.01	Native warm-season bunchgrass that establishes well on sites with coarser soil texture. Elective.
R	Stipa viridula	Green needlegrass – LoDorm	2	5.3	0.5	Native cool-season bunchgrass that establishes dependably
	Total		38***	100	11.25***	

*Seeds per square foot for drill seeding
** Native = source in central Great Plains
*** 36 seeds per square foot, when drilled with a drill with 8-inch furrow spacing results in an average of two seeds per lineal inch of drill furrow.
[t] PLS = pure live seed

Seed Mixtures for use in 3 Seed Driller Boxes; Revision 1

March 10, 2005

Mixture 1 (for Use in the Warm Season Seeder Box)						
Fluffy/ Round	**Species**	**Common Name – Variety**	**Sd / sq ft***	**% PLS[t]**	**Lb/ac**	**Role**
F	Andropogon gerardii	Big bluestem – Kaw	4	10.5	1.4	Deep-rooted, warm-season; accessing deep moisture when shallow moisture is deficient
F	Bouteloua curtipendula	Sideoats grama – Vaughn	2	5.3	0.7	Moderately deep-rooted, warm-season; establishes well on restoration sites
F	Chondrosum gracile	Blue grama – Bad River	4	10.5	0.2	Ditto except blue grama is a wide-spreading bunchgrass
F	Sorghastrum nutans	Yellow Indiangrass – Holt	2	5.3	0.5	Deep-rooted, warm-season; accessing deep moisture when shallow moisture is deficient
	Total		12***	31.6	2.8***	

Mixture 2 (for Use in the Cool Season Seeder Box)						
R	Buchloe dactyloides	Buffalograss – Cody	3	7.9	2.3	Warm-season turfgrass of short stature that can be expected to provide important ground cover when drought restricts cover of other species
R	Buchloe dactyloides	Buffalograss – Native**	1	2.6	0.8	Ditto
R	Elymus lanceolatus var. psammophilus	Streambank wheatgrass - Sodar	5	13.2	1.4	Native cool-season turfgrass that can be expected to dependably establish and provide important erosion control
R	Elymus lanceolatus var. lanceolatus	Thickspike wheatgrass-Critana	5	13.2	1.4	Ditto
R	Elymus trachycaulus	Slender wheatgrass – San Luis	3	7.9	0.8	Native bunchgrass of moderate to tall stature that establishes vigorously, providing early cover; can be expected to fade as slower-growing natives progress after the first few years
R	Pascopyrum smithii	Western wheatgrass – Arriba	3	7.9	01.2	Native cool-season turfgrass that can be expected to dependably establish and provide important erosion control
R	Stipa viridula	Green needlegrass – LoDorm	2	5.3	0.5	Native cool-season bunchgrass that establishes dependably
	Total		28***	57.9	9.3***	

Mixture 3 (for Use in the Legume Seeder Box)						
R	Koeleria pyrimidata	Prairie Junegrass – Native**	1	2.6	0.2	Native bunchgrass of the plains, slow to establish but then durable.
R	Poa canbyi (P. secunda)	Canby bluegrass – Canbar	1	2.6	0.5	Native bunchgrass of the plains, slow to establish but then durable.
R	Sporobolus cryptandrus	Sand dropseed - Native	2	5.3	0.01	Native warm-season bunchgrass that establishes well on sites with coarser soil texture. Elective.
	Total		4***	10.5	0.71***	

*Seeds per square foot for drill seeding

** Native = source in central Great Plains

*** 38 seeds per square foot, when drilled with a drill with 8-inch furrow spacing results in an average of two seeds per lineal inch of drill furrow.

[t] PLS = pure live seed

SEEDING SPECIFICATIONS SHEET FOR DRILLING
(EXAMPLE)

SPECIES	COMMON NAME-VARIETY	PLS lbs/ac	PURITY	GERMINATION	BULK lbs/ac NEEDED	ACRES TO BE SEEDED	TOTAL BULK lbs NEEDED
FLUFFY SEED BOX							
Andropogon gerardii	Big bluestem – Kaw	1.4	72.67	98%	1.96		
Bouteloua curtipendula	Sideoats grama – Vaughn	0.7	91.79	76%	1		
Chondrosum gracile	Blue grama – Bad River	0.2	95.9	98%	0.21		
Sorghastrum nutans	Yellow Indiangrass – Holt	0.5	92.65	97%	0.55		
	TOTALS	**2.8**			**3.72**		
					***** 1.86**		
COOL SEED BOX							
Buchloe dactyloides	Buffalograss – Cody	2.3	98	90%	2.6		
Buchloe dactyloides	Buffalograss – Native	0.8	95.68	91%	0.91		
Elymus lanceolatus var. psammophilus	Streambank wheatgrass - Sodar	1.4	96.96	95%	1.51		
Elymus lanceolatus var. lanceolatus	Thickspike wheatgrass-Critana	1.4	86.16	89%	1.82		
Elymus trachycaulus	Slender wheatgrass – San Luis	0.8	99.05	95%	0.85		
Pascopyrum smithii	Western wheatgrass – Arriba	1.2	96.29	94%	1.32		
Stipa viridula	Green needlegrass – LoDorm	0.5	97.46	88%	0.58		
	TOTALS	**8.4**			**9.59**		
					***** 4.8**		
SMALL SEED BOX							
Koeleria pyrimidata	Prairie Junegrass – Native	0.2	96.31	92%	0.22		
Poa canbyi (P. secunda)	Canby bluegrass – Canbar	0.5	99.64	88%	0.57		
Sporobolus cryptandrus	Sand dropseed - Native	0.01	99.05	96%	0.01		
	TOTALS	**0.71**			**0.8**		
					***** .4**		

PLS = Pure Live Seed
%PLS = %Germination x %Purity (Data Taken From Seed Packaging Labels)
(PLS lbs/ac) divided by (Germination x Purity) = Bulk Seed Per Acre

***** DRILL TO BE CALIBRATED TO 50% OF BULK POUNDS NEEDED FOR DOUBLE/CROSS SEEDING**

Project No. GR201400	**Specification No.** SPEC-02900-0952
Submittal No. GR201400-6 – Certified Copy of Seed Analysis	
Submitted By Rocky Flats Closure Site Services (RFCSS)	
Requirements None	

Quality Control Item	CQAP Section	Specification Section	QA/QC Item	Method	Requirements	QA Action	QC Action
Seeding	4.11	02900	Submittal	Certified copy of seed analysis	Submit prior to use	Review	Review and Approve

1. *Table 4.2, Earthwork QA/QC Summary, 100% Design – Present Landfill Design, RFETS, Golden, Colorado* is attached. Quality Control Item Seeding requires submittal of documentation of certified copy of seed analysis.
2. Seed Mixtures for Use in 3 Seed Driller Boxes; Revision 1, is attached. This document specifies the seed mixture to be placed into each of the 3 seed boxes on the seed driller. It is included as a "table of contents" for the analysis.
3. The Arkansas Valley Seed Solutions™ seed certification.
4. The Arkansas Valley Seed Solutions™ certified copies of seed analyses.

TABLE 4.2

EARTHWORK QA/QC SUMMARY
100% DESIGN - PRESENT LANDFILL DESIGN, RFETS, GOLDEN, COLORADO

Quality Control Item	CQAP Section	Specification Section	QA/QC Item	Method	Requirements	QC Action	QA Action
			Placement Documentation	Visual inspection	Underlying cushion soil is clean, free of all foreign debris, not disturbed by traffic or other operations, and maintained in a satisfactory condition.	Continuous	Oversight of QC
			Placement Documentation	Visual inspection	Underlying materials is accepted by the SQAM and has not changed detrimentally.	Continuous	Oversight of QC
Seeding	4.11	02900	Submittal	List of proposed equipment	Submit prior to use.	Review	Review and Approve
			Submittal	Certified copy of seed analysis	Submit prior to use.	Review	Review and Approve
			Submittal	Seed bag tickets	Submit prior to use.	Review	Review and Approve
			Submittal	Documentation of seed calibration	Submit prior to use.	Review	Review and Approve
			Topsoil Sieve Analysis	USDA	Report	Review	Review and Approve
			Topsoil Organic Content	USDA	Report	Review	Review and Approve
			Topsoil N,P,K	USDA	Report	Review	Review and Approve
			Surface Inspection	Visual inspection	Topsoil is free from hard lumps, plants, roots, gravel, cinders, and stones over 1-inch in any dimension.	Continuous	Oversight of QC
As-Built Surveys	4.12	01310	Top of regrade	See requirements in Specification 01310	Verify elevations required by design.	As required	As required, at the discretion of the CQAE.
			Top of subgrade		Verify elevations required by design.		
			Gas management system (trench alignments)		Verify trench locations required by design.		
As-Built Surveys Cont.	4.12	01310	Geosynthetics panel layout	See requirements in Specification 01310	Obtain as-built survey of all geosynthetic panel layouts.	As required	As required, at the discretion of the CQAE.
			Anchor trench alignment		Verify location and slope required by design.		
			Top of 10-inch cushion layer		Verify elevations required by design.		
			Top of rock layer		Verify elevations required by design.		
			Top of final surface		Verify elevations required by design.		
			Perimeter drainage channel (slope and width)		Verify slope and width of channel required by design		
			Diversion berm toe of slope		Verify slope required by design.		
			Seep treatment system layout		Verify location and elevations required by design.		
			Final project completion site topographic map		Verify compliance with design.		

Notes:

Seed Mixtures for use in 3 Seed Driller Boxes; Revision 1

March 10, 2005

Mixture 1 (for Use in the Warm Season Seeder Box)						
Fluffy/ Round	**Species**	**Common Name – Variety**	**Sd / sq ft***	**% PLS[t]**	**Lb/ac**	**Role**
F	Andropogon gerardii	Big bluestem – Kaw Page 1, N° 1	4	10.5	1.4	Deep-rooted, warm-season; accessing deep moisture when shallow moisture is deficient
F	Bouteloua curtipendula	Sideoats grama – Vaughn Page 1, N° 3	2	5.3	0.7	Moderately deep-rooted, warm-season; establishes well on restoration sites
F	Chondrosum gracile	Blue grama – Bad River Page 1, N° 4	4	10.5	0.2	Ditto except blue grama is a wide-spreading bunchgrass
F	Sorghastrum nutans	Yellow Indiangrass – Holt Page 1, N° 2	2	5.3	0.5	Deep-rooted, warm-season; accessing deep moisture when shallow moisture is deficient
	Total		12***	31.6	2.8***	

Mixture 2 (for Use in the Cool Season Seeder Box)						
R	Buchloe dactyloides	Buffalograss – Cody Page 2, N° 1	3	7.9	2.3	Warm-season turfgrass of short stature that can be expected to provide important ground cover when drought restricts cover of other species
R	Buchloe dactyloides	Buffalograss – Native** Page 2, N° 5	1	2.6	0.8	Ditto
R	Elymus lanceolatus var. psammophilus	Streambank wheatgrass - Sodar Page 2, N° 3	5	13.2	1.4	Native cool-season turfgrass that can be expected to dependably establish and provide important erosion control
R	Elymus lanceolatus var. lanceolatus	Thickspike wheatgrass-Critana Page 2, N° 2	5	13.2	1.4	Ditto
R	Elymus trachycaulus	Slender wheatgrass – San Luis Page 2, N° 6	3	7.9	0.8	Native bunchgrass of moderate to tall stature that establishes vigorously, providing early cover; can be expected to fade as slower-growing natives progress after the first few years
R	Pascopyrum smithii	Western wheatgrass – Arriba Page 2, N° 4	3	7.9	01.2	Native cool-season turfgrass that can be expected to dependably establish and provide important erosion control
R	Stipa viridula Page 3, N° 1	Green needlegrass – LoDorm	2	5.3	0.5	Native cool-season bunchgrass that establishes dependably
	Total		28***	57.9	9.3***	

Mixture 3 (for Use in the Legume Seeder Box)						
R	Koeleria pyrimidata	Prairie Junegrass – Native** Page 4, N° 2	1	2.6	0.2	Native bunchgrass of the plains, slow to establish but then durable.
R	Poa canbyi (P. secunda)	Canby bluegrass – Canbar Page 4, N° 1	1	2.6	0.5	Native bunchgrass of the plains, slow to establish but then durable.
R	Sporobolus cryptandrus	Sand dropseed - Native Page 4, N° 3	2	5.3	0.01	Native warm-season bunchgrass that establishes well on sites with coarser soil texture. Elective.
	Total		4***	10.5	0.71***	

↑ See Arkansas Valley Seed Solutions certifications, attached.

*Seeds per square foot for drill seeding

** Native = source in central Great Plains

*** 38 seeds per square foot, when drilled with a drill with 8-inch furrow spacing results in an average of two seeds per lineal inch of drill furrow.

[t] PLS = pure live seed

Arkansas Valley
Seed Solutions™
seedsolutions.com — Seeds for Growing Success

Date: MARCH 9, 2005

Customer: ROCKY FLATS
10808 HWY 93, UNIT B BLDG T130D
GOLDEN, CO 80403-8200

Invoice No:

Job Name or No:

Lot Number: 55421-55423-55424-56211-56220

This is to certify that all lots of seed and varieties used in the mix were tested by an authorized seed lab as prescribed in the Federal Seed Act and the Colorado State Seed Laws.

Sincerely,

RETA STIMMEL
SALES MANAGER

Arkansas Valley Seed Solutions
4625 Colorado Blvd.
Denver, CO 80216
(303) 320-7500

Arkansas Valley Seed Solutions
4333 Hwy. 66
Longmont, CO 80504
(970) 535-4481

Arkansas Valley Seed Solutions
12th & Santa Fe Tracks
Rocky Ford, CO 81067
(719) 254-7469

Colorado Seed Solutions
195 N. Washington
Monte Vista, CO 81144
(719) 852-3505

Wilbers Seed Solutions
809 N. Broadway
Miller, SD 57362
(605) 853-2414

Fluffy Seed Boy

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PAGE 1

AV SEEDS
CERTIFIED COPY OF SEED ANALYSIS

№

1

Name of Lab:	AVS	Lot No:	1605
Kind & Variety:	BIG BLUESTEM, KAW		
Purity:	72.67%	Germ & Hard:	
Crop:	.00%	Germination:	98%
Inert:	27.33%	Hard & Dormant:	
Weeds:	0.00%	Date of Test:	12/04
Origin:	MO	Noxious Weeds:	NONE

2

Name of Lab:	AVS	Lot No:	G3-817
Kind & Variety:	YELLOW INDIAN GRASS, HOLT		
Purity:	92.65%	Germ & Hard:	
Crop:	.00%	Germination:	97%
Inert:	7.35%	Hard & Dormant:	
Weeds:	.00%	Date of Test:	11/04
Origin:	NE	Noxious Weeds:	NONE

3

	AVS	Lot No:	14284
Kind & Variety:	SIDEOATS GRAMA, VAUGHN		
Purity:	91.79%	Germ & Hard:	
Crop:	0.13%	Germination:	76%
Inert:	8.06%	Hard & Dormant:	
Weeds:	0.02%	Date of Test:	12/04
Origin:	TX	Noxious Weeds:	NONE

4

	AVS	Lot No:	022-528-30H
Kind & Variety:	BLUE GRAMA, BAD RIVER		
Purity:	95.90%	Germ & Hard:	
Crop:	0.05%	Germination:	98%
Inert:	3.91%	Hard & Dormant:	
Weeds:	0.21%	Date of Test:	12/04
Origin:	WA	Noxious Weeds:	NONE

Cool Seed Soy Mix

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Page 2

AV SEEDS
CERTIFIED COPY OF SEED ANALYSIS

	Name of Lab:	AVS	Lot No:	13961
	Kind & Variety:	BUFFALO GRASS, CODY		
1	Purity:	98.00%	Germ & Hard:	
	Crop:	0.10%	Germination:	90%
	Inert:	1.80%	Hard & I	
	Weeds:	0.10%	Date of Test:	10/04
	Origin:	OK	Noxious Weeds:	NONE

	Name of Lab:	AVS	Lot No:	559-126-10A
	Kind & Variety:	THICKSPIKE WHEATGRASS, CRITANA		
	Purity:	86.16%	Germ & Hard:	
2	Crop:	3.15%	Germination:	89%
	Inert:	10.19%	Hard & Dormant:	
	Weeds:	0.50%	Date of Test:	11/04
	Origin:	WA		NONE

	Name of Lab:	AVS	Lot No:	616-122-11A
	Kind & Variety:	STREAMBANK WHEATGRASS, SODAR		
	Purity:	96.96%	Germ & Hard:	
3	Crop:	0.00%	Germination:	95%
	Inert:	2.62%	Hard & Dormant:	
	Weeds:	0.42%	Date of Test:	11/04
	Origin:	WA	Noxious Weeds:	NONE

	Name of Lab:	AVS	Lot No:	BG3064-4
	Kind & Variety:	WESTERN WHEATGRASS, ARRIBA		
	Purity:	96.29%	Germ & Hard:	
4	Crop:	.00%	Germination:	94%
	Inert:	3.71%	Hard & Dormant:	
	Weeds:	.00%	Date of Test:	10/04
	Origin:	WY	Noxious Weeds:	NONE

	Name of Lab:	AVS	Lot No:	13742T
	Kind & Variety:	BUFFALO GRASS, VNS		
	Purity:	95.68%	Germ & Hard:	
5	Crop:	.00%	Germination:	91%
	Inert:	4.32%	Hard & Dormant:	
	Weeds:	.00%	Date of Test:	12/04
	Origin:	TX	Noxious Weeds:	NONE

	Name of Lab:	AVS	Lot No:	BG3061-4
	Kind & Variety:	SLENDER WHEATGRASS, SAN LUIS		
	Purity:	99.05%	Germ & Hard:	
6	Crop:	.00%	Germination:	95%
	Inert:	.95%	Hard & Dormant:	
	Weeds:	.00%	Date of Test:	12/04
	Origin:	WY	Noxious Weeds:	NONE

AV SEEDS
CERTIFIED COPY OF SEED ANALYSIS

Name of Lab:	AVS	Lot No:	528-535-21A
Kind & Variety:	GREEN NEEDLEGRASS, LODORM		
Purity:	97.46%	Germ & Hard:	
Crop:	.00%	Germination:	88%
Inert:	2.09%	Hard & Dormant:	
Weeds:	0.45%	Date of Test:	10/04
Origin:	WA	Noxious Weeds:	NONE

Small Seed box Mix

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Page 4

AV SEEDS
CERTIFIED COPY OF SEED ANALYSIS

No

	Name of Lab:	AVS	Lot No:	LHS-8-5-3R
	Kind & Variety:	CANBY BLUEGRASS, CANBAR		
	Purity:	99.64%	Germ & Hard:	
1	Crop:	0.00%	Germination:	88%
	Inert:	0.36%	Hard & I	
	Weeds:	0.00%	Date of Test:	10/04
	Origin:	WA	Noxious Weeds:	NONE

	Name of Lab:	AVS	Lot No:	4-0400
	Kind & Variety:	PRAIRIE JUNEGRASS		
	Purity:	96.31%	Germ & Hard:	
2	Crop:	0.04%	Germination:	96%
	Inert:	3.65%	Hard & Dormant:	
	Weeds:	0.00%	Date of Test:	11/04
	Origin:	CAN		NONE

	Name of Lab:	AVS	Lot No:	099-524-20A
	Kind & Variety:	SAND DROPSEED		
	Purity:	99.05%	Germ & Hard:	
3	Crop:	0.00%	Germination:	96%
	Inert:	0.46%	Hard & Dormant:	
	Weeds:	0.49%	Date of Test:	10/04
	Origin:	WA	Noxious Weeds:	NONE

Project No. GR201400	**Specification No.** SPEC-02900-0952
Submittal No. GR201400-7 – Seed Bag Tickets	
Submitted By Rocky Flats Closure Site Services (RFCSS)	
Requirements None	

Quality Control Item	CQAP Section	Specification Section	QA/QC Item	Method	Requirements	QA Action	QC Action
Seeding	4.11	02900	Submittal	Seed bag tickets	Submit prior to use	Review	Review and Approve

1. *Table 4.2, Earthwork QA/QC Summary, 100% Design – Present Landfill Design, RFETS, Golden, Colorado* is attached. Quality Control Item Seeding requires submittal of documentation of seed bag tickets.
2. Seed Mixtures for Use in 3 Seed Driller Boxes; Revision 1, is attached. This document specifies the seed mixture to be placed into each of the 3 seed boxes on the seed driller. It is included as a "table of contents" for the photocopies of the seed bag tickets that were used to create the 3 seed mixtures.
3. Photocopies of the seed bag tickets that were used to create the 3 seed mixtures are attached.

TABLE 4.2

EARTHWORK QA/QC SUMMARY
100% DESIGN - PRESENT LANDFILL DESIGN, RFETS, GOLDEN, COLORADO

Quality Control Item	CQAP Section	Specification Section	QA/QC Item	Method	Requirements	QC Action	QA Action
			Placement Documentation	Visual inspection	Underlying cushion soil is clean, free of all foreign debris, not disturbed by traffic or other operations, and maintained in a satisfactory condition.	Continuous	Oversight of QC
			Placement Documentation	Visual inspection	Underlying materials is accepted by the SQAM and has not changed detrimentally.	Continuous	Oversight of QC
Seeding	4.11	02900	Submittal	List of proposed equipment	Submit prior to use.	Review	Review and Approve
			Submittal	Certified copy of seed analysis	Submit prior to use.	Review	Review and Approve
			Submittal	Seed bag tickets	Submit prior to use.	Review	Review and Approve
			Submittal	Documentation of seed calibration	Submit prior to use.	Review	Review and Approve
			Topsoil Sieve Analysis	USDA	Report	Review	Review and Approve
			Topsoil Organic Content	USDA	Report	Review	Review and Approve
			Topsoil N,P,K	USDA	Report	Review	Review and Approve
			Surface Inspection	Visual inspection	Topsoil is free from hard lumps, plants, roots, gravel, cinders, and stones over 1-inch in any dimension.	Continuous	Oversight of QC
As-Built Surveys	4.12	01310	Top of regrade	See requirements in Specification 01310	Verify elevations required by design.	As required	As required, at the discretion of the CQAE.
			Top of subgrade		Verify elevations required by design.		
			Gas management system (trench alignments)		Verify trench locations required by design.		
As-Built Surveys Cont.	4.12	01310	Geosynthetics panel layout	See requirements in Specification 01310	Obtain as-built survey of all geosynthetic panel layouts.	As required	As required, at the discretion of the CQAE.
			Anchor trench alignment		Verify location and slope required by design.		
			Top of 10-inch cushion layer		Verify elevations required by design.		
			Top of rock layer		Verify elevations required by design.		
			Top of final surface		Verify elevations required by design.		
			Perimeter drainage channel (slope and width)		Verify slope and width of channel required by design		
			Diversion berm toe of slope		Verify slope required by design.		
			Seep treatment system layout		Verify location and elevations required by design.		
			Final project completion site topographic map		Verify compliance with design.		

Notes:

Seed Mixtures for use in 3 Seed Driller Boxes; Revision 1

March 10, 2005

Mixture 1 (for Use in the Warm Season Seeder Box) aka "Fluffy Seed Box Mix"

Fluffy/ Round	Species	Common Name – Variety	Sd / sq ft*	% PLS[t]	Lb/ac	Role
F	Andropogon gerardii	Big bluestem – Kaw Page 1, Seed 1	4	10.5	1.4	Deep-rooted, warm-season; accessing deep moisture when shallow moisture is deficient
F	Bouteloua curtipendula	Sideoats grama – Vaughn Page 2, Seed 2	2	5.3	0.7	Moderately deep-rooted, warm-season; establishes well on restoration sites
F	Chondrosum gracile	Blue grama – Bad River Page 2, Seed 3	4	10.5	0.2	Ditto except blue grama is a wide-spreading bunchgrass
F	Sorghastrum nutans	Yellow Indiangrass – Holt Page 2, Seed 4	2	5.3	0.5	Deep-rooted, warm-season; accessing deep moisture when shallow moisture is deficient
	Total		12***	31.6	2.8***	

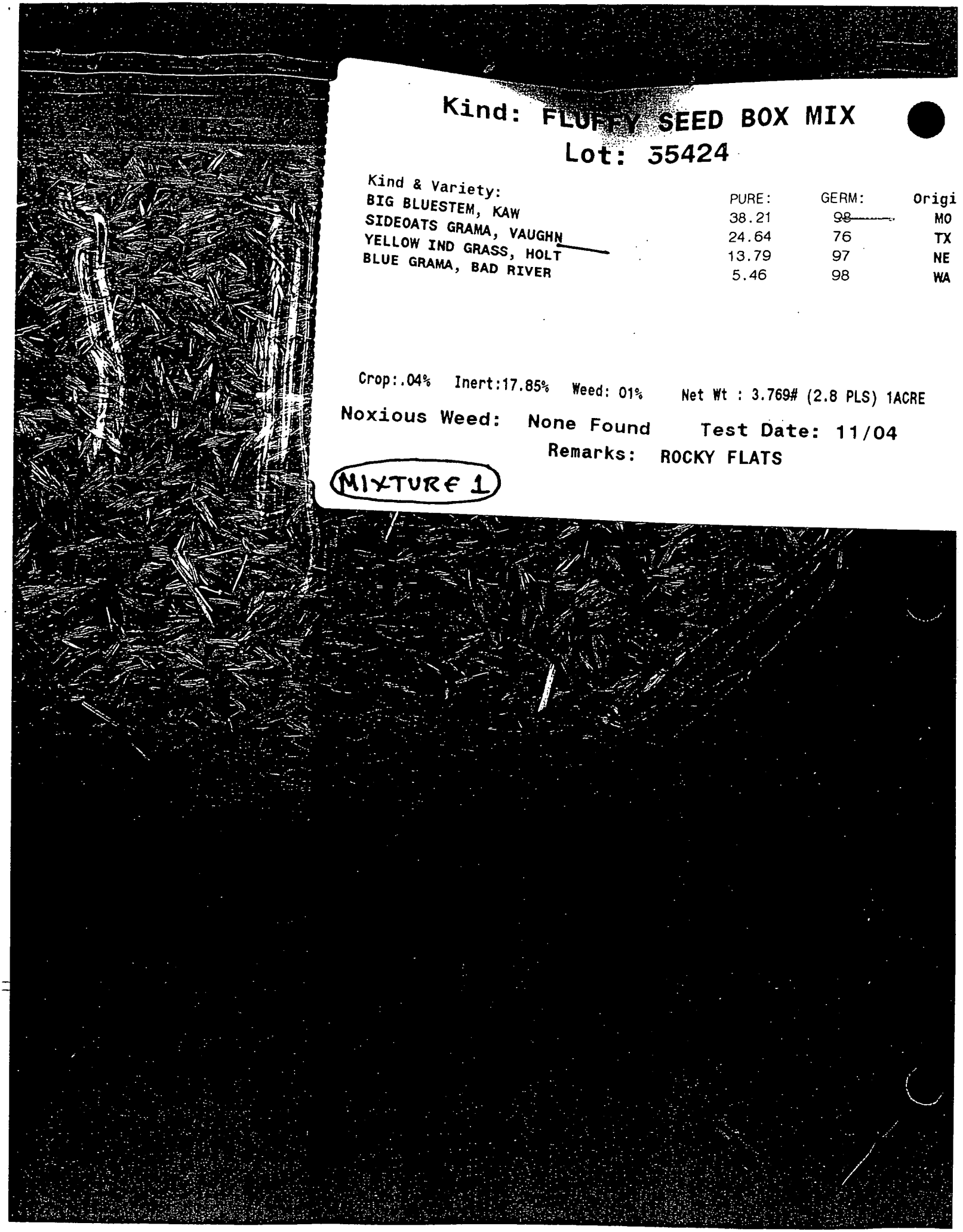
Mixture 2 (for Use in the Cool Season Seeder Box) aka "Hillside Slope Mix"

R	Buchloe dactyloides	Buffalograss – Cody Page 1, Seed 1 Page 2, Seed 1	3	7.9	2.3	Warm-season turfgrass of short stature that can be expected to provide important ground cover when drought restricts cover of other species
R	Buchloe dactyloides	Buffalograss – Native** Page 5, Seed 2	1	2.6	0.8	Ditto
R	Elymus lanceolatus var. psammophilus	Streambank wheatgrass - Sodar Page 2, Seed 3; Page 4, Seed 3	5	13.2	1.4	Native cool-season turfgrass that can be expected to dependably establish and provide important erosion control
R	Elymus lanceolatus var. lanceolatus	Thickspike wheatgrass-Critana Page 2, Seed 4; Page 3, Seed 4	5	13.2	1.4	Ditto
R	Elymus trachycaulus	Slender wheatgrass – San Luis Page 3, Seed 5; Page 4, Seed 5	3	7.9	0.8	Native bunchgrass of moderate to tall stature that establishes vigorously, providing early cover; can be expected to fade as slower-growing natives progress after the first few years
R	Pascopyrum smithii	Western wheatgrass – Arriba Page 3, Seed 6; Page 4, Seed 6	3	7.9	01.2	Native cool-season turfgrass that can be expected to dependably establish and provide important erosion control
R	Stipa viridula Page 6, Seed 7	Green needlegrass – LoDorm	2	5.3	0.5	Native cool-season bunchgrass that establishes dependably
	Total		28***	57.9	9.3***	

Mixture 3 (for Use in the Legume Seeder Box) aka "Small Seed Box Mix"

R	Koeleria pyrimidata	Prairie Junegrass – Native** Page 1, Seed 1	1	2.6	0.2	Native bunchgrass of the plains, slow to establish but then durable.
R	Poa canbyi (P. secunda)	Canby bluegrass – Canbar Page 1, Seed 2	1	2.6	0.5	Native bunchgrass of the plains, slow to establish but then durable.
R	Sporobolus cryptandrus	Sand dropseed - Native Page 1, Seed 3	2	5.3	0.01	Native warm-season bunchgrass that establishes well on sites with coarser soil texture. Elective.
	Total		4***	10.5	0.71***	

*Seeds per square foot for drill seeding
** Native = source in central Great Plains
*** 38 seeds per square foot, when drilled with a drill with 8-inch furrow spacing results in an average of two seeds per lineal inch of drill furrow.
[t] PLS = pure live seed



Kind: FLUFFY SEED BOX MIX

Lot: 55424

Kind & Variety:	PURE:	GERM:	Origi
BIG BLUESTEM, KAW	38.21	~~98~~	MO
SIDEOATS GRAMA, VAUGHN	24.64	76	TX
YELLOW IND GRASS, HOLT	13.79	97	NE
BLUE GRAMA, BAD RIVER	5.46	98	WA

Crop:.04% Inert:17.85% Weed: 01% Net Wt : 3.769# (2.8 PLS) 1ACRE

Noxious Weed: None Found Test Date: 11/04

Remarks: ROCKY FLATS

MIXTURE 1

KIND: BIG BLUESTEM
VARIETY: KAW
LOT: 1605

Box 1
SEED 1

Pure: 91.79%
Crop: .13%
Inert: 8.06%
Weeds .02%

Germ & Hard:
Germ: 98%
Net Wt.: 50#
Tested: 12/04
Origin: MO

Noxious Weeds: NONE FOUND

Arkansas Valley Seed Solutions
4625 Colorado Blvd.
Denver, CO 80216

KIND: BIG BLUESTEM
Variety: KAW
LOT: 1605

Box 1
SEED 1

Pure: 72.67%
Crop: .00%
Inert: 27.33 %
Weeds .00%

Germ & Hard:
Germination:98%
Hard/Dormant:
Net Wt.:50#
Tested: 12/04
Origin: MO

Noxious Weeds: NONE FOUND

Arkansas Valley Seed Solutions
4625 Colorado Blvd.
Denver, CO 80216

MIXTURE 1

Kind: INDIANGRASS
Variety: HOLT
Lot: G3-817

SEED 4

Box1

Pure: 92.65%
Crop: .00%
Inert: 7.35%
Weeds: .00%

Germ & Hard: 97%
Germination: 97%
Hard/Dormant:0%
Net Wt.: 50#
Tested: 11/04
Origin: NE.

Noxious Weeds: NONE FOUND

Arkansas Valley Seed Solutions
4625 Colorado Blvd.
Denver, CO 80216

KIND: SIDEOATS GRAMA
VARIETY: VAUGHN
LOT: 14284

SEED 2

Box1

Pure: 91.79%
Crop: .13%
Iner 8.06%
Weeds .02%

Germ & Hard: 76%
Net Wt.: 7.25#
Tested: 11/04
Origin: TX

Noxious Weeds: NONE FOUND

Arkansas Valley Seed Solutions
4625 Colorado Blvd.
Denver, CO 80216

Kind: MA Variety: BAD RIVER
Lot No.: 022-528-30H

SEED 3

Box1

Pure: 95.90%
Crop: .05%
Inert : 3.91%
Weeds: .14%

Germ & Hard:
Germination: 98%
Hard/Dormant:
Net Wt.: 50%
Tested: 12/04
Origin: WA

Noxious Weeds: None

Arkansas Valley Seed Solutions
4625 Colorado Blvd.
Denver, CO 80216

MIXTURE 1

PAGE 2

Kind: HILLSIDE SLOPE MIX
Lot: 56211

Kind & Variety:	PURE:	GERM:	Origin:
BUFFALO GRASS, TEXOKA	27.17	[illegible]	TX
WESTERN W/G, ARRIBA	22.42	94	WY
SLENDER W/G, SAN LUIS	14.47	95	WY
SIDEOATS GRAMA, VAUGHN	9.90	76	TX
GRN NEEDLE, LODORM	6.94	88	WA
BLUE GRAMA, HACHITA	4.20	89	TX
THICKSPIKE W/G, CRITANA	4.14	89	WA

Crop:.24% Inert:10.38% Weed:.14%

Noxious Weed: None Found

Net Wt : 20# (15.90PLS) 1 ACRE

Test Date: 10/04

Remarks: ROCKY FLATS

MIXTURE 2

MIXTURE 2 PAGE 1

Kind: BUFFALO GRASS Variety: CODY Box 2

Lot No.: 13961 SEED 1

Pure: 98.00%	Germ & Hard:
Crop: .10%	Germination: 90%
Inert: 1.80%	Hard/Dormant:
Weeds: .10%	Net Wt.: 50#
	Tested: 10/04
	Origin: OK

Noxious Weeds: None

Arkansas Valley Seed Solutions
4625 Colorado Blvd.
Denver, CO 80216

Kind: BUFFALO GRASS Variety: CODY Box 2

Lot No.: 13961 SEED 1

Pure: 98.00%	Germ & Hard:
Crop: .10%	Germination: 90%
Inert: 1.80%	Hard/Dormant:
Weeds: .10%	Net Wt.: 50#
	Tested: 10/04
	Origin: OK

Noxious Weeds: None

Arkansas Valley Seed Solutions
4625 Colorado Blvd.
Denver, CO 80216

Kind: BUFFALO GRASS Variety: CODY Box 2

Lot No.: 13961 SEED 1

Pure: 98.00%
Crop: .10%
Inert: 1.80%
Weeds: .10%

Germ & Hard:
Germination: 90%
Hard/Dormant:
Net Wt.: 50#
Tested: 10/04
Origin: OK

Noxious Weeds: None

Arkansas Valley Seed Solutions
4625 Colorado Blvd.
Denver, CO 80216

Kind: THICKSPIKE WHEATGRASS Variety: CRITANA Box 2

Lot No.: 559-126-10A SEED 4

Pure: 86.16%
Crop: 3.15%
Inert: 10.19%
Weeds: .50%

Germ & Hard:
Germination: 89%
Hard/Dormant:
Net Wt.: 50#
Tested: 11/04
Origin: WA

Noxious Weeds: None

Arkansas Valley Seed Solutions
4625 Colorado Blvd.
Denver, CO 80216

Kind: STREAMBANK WHEATGRASS Box 2

Variety: SODAR SEED 3

Lot: 616-122-11A

Pure: 96.96%
Crop: .42%
Inert: 2.62%
Weeds: .00%

Germ & Hard: 92%
Germination: 92%
Hard/Dormant: 0%
Net Wt.: 50#
Tested: 11-04
Origin: WA.

Noxious Weeds: NONE FOUND

Arkansas Valley Seed Solutions
4625 Colorado Blvd.
Denver, CO 80216

Kind: THICKSPIKE WHEATGRASS Variety: CRITANA HS

Lot No.: 559-126-10A SEED 4

Pure:	86.16%	Germ & Hard:	
Crop:	3.15%	Germination:	89%
Inert:	10.19%	Hard/Dormant:	
Weeds:	.50%	Net Wt.:	50#
		Tested:	11/04
		Origin:	WA

Noxious Weeds: None

Arkansas Valley Seed Solutions
4625 Colorado Blvd.
Denver, CO 80216

KIND: SLENDER WHEATGRASS SEED 5 HS
VARIETY: SAN LUIS Box 2
LOT: BG3061-4

Pure:	99.05%	Germ & Hard:	
Crop:	.00%	Germ:	95%
Inert:	.95%	Net Wt.:	50#
Weeds	.00%	Tested:	12/04
		Origin:	WY

Noxious Weeds: NONE FOUND

Arkansas Valley Seed Solutions
4625 Colorado Blvd.
Denver, CO 80216

KIND: WESTERN WHEATGRASS HS
Variety: ARRIBA SEED 6 Box 2
LOT: BG3064-4

Pure:	96.29%	Germ & Hard	
Crop:	.00%	Germination:	94%
Inert:	3.71%	Hard/Dormant:	
Weeds	.00%	Net Wt.:	50#
		Tested:	10/04
		Origin:	MT

Noxious Weeds: NONE FOUND

Arkansas Valley Seed Solutions
4625 Colorado Blvd.
Denver, CO 80216

MIXTURE 2

Kind: STREAMBANK WHEATGRASS
Variety: SODAR
Lot: 616-122-11A
Pure: 96.96%
Crop: .42%
Inert: 2.62%
Weeds: .00%

SEED 3

Germ & Hard: 92%
Germination: 92%
Hard/Dormant: 0%
Net Wt.: 50#
Tested: 11-04
Origin: WA.

Noxious Weeds: NONE FOUND

Arkansas Valley Seed Solutions
4625 Colorado Blvd.
Denver, CO 80216

KIND: WESTERN WHEATGRASS
Variety: ARRIBA
LOT: BG3064-4

SEED 6

Pure: 96.29%
Crop: .00%
Inert: 3.71%
Weeds .00%

Germ & Hard
Germination: 94%
Hard/Dormant:
Net Wt.: 50#
Tested: 10/04
Origin: MT

Noxious Weeds: NONE FOUND

Arkansas Valley Seed Solutions
4625 Colorado Blvd.
Denver, CO 80216

KIND: SLENDER WHEATGRASS
VARIETY: SAN LUIS
LOT: BG3061-4

SEED 5

Pure: 99.05%
Crop: .00%
Inert: .95%
Weeds .00%

Germ & Hard:
Germ: 95%
Net Wt.: 50#
Tested: 12/04
Origin: WY

Noxious Weeds: NONE FOUND

Arkansas Valley Seed Solutions
4625 Colorado Blvd.
Denver, CO 80216

SEED 2

KIND: BUFFALO GRASS Hillside
Variety: VNS aka "Native"
LOT: 13742T

Pure: 95.68%
Crop: .00%
Inert: 4.32%
Weeds .00%

Germ & Hard:
Germination:91%
Hard/Dormant:
Net Wt.:50#
Tested: 12/04
Origin: MT

Noxious Weeds: NONE FOUND

Arkansas Valley Seed Solutions
4625 Colorado Blvd.
Denver. CO 80216

SEED 7

Lot Number: 528-535-21A Net Wt: 50Lb Bag #3
Control Lot #: 528-535-21A

Species	Purity	Germ	Origin	Test
Needlegrass, Green	97.46	88.00		11/03

Box 2

Crop: 0.00%
Weed: 0.45%
Inert: 2.09%
Noxious: NONE FOUND

Arkansas Valley Seeds
12th & Sante Fe Tracks
Rockyford, CO 80167

AMS 730

MIXTURE 3

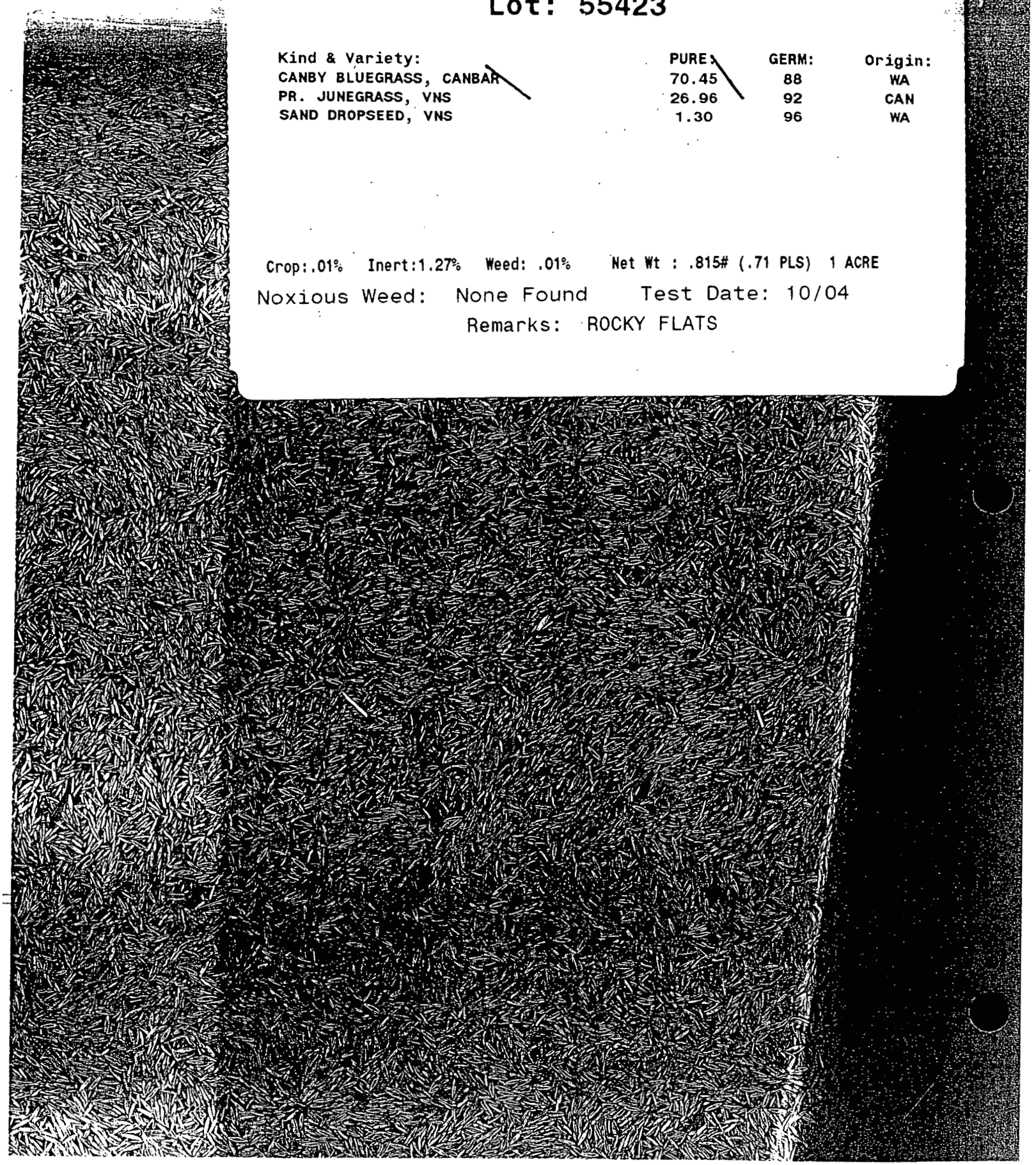
Kind: SMALL SEED BOX MIX
Lot: 55423

Kind & Variety:	PURE:	GERM:	Origin:
CANBY BLUEGRASS, CANBAR	70.45	88	WA
PR. JUNEGRASS, VNS	26.96	92	CAN
SAND DROPSEED, VNS	1.30	96	WA

Crop:.01% Inert:1.27% Weed: .01% Net Wt : .815# (.71 PLS) 1 ACRE

Noxious Weed: None Found Test Date: 10/04

Remarks: ROCKY FLATS



MIXTURE 3 PAGE 1

Kind: CANBY BLUEGRASS Variety: CANBAR

Lot No.: LHS-8-5-3R

Box 3

SEED 2

Pure:	99.64%	Germ & Hard:	
Crop:	.00%	Germination:	88
Inert:	.36%	Hard/Dormant:	
Weeds:	.00%	Net Wt.:	50#
		Tested:	10/04
		Origin:	WA

Noxious Weeds: None

Arkansas Valley Seed Solutions
4625 Colorado Blvd.
Denver, CO 80216

Box 3

SEED 3

KIND: SAND DROPSEED
Variety: VNS
LOT: 099-524-20A

Pure:	99.05%
Crop:	.00%
Inert:	.46%
Weeds	.49%

Noxious Weeds: NONE FOUND
Arkansas Valley Seed Solutions
4625 Colorado Blvd.
Denver, CO 80216

Box 3

SEED 1

Kind: PRAIRIE JUNEGRASS
Lot: 4-0044

Pure:	91.90%
Crop:	.00%
Inert:	8.10%
Weeds:	.00%

Germ & Hard:	89%
Germination:	89%
Hard/Dormant:	0%
Net Wt.:	25#
Tested:	11/04
Origin:	CAN.

Noxious Weeds: NONE
Arkansas Valley Seed Solutions
4625 Colorado Blvd.
Denver. CO 80216

Project No. GR201400	**Specification No.** SPEC-02900-0952
Submittal No. GR201400-8 – Documentation of Seed Calibration	
Submitted By Rocky Flats Closure Site Services (RFCSS)	
Requirements None	

Quality Control Item	CQAP Section	Specification Section	QA/QC Item	Method	Requirements	QA Action	QC Action
Seeding	4.11	02900	Submittal	Documentation of seed calibration	Submit prior to use	Review	Review and Approve

1. *Table 4.2, Earthwork QA/QC Summary, 100% Design – Present Landfill Design, RFETS, Golden, Colorado* is attached. Quality Control Item Seeding requires submittal of documentation of seed bag tickets.
2. The Calibration Record Sheet is attached.

TABLE 4.2

EARTHWORK QA/QC SUMMARY
100% DESIGN - PRESENT LANDFILL DESIGN, RFETS, GOLDEN, COLORADO

Quality Control Item	CQAP Section	Specification Section	QA/QC Item	Method	Requirements	QC Action	QA Action
			Placement Documentation	Visual inspection	Underlying cushion soil is clean, free of all foreign debris, not disturbed by traffic or other operations, and maintained in a satisfactory condition.	Continuous	Oversight of QC
			Placement Documentation	Visual inspection	Underlying materials is accepted by the SQAM and has not changed detrimentally.	Continuous	Oversight of QC
Seeding	4.11	02900	Submittal	List of proposed equipment	Submit prior to use.	Review	Review and Approve
			Submittal	Certified copy of seed analysis	Submit prior to use.	Review	Review and Approve
			Submittal	Seed bag tickets	Submit prior to use.	Review	Review and Approve
			Submittal	Documentation of seed calibration	Submit prior to use.	Review	Review and Approve
			Topsoil Sieve Analysis	USDA	Report	Review	Review and Approve
			Topsoil Organic Content	USDA	Report	Review	Review and Approve
			Topsoil N,P,K	USDA	Report	Review	Review and Approve
			Surface Inspection	Visual inspection	Topsoil is free from hard lumps, plants, roots, gravel, cinders, and stones over 1-inch in any dimension.	Continuous	Oversight of QC
As-Built Surveys	4.12	01310	Top of regrade	See requirements in Specification 01310	Verify elevations required by design.	As required	As required, at the discretion of the CQAE.
			Top of subgrade		Verify elevations required by design.		
			Gas management system (trench alignments)		Verify trench locations required by design.		
As-Built Surveys Cont.	4.12	01310	Geosynthetics panel layout	See requirements in Specification 01310	Obtain as-built survey of all geosynthetic panel layouts.	As required	As required, at the discretion of the CQAE.
			Anchor trench alignment		Verify location and slope required by design.		
			Top of 10-inch cushion layer		Verify elevations required by design.		
			Top of rock layer		Verify elevations required by design.		
			Top of final surface		Verify elevations required by design.		
			Perimeter drainage channel (slope and width)		Verify slope and width of channel required by design		
			Diversion berm toe of slope		Verify slope required by design.		
			Seep treatment system layout		Verify location and elevations required by design.		
			Final project completion site topographic map		Verify compliance with design.		

Notes:

CALIBRATION RECORD SHEET

BULK SEED APPLICATION RATE TOLERANCE:

	MINIMUM LBS/AC	MAXIMUM LBS/AC
SMALL SEED BOX	0.4	0.44 - 1.09 LBS/AC MIN
COOL SEED BOX	5.4	5.94
FLUFFY SEED BOX	1.26	1.39

DATE	SEED BOX	lbs/acre RATE	VERIFIED BY NAME	SIGNATURE
3/28/05	Small Seed Box	1.09	Frank Huffman	
3/28/05	Cool Seed Box	8.87	Frank Huffman	
3/28/05	fluffy seed Box	6.81	Frank Huffman	

.447

Σ = 16.77 lbs./ac

TARGET CALIBRATION RATES for 50% PASSES

SEEDING SPECIFICATIONS SHEET FOR DRILLING

SPECIES	COMMON NAME-VARIETY	PLS lbs/ac	PURITY	GERMINATION	BULK lbs/ac NEEDED	ACRES TO BE SEEDED	TOTAL BULK lbs NEEDED
FLUFFY SEED BOX							
Andropogon gerardii	Big bluestem – Kaw	1.4	72.67	98%	1.97		
Bouteloua curtipendula	Sideoats grama – Vaughn	0.7	91.79	76%	1		
Chondrosum gracile	Blue grama – Bad River	0.2	95.9	98%	0.21		
Sorghastrum nutans	Yellow Indiangrass – Holt	0.5	92.65	97%	0.55		
	TOTALS	2.8			3.73		
					*** 1.87		
COOL SEED BOX							
Buchloe dactyloides	Buffalograss – Cody	2.3	98	90%	2.6		
Buchloe dactyloides	Buffalograss – Native	0.8	95.68	91%	0.91		
Elymus lanceolatus var. psammophilus	Streambank wheatgrass - Sodar	1.4	96.96	95%	1.51		
Elymus lanceolatus var. lanceolatus	Thickspike wheatgrass-Critana	1.4	86.16	89%	1.82		
Elymus trachycaulus	Slender wheatgrass – San Luis	0.8	99.05	95%	0.85		
Pascopyrum smithii	Western wheatgrass – Arriba	1.2	96.29	94%	1.32		
Stipa viridula	Green needlegrass – LoDorm	0.5	97.46	88%	0.58		
	TOTALS	8.4			9.59		
					*** 4.8		
SMALL SEED BOX							
Koeleria pyrimidata	Prairie Junegrass – Native	0.2	96.31	92%	0.22		
Poa canbyi (P. secunda)	Canby bluegrass – Canbar	0.5	99.64	88%	0.57		
Sporobolus cryptandrus	Sand dropseed - Native	0.01	99.05	96%	0.01		
	TOTALS	0.71			0.8		
					*** .4		

ACTUAL RATE ON 03/28/05 : 6.81

ACTUAL RATE ON 03/28/05 : 8.87

ACTUAL RATE ON 03/28/05 : 1.09

PLS = Pure Live Seed
%PLS = %Germination x %Purity (Data Taken From Seed Packaging Labels)
(PLS lbs/ac) divided by (Germination x Purity) = Bulk Seed Per Acre

*** DRILL TO BE CALIBRATED TO 50% OF BULK POUNDS NEEDED FOR DOUBLE/CROSS SEEDING

SUBMITTAL FROM ENVIROCON

MATERIAL DATA FOR EAST FACE STORMWATER CHANNELS

TOOL & ANCHOR SUPPLY, INC.

1962 W. 12TH AVENUE
DENVER, CO. 80204
(303) 595-8488

TOOL & ANCHOR
Industrial • Construction
DENVER SUPPLY GREELEY

* * SALES ORDER * *

DO NOT PAY
INVOICE WILL FOLLOW

ORDER NUMBER: 0261416
ORDER DATE: 7/28/05
PAGE: 1 of 1

SOLD TO:

KAISER-HILL COMPANY L.L.C.
ATTN: ACCTS PAYABLE BLDG 850
10808 HIGHWAY 93 UNIT B
GOLDEN, CO 80403-8200

SHIP TO:

(KH021227) KAISER-HILL LLC
R.F.E.T.S. FOR: USDOE
ATTN: TOM LINDSAY / C2 DAM
GOLDEN, CO 80402-0464

CUSTOMER P.O.	SHIP VIA					
ACO51303	AAA OUR TRUCK					**VISA/MASTER CARD**
ITEM NUMBER	UNIT	ORDERED	SHIPPED	BACK ORDER	PRICE	AMOUNT
*	EACH	1.00	1.00 ✓	0.000	512.0000	512.00
NW80 GEOTEXTILE 8 OZ ROLL						

1 unit

FILLED BY: _____

CHECKED BY: _____ RECEIVED BY: _____

Net Order:	512.00
Freight:	0.00
Sales Tax:	0.00
Order Total:	**512.00**

CUST COPY

Albert Frei & Sons, Inc.

8/2/2005
6:52:26AM

P.O. Box 700, Henderson, CO 80640
(303) 289-3316

659489

Location: **6** **Pit 6**
Customer: K065 Kaiser - Hill Company, L
Order: 00005957
ACO 051290
Credit Card Payment
P.O. : aco051290
Product : 520 VL Riprap (Avg 6")

Gross	Tare	Net
82180	35100 *	47080 *

* Predetermined Tare

23.54 Ton

Price		7.50	176.55
Freight		4.75	111.82
Tax	PIT6		6.89
Total			295.26
Today:	23.54	Loads:	1

Vehicle : 830
Received: _____ Weighmaster: John

1. Customer has the option to determine the means of transportation to destination.
2. Customer is responsible for all damages if delivery is beyond curb line.
3. All sales are F.O.B. Albert Frei & Sons Pits.

Albert Frei & Sons, Inc.

8/2/2005
6:54:48AM

P.O. Box 700, Henderson, CO 80640
(303) 289-3316

659490

Location: **6** **Pit 6**
Customer: K065 Kaiser - Hill Company, L
Order : 00005957
ACO 051290
Credit Card Payment
P.O. : aco051290
Product : 520 VL Riprap (Avg 6")

Gross	Tare	Net
80660	31620 *	49040 *

* Predetermined Tare

24.52 Ton

Price		7.50	183.90
Freight		4.75	116.47
Tax	PIT6		7.17
Total			307.54
Today:	48.06	Loads:	2

Vehicle : 829
Received: _____ Weighmaster: John

1. Customer has the option to determine the means of transportation to destination.
2. Customer is responsible for all damages if delivery is beyond curb line.
3. All sales are F.O.B. Albert Frei & Sons Pits.

Albert Frei & Sons, Inc.

P.O. Box 700, Henderson, CO 80640
(303) 289-3316

8/2/2005
6:59:35AM

659494

Location: **6** **Pit 6**
Customer: K065 Kaiser - Hill Company, L
Order: 00005957
ACO 051290
Credit Card Payment
P.O. : aco051290
Product : 520 VL Riprap (Avg 6")

Gross	Tare	Net
83000	33860 *	49140 *

* Predetermined Tare

24.57 Ton

Price		7.50	184.28
Freight		4.75	116.71
Tax	PIT6		7.19
Total			308.18
Today:	72.63	Loads:	3

Vehicle : TC22
Received: _____ Weighmaster: John

1. Customer has the option to determine the means of transportation to destination.
2. Customer is responsible for all damages if delivery is beyond curb line.
3. All sales are F.O.B. Albert Frei & Sons Pits.

Albert Frei & Sons, Inc.

P.O. Box 700, Henderson, CO 80640
(303) 289-3316

8/2/2005
9:23:52AM

659563

Location: **6** **Pit 6**
Customer: K065 Kaiser - Hill Company, L
Order : 00005957
ACO 051290
Credit Card Payment
P.O. : aco051290
Product : 520 VL Riprap (Avg 6")

Gross	Tare	Net
84500	35100 *	49400 *

* Predetermined Tare

24.70 Ton

Price		7.50	185.25
Freight		4.75	117.33
Tax	PIT6		7.22
Total			309.80
Today:	97.33	Loads:	4

Vehicle : 830
Received: _____ Weighmaster: John

1. Customer has the option to determine the means of transportation to destination.
2. Customer is responsible for all damages if delivery is beyond curb line.
3. All sales are F.O.B. Albert Frei & Sons Pits.

Albert Frei & Sons, Inc.

8/2/2005
9:33:05AM

P.O. Box 700, Henderson, CO 80640
(303) 289-3316

659570

Location: **6** **Pit 6**
Customer: K065 Kaiser - Hill Company, L
Order : 00005957
ACO 051290
Credit Card Payment
P.O. : aco051290
Product : 520 VL Riprap (Avg 6")

Gross	Tare	Net
84040	33860 *	50180 *

* Predetermined Tare

25.09 Ton

Price		7.50	188.18
Freight		4.75	119.18
Tax	PIT6		7.34
Total			314.70
Today:	122.42	Loads:	5

Vehicle : TC22
Received: _____ Weighmaster: John

1. Customer has the option to determine the means of transportation to destination.
2. Customer is responsible for all damages if delivery is beyond curb line.
3. All sales are F.O.B. Albert Frei & Sons Pits.

Albert Frei & Sons, Inc.

8/2/2005
9:37:49AM

P.O. Box 700, Henderson, CO 80640
(303)-289-3316

659573

Location: **6** **Pit 6**
Customer: K065 Kaiser - Hill Company, L
Order : 00005957
ACO 051290
Credit Card Payment
P.O. : aco051290
Product : 520 VL Riprap (Avg 6")

Gross	Tare	Net
86700	31620 *	55080 *

* Predetermined Tare

27.54 Ton

Price		7.50	206.55
Freight		4.75	130.82
Tax	PIT6		8.06
Total			345.43
Today:	149.96	Loads:	6

Vehicle : 829
Received: _____ Weighmaster: John

1. Customer has the option to determine the means of transportation to destination.
2. Customer is responsible for all damages if delivery is beyond curb line.
3. All sales are F.O.B. Albert Frei & Sons Pits.

Albert Frei & Sons, Inc.

P.O. Box 700, Henderson, CO 80640
(303) 289-3316

8/2/2005
11:24:37AM

659628

Location: **6** **Pit 6**
Customer: K065 Kaiser - Hill Company, L
Order : 00005957
ACO 051290
Credit Card Payment
P.O. : aco051290
Product : 520 VL Riprap (Avg 6")

Gross	Tare	Net
84780	35100 *	49680 *

* Predetermined Tare

24.84 Ton

Price		7.50	186.30
Freight		4.75	117.99
Tax	PIT6		7.27
Total			311.56
Today:	174.80	Loads:	7

Vehicle : 830
Received: _____ Weighmaster: John

1. Customer has the option to determine the means of transportation to destination.
2. Customer is responsible for all damages if delivery is beyond curb line.
3. All sales are F.O.B. Albert Frei & Sons Pits.

Albert Frei & Sons, Inc.

P.O. Box 700, Henderson, CO 80640
(303) 289-3316

8/2/2005
11:41:24AM

659636

Location: **6** **Pit 6**
Customer: K065 Kaiser - Hill Company, L
Order : 00005957
ACO 051290
Credit Card Payment
P.O. : aco051290
Product : 520 VL Riprap (Avg 6")

Gross	Tare	Net
82200	33860 *	48340 *

* Predetermined Tare

24.17 Ton

Price		7.50	181.28
Freight		4.75	114.81
Tax	PIT6		7.07
Total			303.16
Today:	198.97	Loads:	8

Vehicle : TC22
Received: _____ Weighmaster: John

1. Customer has the option to determine the means of transportation to destination.
2. Customer is responsible for all damages if delivery is beyond curb line.
3. All sales are F.O.B. Albert Frei & Sons Pits.

Albert Frei & Sons, Inc.

P.O. Box 700, Henderson, CO 80640
(303) 289-3316

8/2/2005
11:43:41AM

659639

Location: **6** **Pit 6**
Customer: K065 Kaiser - Hill Company, L
Order: 00005957
ACO 051290
Credit Card Payment
P.O. : aco051290
Product : 410 Class A Filter (1 1/2")

Gross	Tare	Net
81120	31620 *	49500 *

* Manual Weight

24.75 Ton

Price		7.50	185.63
Freight		4.50	111.38
Tax	PIT6		7.24
Total			304.25
Today:	24.75	Loads:	1

Vehicle : 829
Received: _____ Weighmaster: John

1. Customer has the option to determine the means of transportation to destination.
2. Customer is responsible for all damages if delivery is beyond curb line.
3. All sales are F.O.B. Albert Frei & Sons Pits.

Albert Frei & Sons, Inc.

P.O. Box 700, Henderson, CO 80640
(303) 289-3316

8/2/2005
1:40:13PM

659698

Location: **6** **Pit 6**
Customer: K065 Kaiser - Hill Company, L
Order : 00005957
ACO 051290
Credit Card Payment
P.O. : aco051290
Product : 410 Class A Filter (1 1/2")

Gross	Tare	Net
86860	35100 *	51760 *

* Predetermined Tare

25.88 Ton

Price		7.50	194.10
Freight		4.50	116.46
Tax	PIT6		7.57
Total			318.13
Today:	50.63	Loads:	2

Vehicle : 830
Received: _____ Weighmaster: John

1. Customer has the option to determine the means of transportation to destination.
2. Customer is responsible for all damages if delivery is beyond curb line.
3. All sales are F.O.B. Albert Frei & Sons Pits.

Albert Frei & Sons, Inc.

P.O. Box 700, Henderson, CO 80640
(303) 289-3316

8/2/2005
2:05:50PM

659710

Location: **6** **Pit 6**
Customer: K065 Kaiser - Hill Company, L
Order: 00005957
ACO 051290
Credit Card Payment
P.O. : aco051290
Product : 410 Class A Filter (1 1/2")

Gross	Tare	Net
78280	33860 *	44420 *

* Predetermined Tare

22.21 Ton

Price		7.50	166.5
Freight		4.50	99.9
Tax	PIT6		6.5
Total			273.0
Today:	72.84	Loads:	3

Vehicle : TC22

Received. _____ Weighmaster: John

1. Customer has the option to determine the means of transportation to destination.
2. Customer is responsible for all damages if delivery is beyond curb line.
3. All sales are F.O.B. Albert Frei & Sons Pits.

Albert Frei & Sons, Inc.

P.O. Box 700, Henderson, CO 80640
(303) 289-3316

8/2/2005
2:07:30PM

659711

Location: **6** **Pit 6**
Customer: K065 Kaiser - Hill Company, L
Order : 00005957
ACO 051290
Credit Card Payment
P.O. : aco051290
Product : 410 Class A Filter (1 1/2")

Gross	Tare	Net
82300	31620 *	50680 *

* Predetermined Tare

25.34 Ton

Price		7.50	190.0
Freight		4.50	114.0
Tax	PIT6		7.4
Total			311.4
Today:	98.18	Loads:	4

Vehicle : 829

Received: _____ Weighmaster: John

1. Customer has the option to determine the means of transportation to destination.
2. Customer is responsible for all damages if delivery is beyond curb line.
3. All sales are F.O.B. Albert Frei & Sons Pits.

APPENDIX D-3: LIST/SIGNOFF SHEETS FOR CONTRACTOR'S WORK CONTROL DOCUMENTS

PF Number: T0111821 – 10 Charge #: GR201100 Estimate: $10,000 Sequence Date: 07/22/2004

Bldg: 280 Location: 280

Notify: BEMSKI,MICHAEL L R519545 Phone: 4090 Pager: Pager

Job Description:
COLLECT SAMPLES OF THE RF ALLUVIAL SOIL IN THE PILE WEST FO THE PRESENT LANDFILL

requisites/Hazard Control Documents: (Check YES or NO for each line, attach any permits or indicate permit number per governing document)

	YES	NO	Permit No./ Comments
ldditional Guidance Attached?	☑	☐	
bestos Abatement Plan	☐	☒	
ryllium Work Form/Log (OS&IH Ch28)	☐	☒	
ld and Dark Certification	☐	☒	
nfined Space Entry Permit (OS&IH 21)	☐	☒	
ergized Work Permit (OS&IH CH 36)	☐	☒	
gineering Inputs Attached?	☐	☒	
vironmental Checklist	☐	☒	
cavation & Trenching Checklist (OS&IH 45)	☐	☒	
isting and Rigging Operations, Checklist S&IH Ch 12)	☐	☒	
Permit (MAN-029-FPPM)	☐	☒	
Required (OS&IH Ch 9)	☐	☒	
Radiological Work Permit Req'd f performing a breach , package uires Rad Protection review and roval)	☐	☑	
vated Work	☐	☒	
affold Permit (OS&IH Ch 40)	☐	☒	
il Disturbance Approval/Waiver Form S&IH Ch45)	☐	☑	
ate Permit(s)	☐	☒	
O Characterization (PRO-267-RSP-.05)	☐	☒	
aste Release Evaluation	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	

ldditional Prerequisites (If Any):

l Precautions/Limitations/Hold Points/Comments and/or Special Tools/Equipment:

CRAFT WORK PACKAGE

r Safety Review: (N/A if work is not on or does not affect a safety SSC or AB controls as defined in the TSR)

☐ **Yes** (Attach Categorical Exclusion, Prescreen, SES, or USQD) ☒ No 7/26/04 ☒ N/A

	Name	Signature	Date
Nuclear Safety:			

stem Engineer Review: (N/A if work does not involve an AB credited or AB Defense in Depth system)

	Name	Signature	Date
System Eng:			

ncurrence: (N/A if not required)

Name	Signature	Date

ncurrence: (N/A if not required)

Name	Signature	Date

oncurrence: (N/A if not required)

Name	Signature	Date

val and Authorization:

VCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls) and Authorization by Responsible Manager to perform work:

Authorization by Responsible Manager to perform work:

	Name	Signature	Date
RM:	K L WIEMELT	K L Wiemelt	7/26/04

Authorization by Operations/Facility Management to perform work:

	Name	Signature	Date
Operations/ Facility Management:	Robert W. Davis	Robert W. Davis	07/27/04

uality Work: (N/A if work does not have quality requirements)

1) Quality Parts:

2) System Description/Location:

3) Quality Inspection:

4) Retest:

CRAFT WORK PACKAGE

Work Performance:

Check which one performed:

Job Task Briefing Performed: ☒ Pre-Ev Briefing Performed (attach completed form): ☒

Record Work Performed: (N/A if recorded on attached instructions)

Volume of soil/pile was estimated to be 60,000 cu. yds. Ten locations were staked and sampled.

Claystone was found at several test pits. Scope of work was modified to dig more pits in area to determine limits of claystone.

All pits were backfilled.

MJC 7/27/04

PWT Requirements/Operational Check: Not Required RWD

☐ Operational Check Performed Satisfactory: - OR 07/27/04

☐ PWT Performed (record PWT performed and results)

Return to Service Actions, if required:

Feedback: (Attach Post-job Review Checklist, if used)

Completion Review:

Craft Hours: 4 hrs

Job Supervisor: Robert W. Davis (Name) | Robert W. Davis (Signature) | 07/27/04 (Date)

T 0111824-366

CRAFT WORK PACKAGE

WPF: RFETS Landfill Cap Mobilization, Rev 0	Bldg.: RFETS Landfill	Charge: N/A	Page 1 of 3

Originator Paul Kreitz Date: 8/6/04

This work package covers the mobilization phase of the RFETS Landfill Cap project. Mobilization includes all aspects of preparing the job site prior to beginning work on site prep and installation of the landfill cap.

Prerequisites/Hazard Control Documents: (Check YES or NO for each line, attach any permits or indicate permit # per governing document)

	YES	NO	Permit No. / Comments
Additional Guidance attached?	x	☐	
Asbestos Abatement Plan	☐	x	
Beryllium Work Form/Log (OS&IH Ch 28)	☐	x	
Cold and Dark Certification	☐	x	
Confined Space Entry Permit (OS&IH Ch 21)	☐	x	
Energized Work Permit (OS&IH Ch 36)	☐	x	
Engineering Inputs Attached?	x	☐	Fuel Storage Facility Drawing
Environmental Checklist	x	☐	
Excavation & Trenching Checklist (OS&IH Ch45)	x	☐	
Hoisting and Rigging Operations, Checklist (OS&IH Ch 12)	x	☐	
Hot Work Permit (MAN-029-FPPM)	☐	x	
LO/TO Required (OS&IH Ch 9)	x	☐	
Radiological Work Permit Required (If performing a breach, package requires Rad Protection review and approval.)	☐	x	
Scaffold Permit (OS&IH Ch 40)	☐	x	
Soil Disturbance Approval/Waiver Form (OS&IH Ch 45)	x	☐	
State Permit(s)	☐	x	
Surface Contaminated Object Characterization (PRO-267-RSP-09.05)	☐	x	
Waste Release Evaluation	☐	x	
	☐	☐	
	☐	☐	
	☐	☐	

Additional Prerequisites: (If Any)
Specified in Work Instructions

Additional Precautions/Limitations/Hold Points/Comments and/or Special Tools/Equipment:
Specified in Work Instructions

TO111824-366 FO112735

CRAFT WORK PACKAGE

Project Name: Present Landfill Accelerated Action Construction Mobilization, Rev. 02 KMH 9-8-04	Page 2 of 3

Nuclear Safety Review Required: N/A

☐ Yes (Attach Categorical Exclusion, Prescreen, SES, or USQD) ☐ NO x N/A

Nuclear Safety: N/A (Name / Signature / Date)

System Engineer Review: (N/A if work does not involve an AB credited or AB Defense in Depth system)

System Eng: ~~N/A~~ For Electrical — RB Hayduk — RB Hayduk — 8/11/04 (Name / Signature / Date)

Concurrence: (N/A if not required)

Ind. Hygiene & Safety: Doug Hilbert — — 8/10/04 (Name / Signature / Date)

Concurrence: (N/A if not required)

Radiological Safety: N/A (Name / Signature / Date)

Concurrence: (N/A if not required)

Environmental Compliance: Matt Francis — — 8.10.04 (Name / Signature / Date)

Approval and Authorization:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls) and Authorization by Responsible Manager to perform work:

Approval and Authorization by Responsible Manager to perform work:

RM: KL WIEMELT — — 8/11/04 (Name / Signature / Date)

Authorization by Operations/Facility Management to perform work:

Operations/ Facility Mgt: Robert W. Davis — Robert W. Davis — 8/11/04 (Name / Signature / Date)

Subcontractor Concurrence:

WCD Concurrence (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls) :

Concurrence by Stoller to perform work:

Project Manager: Paul Kreitz — — 8/11/04 (Name / Signature / Date)

Subcontractor Concurrence:

Construction Superintendent: Richard B Berry — — 8.11.04 (Name / Signature / Date)

T0111824-366

~~T0112735~~

Quality Work: (N/A if work does not have quality requirements)
1) Quality Parts: N/A
2) System description/location: N/A
3) Quality inspection: N/A
4) Retest: N/A

TO112735

CRAFT WORK PACKAGE

Project Name: Present Landfill Accelerated Action Construction Mobilization, Rev. 02 Final-04	Page 3 of 3

Work Performance:

Check which one performed:

Job Task Briefing Performed: ☐ Pre-Ev Briefing Performed (attach completed form): x

Record Work Performed: (N/A if recorded on attached instructions) N/A

PWT Requirements/Operational Check:

☐ Operational Check Performed Satisfactory - OR - N/A

☐ PWT Performed (record PWT performed and results): N/A

Return to Service Actions, if required: N/A

Feedback: (Attach Post-job Review Checklist, if used)

None

Completion Review:

Job Supervisor: Gary Hall 9/27/04

Name Signature Date

TO 111824-368

CRAFT WORK PACKAGE

WPF:	Charge No.: NA	Estimate: N/A	Sequence Date: 8/13/04
Bldg: NA	Location: Present Landfill		Page 1 of 3
Notify: Bob Davis/Mike Bemski	Phone: 7026/4090		

Originator Paul Kreitz/Stoller

Project Name: Present Landfill Accelerated Action Construction Project – Water Supply Station; Rev. 1

Project Description:

This work package describes the installation of the Water Supply Station that will be used to pump water from the designated Water Supply Pond for use on the Present Landfill Accelerated Action Construction project.

Prerequisites/Hazard Control Documents: (Check YES or NO for each line, attach any permits or indicate permit # per governing document)

	YES	NO	Permit No. / Comments
Additional Guidance attached?	x	☐	
Asbestos Abatement Plan	☐	x	
Beryllium Work Form/Log (OS&IH Ch 28)	☐	x	
Cold and Dark Certification	☐	x	
Confined Space Entry Permit (OS&IH Ch 21)	☐	x	
Energized Work Permit (OS&IH Ch 36)	☐	x	
Engineering Inputs Attached?	☐	x	
Environmental Checklist	☐	x	
Excavation & Trenching Checklist (OS&IH Ch45)	☐	x	
Hoisting and Rigging Operations, Checklist (OS&IH Ch 12)	☐	x	
Hot Work Permit (MAN-029-FPPM)	☐	x	
LO/TO Required (OS&IH Ch 9)	☐	x	
Radiological Work Permit Required (If performing a breach, package requires Rad Protection review and approval.)	☐	x	
Scaffold Permit (OS&IH Ch 40)	☐	x	
Soil Disturbance Approval/Waiver Form (OS&IH Ch 45)	☐	x	
State Permit(s)	☐	x	
Surface Contaminated Object Characterization (PRO-267-RSP-09.05)	☐	x	
Waste Release Evaluation	☐	x	
	☐	☐	
	☐	☐	
	☐	☐	

Additional Prerequisites: (If Any)
Specified in Work Instructions

Additional Precautions/Limitations/Hold Points/Comments and/or Special Tools/Equipment:
Specified in Work Instructions

1011827-368

CRAFT WORK PACKAGE

Project Name: Present Landfill Accelerated Action Construction Project – Water Supply Station; Rev. 1	Page 2 of 3

Nuclear Safety Review Required: N/A

☐ **Yes** (Attach Categorical Exclusion, Prescreen, SES, or USQD) ☐ **NO** x **N/A**

Nuclear Safety: N/A (Name) (Signature) (Date)

System Engineer Review: (N/A if work does not involve an AB credited or AB Defense in Depth system)

System ~~Eng.~~ OU IV: N/A (Name) (Signature) 8/16/04 (Date)

Concurrence: (N/A if not required)

Ind. Hygiene & Safety: D. Hickman (Name) (Signature) 8/16/04 (Date)

Concurrence: (N/A if not required)

Radiological Safety: N/A (Name) (Signature) (Date)

Concurrence: (N/A if not required)

Environmental Compliance: Matt Flowers (Name) (Signature) 8.16.04 (Date)

Concurrence: (N/A if not required)

RISS Traffic Committee: Jerry Cable (Name) (Signature) 8/16/04 (Date)

Approval and Authorization:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls) and Authorization by Responsible Manager to perform work:

Approval and Authorization by Responsible Manager to perform work:

RM: KAREN WIDMEIER (Name) (Signature) 8/16/04 (Date)

Authorization by Operations/Facility Management to perform work:

Operations/ Facility Mgt: (Name) (Signature) (Date)

Subcontractor Concurrence:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls):

Concurrence by Stoller to perform work:

Project Manager: Kevin Taylor for Paul Kearney (Name) (Signature) 8/16/04 (Date)

Subcontractor Concurrence:

Construction Superintendent: Bruce Berry (Name) (Signature) 8-18-04 (Date)

Quality Work: (N/A if work does not have quality requirements)

1) Quality Parts: N/A
2) System description/location: N/A
3) Quality inspection: N/A
4) Retest: N/A

TO111824-368

CRAFT WORK PACKAGE

Project Name: Present Landfill Accelerated Action Construction Project – Water Supply Station; Rev. 1	Page 3 of 3

Work Performance:
Check which one performed:
Job Task Briefing Performed: ☐ Pre-Ev Briefing Performed (attach completed form): x

Record Work Performed: (N/A if recorded on attached instructions) N/A

PWT Requirements/Operational Check:
☐ Operational Check Performed Satisfactory - OR -
☐ PWT Performed (record PWT performed and results): N/A

Return to Service Actions, if required: N/A

Feedback: (Attach Post-job Review Checklist, if used)

Completion Review:
Job Supervisor: Michael Benski Michael Benski 11/03/04
Name Signature Date

TO111824-367

CRAFT WORK PACKAGE

WPF:	Charge No.: NA	Estimate: N/A	Sequence Date: 8/12/04
Bldg: NA	Location: Present Landfill		Page 1 of 3
Notify: Bob Davis/Mike Bemski	Phone: 7026/4090		

Originator Paul Kreitz/Stoller Date: 8/12/04

Project Name: Present Landfill Accelerated Action Construction Project; Rev. 1

Project Description:

This work package describes the steps necessary to install the road that will be used to transport aggregate between the Centennial Pit and the Present Landfill at RFETS under the Statement of Work for the Construction of the Present Landfill Accelerated Action at the Rocky Flats Environmental Technology Site (RFETS), No. KH-020577 (SOW). This project includes upgrading existing roadways to accommodate heavy equipment and truck traffic, installing a gate on the haul road in the existing security fence between Centennial and RFETS, and installing applicable traffic control signs.

Prerequisites/Hazard Control Documents: (Check **YES** or **NO** for each line, attach any permits or indicate permit # per governing document)

	YES	NO	Permit No. / Comments
Additional Guidance attached?	x	☐	
Asbestos Abatement Plan	☐	x	
Beryllium Work Form/Log (OS&IH Ch 28)	☐	x	
Cold and Dark Certification	☐	x	
Confined Space Entry Permit (OS&IH Ch 21)	☐	x	
Energized Work Permit (OS&IH Ch 36)	☐	x	
Engineering Inputs Attached?	☐	x	
Environmental Checklist	☐	x	
Excavation & Trenching Checklist (OS&IH Ch45)	☐	x	
Hoisting and Rigging Operations, Checklist (OS&IH Ch 12)	☐	x	
Hot Work Permit (MAN-029-FPPM)	☐	x	
LO/TO Required (OS&IH Ch 9)	☐	x	
Radiological Work Permit Required (If performing a breach, package requires Rad Protection review and approval.)	☐	x	
Scaffold Permit (OS&IH Ch 40)	☐	x	
Soil Disturbance Approval/Waiver Form (OS&IH Ch 45)	x	☐	
State Permit(s)	☐	x	
Surface Contaminated Object Characterization (PRO-267-RSP-09.05)	☐	x	
Waste Release Evaluation	☐	x	
	☐	☐	
	☐	☐	
	☐	☐	

Additional Prerequisites: (If Any)
Specified in Work Instructions

Additional Precautions/Limitations/Hold Points/Comments and/or Special Tools/Equipment:
Specified in Work Instructions

1 U111021-JGT

CRAFT WORK PACKAGE

Project Name: Present Landfill Accelerated Action Construction Project; Rev. 1	Page 2 of 3

Nuclear Safety Review Required: N/A

☐ **Yes** (Attach Categorical Exclusion, Prescreen, SES, or USQD) ☐ **NO** x **N/A**

Nuclear Safety: N/A (Name) (Signature) (Date)

System Engineer Review: (N/A if work does not involve an AB credited or AB Defense in Depth system)

System Eng: N/A (Name) (Signature) (Date)

Concurrence: (N/A if not required)

Ind. Hygiene & Safety: D. Hobbs (Name) [signature] (Signature) 8/17/04 (Date)

Concurrence: (N/A if not required)

Radiological Safety: N/A (Name) (Signature) (Date)

Concurrence: (N/A if not required)

Environmental Compliance: Matt Francis (Name) [signature] (Signature) 5.16.04 (Date)

Concurrence: (N/A if not required)

Security: [signature] (Name) [signature] (Signature) 8/17/04 (Date)

Approval and Authorization:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls) and Authorization by Responsible Manager to perform work:

Approval and Authorization by Responsible Manager to perform work:

RM: KAREN L WIEMELT (Name) Karen L Wiemelt (Signature) 8/17/04 (Date)

Authorization by Operations/Facility Management to perform work:

Operations/ Facility Mgt: KAREN L WIEMELT (Name) Karen L Wiemelt (Signature) 8/17/04 (Date)

Subcontractor Concurrence:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls):

Concurrence by Stoller to perform work:

Project Manager: Paul Kreite (Name) [signature] (Signature) 8/18/04 (Date)

Subcontractor Concurrence:

Construction Superintendent: (Name) (Signature) (Date)

Quality Work: (N/A if work does not have quality requirements)

1) Quality Parts: N/A
2) System description/location: N/A
3) Quality inspection: N/A
4) Retest: N/A

T0111824-367

CRAFT WORK PACKAGE

Project Name: Present Landfill Accelerated Action Construction Project; Rev. 1	Page 3 of 3

Work Performance:

Check which one performed:

Job Task Briefing Performed: ☐ Pre-Ev Briefing Performed (attach completed form): x

Record Work Performed: (N/A if recorded on attached instructions) N/A

PWT Requirements/Operational Check:

☐ Operational Check Performed Satisfactory - OR - N/A

☐ PWT Performed (record PWT performed and results): N/A

Return to Service Actions, if required: N/A

Feedback: (Attach Post-job Review Checklist, if used)

Work performed as required. No issues or additional comments

Completion Review:

Job Supervisor: Bruce Berry 9-10-04

Name Signature Date

WORK PACKAGE COVER SHEET

Work Tracking No.: T0112773 Revision No.: Rev. 2 E.O. Number:

Title: Present Landfill Accelerated Action – Pre-Grade and Roll

	Name	Signature	Date
Planner:	Kathy Hagglund	Kathy Hagglund	8/31/04

CONCURRENCE

Based on my personal review, I agree that the work described in this package meets technical requirements under my cognizance, and contains the controls from the JHA.

	Name	Signature	Date
K-H Project Mgr. (or designee):	Bob Davis	Robert W. Davis	8/31/04
Stoller Project Mgr. (or designee):	Paul Kreitz	Paul Kreitz	8/30/04
Stoller QC Mgr. (or designee)	Jim Erickson	Jim Erickson	8/30/04
Nielson-Skanska PM (or designee)	Bruce Berry	Bruce Berry per telecon PB	8-30-04
Golder:	Michael Place	[signature]	8/31/04
Paragon:	BRIAN REED	[signature]	8/31/04
Tetra-Tech (QA):	Josh Valentine	[signature]	8-30-04
Earth Tech (Design Engineer):	NA Scott Purcell RWD 8/31/2004	[signature]	5/19/05
H&S:	D. Hiebert	[signature]	8/30/04
Engineering:	DK WOODS	[signature]	8/31/04
Rad Safety:	C Blake	C Blake	8/31/04
Environmental Compliance:	Matt Francis	[signature]	8-30-04
Waste:	L E Golden	L E Golden	8-31-04
Fire Protection:	JAMES Cooley	J W Cooley	8-30-04

APPROVAL

Based on my personal review, and the concurrence of the above technical experts, I agree that the work described in this package meets technical requirements, can be performed safely, and contains the controls of the JHA.

	Name	Signature	Date
Responsible Manager:	KAREN L WIEMELT	Karen L Wiemelt	8/31/04

Work Tracking No.: T0112773	Revision No.: Rev. 2	E.O. Number:

APPROVAL

Based on my personal review, and the concurrence of the above technical experts, I agree that the work described in this package meets technical requirements, can be performed safely, and contains the controls of the JHA.

	Name	Signature	Date
Responsible Manager:			

CLOSURE CONCURRENCE

Based upon my personal review of this work packages and inspection of the work site, the work and retest specified in this package has been satisfactory completed.

	Name	Signature	Date
Job Supervisor:	Bruce Berg	Bruce Berg	11-10-04
Quality:	[illegible]	Jim Erickson	11-10-04

CLOSURE APPROVAL

	Name	Signature	Date
Responsible Manager:	K L WIEMERT	Karen K Wiemert	11/15/04

Do not modify this form except to add organizations for review and concurrence.

CRAFT WORK PACKAGE

WPF: T0111824-397	Charge No.: NA	Estimate: N/A	Sequence Date: 9/9/04
Bldg: NA	Location: Present Landfill		Page 1 of 3
Notify: Bob Davis/Mike Bemski	Phone: 7026/4090		

Originator Paul Kreitz/Stoller Date: 9/9/04

Project Name: Present Landfill Accelerated Action Construction Project, Boring Pad Construction, Rev. 1

Project Description:

This work package describes the installation of the road and boring pads required for access to the proposed boring locations on the East face of the Landfill Pond.

Prerequisites/Hazard Control Documents: (Check YES or NO for each line, attach any permits or indicate permit # per governing document)

	YES	NO	Permit No. / Comments
Additional Guidance attached?	x	☐	
Asbestos Abatement Plan	☐	x	
Beryllium Work Form/Log (OS&IH Ch 28)	☐	x	
Cold and Dark Certification	☐	x	
Confined Space Entry Permit (OS&IH Ch 21)	☐	x	
Energized Work Permit (OS&IH Ch 36)	☐	x	
Engineering Inputs Attached?	x	☐	
Environmental Checklist	N/A	☒	
Excavation & Trenching Checklist (OS&IH Ch45)	☐	x	
Hoisting and Rigging Operations, Checklist (OS&IH Ch 12)	☐	x	
Hot Work Permit (MAN-029-FPPM)	☐	x	
LO/TO Required (OS&IH Ch 9)	☐	x	
Radiological Work Permit Required (If performing a breach, package requires Rad Protection review and approval.)	☐	x	
Scaffold Permit (OS&IH Ch 40)	☐	x	
Soil Disturbance Approval/Waiver Form (OS&IH Ch 45)	x	☐	
State Permit(s)	☐	x	
Surface Contaminated Object Characterization (PRO-267-RSP-09.05)	☐	x	
Waste Release Evaluation	☐	x	
	☐	☐	
	☐	☐	
	☐	☐	

Additional Prerequisites: (If Any)
Specified in Work Instructions

Additional Precautions/Limitations/Hold Points/Comments and/or Special Tools/Equipment:
Specified in Work Instructions

CRAFT WORK PACKAGE

Project Name: : Present Landfill Accelerated Action Construction Project, Boring Pad Construction, Rev. 1	Page 2 of 3

Nuclear Safety Review Required: N/A

☐ Yes (Attach Categorical Exclusion, Prescreen, SES, or USQD) ☐ NO x N/A

Nuclear Safety:

N/A — Name — Signature — Date

System Engineer Review: (N/A if work does not involve an AB credited or AB Defense in Depth system)

System Eng: ~~N/A~~ DIANA WOODS — Name — Signature — 9/13/04 Date

Concurrence: (N/A if not required)

Ind. Hygiene & Safety: D. Hiebert — Name — Signature — 9/17/04 Date

Concurrence: (N/A if not required)

Radiological Safety: N/A — Name — Signature — Date

Concurrence: (N/A if not required)

Environmental Compliance: Matt Francis — Name — Signature — 9.14.04 Date

Approval and Authorization:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls) and Authorization by Responsible Manager to perform work:

Approval and Authorization by Responsible Manager to perform work:

RM: K L WIEMELT — Name — Signature — 9/14/04 Date

Authorization by Operations/Facility Management to perform work:

Operations/ Facility Mgt: Robert K. Davis — Name — Signature — 09/13/04 Date

Subcontractor Concurrence:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls):

Concurrence by Stoller to perform work:

Project Manager: N/A — Name — Signature — Date

Subcontractor Concurrence:

Construction Superintendent: Jay Hall — Name — Signature — 9/15/04 Date

Quality Work: (N/A if work does not have quality requirements)

1) Quality Parts: N/A
2) System description/location: N/A
3) Quality Inspection: N/A
4) Retest: N/A

CRAFT WORK PACKAGE

Project Name: Present Landfill Accelerated Action Construction Project, Boring Pad Construction, Rev. 1	Page 3 of 3

Work Performance:
Check which one performed:
Job Task Briefing Performed: ☐ Pre-Ev Briefing Performed (attach completed form): x

Record Work Performed: (N/A if recorded on attached instructions) N/A

PWT Requirements/Operational Check:
☐ Operational Check Performed Satisfactory - OR -
☐ PWT Performed (record PWT performed and results):

N/A

Return to Service Actions, if required: N/A

Feedback: (Attach Post-job Review Checklist, if used)

None

Completion Review:
Job Supervisor: [signature] 9/27/04
Name Signature Date

CRAFT WORK PACKAGE

WPF: T0111824-408	Charge No.: NA	Estimate: N/A	Sequence Date: 9/20/04
Bldg: NA	Location: Present Landfill		Page 1 of 3
Notify: Bob Davis/Mike Bemski	Phone: 7026/4090		

Originator Paul Kreitz/Stoller Phone: 303-994-7697

Project Name: Present Landfill Accelerated Action Construction Project, Liner Laydown Yards, Rev. 0

Project Description:

This work package describes the installation of the laydown yards that will be used to stage the synthetic liner components. It also includes requirements for offloading the materials from the delivery trucks to the laydown yards.

Prerequisites/Hazard Control Documents: (Check YES or NO for each line, attach any permits or indicate permit # per governing document)

	YES	NO	Permit No. / Comments
Additional Guidance attached?	x	☐	
Asbestos Abatement Plan	☐	x	
Beryllium Work Form/Log (OS&IH Ch 28)	☐	x	
Cold and Dark Certification	☐	x	
Confined Space Entry Permit (OS&IH Ch 21)	☐	x	
Energized Work Permit (OS&IH Ch 36)	☐	x	
Engineering Inputs Attached?	☐	x	
Environmental Checklist	☐	x	
Excavation & Trenching Checklist (OS&IH Ch45)	☐	x	
Hoisting and Rigging Operations, Checklist (OS&IH Ch 12)	x	☐	
Hot Work Permit (MAN-029-FPPM)	☐	x	
LO/TO Required (OS&IH Ch 9)	☐	x	
Radiological Work Permit Required (If performing a breach, package requires Rad Protection review and approval.)	☐	x	
Scaffold Permit (OS&IH Ch 40)	☐	x	
Soil Disturbance Approval/Waiver Form (OS&IH Ch 45)	x	☐	
State Permit(s)	☐	x	
Surface Contaminated Object Characterization (PRO-267-RSP-09.05)	☐	x	
Waste Release Evaluation	☐	x	
	☐	☐	
	☐	☐	
	☐	☐	

Additional Prerequisites: (If Any)
Specified in Work Instructions

Additional Precautions/Limitations/Hold Points/Comments and/or Special Tools/Equipment:
Specified in Work Instructions

CRAFT WORK PACKAGE

Project Name: : Present Landfill Accelerated Action Construction Project, Liner Laydown Yards, Rev. 0	Page 2 of 3

Nuclear Safety Review Required: N/A

☐ Yes (Attach Categorical Exclusion, Prescreen, SES, or USQD) ☐ NO x N/A

	Name	Signature	Date
Nuclear Safety:	N/A		

System Engineer Review: (N/A if work does not involve an AB credited or AB Defense in Depth system)

	Name	Signature	Date
System Eng:	N/A		

Concurrence: (N/A if not required)

	Name	Signature	Date
Ind. Hygiene & Safety	D. Hibert		9/23/04

Concurrence: (N/A if not required)

	Name	Signature	Date
Radiological Safety	N/A		

Concurrence: (N/A if not required)

	Name	Signature	Date
Environmental Compliance	Matt Francys		9.23.04

Approval and Authorization:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls) and Authorization by Responsible Manager to perform work:

Approval and Authorization by Responsible Manager to perform work:

	Name	Signature	Date
RM:	Robert W. Davis	Robert W. Davis	09/23/04

Authorization by Operations/Facility Management to perform work:

	Name	Signature	Date
Operations/ Facility Mgt:	Robert W. Davis	Robert W. Davis	09/23/04

Subcontractor Concurrence:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls):

Concurrence by Stoller to perform work:

	Name	Signature	Date
Project Manager:	Paul Kreitz		10/18/04

Subcontractor Concurrence:

	Name	Signature	Date
Construction Superintendent:	Bruce Berry	Bruce Berry	9-22-04

Quality Work: (N/A if work does not have quality requirements)

1) Quality Parts: N/A
2) System description/location: N/A
3) Quality inspection: N/A
4) Retest: N/A

CRAFT WORK PACKAGE

Project Name: Present Landfill Accelerated Action Construction Project, Liner Laydown Yards, Rev. 0	Page 3 of 3

Work Performance:
Check which one performed:
Job Task Briefing Performed: ☐ Pre-Ev Briefing Performed (attach completed form): x

Record Work Performed: (N/A if recorded on attached instructions) N/A

PWT Requirements/Operational Check:
☐ Operational Check Performed Satisfactory - OR -
☐ PWT Performed (record PWT performed and results):

Return to Service Actions, if required: N/A

Feedback: (Attach Post-job Review Checklist, if used)

None

Closed Robert V. Davis 05/18/05

Completion Review:
Job Supervisor:

Kurt Schroeder — Name
[signature] — Signature
1-7-05 — Date

Reopen Work Package for unload additional Geosynthetics Bob Davis 01/19/2005

WORK PACKAGE COVER SHEET

Work Tracking No.: TD112785 Revision No.: Rev. 1 E.O. Number:

Title: Present Landfill Accelerated Action – Subgrade Prep and Cushion Soil Placement

	Name	Signature	Date
Planner:	Kathy Hagglund	Kathy Hagglund	9/22/04

CONCURRENCE

Based on my personal review, I agree that the work described in this package meets technical requirements under my cognizance, and contains the controls from the JHA.

	Name	Signature	Date
K-H Project Mgr. (or designee):	Bob Davis	Robert K. Davis	9/29/04
Stoller Project Mgr. (or designee):	Paul Kreitz	Paul King	9/22/04
Stoller QC Mgr. (or designee)	Jim Erickson	Jim Erickson	9/22/04
Nielson-Skanska PM (or designee)	Bruce Berry Bruce Berry	Bruce Berry	9-29-04
Golder:	Patrick Harrell	PAR	
Paragon:	Brian Reed		9/29/04
Tetra-Tech (QA):	Josh Valentine		9-29-04
Earth Tech (Design Engineer):	Scott Powell		9/29/04
H&S:	D. Hibbard		9/29/04
Engineering:	DK WOODS FOR 9.4 ONLY		9/29/04
Rad Safety:	C Blake	C Blake	9/22/04
Environmental Compliance:	Mat Francis		9.20.04
Waste:	NA		

APPROVAL

Based on my personal review, and the concurrence of the above technical experts, I agree that the work described in this package meets technical requirements, can be performed safely, and contains the controls of the JHA.

	Name	Signature	Date
Responsible Manager:	Robert K. Davis	Robert K. Davis	09/29/2004

Work Tracking No.: T0112785	Revision No.: Rev. 1	E.O. Number:

CLOSURE CONCURRENCE

Based upon my personal review of this work packages and inspection of the work site, the work and retest specified in this package has been satisfactory completed.

	Name	Signature	Date
Job Supervisor:	Hunt Johnson	Kurt Schroeder	5-11-05
Quality:	Jim Erickson		5-10-05

CLOSURE APPROVAL

	Name	Signature	Date
Responsible Manager:	Robert W. Davis	Robert W. Davis	05/12/05

Do not modify this form except to add organizations for review and concurrence.

WORK PACKAGE COVER SHEET

Work Tracking No.: T0112869 Revision No.: Rev. 1 E.O. Number:

Title: Present Landfill Accelerated Action – Liner/Upper Cushion Layer

	Name	Signature	Date
Planner:	Kathy Hagglund	Kathy Hagglund	10/12/04

CONCURRENCE

Based on my personal review, I agree that the work described in this package meets technical requirements under my cognizance, and contains the controls from the JHA.

	Name	Signature	Date
K-H Project Mgr. (or designee):	Bob Davis	Robert Davis	10/14/04
Stoller Project Mgr. (or designee):	Paul Kreitz	Paul Kreitz	10/14/04
Stoller QC Mgr. (or designee)	Jim Erickson ~~Michael Bolton~~ (Harry)		10/14/04
Nielson-Skanska PM (or designee)	Bruce Berry	Bruce Berry	10-15-04
Golder:	Michael Place		10/14/04
Paragon:	Brad Reed		10/15/04
Tetra-Tech (QA):	John Valletta	Josh Valentine	10-14-04
Earth Tech (Design Engineer):	RYAN ARCHIBALD		10-14-04
H&S:	D. Hilbert		10/15/04
Engineering:	N/A	N/A	
Rad Safety:	N/A	N/A	
Environmental Compliance:	Matt Francis		10/13/04
Waste:	N/A	N/A	

APPROVAL

Based on my personal review, and the concurrence of the above technical experts, I agree that the work described in this package meets technical requirements, can be performed safely, and contains the controls of the JHA.

	Name	Signature	Date
Responsible Manager:	Robert W. Davis	Robert W. Davis	10/19/04

Work Tracking No.: T0112869	Revision No.: Rev. 1	E.O. Number:

CLOSURE CONCURRENCE

Based upon my personal review of this work packages and inspection of the work site, the work and retest specified in this package has been satisfactory completed.

	Name	Signature	Date
Job Supervisor:	Buzz Green		4-8-05
Quality:	Jim Erickson		4-8-05

CLOSURE APPROVAL

	Name	Signature	Date
Responsible Manager:	~~Buzz Green~~ Bob Davis		~~4/8/05~~

Do not modify this form except to add organizations for review and concurrence.

RM: Robert W. Davis
Name

Robert W. Davis
Signature

05/17/05
Date

CRAFT WORK PACKAGE

WPF: T0111824-380	Charge No.: NA	Estimate: N/A	Sequence Date: 10/12/04
Bldg: NA	Location: Present Landfill		Page 1 of 3
Notify: Bob Davis/Mike Bemski	Phone: 7026/4090		

Originator Paul Kreitz/Stoller, Phone 303-994-7697

Project Name: Present Landfill Accelerated Action Construction Project – Seep Pump-out Station; Rev. 2

Project Description:

This work package describes the installation of the Seep Pump-out Station that will be used to collect and pump water from the Present Landfill seep to a temporary holding tank.

Prerequisites/Hazard Control Documents: (Check YES or NO for each line, attach any permits or indicate permit # per governing document)

	YES	NO	Permit No. / Comments
Additional Guidance attached?	x	☐	
Asbestos Abatement Plan	☐	x	
Beryllium Work Form/Log (OS&IH Ch 28)	☐	x	
Cold and Dark Certification	☐	x	
Confined Space Entry Permit (OS&IH Ch 21)	☐	x	
Energized Work Permit (OS&IH Ch 36)	☐	x	
Engineering Inputs Attached?	x	☐	
Environmental Checklist	x	☐	
Excavation & Trenching Checklist (OS&IH Ch45)	x	☐	
Hoisting and Rigging Operations, Checklist (OS&IH Ch 12)	☐	x	
Hot Work Permit (MAN-029-FPPM)	☐	x	
LO/TO Required (OS&IH Ch 9)	☐	x	
Radiological Work Permit Required (If performing a breach, package requires Rad Protection review and approval.)	☐	x	
Scaffold Permit (OS&IH Ch 40)	☐	x	
Soil Disturbance Approval/Waiver Form (OS&IH Ch 45)	x	☐	
State Permit(s)	☐	x	
Surface Contaminated Object Characterization (PRO-267-RSP-09.05)	☐	x	
Waste Release Evaluation	☐	x	
	☐	☐	
	☐	☐	
	☐	☐	

Additional Prerequisites: (If Any)
Specified in Work Instructions

Additional Precautions/Limitations/Hold Points/Comments and/or Special Tools/Equipment:
Specified in Work Instructions

CRAFT WORK PACKAGE

Project Name: Present Landfill Accelerated Action Construction Project – Seep Pump-out Station; Rev. 2	Page 2 of 3

Nuclear Safety Review Required: N/A

☐ Yes (Attach Categorical Exclusion, Prescreen, SES, or USQD) ☐ NO x N/A

Nuclear Safety: N/A (Name) (Signature) (Date)

System Engineer Review: (N/A if work does not involve an AB credited or AB Defense in Depth system)

System Eng: N/A (Name) (Signature) (Date)

Concurrence: (N/A if not required)

Ind. Hygiene & Safety: Doug Hiebert (Name) (Signature) 10/21/04 (Date)

Concurrence: (N/A if not required)

Radiological Safety: N/A CBlake (Name) CBlake (Signature) 10/20/04 (Date)

Concurrence: (N/A if not required)

Environmental Compliance: Matt Francis (Name) (Signature) 10-20-04 (Date)

Approval and Authorization:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls) and Authorization by Responsible Manager to perform work:

Approval and Authorization by Responsible Manager to perform work:

RM: KAREN L. WIEMELT (Name) (Signature) 10/21/04 (Date)

Authorization by Operations/Facility Management to perform work:

Operations/ Facility Mgt: N/A (Name) N/A (Signature) (Date)

Subcontractor Concurrence:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls):

Concurrence by Stoller to perform work:

Project Manager: Paul Kreitz (Name) (Signature) 10/20/04 (Date)

Subcontractor Concurrence:

Construction Superintendent: Bruce Berry (Name) (Signature) 10-19-04 (Date)

Quality Work: (N/A if work does not have quality requirements)

1) Quality Parts: N/A
2) System description/location: N/A
3) Quality inspection: N/A
4) Retest: N/A

CRAFT WORK PACKAGE

Project Name: Present Landfill Accelerated Action Construction Project – Seep Pump-out Station; Rev. 2	Page 3 of 3

Work Performance:

Check which one performed:

Job Task Briefing Performed: ☐ Pre-Ev Briefing Performed (attach completed form): x

Record Work Performed: (N/A if recorded on attached instructions) N/A

PWT Requirements/Operational Check:

☐ Operational Check Performed Satisfactory - OR -

☐ PWT Performed (record PWT performed and results):

Return to Service Actions, if required: N/A

Feedback: (Attach Post-job Review Checklist, if used)

None Req'd.

Completion Review:

Job Supervisor: Stephen R. Anderson _____ 1/6/05

Name Signature Date

CRAFT WORK PACKAGE

WPF: T0112847-16	Charge No.: GR201400	Estimate: N/A	Sequence Date: 11/23/04
Bldg: 202	Location: Present Landfill		Page 1 of 3
Notify: Bob Davis/Marco Calderon	Phone: 7026/2943		

Originator Paul Kreitz/Stoller Phone: 303-994-7697

Project Name: Present Landfill Accelerated Action Construction Project, Shooting Range Berm Soil Sampling, Rev. 0

Project Description:

The soils currently making up the berms at the demolished shooting range (Bldg 303) may be used as fill for the construction of the cap at the Present Landfill. Before the soil can be used, samples must be taken to determine if the soil will meet the requirements in the specifications for the Present Landfill cap. This work package is to remove samples from the berms and send them to an offsite laboratory for geotechnical testing.

Prerequisites/Hazard Control Documents: (Check YES or NO for each line, attach any permits or indicate permit # per governing document)

	YES	NO	Permit No. / Comments
Additional Guidance attached?	x	☐	
Asbestos Abatement Plan	☐	x	
Beryllium Work Form/Log (OS&IH Ch 28)	☐	x	
Cold and Dark Certification	☐	x	
Confined Space Entry Permit (OS&IH Ch 21)	☐	x	
Energized Work Permit (OS&IH Ch 36)	☐	x	
Engineering Inputs Attached?	☐	x	
Environmental Checklist	x	☐	
Excavation & Trenching Checklist (OS&IH Ch45)	x	☐	
Hoisting and Rigging Operations, Checklist (OS&IH Ch 12)	☐	x	
Hot Work Permit (MAN-029-FPPM)	☐	x	
LO/TO Required (OS&IH Ch 9)	☐	x	
Radiological Work Permit Required (If performing a breach, package requires Rad Protection review and approval.)	☐	x	
Scaffold Permit (OS&IH Ch 40)	☐	x	
Soil Disturbance Approval/Waiver Form (OS&IH Ch 45)	x	☐	
State Permit(s)	☐	x	
Surface Contaminated Object Characterization (PRO-267-RSP-09.05)	☐	x	
Waste Release Evaluation	☐	x	
	☐	☐	
	☐	☐	
	☐	☐	

Additional Prerequisites: (If Any)
Specified in Work Instructions

Additional Precautions/Limitations/Hold Points/Comments and/or Special Tools/Equipment:
Specified in Work Instructions

CRAFT WORK PACKAGE

Project Name: : Present Landfill Accelerated Action Construction Project, Shooting Range Berm Soil Sampling, Rev. 0	Page 2 of 3

Nuclear Safety Review Required: N/A

☐ Yes (Attach Categorical Exclusion, Prescreen, SES, or USQD) ☐ NO x N/A

Nuclear Safety: N/A (Name / Signature / Date)

System Engineer Review: (N/A if work does not involve an AB credited or AB Defense in Depth system)

System Eng: N/A (Name / Signature / Date)

Concurrence: (N/A if not required)

Ind. Hygiene & Safety: D Hibbert (Name) / (Signature) / 12/1/04 (Date)

Concurrence: (N/A if not required)

Radiological Safety: N/A (Name / Signature / Date)

Concurrence: (N/A if not required)

Environmental Compliance: Mat Francis (Name) / (Signature) / 11.30.04 (Date)

Approval and Authorization:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls) and Authorization by Responsible Manager to perform work:

Approval and Authorization by Responsible Manager to perform work:

RM: Robert W. Davis (Name) / Robert W. Davis (Signature) / 12/1/04 (Date)

Authorization by Operations/Facility Management to perform work:

Operations/ Facility Mgt: Robert W. Davis (Name) / Robert W. Davis (Signature) / 12/1/04 (Date)

Subcontractor Concurrence:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls):

Concurrence by Stoller to perform work:

Project Manager: Paul Kreitz (Name) / (Signature) / 12/7/04 (Date)

Subcontractor Concurrence:

Construction Superintendent: Bruce Berry (Name) / Bruce Berry (Signature) / 12-7-04 (Date)

Quality Work: (N/A if work does not have quality requirements)

1) Quality Parts: N/A
2) System description/location: N/A
3) Quality inspection: N/A
4) Retest: N/A

CRAFT WORK PACKAGE

Project Name: Present Landfill Accelerated Action Construction Project, Shooting Range Berm Soil Sampling, Rev. 0	Page 3 of 3

Work Performance:

Check which one performed:

Job Task Briefing Performed: ☐ Pre-Ev Briefing Performed (attach completed form): x

Record Work Performed: (N/A if recorded on attached instructions) N/A

PWT Requirements/Operational Check:

☐ Operational Check Performed Satisfactory - OR -

☐ PWT Performed (record PWT performed and results):

Return to Service Actions, if required: N/A

Feedback: (Attach Post-job Review Checklist, if used)

None

Completion Review:

Job Supervisor: [signature] Steve Brinton 1/12/05

Name Signature Date

WORK PACKAGE COVER SHEET

Work Tracking No.: T0112867 Revision No.: Rev. 1 E.O. Number:

Title: Present Landfill Accelerated Action – Rock Layer

	Name	Signature	Date
Planner:	Kathy Hagglund	Kathy Hagglund	12/6/04

CONCURRENCE

Based on my personal review, I agree that the work described in this package meets technical requirements under my cognizance, and contains the controls from the JHA.

	Name	Signature	Date
K-H Project Mgr. (or designee):	Bob Davis	Robert W. Davis	12/11/04
Stoller Project Mgr. (or designee):	Paul Kreitz	Paul Kreitz	12/7/04
Stoller QC Mgr. (or designee)	Jim Erickson	Jim Erickson	12/7/04
Nielson-Skanska PM (or designee)	Bruce Berry	Bruce Berry	12-7-04
Golder:	Michael Place	Michael Place	12/7/04
Paragon:	PAUL GRABOWSKI	Paul C. Grabowski	12/7/04
Tetra-Tech (QA):	MARSHALL MASSARO	Marshall Massaro	12/7/04
Earth Tech (Design Engineer):	SCOTT LAWRENCE	Scott Lawrence	12/7/04
H&S:	D. Hibbert		12/6/04
Engineering:	NA	—	—
Rad Safety:	NA	—	—
Environmental Compliance:	Matt Francis	Matt Francis	12.7.04
Waste:	NA	—	—

APPROVAL

Based on my personal review, and the concurrence of the above technical experts, I agree that the work described in this package meets technical requirements, can be performed safely, and contains the controls of the JHA.

	Name	Signature	Date
Responsible Manager:	Robert W. Davis	Robert W. Davis	12/11/2004

Work Tracking No.: T0112867	Revision No.: Rev. 1	E.O. Number:

CLOSURE CONCURRENCE

Based upon my personal review of this work packages and inspection of the work site, the work and retest specified in this package has been satisfactory completed.

	Name	Signature	Date
Job Supervisor:	Kurt Schroeder	Kurt Schroeder per telecon JN	5/18/05
Quality:		Jim Erickson	5/18/05

CLOSURE APPROVAL

	Name	Signature	Date
Responsible Manager:	Robert W. Davis	Robert W. Davis	05/18/05

Do not modify this form except to add organizations for review and concurrence.

CRAFT WORK PACKAGE

WPF: T0112847-1	Charge No.: GR201499	Estimate: N/A	Sequence Date: 12/10/04
Bldg: 202	Location: Present Landfill		Page 1 of 3
Notify: Bob Davis/Marco Calderon	Phone: 7026/2943		

Originator Paul Kreitz/Stoller Phone: 303-994-7697

Project Name: Present Landfill Accelerated Action Construction Project, Landfill Pond Sludge Removal, Rev. 1

Project Description:

This work package describes the steps necessary to excavate the sediment, vegetation and sludge from the perimeter of the East Landfill Pond and move it to the east end of the landfill. The sediment will be stabilized, spread and compacted in a designated area of the landfill that will be covered with the RCRA Subtitle C cap.

Prerequisites/Hazard Control Documents: (Check YES or NO for each line, attach any permits or indicate permit # per governing document)

	YES	NO	Permit No. / Comments
Additional Guidance attached?	x	☐	
Asbestos Abatement Plan	☐	x	
Beryllium Work Form/Log (OS&IH Ch 28)	☐	x	
Cold and Dark Certification	☐	x	
Confined Space Entry Permit (OS&IH Ch 21)	☐	x	
Energized Work Permit (OS&IH Ch 36)	☐	x	
Engineering Inputs Attached?	x	☐	
Environmental Checklist	x	☐	
Excavation & Trenching Checklist (OS&IH Ch45)	x	☐	
Hoisting and Rigging Operations, Checklist (OS&IH Ch 12)	☐	x	
Hot Work Permit (MAN-029-FPPM)	x	x	Added for step 3.2.3
LO/TO Required (OS&IH Ch 9)	☐	x	
Radiological Work Permit Required (If performing a breach, package requires Rad Protection review and approval.)	☐	x	
Scaffold Permit (OS&IH Ch 40)	☐	x	
Soil Disturbance Approval/Waiver Form (OS&IH Ch 45)	x	☐	
State Permit(s)	☐	x	
Surface Contaminated Object Characterization (PRO-267-RSP-09.05)	☐	x	
Waste Release Evaluation	☐	x	
	☐	☐	
	☐	☐	
	☐	☐	

Additional Prerequisites: (If Any)
Specified in Work Instructions

Additional Precautions/Limitations/Hold Points/Comments and/or Special Tools/Equipment:
Specified in Work Instructions

CRAFT WORK PACKAGE

Project Name: : Present Landfill Accelerated Action Construction Project, Landfill Pond Sludge Removal, Rev. 1	Page 2 of 3

Nuclear Safety Review Required: N/A

☐ Yes (Attach Categorical Exclusion, Prescreen, SES, or USQD) ☐ NO x N/A

Nuclear Safety: N/A (Name) (Signature) (Date)

System Engineer Review: (N/A if work does not involve an AB credited or AB Defense in Depth system)

System Eng: N/A (Name) (Signature) (Date)

Concurrence: (N/A if not required)

Ind. Hygiene & Safety: D Hiesler (Name) (Signature) 12/12/04 (Date)

Concurrence: (N/A if not required)

Radiological Safety: N/A (Name) (Signature) (Date)

Concurrence: (N/A if not required)

Environmental Compliance: (Name) (Signature) (Date)

Approval and Authorization:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls) and Authorization by Responsible Manager to perform work:

Approval and Authorization by Responsible Manager to perform work:

RM: Robert W. Davis (Name) Robert W. Davis (Signature) 12/12/04 (Date)

Authorization by Operations/Facility Management to perform work:

Operations/ Facility Mgt: Robert W. Davis (Name) Robert W. Davis (Signature) 12/12/04 (Date)

Subcontractor Concurrence:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls):

Concurrence by Stoller to perform work:

Project Manager: Paul Kreitz (Name) Paul Kreitz (Signature) 12/13/04 (Date)

Subcontractor Concurrence:

Construction Superintendent: ~~Bruce Berry~~ Curt Schroeder (Name) Curt Schroeder (Signature) 12/13/04 (Date)

Quality Work: (N/A if work does not have quality requirements)

1) Quality Parts: N/A
2) System description/location: N/A
3) Quality inspection: N/A
4) Retest: N/A

CRAFT WORK PACKAGE

Project Name: Present Landfill Accelerated Action Construction Project, Landfill Pond Sludge Removal, Rev. 1	Page 3 of 3

Work Performance:
Check which one performed:
Job Task Briefing Performed: ☐ Pre-Ev Briefing Performed (attach completed form): x

Record Work Performed: (N/A if recorded on attached instructions) N/A

PWT Requirements/Operational Check:
☐ Operational Check Performed Satisfactory - OR -
☐ PWT Performed (record PWT performed and results):

Return to Service Actions, if required: N/A

Feedback: (Attach Post-job Review Checklist, if used)

None Added

Completion Review:
Job Supervisor: [signature] GARY M. SURENSBERRY 1/27/05

Name Signature Date

CRAFT WORK PACKAGE

WPF: T0112847-24	Charge No.: GR201400	Estimate: N/A	Sequence Date: 12/20/04
Bldg: 202	Location: North Buffer Present Landfill		Page 1 of 3
Notify: Bob Davis/Marco Calderon	Phone: 7026/2943		

Originator Paul Kreitz/Stoller Phone: 303-994-7697

Project Name: Present Landfill Accelerated Action Construction Project, Bulldozer Ground Pressure Test on Rock Layer, Rev. 0

Project Description:

This evolution is being performed in support of the ongoing Present Landfill Accelerated Action project. The purpose of this test is to determine whether a low-ground pressure dozer driven on the rock layer will exert enough pressure to damage the underlying cushion soil. The test includes creating a mock-up of a portion of the cover components that are being installed on the Present Landfill. A layer of 10-inch cushion soil covered with a 12-inch rock layer will be built for this test. After the test pad is built, a low ground pressure dozer will be driven over the area. Finally, the rock layer will be removed and the cushion soil will be evaluated.

Prerequisites/Hazard Control Documents: (Check YES or NO for each line, attach any permits or indicate permit # per governing document)

	YES	NO	Permit No. / Comments
Additional Guidance attached?	x	☐	
Asbestos Abatement Plan	☐	x	
Beryllium Work Form/Log (OS&IH Ch 28)	☐	x	
Cold and Dark Certification	☐	x	
Confined Space Entry Permit (OS&IH Ch 21)	☐	x	
Energized Work Permit (OS&IH Ch 36)	☐	x	
Engineering Inputs Attached?	x	☐	
Environmental Checklist	x	☐	
Excavation & Trenching Checklist (OS&IH Ch45)	☐	x	
Hoisting and Rigging Operations, Checklist (OS&IH Ch 12)	☐	x	
Hot Work Permit (MAN-029-FPPM)	☐	x	
LO/TO Required (OS&IH Ch 9)	☐	x	
Radiological Work Permit Required (If performing a breach, package requires Rad Protection review and approval.)	☐	x	
Scaffold Permit (OS&IH Ch 40)	☐	x	
Soil Disturbance Approval/Waiver Form (OS&IH Ch 45)	x	☐	
State Permit(s)	☐	x	
Surface Contaminated Object Characterization (PRO-267-RSP-09.05)	☐	x	
Waste Release Evaluation	☐	x	
	☐	☐	
	☐	☐	
	☐	☐	

Additional Prerequisites: (If Any)
Specified in Work Instructions

Additional Precautions/Limitations/Hold Points/Comments and/or Special Tools/Equipment:
Specified in Work Instructions

CRAFT WORK PACKAGE

Project Name: : Present Landfill Accelerated Action Construction Project, Bulldozer Ground Pressure Test on Rock Layer, Rev. 0	Page 2 of 3

Nuclear Safety Review Required: N/A

☐ Yes (Attach Categorical Exclusion, Prescreen, SES, or USQD) ☐ NO x N/A

Nuclear Safety: N/A (Name) (Signature) (Date)

System Engineer Review: (N/A if work does not involve an AB credited or AB Defense in Depth system)

System Eng: N/A (Name) (Signature) (Date)

Concurrence: (N/A if not required)

Ind. Hygiene & Safety: Doug Hibbert (Name) (Signature) 5/10/05 (Date)

Concurrence: (N/A if not required)

Radiological Safety: N/A (Name) (Signature) (Date)

Concurrence: (N/A if not required)

Environmental Compliance: N/A (Name) (Signature) (Date)

Approval and Authorization:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls) and Authorization by Responsible Manager to perform work:

Approval and Authorization by Responsible Manager to perform work:

RM: Robert W. Davis (Name) Robert W. Davis (Signature) 12/21/04 (Date)

Authorization by Operations/Facility Management to perform work:

Operations/ Facility Mgt: N/A (Name) (Signature) (Date)

Subcontractor Concurrence:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls):

Concurrence by Stoller to perform work:

Project Manager: Paul Kreitz (Name) (Signature) 12/21/04 (Date)

Subcontractor Concurrence:

Construction Superintendent: Kurt Schroeder (Name) Kurt Schroeder (Signature) 1-7-05 (Date)

CRAFT WORK PACKAGE

Project Name: Present Landfill Accelerated Action Construction Project, Bulldozer Ground Pressure Test on Rock Layer, Rev. 0	Page 3 of 3

Quality Work: (N/A if work does not have quality requirements)
1) Quality Parts: N/A
2) System description/location: N/A
3) Quality inspection: N/A
4) Retest: N/A

Work Performance:

Check which one performed:

Job Task Briefing Performed: ☐ Pre-Ev Briefing Performed (attach completed form): x

Record Work Performed: (N/A if recorded on attached instructions) N/A

PWT Requirements/Operational Check:

☐ Operational Check Performed Satisfactory - OR -

☐ PWT Performed (record PWT performed and results):

N/A PBs

Return to Service Actions, if required: N/A

Feedback: (Attach Post-job Review Checklist, if used)

None

Completion Review:

Job Supervisor:

Kurt Schroeder	Kurt Schroeder	1-7-01
Name	Signature	Date

-7867

CRAFT WORK PACKAGE

WPF: T0112848-93	Charge No.: GR201400	Estimate: N/A	Sequence Date: 1/13/05
Bldg:	Location: Present Landfill		Page 1 of 3
Notify: Bob Davis/Marco Calderon	Phone: 7026/2943		

Originator Paul Kreitz/Stoller Phone: 303-994-7697

Project Name: Present Landfill Accelerated Action Construction Project, East Face Clearing and Grubbing, Rev. 0

Project Description:

The present landfill project will be starting work on the east face of the landfill. This work package covers the clearing and grubbing of the existing vegetation on the east face and slope.

Prerequisites/Hazard Control Documents: (Check YES or NO for each line, attach any permits or indicate permit # per governing document)

	YES	NO	Permit No. / Comments
Additional Guidance attached?	x	☐	
Asbestos Abatement Plan	☐	x	
Beryllium Work Form/Log (OS&IH Ch 28)	☐	x	
Cold and Dark Certification	☐	x	
Confined Space Entry Permit (OS&IH Ch 21)	☐	x	
Energized Work Permit (OS&IH Ch 36)	☐	x	
Engineering Inputs Attached?	☐	x	
Environmental Checklist	x	☐	
Excavation & Trenching Checklist (OS&IH Ch45)	x	☐	
Hoisting and Rigging Operations, Checklist (OS&IH Ch 12)	☐	x	
Hot Work Permit (MAN-029-FPPM)	☐	x	
LO/TO Required (OS&IH Ch 9)	☐	x	
Radiological Work Permit Required (If performing a breach, package requires Rad Protection review and approval.)	☐	x	
Scaffold Permit (OS&IH Ch 40)	☐	x	
Soil Disturbance Approval/Waiver Form (OS&IH Ch 45)	x	☐	
State Permit(s)	☐	x	
Surface Contaminated Object Characterization (PRO-267-RSP-09.05)	☐	x	
Waste Release Evaluation	☐	x	
	☐	☐	
	☐	☐	
	☐	☐	

Additional Prerequisites: (If Any)
Specified in Work Instructions

Additional Precautions/Limitations/Hold Points/Comments and/or Special Tools/Equipment:
Specified in Work Instructions

CRAFT WORK PACKAGE

Project Name: : Present Landfill Accelerated Action Construction Project, East Face Clearing and Grubbing, Rev. 0	Page 2 of 3

Nuclear Safety Review Required: N/A

☐ Yes (Attach Categorical Exclusion, Prescreen, SES, or USQD) ☐ NO x N/A

Nuclear Safety: N/A (Name) (Signature) (Date)

System Engineer Review: (N/A if work does not involve an AB credited or AB Defense in Depth system)

System Eng: N/A (Name) (Signature) (Date)

Concurrence: (N/A if not required)

Ind. Hygiene & Safety: Doug Hickson (Name) (Signature) 1/19/05 (Date)

Concurrence: (N/A if not required)

Radiological Safety: N/A (Name) (Signature) (Date)

Concurrence: (N/A if not required)

Environmental Compliance: Matt Francis (Name) (Signature) 1/19/05 (Date)

Approval and Authorization:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls) and Authorization by Responsible Manager to perform work:

Approval and Authorization by Responsible Manager to perform work:

RM: Robert W. Davis (Name) MARCO CALDERON FOR BOB DAVIS PER TELECON Robert W. Davis (Signature) 1/19/05 01/21/05 (Date)

Authorization by Operations/Facility Management to perform work:

Operations/ Facility Mgt: N/A (Name) (Signature) (Date)

Subcontractor Concurrence:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls):

Concurrence by Stoller to perform work:

Project Manager: Paul Kreitz (Name) (Signature) 1/19/05 (Date)

Quality Work: (N/A if work does not have quality requirements)

1) Quality Parts: N/A
2) System description/location: N/A
3) Quality inspection: N/A
4) Retest: N/A

CRAFT WORK PACKAGE

Project Name: Present Landfill Accelerated Action Construction Project, East Face Clearing and Grubbing, Rev. 0	Page 3 of 3

Work Performance:

Check which one performed:

Job Task Briefing Performed: ☐ Pre-Ev Briefing Performed (attach completed form): x

Record Work Performed: (N/A if recorded on attached instructions) N/A

PWT Requirements/Operational Check:

☐ Operational Check Performed Satisfactory - OR -

☐ PWT Performed (record PWT performed and results):

Return to Service Actions, if required: N/A

Feedback: (Attach Post-job Review Checklist, if used)

None

Completion Review:

Job Supervisor: Gary M. Shrewsberry 2/22/05

Name Signature Date

WORK PACKAGE COVER SHEET

Work Tracking No.: T0113022 Revision No.: Rev. 1 E.O. Number:

Title: Present Landfill Accelerated Action – Soil Cover

	Name	Signature	Date
Planner:	Kathy Hagglund		

CONCURRENCE

Based on my personal review, I agree that the work described in this package meets technical requirements under my cognizance, and contains the controls from the JHA

	Name	Signature	Date
K-H Project Mgr. (or designee):	Bob Davis Robert W. Davis 01/21/2005	OK per Telecon P.B. K	1/21/05
Stoller Project Mgr. (or designee):	Paul Kreitz		1/21/05
Stoller QC Mgr. (or designee)	Jim Erickson / Steve Breitrick		1/21/05
Nielson-Skanska PM (or designee)	Kurt Schroeder		1-21-05
Golder:	Patrick Harrell		2-5-05
Paragon:	N/A	N/A	
Tetra-Tech (QA):	Josh Valentine		2-5-05
Earth Tech (Design Engineer):	NA Scott Parker	NA	5/19/05
H&S:	D. Hibbert		1/21/05
Engineering:	NA		
Rad Safety:	NA		
Environmental Compliance:	NA		
Waste:	NA		

APPROVAL

Based on my personal review, and the concurrence of the above technical experts, I agree that the work described in this package meets technical requirements, can be performed safely, and contains the controls of the JHA.

	Name	Signature	Date
Responsible Manager:	Bob Davis	ok per Heem	1/21/05

Per Telecon P.B. K 1/21/05

Robert W. Davis 01/21/05

Work Tracking No.: T0113022 Revision No: Rev. 1 E.O. Number:

CLOSURE CONCURRENCE

Based upon my personal review of this work packages and inspection of the work site, the work and retest specified in this package has been satisfactory completed.

	Name	Signature	Date
Job Supervisor:	[illegible]	[illegible]	4-22-5[illegible]
Quality:	Jim Erickson	[illegible]	4-22-05

CLOSURE APPROVAL

	Name	Signature	Date
Responsible Manager:	Robert W. Davis	[illegible]	4/26/05

Do not modify this form except to add organizations for review and concurrence.

CRAFT WORK PACKAGE

WPF: T0112847-35	Charge No.: GR201400	Estimate: N/A	Sequence Date: 1/20/05
Bldg: 202	Location: Present Landfill		Page 1 of 3
Notify: Bob Davis/Marco Calderon	Phone: 7026/2943		

Originator Paul Kreitz/Stoller Phone: 303-994-7697

Project Name: Present Landfill Accelerated Action Construction Project, Water Tank Sludge Removal, Rev. 0

Project Description:

The PLF remediation project collected the seep water from the landfill during the landfill sludge removal activities. The water was collected in two Baker tanks. The tanks have been emptied and the fallout needs to be collected. The Baker tanks will be lifted off the ground at one end to allow a vacuum truck to wash out and collect the sludge. The vacuum truck will then spread this out under the landfill cap.

Prerequisites/Hazard Control Documents: (Check YES or NO for each line, attach any permits or indicate permit # per governing document)

	YES	NO	Permit No. / Comments
Additional Guidance attached?	x	☐	
Asbestos Abatement Plan	☐	x	
Beryllium Work Form/Log (OS&IH Ch 28)	☐	x	
Cold and Dark Certification	☐	x	
Confined Space Entry Permit (OS&IH Ch 21)	☐	x	
Energized Work Permit (OS&IH Ch 36)	☐	x	
Engineering Inputs Attached?	☐	x	
Environmental Checklist	☐	x	
Excavation & Trenching Checklist (OS&IH Ch45)	☐	x	
Hoisting and Rigging Operations, Checklist (OS&IH Ch 12)	☐	x	
Hot Work Permit (MAN-029-FPPM)	☐	x	
LO/TO Required (OS&IH Ch 9)	☐	x	
Radiological Work Permit Required (If performing a breach, package requires Rad Protection review and approval.)	☐	x	
Scaffold Permit (OS&IH Ch 40)	☐	x	
Soil Disturbance Approval/Waiver Form (OS&IH Ch 45)	☐	x	
State Permit(s)	☐	x	
Surface Contaminated Object Characterization (PRO-267-RSP-09.05)	☐	x	
Waste Release Evaluation	☐	x	
	☐	☐	
	☐	☐	
	☐	☐	

Additional Prerequisites: (If Any)
Specified in Work Instructions

Additional Precautions/Limitations/Hold Points/Comments and/or Special Tools/Equipment:
Specified in Work Instructions

CRAFT WORK PACKAGE

Project Name: : Present Landfill Accelerated Action Construction Project, Water Tank Sludge Removal, Rev. 0	Page 2 of 3

Nuclear Safety Review Required: N/A

☐ **Yes** (Attach Categorical Exclusion, Prescreen, SES, or USQD) ☐ **NO** x **N/A**

Nuclear Safety:

N/A		
Name	Signature	Date

System Engineer Review: (N/A if work does not involve an AB credited or AB Defense in Depth system)

System Eng:

N/A		
Name	Signature	Date

Concurrence: (N/A if not required)

Ind. Hygiene & Safety

D. Hibbert		1/21/05
Name	Signature	Date

Concurrence: (N/A if not required)

Radiological Safety

N/A		
Name	Signature	Date

Concurrence: (N/A if not required)

Environmental Compliance

N/A		
Name	Signature	Date

Approval and Authorization:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls) and Authorization by Responsible Manager to perform work:

Approval and Authorization by Responsible Manager to perform work:

RM:

Robert W. Davis	Robert W. Davis	01/21/05
Name	Signature	Date

Authorization by Operations/Facility Management to perform work:

Operations/ Facility Mgt:

N/A		
Name	Signature	Date

Subcontractor Concurrence:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls):

Concurrence by Stoller to perform work:

Project Manager:

Paul Kreitz		1/20/05
Name	Signature	Date

Quality Work: (N/A if work does not have quality requirements)

1) Quality Parts: N/A
2) System description/location: N/A
3) Quality inspection: N/A
4) Retest: N/A

CRAFT WORK PACKAGE

Project Name: Present Landfill Accelerated Action Construction Project, Water Tank Sludge Removal, Rev. 0	Page 3 of 3

Work Performance:

Check which one performed:

Job Task Briefing Performed: ☐ Pre-Ev Briefing Performed (attach completed form): x

Record Work Performed: (N/A if recorded on attached instructions) N/A

PWT Requirements/Operational Check:

☐ Operational Check Performed Satisfactory - OR -

☐ PWT Performed (record PWT performed and results):

Return to Service Actions, if required: N/A

Feedback: (Attach Post-job Review Checklist, if used)

None

Completion Review:

Job Supervisor: Paul Kreitz Paul Kreitz 1/21/05

Name Signature Date

WORK PACKAGE COVER SHEET

Work Tracking No.: T0113087 Revision No.: Rev. 1 E.O. Number:

Title: Present Landfill Accelerated Action – East Face Buttress Fill

	Name	Signature	Date
Planner:			

CONCURRENCE

Based on my personal review, I agree that the work described in this package meets technical requirements under my cognizance, and contains the controls from the JHA.

	Name	Signature	Date
K-H Project Mgr. (or designee):	Bob Davis	Robert W. Davis	1/28/05
Stoller Project Mgr. (or designee):	Paul Kreitz	Paul Kreitz	1/28/05
Stoller QC Mgr. (or designee)	~~Jim Erickson~~ Michael Place	Michael Place	1/29/05
Nielson-Skanska PM (or designee)	Kurt Schroeder	Kurt Schroeder	1-28-05
Golder:	Patrick Harrell	Patrick Harrell	2-5-05
Paragon:	N/A		
Tetra-Tech (QA):	Josh Valentine	Josh Valentine	1-29-05
Earth Tech (Design Engineer):	Scott Powers	Scott Powers	5/19/05
H&S:	Dan Hibbard	Dan Hibbard	1/29/05
Engineering:	NA		
Rad Safety:	NA		
Environmental Compliance:	NA		
Waste:	NA		
Fire Protection:	NA		

APPROVAL

Based on my personal review, and the concurrence of the above technical experts, I agree that the work described in this package meets technical requirements, can be performed safely, and contains the controls of the JHA.

	Name	Signature	Date
Responsible Manager:	Robert W. Davis	Robert W. Davis	1/28/05

Work Tracking No.: T0113087	Revision No.: Rev. 1	E.O. Number:

CLOSURE CONCURRENCE

Based upon my personal review of this work packages and inspection of the work site, the work and retest specified in this package has been satisfactory completed.

	Name	Signature	Date
Job Supervisor:	Kurt Schroeder	Kurt Schroeder	4-22-05
Quality:	[illegible]	Jim Erickson	4-28-05

CLOSURE APPROVAL

	Name	Signature	Date
Responsible Manager:	Robert W. Davis	Robert W. Davis	04/29/05

Do not modify this form except to add organizations for review and concurrence.

CRAFT WORK PACKAGE

WPF: T0112847-46	Charge No.: GR201499	Estimate: N/A	Sequence Date: 2/3/05
Bldg: 202	Location: Present Landfill		Page 1 of 3
Notify: Bob Davis/Marco Calderon	Phone: 7026/2943		

Originator Paul Kreitz/Stoller Phone: 303-994-7697

Project Name: Present Landfill Accelerated Action Construction Project, Truck Recovery, Rev. 0

Project Description:

A belly-dump truck that overturned on the cap will be up-righted and hauled offsite. Soil that was contaminated with fluids from the overturned truck will be removed from the cap. Additionally, another truck on the project which is broken down will be hauled off-site.

Prerequisites/Hazard Control Documents: (Check YES or NO for each line, attach any permits or indicate permit # per governing document)

	YES	NO	Permit No. / Comments
Additional Guidance attached?	x	☐	
Asbestos Abatement Plan	☐	x	
Beryllium Work Form/Log (OS&IH Ch 28)	☐	x	
Cold and Dark Certification	☐	x	
Confined Space Entry Permit (OS&IH Ch 21)	☐	x	
Energized Work Permit (OS&IH Ch 36)	☐	x	
Engineering Inputs Attached?	☐	x	
Environmental Checklist	☐	x	
Excavation & Trenching Checklist (OS&IH Ch45)	☐	x	
Hoisting and Rigging Operations, Checklist (OS&IH Ch 12)	x	☐	
Hot Work Permit (MAN-029-FPPM)	☐	x	
LO/TO Required (OS&IH Ch 9)	☐	x	
Radiological Work Permit Required (If performing a breach, package requires Rad Protection review and approval.)	☐	x	
Scaffold Permit (OS&IH Ch 40)	☐	x	
Soil Disturbance Approval/Waiver Form (OS&IH Ch 45)	☐	x	
State Permit(s)	☐	x	
Surface Contaminated Object Characterization (PRO-267-RSP-09.05)	☐	x	
Waste Release Evaluation	☐	x	
	☐	☐	
	☐	☐	
	☐	☐	

Additional Prerequisites: (If Any)
Specified in Work Instructions

Additional Precautions/Limitations/Hold Points/Comments and/or Special Tools/Equipment:
Specified in Work Instructions

CRAFT WORK PACKAGE

Project Name: : Present Landfill Accelerated Action Construction Project, Truck Recovery, Rev. 0	Page 2 of 3

Nuclear Safety Review Required: N/A

☐ Yes (Attach Categorical Exclusion, Prescreen, SES, or USQD) ☐ NO x N/A

Nuclear Safety: N/A (Name) (Signature) (Date)

System Engineer Review: (N/A if work does not involve an AB credited or AB Defense in Depth system)

System Eng: N/A (Name) (Signature) (Date)

Concurrence: (N/A if not required)

Ind. Hygiene & Safety: D Hilbert (Name) (Signature) 2/3/05 (Date)

Concurrence: (N/A if not required)

Radiological Safety: N/A (Name) (Signature) (Date)

Concurrence: (N/A if not required)

Environmental Compliance: N/A per (Name) (Signature) (Date)

Approval and Authorization:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls) and Authorization by Responsible Manager to perform work:

Approval and Authorization by Responsible Manager to perform work:

RM: Robert W. Davis (Name) Robert W. Davis (Signature) 02/03/05 (Date)

Authorization by Operations/Facility Management to perform work:

Operations/ Facility Mgt: N/A per (Name) (Signature) (Date)

Subcontractor Concurrence:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls):

Concurrence by Stoller to perform work:

Project Manager: Paul Kreitz (Name) Paul Kreitz (Signature) 2/3/05 (Date)

Quality Work: (N/A if work does not have quality requirements)

1) Quality Parts: N/A
2) System description/location: N/A
3) Quality Inspection: N/A
4) Retest: N/A

CRAFT WORK PACKAGE

Project Name: Present Landfill Accelerated Action Construction Project, Truck Recovery, Rev. 0	Page 3 of 3

Work Performance:
Check which one performed:
Job Task Briefing Performed: ☐ Pre-Ev Briefing Performed (attach completed form): x

Record Work Performed: (N/A if recorded on attached instructions) N/A

PWT Requirements/Operational Check:
☐ Operational Check Performed Satisfactory - OR -
☐ PWT Performed (record PWT performed and results):

Return to Service Actions, if required: N/A

Feedback: (Attach Post-job Review Checklist, if used)

None

Completion Review:
Job Supervisor: Kurt Schroeder Kurt Schroeder 3-15-05
Name Signature Date

CRAFT WORK PACKAGE

WPF: T0112847-45	Charge No.: GR201400	Estimate: N/A	Sequence Date: 2/4/05
Bldg: 202	Location: Present Landfill		Page 1 of 3
Notify: Bob Davis/Marco Calderon	Phone: 7026/2943		

Originator Paul Kreitz/Stoller Phone: 303-994-7697

Project Name: Present Landfill Accelerated Action Construction Project, Seep Capture System Repair, Rev. 1

Project Description:

The PLF seep is currently emerging from the ground below the existing seep treatment system pipe. This craft package describes the activities to install a barrier to prevent this from happening and to allow the seep to drain through the pipe. The existing pipe will be extended to divert the water around existing structures that will remain in place.

Prerequisites/Hazard Control Documents: (Check YES or NO for each line, attach any permits or indicate permit # per governing document)

	YES	NO	Permit No. / Comments
Additional Guidance attached?	x	☐	
Asbestos Abatement Plan	☐	x	
Beryllium Work Form/Log (OS&IH Ch 28)	☐	x	
Cold and Dark Certification	☐	x	
Confined Space Entry Permit (OS&IH Ch 21)	☐	x	
Energized Work Permit (OS&IH Ch 36)	☐	x	
Engineering Inputs Attached?	x	☐	51781-015
Environmental Checklist	x	☐	
Excavation & Trenching Checklist (OS&IH Ch 45)	x	☐	
Hoisting and Rigging Operations, Checklist (OS&IH Ch 12)	☐	x	
Hot Work Permit (MAN-029-FPPM)	☐	x	
LO/TO Required (OS&IH Ch 9)	☐	x	
Radiological Work Permit Required (If performing a breach, package requires Rad Protection review and approval.)	☐	x	
Scaffold Permit (OS&IH Ch 40)	☐	x	
Soil Disturbance Approval/Waiver Form (OS&IH Ch 45)	x	☐	
State Permit(s)	☐	x	
Surface Contaminated Object Characterization (PRO-267-RSP-09.05)	☐	x	
Waste Release Evaluation	☐	x	
	☐	☐	
	☐	☐	
	☐	☐	

Additional Prerequisites: (If Any)
Specified in Work Instructions

Additional Precautions/Limitations/Hold Points/Comments and/or Special Tools/Equipment:
Specified in Work Instructions

CRAFT WORK PACKAGE

Project Name: : Present Landfill Accelerated Action Construction Project, Seep Capture System Repair, Rev. 1	Page 2 of 3

Nuclear Safety Review Required: N/A

☐ Yes (Attach Categorical Exclusion, Prescreen, SES, or USQD) ☐ NO x N/A

Nuclear Safety:

	Name	Signature	Date
	N/A		

System Engineer Review: (N/A if work does not involve an AB credited or AB Defense in Depth system)

System Eng:

	Name	Signature	Date
	N/A		

Concurrence: (N/A if not required)

	Name	Signature	Date
Ind. Hygiene & Safety	D. Hibbert		2/4/05

Concurrence: (N/A if not required)

	Name	Signature	Date
Radiological Safety	N/A		

Concurrence: (N/A if not required)

	Name	Signature	Date
Environmental Compliance	NA		

Approval and Authorization:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls) and Authorization by Responsible Manager to perform work:

Approval and Authorization by Responsible Manager to perform work:

	Name	Signature	Date
RM:	Robert W. Davis	Robert W. Davis	02/05/05

Authorization by Operations/Facility Management to perform work:

	Name	Signature	Date
Operations/ Facility Mgt:	NA		

Subcontractor Concurrence:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls):

Concurrence by Stoller to perform work:

	Name	Signature	Date
Project Manager:	Paul Kreitz		2/4/05

Quality Work: (N/A if work does not have quality requirements)

1) Quality Parts: N/A
2) System description/location: N/A
3) Quality inspection: N/A
4) Retest: N/A

CRAFT WORK PACKAGE

Project Name: Present Landfill Accelerated Action Construction Project, Seep Capture System Repair, Rev. 1	Page 3 of 3

Work Performance:
Check which one performed:
Job Task Briefing Performed: ☐ Pre-Ev Briefing Performed (attach completed form): x

Record Work Performed: (N/A if recorded on attached instructions) N/A

PWT Requirements/Operational Check:
☐ Operational Check Performed Satisfactory - OR -
☐ PWT Performed (record PWT performed and results):

Return to Service Actions, if required: N/A

Feedback: (Attach Post-job Review Checklist, if used)

None

Completion Review:
Job Supervisor:

Name	Signature	Date
[signature]	GARY M. SHREWSBERRY	2/20/05

CRAFT WORK PACKAGE

WPF: T0112847-55	Charge No.: GR201400	Estimate: N/A	Sequence Date: 2/21/05
Bldg: NA	Location: Present Landfill		Page 1 of 3
Notify: Bob Davis/Mike Bemski	Phone: 7026/4090		

Originator Paul Kreitz/Stoller Phone: 303-994-7697

Project Name: Present Landfill Accelerated Action Construction Project, Erosion Control Material Off-Loading, Rev. 0

Project Description:

This work package describes the requirements for offloading the erosion control materials from the delivery trucks to the laydown yards.

Prerequisites/Hazard Control Documents: (Check YES or NO for each line, attach any permits or indicate permit # per governing document)

	YES	NO	Permit No. / Comments
Additional Guidance attached?	x	☐	
Asbestos Abatement Plan	☐	x	
Beryllium Work Form/Log (OS&IH Ch 28)	☐	x	
Cold and Dark Certification	☐	x	
Confined Space Entry Permit (OS&IH Ch 21)	☐	x	
Energized Work Permit (OS&IH Ch 36)	☐	x	
Engineering Inputs Attached?	☐	x	
Environmental Checklist	☐	x	
Excavation & Trenching Checklist (OS&IH Ch45)	☐	x	
Hoisting and Rigging Operations, Checklist (OS&IH Ch 12)	x	☐	
Hot Work Permit (MAN-029-FPPM)	☐	x	
LO/TO Required (OS&IH Ch 9)	☐	x	
Radiological Work Permit Required (If performing a breach, package requires Rad Protection review and approval.)	☐	x	
Scaffold Permit (OS&IH Ch 40)	☐	x	
Soil Disturbance Approval/Waiver Form (OS&IH Ch 45)	☐	x	
State Permit(s)	☐	x	
Surface Contaminated Object Characterization (PRO-267-RSP-09.05)	☐	x	
Waste Release Evaluation	☐	x	
	☐	☐	
	☐	☐	
	☐	☐	

Additional Prerequisites: (If Any)
Specified in Work Instructions

Additional Precautions/Limitations/Hold Points/Comments and/or Special Tools/Equipment:
Specified in Work Instructions

CRAFT WORK PACKAGE

Project Name: : Present Landfill Accelerated Action Construction Project, Erosion Control Material Off-Loading, Rev. 0	Page 2 of 3

Nuclear Safety Review Required: N/A

☐ Yes (Attach Categorical Exclusion, Prescreen, SES, or USQD) ☐ NO x N/A

Nuclear Safety: N/A

Name Signature Date

System Engineer Review: (N/A if work does not involve an AB credited or AB Defense in Depth system)

System Eng: N/A

Name Signature Date

Concurrence: (N/A if not required)

Ind. Hygiene & Safety: D. Hilbert [signature] 2/22/05

Name Signature Date

Concurrence: (N/A if not required)

Radiological Safety: N/A

Name Signature Date

Concurrence: (N/A if not required)

Environmental Compliance: N/A

Name Signature Date

Approval and Authorization:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls) and Authorization by Responsible Manager to perform work:

Approval and Authorization by Responsible Manager to perform work:

RM: Robert W. Davis [signature] Robert W. Davis 02/22/05

Name Signature Date

Authorization by Operations/Facility Management to perform work:

Operations/ Facility Mgt: N/A

Name Signature Date

Subcontractor Concurrence:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls):

Concurrence by Stoller to perform work:

Project Manager: Paul Kreitz [signature] 2/21/05

Name Signature Date

Subcontractor Concurrence:

Construction Superintendent: Buzz Green ~~Kurt Schroeder~~ [signature] 2/21/05

PDO 2/21/05

Name Signature Date

Quality Work: (N/A if work does not have quality requirements)

1) Quality Parts: N/A
2) System description/location: N/A
3) Quality Inspection: N/A
4) Retest: N/A

CRAFT WORK PACKAGE

Project Name: Present Landfill Accelerated Action Construction Project, Erosion Control Material Off-Loading, Rev. 0	Page 3 of 3

Work Performance:

Check which one performed:

Job Task Briefing Performed: ☐ Pre-Ev Briefing Performed (attach completed form): x

Record Work Performed: (N/A if recorded on attached instructions) N/A

PWT Requirements/Operational Check:

☐ Operational Check Performed Satisfactory - OR -

☐ PWT Performed (record PWT performed and results): N/A

Return to Service Actions, if required: N/A

N/A

Feedback: (Attach Post-job Review Checklist, if used)

None

Completion Review:

Job Supervisor: Allan Green — Name / Signature — 4/8/05 Date

CRAFT WORK PACKAGE

WPF: T0112847-60	Charge No.: GR201400	Estimate: N/A	Sequence Date: 3/7/05
Bldg: 202	Location: Present Landfill		Page 1 of 3
Notify: Bob Davis/Marco Calderon	Phone: 7026/2943		

Originator Paul Kreitz/Stoller Phone: 303-994-7697

Project Name: Present Landfill Accelerated Action Construction Project, Asbestos Excavation, Rev. 0

Project Description:

Prerequisites/Hazard Control Documents: (Check YES or NO for each line, attach any permits or indicate permit # per governing document)

	YES	NO	Permit No. / Comments
Additional Guidance attached?	x	☐	
Asbestos Abatement Plan	x	☐	Work will be performed under K-H's existing AAP
Beryllium Work Form/Log (OS&IH Ch 28)	☐	x	
Cold and Dark Certification	☐	x	
Confined Space Entry Permit (OS&IH Ch 21)	☐	x	
Energized Work Permit (OS&IH Ch 36)	☐	x	
Engineering Inputs Attached?	☐	x	
Environmental Checklist	x	☐	
Excavation & Trenching Checklist (OS&IH Ch45)	x	☐	
Hoisting and Rigging Operations, Checklist (OS&IH Ch 12)	☐	x	
Hot Work Permit (MAN-029-FPPM)	☐	x	
LO/TO Required (OS&IH Ch 9)	☐	x	
Radiological Work Permit Required (If performing a breach, package requires Rad Protection review and approval.)	☐	x	
Scaffold Permit (OS&IH Ch 40)	☐	x	
Soil Disturbance Approval/Waiver Form (OS&IH Ch 45)	x	☐	
State Permit(s)	☐	x	
Surface Contaminated Object Characterization (PRO-267-RSP-09.05)	☐	x	
Waste Release Evaluation	☐	x	
	☐	☐	
	☐	☐	
	☐	☐	

Additional Prerequisites: (If Any)
Specified in Work Instructions

Additional Precautions/Limitations/Hold Points/Comments and/or Special Tools/Equipment:
Specified in Work Instructions

CRAFT WORK PACKAGE

Project Name: Present Landfill Accelerated Action Construction Project, Asbestos Excavation, Rev. 0	Page 2 of 3

Nuclear Safety Review Required: N/A

☐ Yes (Attach Categorical Exclusion, Prescreen, SES, or USQD) ☐ NO x N/A

Nuclear Safety: N/A (Name) (Signature) (Date)

System Engineer Review: (N/A if work does not involve an AB credited or AB Defense in Depth system)

System Eng: N/A (Name) (Signature) (Date)

Concurrence: (N/A if not required)

Ind. Hygiene & Safety: D. Hiebert (Name) (Signature) 3/7/05 (Date)

Concurrence: (N/A if not required)

Radiological Safety: ~~N/A~~ S Cagan (Name) (Signature) 3-7-05 (Date)

Concurrence: (N/A if not required)

Environmental Compliance: Mark Burmeister / MC Burmeister (Name) (Signature) 3/7/05 (Date)

Approval and Authorization:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls) and Authorization by Responsible Manager to perform work:

Approval and Authorization by Responsible Manager to perform work:

RM: Robert W. Davis (Name) Robert W. Davis (Signature) 3/7/05 (Date)

Authorization by Operations/Facility Management to perform work:

Operations/ Facility Mgt: N/A (Name) (Signature) (Date)

Subcontractor Concurrence:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls):

Concurrence by Stoller to perform work:

Project Manager: Paul Kreitz (Name) (Signature) 3/7/05 (Date)

Quality Work: (N/A if work does not have quality requirements)

1) Quality Parts: N/A
2) System description/location: N/A
3) Quality inspection: N/A
4) Retest: N/A

CRAFT WORK PACKAGE

Project Name: Present Landfill Accelerated Action Construction Project, Asbestos Excavation, Rev. 0	Page 3 of 3

Work Performance:
Check which one performed:
Job Task Briefing Performed: ☐ Pre-Ev Briefing Performed (attach completed form): x

Record Work Performed: (N/A if recorded on attached instructions) N/A

PWT Requirements/Operational Check:
☐ Operational Check Performed Satisfactory - OR -
☐ PWT Performed (record PWT performed and results):

Return to Service Actions, if required: N/A

Feedback: (Attach Post-job Review Checklist, if used)

Completion Review:
Job Supervisor: M. Calderon 5/13/05

Name Signature Date

CRAFT WORK PACKAGE

WPF: T0112847-61	Charge No.: GR201400	Estimate: N/A	Sequence Date: 3/7/05
Bldg: 202	Location: Present Landfill		Page 1 of 3
Notify: Bob Davis/Marco Calderon	Phone: 7026/2943		

Originator Paul Kreitz/Stoller Phone: 303-994-7697

Project Name: Present Landfill Accelerated Action Construction Project, 22-inch and 2-inch Present Landfill Sampling Plans, Rev. 0

Project Description:

Prerequisites/Hazard Control Documents: (Check YES or NO for each line, attach any permits or indicate permit # per governing document)

	YES	NO	Permit No. / Comments
Additional Guidance attached?	x	☐	
Asbestos Abatement Plan	☐	x	
Beryllium Work Form/Log (OS&IH Ch 28)	☐	x	
Cold and Dark Certification	☐	x	
Confined Space Entry Permit (OS&IH Ch 21)	☐	x	
Energized Work Permit (OS&IH Ch 36)	☐	x	
Engineering Inputs Attached?	☐	x	
Environmental Checklist	☐	x	
Excavation & Trenching Checklist (OS&IH Ch45)	x	☐	
Hoisting and Rigging Operations, Checklist (OS&IH Ch 12)	☐	x	
Hot Work Permit (MAN-029-FPPM)	☐	x	
LO/TO Required (OS&IH Ch 9)	☐	x	
Radiological Work Permit Required (If performing a breach, package requires Rad Protection review and approval.)	☐	x	
Scaffold Permit (OS&IH Ch 40)	☐	x	
Soil Disturbance Approval/Waiver Form (OS&IH Ch 45)	☐	x	
State Permit(s)	☐	x	
Surface Contaminated Object Characterization (PRO-267-RSP-09.05)	☐	x	
Waste Release Evaluation	☐	x	
	☐	☐	
	☐	☐	
	☐	☐	

Additional Prerequisites: (If Any)
Specified in Work Instructions

Additional Precautions/Limitations/Hold Points/Comments and/or Special Tools/Equipment:
Specified in Work Instructions

CRAFT WORK PACKAGE

Project Name: : Present Landfill Accelerated Action Construction Project, 22-inch and 2-inch Present Landfill Sampling Plans, Rev. 0	Page 2 of 3

Nuclear Safety Review Required: N/A

☐ Yes (Attach Categorical Exclusion, Prescreen, SES, or USQD) ☐ NO x N/A

Nuclear Safety:

N/A — Name / Signature / Date

System Engineer Review: (N/A if work does not involve an AB credited or AB Defense in Depth system)

System Eng:

N/A — Name / Signature / Date

Concurrence: (N/A if not required)

Ind. Hygiene & Safety: D. Hilbert — Name / Signature / 3/4/05 Date

Concurrence: (N/A if not required)

Radiological Safety: N/A — Name / Signature / Date

Concurrence: (N/A if not required)

~~Environmental~~ Compliance [redacted] Josh Valentine — Name / Signature / 3-9-05 Date

Quality Assurance

Approval and Authorization:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls) and Authorization by Responsible Manager to perform work:

Approval and Authorization by Responsible Manager to perform work:

RM: Robert W. Davis — Name / Signature / 03/09/05 Date

Authorization by Operations/Facility Management to perform work:

Operations/ Facility Mgt: N/A — Name / Signature / Date

Subcontractor Concurrence:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls):

Concurrence by Stoller to perform work:

Project Manager: Paul Kreitz — Name / Signature / 3/7/05 Date

Quality Work: (N/A if work does not have quality requirements)

1) Quality Parts: N/A
2) System description/location: N/A
3) Quality inspection: N/A
4) Retest: N/A

CRAFT WORK PACKAGE

Project Name: Present Landfill Accelerated Action Construction Project, 22-inch and 2-inch Present Landfill Sampling Plans, Rev. 0	Page 3 of 3

Work Performance:

Check which one performed:

Job Task Briefing Performed: ☐ Pre-Ev Briefing Performed (attach completed form): x

Record Work Performed: (N/A if recorded on attached instructions) N/A

PWT Requirements/Operational Check:

☐ Operational Check Performed Satisfactory - OR -

☐ PWT Performed (record PWT performed and results):

Return to Service Actions, if required: N/A

Feedback: (Attach Post-job Review Checklist, if used)

None Req'd

Completion Review:

Job Supervisor: Paul Kruz, Paul Kruz 5/18/05

Name Signature Date

T0113123 WORK PACKAGE COVER SHEET

Work Tracking No.: T0113123 — Revision No.: Rev 0 — E.O. Number

Title: Present Landfill Accelerated Action – New Seep Excavation and Repair

	Name	Signature	Date
Planner:			March 8, 2005

CONCURRENCE

Based on my personal review, I agree that the work described in this package meets technical requirements under my cognizance, and contains the controls from the JHA.

	Name	Signature	Date
K-H Project Mgr. (or designee):	Bob Davis	Robert W. Davis	3/10/05
Stoller Project Mgr. (or designee):	Paul Kreitz	Paul Kreitz	3/8/05
Stoller QC Mgr. (or designee)	Jim Erickson	Jim Erickson	3-8-05
Nielson-Skanska PM (or designee)	Kurt Schroeder	Kurt Schroeder	3-10-05
Golder:	Michael Place	Michael Place	
Paragon:	N/A		
Tetra-Tech (QA):	Josh Valentine	Josh Valentine	3/10/05
Earth Tech (Design Engineer):	Scott Powell	Scott Powell	5/19/05
H&S:	Doug Hiebert	Doug Hiebert	3/10/05
Engineering:	N/A		
Rad Safety:	N/A		
Environmental Compliance:	N/A		
Waste:	N/A		
Fire Protection:	N/A		

APPROVAL

Based on my personal review, and the concurrence of the above technical experts, I agree that the work described in this package meets technical requirements, can be performed safely, and contains the controls of the JHA.

	Name	Signature	Date
Responsible Manager:	Robert W. Davis	Robert W. Davis	03/10/05

Work Tracking No.: T0113123 Revision No: Rev. 0 E.O. Number:

CLOSURE CONCURRENCE

Based upon my personal review of this work packages and inspection of the work site, the work and retest specified in this package has been satisfactory completed.

	Name	Signature	Date
Job Supervisor:	Paul Kreitz		5/18/05
Quality:	J. Erickson		5-18-05

CLOSURE APPROVAL

	Name	Signature	Date
Responsible Manager:	Robert W. Davis		05/22/05

Do not modify this form except to add organizations for review and concurrence.

WORK PACKAGE COVER SHEET

Work Tracking No.: T0113074 Revision No.: Rev. 1 E.O. Number:

Title: Present Landfill Accelerated Action – East Face Liner

	Name	Signature	Date
Planner:	Kathy Hagglund	Kathy Hagglund	3/22/05

CONCURRENCE

Based on my personal review, I agree that the work described in this package meets technical requirements under my cognizance, and contains the controls from the JHA.

	Name	Signature	Date
K-H Project Mgr. (or designee):	Bob Davis	Robert W. Davis	3/22/05
Stoller Project Mgr. (or designee):	Paul Kreitz	Paul Kreitz	3/22/05
Stoller QC Mgr. (or designee)	Michael Bolton (Harry)	Michael Bolton	3/22/05
Nielson-Skanska PM (or designee)	Kurt Schroeder	[illegible]	3-22-05
Colorado Lining PM (or designee)	Allan Green (Buz)	Allan Green	3/22/05
Golder:	Michael Place	[illegible]	5/19/05
Paragon:	N/A		
Tetra-Tech (QA):	Josh Valentine	[illegible]	5/19/05
Earth Tech (Design Engineer):	Scott Purvis	[illegible]	5/19/05
H&S:	D. Hibbard	[illegible]	5/19/05
Engineering:	N/A		
Rad Safety:	N/A		
Environmental Compliance:	N/A		
Waste:	N/A		

APPROVAL

Based on my personal review, and the concurrence of the above technical experts, I agree that the work described in this package meets technical requirements, can be performed safely, and contains the controls of the JHA.

	Name	Signature	Date
Responsible Manager:	Robert W. Davis	Robert W. Davis	03/22/05

Work Tracking No.: T0113074 Revision No.: Rev. 1 E.O. Number:

CLOSURE CONCURRENCE

Based upon my personal review of this work packages and inspection of the work site, the work and retest specified in this package has been satisfactory completed.

	Name	Signature	Date
Job Supervisor:	Buz Green		4-8-05
Quality:		Jim Erickson	4-8-05

CLOSURE APPROVAL

	Name	Signature	Date
Responsible Manager:	Robert W. Davis		04/13/05

Do not modify this form except to add organizations for review and concurrence.

WORK PACKAGE COVER SHEET

Work Tracking No.: T0113153 Revision No.: Rev. 0 E.O. Number:

Title: Present Landfill Accelerated Action – East Face Rock Layer

	Name	Signature	Date
Planner:	Kathy Hagglund		

CONCURRENCE

Based on my personal review, I agree that the work described in this package meets technical requirements under my cognizance, and contains the controls from the JHA.

	Name	Signature	Date
K-H Project Mgr. (or designee):	Bob Davis	Robert W. Davis	04/05/05
Stoller Project Mgr. (or designee):	Paul Kreitz	Paul Kreitz	3/30/05
Stoller QC Mgr. (or designee)	Jim Erickson	J. Erickson	
Nielson-Skanska PM (or designee)	Kurt Schroeder	Kurt Schroeder	
Golder:	Michael Place	Michael Place	4/7/05
Paragon:	N/A		
Tetra-Tech (QA):	Josh Valentine	Josh Valentine	5/19/05
Earth Tech (Design Engineer):	Scott Power	Scott Power	5/19/05
H&S:	D. Hickerson		5/19/05
Engineering:	N/A		
Rad Safety:	N/A		
Environmental Compliance:	N/A		
Waste:	N/A		

APPROVAL

Based on my personal review, and the concurrence of the above technical experts, I agree that the work described in this package meets technical requirements, can be performed safely, and contains the controls of the JHA.

	Name	Signature	Date
Responsible Manager:	Robert W. Davis	Robert W. Davis	04/05/05

Work Tracking No.: T0113153 Revision No.: Rev. 0 E.O. Number:

CLOSURE CONCURRENCE

Based upon my personal review of this work packages and inspection of the work site, the work and retest specified in this package has been satisfactory completed.

	Name	Signature	Date
Job Supervisor:	Paul Kreitz	Paul Kreitz	5/18/05
Quality:	Jim Erickson		5-18-05

CLOSURE APPROVAL

	Name	Signature	Date
Responsible Manager:	Robert W. Davis	Robert W. Davis	05/18/05

Do not modify this form except to add organizations for review and concurrence.

WORK PACKAGE COVER SHEET

Work Tracking No.: T0113102 Revision No.: Rev 1 E.O. Number:

Title: Present Landfill Accelerated Action – New Seep Treatment System

Planner: Kathy Hoagland

CONCURRENCE

Based on my personal review, I agree that the work described in this package meets technical requirements under my cognizance, and contains the controls from the JHA.

	Name	Signature	Date
K-H Project Mgr. (or designee):	Bob Davis	W/OP PER B. DAVIS PER TELECON Robert M. Davis	04/06/05 10:20
Stoller Project Mgr. (or designee):	Paul Kreitz		4/4/05
Stoller QC Mgr. (or designee)	Jim Erickson		
Nielson-Skanska PM (or designee)	Kurt Schroeder		4-6-05
Golder:	Michael Place N/A		5/19/05
Paragon:	N/A		
Tetra-Tech (QA):	Josh Valentine N/A		5/19/05
Earth Tech (Design Engineer):	Scott Lasse N/A		5/19/05
H&S:	[illegible]		4/5/05
Engineering:	N/A		
Rad Safety:	N/A		
Environmental Compliance:	N/A		
Waste:	N/A		
Fire Protection:	N/A		

APPROVAL

Based on my personal review, and the concurrence of the above technical experts, I agree that the work described in this package meets technical requirements, can be performed safely, and contains the controls of the JHA.

	Name	Signature	Date
Responsible Manager:	W/OP PER B. DAVIS PER TELECON Robert M. Davis	4/6/05 10:20	04/06/05

Work Tracking No.: T0113102 Revision No.: Rev. 1 E.O. Number:

CLOSURE CONCURRENCE

Based upon my personal review of this work packages and inspection of the work site, the work and retest specified in this package has been satisfactory completed.

	Name	Signature	Date
Job Supervisor:	Kurt Schroeder	Kurt Schroeder	5-17-05
Quality:	Paul Kreda	Paul Kreda	5/17/05

CLOSURE APPROVAL

	Name	Signature	Date
Responsible Manager:	Robert W. Davis	Robert W. Davis	5/18/05

Do not modify this form except to add organizations for review and concurrence.

WORK PACKAGE COVER SHEET

Work Tracking No.: T0113139 Revision No.: Rev. 0 E.O. Number:

Title: Present Landfill Accelerated Action – East Face Upper Cushion Layer

	Name	Signature	Date
Planner:	Kathy Hagglund		

CONCURRENCE

Based on my personal review, I agree that the work described in this package meets technical requirements under my cognizance, and contains the controls from the JHA.

	Name	Signature	Date
K-H Project Mgr. (or designee):	Bob Davis	PER B. DAVIS 3/30/05 Robert W. Davis	04/05/05
Stoller Project Mgr. (or designee):	Paul Kreitz	Paul Kreitz	3/16/05
Stoller QC Mgr. (or designee)	Jim Erickson ~~Michael Bolton (Harry)~~	[signature]	3/29/05
Nielson-Skanska PM (or designee)	Kurt Schroeder	Kurt Schroeder	3-30-05
Golder:	Michael Place	[signature]	4/7/05
Paragon:	N/A		
Tetra-Tech (QA):	Josh Valentine	[signature]	5/19/05
Earth Tech (Design Engineer):	Scott Pavese	[signature]	5/19/05
H&S:	D Hiebert	[signature]	5/19/05
Engineering:	N/A		
Rad Safety:	N/A		
Environmental Compliance:	N/A		
Waste:	N/A		

APPROVAL

Based on my personal review, and the concurrence of the above technical experts, I agree that the work described in this package meets technical requirements, can be performed safely, and contains the controls of the JHA.

	Name	Signature	Date
Responsible Manager:	Robert W. Davis	Robert W. Davis	04/05/05

Work Tracking No.: T0113139	Revision No.: Rev. 0	E.O. Number:

CLOSURE CONCURRENCE

Based upon my personal review of this work packages and inspection of the work site, the work and retest specified in this package has been satisfactory completed.

	Name	Signature	Date
Job Supervisor:	Paul Kreutz	Paul Kreutz	5/19/05
Quality:	Paul Kreutz FOR J. Erickson	Paul Kreutz	5/19/05

CLOSURE APPROVAL

	Name	Signature	Date
Responsible Manager:	Robert W. Davis	Robert W. Davis	05/19/05

Do not modify this form except to add organizations for review and concurrence.

WORK PACKAGE COVER SHEET

Work Tracking No.: T0113162 Revision No.: Rev. 0 E.O. Number:

Title: Present Landfill Accelerated Action – East Face Soil Cover

	Name	Signature	Date
Planner:	Kathy Hagglund	Kathy Hagglund	4/15/05

CONCURRENCE

Based on my personal review, I agree that the work described in this package meets technical requirements under my cognizance, and contains the controls from the JHA.

	Name	Signature	Date
K-H Project Mgr. (or designee):	Bob Davis M. Calderon for Bob Davis		4/15/05
Stoller Project Mgr. (or designee):	Paul Kreitz		4/15/05
Stoller QC Mgr. (or designee)	Jim Erickson		4/18/05 4-17-05
Nielson-Skanska PM (or designee)	Kurt Schroeder K		4-17-05
Golder:	Matt Cashimer	MATT CASHIMER	4/18/05
Paragon:	Brian Reed		4-18-05
Tetra-Tech (QA):	Josh Valentine		4-16-05
Earth Tech (Design Engineer):	Scott Lucas	N/A	5/19/05
H&S:	Doug Hiebert		4/15/05
Engineering:		N/A	
Rad Safety:		N/A	
Environmental Compliance:		N/A	
Waste:		N/A	

APPROVAL

Based on my personal review, and the concurrence of the above technical experts, I agree that the work described in this package meets technical requirements, can be performed safely, and contains the controls of the JHA.

	Name	Signature	Date
Responsible Manager:	KAREN WIEMER		4/18/05

Work Tracking No.: ID113022	Revision No.: Rev. 0	E.O. Number:

CLOSURE CONCURRENCE

Based upon my personal review of this work packages and inspection of the work site, the work and retest specified in this package has been satisfactory completed.

	Name	Signature	Date
Job Supervisor:	Kurt Schroeder	Kurt Schroeder	5-17-05
Quality:	Paul Kreutz FOR J. Erickson	Paul Kreutz	5/17/05

CLOSURE APPROVAL

	Name	Signature	Date
Responsible Manager:	Robert W. Davis	Robert W. Davis	5/17/05

Do not modify this form except to add organizations for review and concurrence.

CRAFT WORK PACKAGE

WPF: T0112847-69, Rev 0	Bldg.: RFETS Landfill	Charge: N/A	Page 1 of 3

Originator Paul Kreitz Date: 4/11/05

This work package covers demobilization of the following items from the Present Landfill – trailers, generators, jersey barriers, fencing and port-a-lets.

Prerequisites/Hazard Control Docuents: (Check YES or NO for each line, attach any permits or indicate permit # per governing document)

	YES	NO	Permit No. / Comments
Additional Guidance attached?	x	☐	
Asbestos Abatement Plan	☐	x	
Beryllium Work Form/Log (OS&IH Ch 28)	☐	x	
Cold and Dark Certification	☐	x	
Confined Space Entry Permit (OS&IH Ch 21)	☐	x	
Energized Work Permit (OS&IH Ch 36)	☐	x	
Engineering Inputs Attached?	☐	x	
Environmental Checklist	☐	x	
Excavation & Trenching Checklist (OS&IH Ch45)	☐	x	
Hoisting and Rigging Operations, Checklist (OS&IH Ch 12)	x	☐	
Hot Work Permit (MAN-029-FPPM)	☐	x	
LO/TO Required (OS&IH Ch 9)	x	☐	
Radiological Work Permit Required (If performing a breach, package requires Rad Protection review and approval.)	☐	x	
Scaffold Permit (OS&IH Ch 40)	☐	x	
Soil Disturbance Approval/Waiver Form (OS&IH Ch 45)	☐	x	
State Permit(s)	☐	x	
Surface Contaminated Object Characterization (PRO-267-RSP-09.05)	☐	x	
Waste Release Evaluation	☐	x	
	☐	☐	
	☐	☐	
	☐	☐	

Additional Prerequisites: (If Any)
Specified in Work Instructions

Additional Precautions/Limitations/Hold Points/Comments and/or Special Tools/Equipment:
Specified in Work Instructions

CRAFT WORK PACKAGE

WPF: Preliminary Demobilization – T0112847-69, Rev 0	Page 2 of 3

Nuclear Safety Review Required: N/A

☐ Yes (Attach Categorical Exclusion, Prescreen, SES, or USQD) ☐ NO x N/A

Nuclear Safety:

Name	Signature	Date
N/A		

System Engineer Review: (N/A if work does not involve an AB credited or AB Defense in Depth system)

System Eng:

Name	Signature	Date
N/A		

Concurrence: (N/A if not required)

Ind. Hygiene & Safety

Name	Signature	Date
N/A		

Concurrence: (N/A if not required)

Radiological Safety

Name	Signature	Date
N/A	N/A	

Concurrence: (N/A if not required)

Environmental Compliance

Name	Signature	Date
N/A		

Approval and Authorization:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls) and Authorization by Responsible Manager to perform work:

Approval and Authorization by Responsible Manager to perform work:

RM:

Name	Signature	Date
P. Kreitz FOR B. Davis		4/13/05

Authorization by Operations/Facility Management to perform work:

Operations/ Facility Mgt:

Name	Signature	Date
N/A		

Quality Work: (N/A if work does not have quality requirements)

1) Quality Parts: N/A

2) System description/location: N/A

3) Quality inspection: N/A

4) Retest: N/A

Robert Davis 04/25/05

CRAFT WORK PACKAGE

WPF: Preliminary Demobilization – T0112847-69, Rev 0	Page 3 of 3

Work Performance:
Check which one performed:
Job Task Briefing Performed: ☐ Pre-Ev Briefing Performed (attach completed form): x

Record Work Performed: (N/A if recorded on attached instructions) N/A

PWT Requirements/Operational Check:
☐ Operational Check Performed Satisfactory - OR - N/A
☐ PWT Performed (record PWT performed and results): N/A

PwD 05/23/05

Return to Service Actions, if required: N/A

Feedback: (Attach Post-job Review Checklist, if used)

None Req'd

Completion Review:
Job Supervisor: Paul Kreitz Paul Kreitz 5/20/05
Name Signature Date

CRAFT WORK PACKAGE

WPF: T0112847-68, Rev 1	Bldg.: RFETS Landfill	Charge: N/A	Page 1 of 3

Originator Paul Kreitz Date: 4/27/05

This work package covers the following demobilization activities at the Present Landfill – trailer sites, parking area and laydown area restoration, spoils pile mitigation, water supply station removal, removal of the gates to Centennial, nuclear density gauge disposition, fuel storage facility removal, wash down pad removal and loading extra liner materials onto trailers for removal from site.

Prerequisites/Hazard Control Documents: (Check YES or NO for each line, attach any permits or indicate permit # per governing document)

	YES	NO	Permit No. / Comments
Additional Guidance attached?	x	☐	
Asbestos Abatement Plan	☐	x	
Beryllium Work Form/Log (OS&IH Ch 28)	☐	x	
Cold and Dark Certification	☐	x	
Confined Space Entry Permit (OS&IH Ch 21)	☐	x	
Energized Work Permit (OS&IH Ch 36)	☐	x	
Engineering Inputs Attached?	☐	x	
Environmental Checklist	x	☐	
Excavation & Trenching Checklist (OS&IH Ch45)	☐	x	
Hoisting and Rigging Operations, Checklist (OS&IH Ch 12)	x	☐	
Hot Work Permit (MAN-029-FPPM)	☐	x	
LO/TO Required (OS&IH Ch 9)	☐	x	
Radiological Work Permit Required (If performing a breach, package requires Rad Protection review and approval.)	☐	x	
Scaffold Permit (OS&IH Ch 40)	☐	x	
Soil Disturbance Approval/Waiver Form (OS&IH Ch 45)	x	☐	
State Permit(s)	☐	x	
Surface Contaminated Object Characterization (PRO-267-RSP-09.05)	☐	x	
Waste Release Evaluation	☐	x	
	☐	☐	
	☐	☐	
	☐	☐	

Additional Prerequisites: (If Any)
Specified in Work Instructions

Additional Precautions/Limitations/Hold Points/Comments and/or Special Tools/Equipment:
Specified in Work Instructions

CRAFT WORK PACKAGE

WPF: Final Demobilization – T0112847-68, Rev 1	Page 2 of 3

Nuclear Safety Review Required: N/A

☐ Yes (Attach Categorical Exclusion, Prescreen, SES, or USQD) ☐ NO x N/A

Nuclear Safety:

N/A
Name Signature Date

System Engineer Review: (N/A if work does not involve an AB credited or AB Defense in Depth system)

System Eng:

N/A
Name Signature Date

Concurrence: (N/A if not required)

Ind. Hygiene & Safety

N/A
Name Signature Date

Concurrence: (N/A if not required)

Radiological Safety

N/A
Name Signature Date

Concurrence: (N/A if not required)

Environmental Compliance

N/A
Name Signature Date

Approval and Authorization:

WCD Approval (Instructions and attachments meet technical requirements, work can be performed safely, and package adequately covers hazard controls) and Authorization by Responsible Manager to perform work:

Approval and Authorization by Responsible Manager to perform work:

RM: Robert W. Davis Robert W. Davis 05/11/05
Name Signature Date

Authorization by Operations/Facility Management to perform work:

Operations/ Facility Mgt:

N/A
Name Signature Date

Quality Work: (N/A if work does not have quality requirements)

1) Quality Parts: N/A

2) System description/location: N/A

3) Quality inspection: N/A

4) Retest: N/A

CRAFT WORK PACKAGE

WPF: Final Demobilization – T0112847-68, Rev 1	Page 3 of 3

Work Performance:
Check which one performed:
Job Task Briefing Performed: ☐ Pre-Ev Briefing Performed (attach completed form): x

Record Work Performed: (N/A if recorded on attached instructions) N/A

PWT Requirements/Operational Check:
☐ Operational Check Performed Satisfactory - OR - N/A
☐ PWT Performed (record PWT performed and results): N/A

Return to Service Actions, if required: N/A

Feedback: (Attach Post-job Review Checklist, if used)

None Req'd

Completion Review:
Job Supervisor: Paul Kreutz [signature] 5/20/05
Name Signature Date

DWD 05/23/05

APPENDIX E

CONSTRUCTION REQUESTS FOR INFORMATION

APPENDIX E-1: LOG OF RFIS

RFI Log
Present Landfill Accelerated Action Construction Project
Rocky Flats Environmental Technology Site

Revised: 05/18/05

RFI No.	Date Received	Description or Request	Specifications/ Drawings	Author	Response Date	Response Summary
001	7/2/04	Change LLDPE thickness from 40 to 60 mil	Spec. 02225	Paul Kreitz	7/2/04	Submit and price for 60 mil, Design will be modified
002	7/8/04	Analytical data, flow rate data, and as built drawings for seep and treatment system	N/A	Paul Kreitz	7/31/04	Analytical data returned, as built drawings referenced, flow rate data given
003		Debris on landfill surface conflicts with regrading	Spec. 01350	Paul Kreitz	7/31/04	Construction debris shall be treated as sanitary waste per Specification 01350. Waste should not be exposed during regrading.
004		Specification 02110 "Clearing & Grubbing" Clarification	Spec. 02110	Paul Kreitz	9/17/04	Clearing & grubbing is allowed on landfill surface w/ grader or scraper
005	7/7/04	Delete requirements for draft and final Field Implementation Plan	Statement of Work	Paul Kreitz	7/31/04	FIP will not be required
006	7/7/04	Revised specification for LLDPE thickness change from 40 to 60 mil	Spec. 02225	Paul Kreitz	7/9/04	Revised specification 02225 provided
007	7/8/04	Quantities listed in Exhibit B not accurate	Dwg. 012	Paul Kreitz	8/1/04	Revised calculations for quantities provided
008	7/8/04	New gradation specification required to account for addition of fines to fill voids in rock	Spec. 02222	Paul Kreitz	9/17/04	Rock spec modified and provided
009	7/13/04	SOW mentions beryllium containing material. Advise on Be Program requirements.	Statement of Work	Paul Kreitz	8/7/04	Waste should not be exposed. If it is, proper evaluation will be performed.
010	7/20/04	Eliminate or relax requirement of 3" max wrinkle height in 60 mil LLDPE	Spec. 02225	Paul Kreitz	9/17/04	Spec revised to allow for 6" wrinkle and wrinkle height-width ratio not to exceed 0.5
011	7/20/04	Sample cushion soil in situ at origin at Centennial rather than at job site	Spec. 02221	Paul Kreitz	9/17/04	Rejected. Cushion soil will be sampled at PLF site as placed
012	7/20/04	Authorization to sample LLDPE rolls at manufacturer's plant rather than at job site	QA/QC Plan	Paul Kreitz	9/17/04	Authorization given to sample liner at manufacturer's plant
013		Specifications require decontamination pad for equipment. Since such pad is expensive and contamination not expected, please review this requirement.	Spec. 01900	Steve Brinkman	9/17/04	Spec modified from decontamination pad to clean-up pad

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014	7/30/04	Eliminate ASTM reference from compaction specification for R.F.A. Results from sampling show that quantity of oversize material present greater than 30%.	Spec. 02221	Paul Kreitz	9/19/04	The RF Alluvium issue is known and actions are being considered. Changes and clarifications are forthcoming.
015	8/4/04	Clarification on requirement for trailer anchoring at RFETS	Spec. 01500	Paul Kreitz	8/7/04	RFETS trailer anchor requirements provided
016	8/10/04	Digital maps of landfill for project	N/A	Paul Kreitz	8/17/04	CD with digital maps provided
017	8/20/04	Type of grout to be used to fill gas venting pipes on landfill	N/A	Paul Kreitz	9/17/04	Use high solids bentonite grout
018	8/27/04	Vent pipe system: (1) material underneath ADS pipe in gas header trench, (2) two different pipes scheduled for vent pipe, (3) no dwg detail for install of drainage fabric, and (4) can vent pipe be installed in two pieces	Dwg. 014, Spec. 11110	Paul Kreitz	10/10/04	(1) bedding material for vent pipe shall conform to Table SPEC-02245-1, (2) piping to be HDPE, (3) do not install fabric within vent trenches, (4) yes, but a longer than needed pipe is recommended
019	8/27/04	Required forms referenced in document not included	QA/QC Plan	Paul Kreitz	9/24/04	Required forms provided
020	8/31/04	Geotechnical results for samples collected from test pits on existing landfill cap	N/A	Paul Kreitz	9/24/04	Results of interim cover test pits at PLF provided, LF-1 to LF-12
021	8/31/04	Authorization to cut and remove abandoned groundwater monitoring wells on landfill surface	N/A	Paul Kreitz	9/24/04	Authorization granted
022	8/31/04	Authorization to construct Clean-up Pad as per drawing provided	Spec. 01900	Paul Kreitz	9/24/04	Authorization granted
023	9/1/04	Seep Capture System: (1) Verify 2 gpm flow, (2) tapping into power to air monitor near dam, (3) drain storage tank by line used to drain to other ponds, and (4) need for secondary containment	N/A	Paul Kreitz	9/24/04	(1) Flow averages 2 to 3 gpm, high as 6 gpm after heavy rain, (2) power is active and available for use, (3) yes, storage tank can be drained by existing piping, (4) no need for secondary containment

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024	9/3/04	Use PVC for header access riser instead of HDPE	Dwg. 014	Steve Brinkman	10/9/04	Must be HDPE as per Spec. 11111
025	9/7/04	Confirm foundation layer defined in spec is same as 6" layer on Dwg. 51781-013. Soil approved by Submittal 20 intended to be used.	Dwg. 013, Spec. 02221	Paul Kreitz	9/24/04	Foundation layer soil in Spec. 02221 same as 6" cushion layer in drawings.
026	9/8/04	Change Dwg. 12 to extend GDN toe of perimeter channel, drawing attached	Dwg. 012	Paul Kreitz	9/24/04	Extending GDN to toe accepted.
027	9/8/04	Questions from lining vendor regarding memo dated 8/31/04 on geosynthetics (4 questions)	N/A	Paul Kreitz	9/24/04	Response by vendor to questions is acceptable
028	9/8/04	Confirm approval of HASP	Statement of Work	Paul Kreitz	9/24/04	HASP reviewed and approved by KH Safety
029	9/10/04	Empty sandbags (containing cushion soil & sand) onto installed liner materials	N/A	Paul Kreitz	9/10/04	Rejected.
030	9/17/04	Seam LLDPE down to 5 deg F; Supporting letters from GSE and Geosynthetic Research Institute Test Method attached	Spec. 02225	Paul Kreitz	12/18/04	Approved with adherence to GRI standard and additional listed requirements
031	9/20/04	Alternate method to proof-roll areas where rebar protrudes from surface (east section of cap)	Spec. 02221	Paul Kreitz	10/25/04	Clarified that proofrolling should be conducted with a loaded scraper as specified
032	9/20/04	Requirement for Medical Monitoring be removed after cushion soil has been placed since contact with waste remote at that point	Statement of Work	Paul Kreitz	12/12/04	Accepted with clarification that monitoring could not be waived until all excavations at the landfill are complete.
033	10/6/04	Relax +/- 0.1 foot tolerance for vertical re-grade for 6" cushion, 10" cushion, and 24" infiltration layers	Spec. 02221	Paul Kreitz	11/13/04	Tolerance required by the specification is -0.0 feet to +0.2 feet.

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034	10/6/04	Approval for sealing method for cable tie holes at overlap joints in liner	Spec. 02224	Paul Kreitz	11/13/04	Accepted; method is in accordance with manufacturers requirements.
035	10/6/04	Advise on water from perimeter ditches draining into pond during sediment removal. Suggestions: dams in ditches or diversions	N/A	Paul Kreitz	11/13/04	Establishment of new perimeter channels (as designed) will divert surface water runoff away from the pond.
036	10-12-04	Establishing the offset to the outside of the anchor trench	Dwg. 012	Paul Kreitz	10-18-04	Establishing off-set is acceptable.
037	10-25-04	Request to use 24-inch overlap for GDN butt seams	Spec. 02224	Paul Kreitz	10-25-04	24-inch overlap is acceptable over the specified 6-inch overlap.
038	10-25-04	Request for specs for liner "boots" around gas vent system stand pipes	Dwg. 014	Paul Kreitz	11-2-04	Provided additional details on construction of vent boots.
039	10/26/04	Alternate forms to capture information	QA/QC Plan	Paul Kreitz	10/27/04	Forms are acceptable
040	10/26/04	Acceptable to use Rocky Flats alluvium with limited rock greater than 6 inches as grade fill?	Spec. 02221	Paul Kreitz	10/29/04	Acceptable, Rocky Flats Alluvium routinely have rock larger than 6-inch.
041	10/26/04	Acceptable to leave refuse and debris in the top 6 inches of the Subgrade as long as subgrade passes proof rolling?	Section 02221	Paul Kreitz	10/29/04	Acceptable with the clarification that large metal or wooden objects will need to be removed.
042	10/27/04	Geomembrane defect log form acceptable?	QA/QC Plan	Paul Kreitz	10/27/04	Form is acceptable
043	10-29-04	Cut sheet for Trimble 4800	N/A	Paul Kreitz	11/5/04	GPS unit acceptable for surveying of liner installation records
044	11-4-04	Acceptable to follow GSE QA manual recommendations in Section IV?	Spec. 02224	Paul Kreitz	11/13/04	Acceptable to use manufacturer recommendations for tie spacing except where the GDN crosses the anchor trench (here the spacing must be 6-inches)
045	11-5-04	Acceptable to use SDR-35 PVC pipe for risers, elbows, and tees?	Dwg. 014	Paul Kreitz	11/13/04	Rejected
046	11-6-04	Provide written confirmation of this aspect of anchor trench design	Dwg. 012	Paul Kreitz	11/13/04	Acceptable to extend geosynthetics only along the bottom of the anchor trench

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047	11-10-04	Acceptable to sew as an alternate method under wet conditions	Spec 02224	Paul Kreitz	11/13/04	Sewing method is acceptable and consistent with specifications
048	11-12-04	Acceptable to use small amount of pea gravel on inner slop during GDN installation until sufficiently	Spec 02224	Paul Kreitz	11/13/04	Use of pea gravel is acceptable
049	11-12-04	Request concurrence on GDN standard industry practice	Spec 02224	Paul Kreitz	11/13/04	Rejected, provide more detail and resubmit. Resubmittal with detail was accepted.
050	11-20-04	Heat bond seams on slopes greater than 10:1	Spec 02224	Paul Kreitz	11/24/04	Manufacturer's recommendations acceptable
051	11/22/04	Boot/vent configuration	Dwg. 014	Paul Kreitz	12/4/04	Alternate boot configuration provided for installation
052	11/29/04	Acceptable to use "mule"	N/A	Paul Kreitz	12/3/04	Acceptable only with successful demonstration
053	12/1/04	Vent system suggested modifications	N/A	Paul Kreitz	12/4/04	Use Sch. 80 HDPE pipe & see response to RFI No. 051
054	12-3-04	Acceptable to install 10-in. cushion material on the GDN if the 6-in. cushion layer below the GDN is frozen?	N/A	Paul Kreitz	12/6/04	Accepted
055	12-5-04	Provide written clarification relative to current K-H position on what "impacted" means and the placement on frozen fill/cushion soil	Spec. 02221	Paul Kreitz	12/10/04	Material must meet compaction and moisture requirements and must not have gained more moisture before it froze
056	12-14-04	Acceptable to use cushion soil from LaFarge?	Spec. 02221	Paul Kreitz	12/17/04	Accepted
057	12-16-04	Route trucks through Centennial pit	N/A	Paul Kreitz	12/18/04	Accepted road improvements only
058	12-17-04	Acceptable to defer proof rolling asbestos burial area until the initial Subgrade has been installed?	Spec. 02221	Paul Kreitz	12/20/04	Rejected. Proof-rolling must be conducted as specified.
059	12-18-04	Acceptable to remove trees in northern asbestos area flush to ground?	Spec. 02110	Paul Kreitz	12/21/04	Rejected
060	12-18-04	Acceptable to revise the grade to delete the cut at the 10350 point?	Dwg. 005	Paul Kreitz	12/21/04	Control point issues resolved in the field, no RFI response required

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061	12-21-04	Request guidance to develop work package and construct a rock layer/10-in. cushion layer test fill to demonstrate ability of low-ground pressure bulldozer to operate on rock layer w/o damaging geo-synthetic material	Statement of Work	Paul Kreitz	12/22/04	Proceed with preparation of work package
062	12-21-04	Request permission to de-mobilize liner installation contractor until design, etc. is available	N/A	Paul Kreitz	12/22/04	De-mobilization of crews acceptable
063	12-21-04	Request guidance to repair/not repair gaps	Spec. 02224	Paul Kreitz	12/21/04	Proceed with repairs and track cost in a separate account
064	1-3-05	Request to revise spec. 02222-944, 3.02	Spec. 02222	Paul Kreitz	1/7/05	Specification already defines the use of the test fill, no specification change required
065	1-3-05	Request to reduce number of spotters and flaggers	N/A	Paul Kreitz	1/10/05	Accepted as endorsed by safety team
066	1-3-05	Request to extend area on which to deposit pond sediment onto north asbestos burial area	N/A	Paul Kreitz	1/6/05	Rejected
067	1-6-05	Request to flush Baker tank sediment into A ponds or into present landfill pond	N/A	Paul Kreitz	1/8/05	Sediment in tanks must be removed and handled in accordance with RFETS policies and procedures
068	1-6-05	Request to change spec to allow -.1 to +.3 thickness tolerance	Spec. 02221	Paul Kreitz	1/7/05	Rejected
069	1-7-05	Request to determine which option to pursue for installation of final 24-in lift	Spec. 02221	Paul Kreitz	1/7/05	Acknowledge receipt of information. See RFI No. 170.
070	1-11-05	Request approval to drive track hoe and bobcat on rock layer to riser locations	Spec. 02222	Paul Kreitz	1/14/05	Rejected
071	1-17-05	Request approval top purchase additional Geosynthetic materials to complete all liner from 5980 line	N/A	Paul Kreitz	1/20/05	Proceed with purchase
072	1-18-05	Specify what to put on top of vertical passive vent system risers	Dwg. 014	Paul Kreitz	4/27/05	Metallic cover with bird screen required
073	1-19-05	Request to approve start of 24-inch lift	N/A	Paul Kreitz	1/20/05	Proceed. See RFI No. 170

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074	1-19-05	Provide guidance as to whether erosion controls are required at base of east face during clearing and grubbing operations	Spec. 02228	Paul Kreitz	1/20/05	Erosion controls required as specified
075	1-19-05	Advise in writing the desired disposition of rip-rap	N/A	Paul Kreitz	1/20/05	Proceed with removal of rip-rap & stockpile on-site for future use
076	1-20-05	Provide written approval to start clearing & grubbing and approve cost to modify contract	N/A	Paul Kreitz	1/19/05	Proceed with clearing and grubbing work
077	1-21-05	Provide approval to clean sediment from Baker tanks	N/A	Paul Kreitz	1/21/05	Proceed with tank cleanout
078	1-21-05	Provide supply charge mechanism/number/process for 2 RISS water trucks	N/A	Paul Kreitz	1/22/05	Provide a separate cost tracking number
079	1-21-05	Provide approval to purchase additional Geosynthetic materials required for East Face	N/A	Paul Kreitz	1/22/05	Accepted, proceed with purchase of geosynthetics
080	1-22-05	Provide revised design for East Face	N/A	Paul Kreitz	1/24/05	Revised design is not required
081	1-22-05	Supply written guidance related to questions on preliminary East Face design	Drawings	Paul Kreitz	N/A	Questions address and resolved in several team meeting over a period of several weeks. No change in design required.
82	1-24-05	Questions regarding how much snow can be on 12-in rock layer and what type of snow removal equipment can be used	N/A	Paul Kreitz	1/26/05	About 1-inch of snow is acceptable. Use only LGP dozers for snow removal
83	1-24-05	Provide sufficient control points to construct culvert	Dwg. 006A	Paul Kreitz	2/10/05	Surveying & control point discrepancies resolved.
84	1-24-05	Review control points 10418, 10391, and 10417	Dwg. 005	Paul Kreitz	1/27/05	Control points provided
85	1/24/05	Provide guidance on how to remediate water seep at control point 11068	Dwg. 006A	Paul Kreitz	1/26/05	Not an issue for construction team

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86	1/24/05	Request clarification on new direction to (1) install 22-in lift of RF alluvium followed by 2-in lift of sandy RF alluvium; (2) reflect revised installation methods; and (3) meet mid-February completion data under current installation methods that require addition of 12 Volvo-type off-road trucks	Spec. 02221	Paul Kreitz	N/A	See RFI No. 170
87	1/24/05	Finalize and give approval to start East Face grade	N/A	Paul Kreitz	1/26/05	Proceed with beginning work
88	1/24/05	Review control points 10350, 10351, and 10376	Dwg. 005	Paul Kreitz	1/27/05	Control points provided
89	1-25-05	Can low ground pressure machinery drive on 12-in rock layer lift	Spec. 02222	Paul Kreitz	1/26/05	Rejected
90	1-26-05	Provide guidance of preferred method to protect strip drains from damage	Dwg. 013A	Paul Kreitz	1/28/05	Placement & compaction of buttress in lifts
91	1-26-05	Provide approval to use motor grader to set grade for nearly final 22-in. lift	N/A	Paul Kreitz	1/27/05	Acceptable
92	1-28-05	Provide answers to Nielsons questions	N/A	Paul Kreitz	N/A	See RFI No. 191
93	1-28-05	What to do with material placed for final 2-in lift that contains rocks larger than 2 inches	N/A	Paul Kreitz	1/29/05	No rocks are to be removed
94	1-28-05	Provide Rad and IH support to minimize work stoppages	N/A	Paul Kreitz	1/28/05	Radiation Technicians have been assigned
95	1-28-05	Soil stockpile in 371 area was sampled at direction of K-H pm on 1-17-05; results will be given to CTR	Spec. 02221	Paul Kreitz	1/27/05	Approved
96	1-28-05	Provide resources/training to expedite temp badging process	N/A	Paul Kreitz	3/3/05	Provide badging request at least 3 days before badging is required
97	1-28-05	Advise as to disposition of vertical PVC clean-out pipes	Dwg. 015	Paul Kreitz	3/4/05	Extend and cap cleanouts
98	1-28-05	Approve expenditure to re-reconstruct culvert area of northern perimeter channel	N/A	Paul Kreitz	3/4/05	Rejected no reconfiguration required

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99	1-31-05	Provide alternative design to collect and route seep flow	Dwg. 015	Paul Kreitz	N/A	See response to RFI No. 191
100	2-1-05	Approve motor grader, scraper, D-6/D-8 standard bulldozers, and front-end loaders to drive directly on 22-in/2-in lifts	Spec. 02221	Paul Kreitz	2/4/05	Approved except for D-8 dozer
101	2-1-05	Supply written approval to complete modifications and repairs to existing seep capture basin	N/A	Paul Kreitz	2/3/05	Accepted
102	2-1-05	Provide written approval to replace cushion material damaged by snow	N/A	Paul Kreitz	2/2/04	Approved
103	2-2-05	Provide written approval to replace sub-grade materials damaged by snow	N/A	Paul Kreitz	2/4/05	Approved
104	2-2-05	Provide written guidance to clarify distance the temporary erosion mat extends up and over liner anchor trench	Dwg. 012	Paul Kreitz	4/12/05	Refer to design drawing 013
105	2-2-05	Provide sketch or map that delineates areas on which C-350 permanent turf reinforcement is to be installed	N/A	Paul Kreitz	4/12/05	Refer to design drawing 013
106	2-2-05	Provide direction on methods and total scope for required remediation of soil disturbed areas.	N/A	Paul Kreitz	4/28/05	All areas must be graded and prepared for re-vegetation
107	2-8-05	Cost & schedule impacts of change from a final 24-in lift to two lifts	N/A	Paul Kreitz	2/15/05	Proceed with construction. See response to RFI No. 170 & 176.
108	02/08/05	Cost Estimate for construction of the east face	N/A	Paul Kreitz	2/15/05	Estimate acknowledged
109	2-5-05	Advise where 3-inch check valve is to be installed	Dwg. 017	Paul Kreitz	2/10/05	Check valve no longer required
110	2-5-05	Is location of flow meter upstream from collection trench flows correct?	Dwg. 017	Paul Kreitz	2/10/05	See response to RFI 211. Flow measurement of strip drainsand GWIS is not required.
111	2-5-05	Need detail regarding exit piping for seep water	Dwg. 018	Paul Kreitz	N/A	See response to RFI No. 189 & 200

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112	2-7-05	Revise rate schedule in contract to reflect paying off-site haulers by hour rather than by load	N/A	Paul Kreitz	2/7/05	Accepted
113	2-8-05	Advise type and dimensions of culvert pipe at crossover on north perimeter channel	Dwg. 009	Paul Kreitz	N/A	See response to RFI No. 198 & 200
114	2-8-05	Provide control points on outside slope of perimeter channels	Dwg. 006A	Paul Kreitz	2/1/05	Slope of outside slope of perimeter channel can vary and will be documented in record drawings
115	2/9/05	Advise if dwg. 51781-012 has been reviewed and approved for construction	Dwg. 012	Paul Kreitz	2/11/05	Yes, proceed with construction
116	2/9/05	Clarify testing requirements in spec 1.05	Spec. 03300	Paul Kreitz	2/11/05	Concrete testing is required as specified
117	2/9/05	Advise as to disposition of east face material	Spec. 02221	Paul Kreitz	2/11/05	Grubbed surface may be used for 2-inch lift on 24-inch soil cover. Any other excavated material will be stockpiled.
118	2/9/05	Is grouting required for larger rip-rap in the channel?	Dwg. 012	Paul Kreitz	N/A	See response to RFI NO. 182
119	2/10/05	Provide guidance regarding direction to proceed with sub-excavation of northern section of east face and guidance to fill with RFA to elevation at top of seep capture vault	N/A	Paul Kreitz	2/10/05	Approved to proceed with excavation and backfill
120	2/14/05	Request approval to initiate final 2-inch lift on 2/16/05. Need responses to RFI 93, 100, 107	N/A	Paul Kreitz	3/15/05	Approved to begin 2-inch lift
121	2/14/05	Seep Treatment System Clarifications	Dwg. 016	Paul Kreitz	2/15/05	See response to RFI 191 & referenced drawings
122	2/14/05	Provide written approval to procure erosion matting	Spec. 02227	Paul Kreitz	2/16/05	Approved
123	2/14/05	Advise of advance procurement of manholes and work package installation details	Dwg. 017	Paul Kreitz	N/A	See response to RFI No. 191
124	2/15/05	Strip drain material	Dwg. 013B	Paul Kreitz	2/17/05	Approved for purchase

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125	2/15/05	East Face Anchor Trench Clarifications	Dwg. 013A & 016	Paul Kreitz		Clarifications provided. See referenced drawings and RFI responses
126	2/16/05	Request approval to construct new seep system per existing drawings/guidance and per current schedule	Dwg. 017	Paul Kreitz	2/25/05	Approved
127	2/19/05	Provide guidance relative to construction of southeast perimeter channel of PLF	Dwg. 009	Paul Kreitz		See RFI No. 198
128	2/19/05	Provide approval to "re-cover" with cushion soil to cover "exposed rock with not enough fines"	Spec. 02222	Paul Kreitz	2/18/05	Approved for locations identified
129	2/19/05	RFI 129 documents the receipt of the engineering on locations, elevations, and grades for East Face	N/A	Paul Kreitz	4/12/05	No RFI response required
130	2/21/05	Specify size, specs, details of required connections and new drain lines that will lead from	N/A	Paul Kreitz		See response to RFI No. 191
131	2/21/05	Can we use scrapers to deposit final 2-inch lift on the 22-inch RFA layer	N/A	Paul Kreitz	2/22/05	Acceptable
132	2/21/05	Give direction as to what design feature to install to keep water in seep sump	N/A	Paul Kreitz	N/A	See response to RFI No. 191
133	2/21/05	Are any hold points or documented inspection points required prior to or during installation of erosion mat materials?	Spec. 02227	Paul Kreitz	3/4/05	Erosion matting will be installed by TP Enterprises
134	2/21/05	Installation crews will be de-mobilized between 2/23/05 and 2/2/505 or allow crews to start installation of erosion control materials?	N/A	Paul Kreitz	2/22/05	Re-mobilization is acceptable
135	2/21/05	Can the 6-in cushion layer be discontinued after the lower anchor trench?	Dwg. 013A	Paul Kreitz	2/24/05	Rejected. Cushion soil must extend 5 to 10 feet past anchor trench
136	2/23/05	Supply design coordinates for toe of East Face Slope	Dwg. 013A	Paul Kreitz	3/1/05	Additional control points provided
137	2/23/05	Provide elevations or profile sketch that shows connection elevations for 8-in PVC lines	N/A	Paul Kreitz	N/A	See response to RFI No. 191

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138	2/24/05	Supply revised locations and installation directions for upper portion of northern section of East Face	N/A	Paul Kreitz	2/25/05	Locations must be surveyed and included in record drawings
139	2/24/05	Provide written approval to remove large rocks in 22-inch lift	N/A	Paul Kreitz	2/25/05	Approved
140	2/25/05	Advise on (1) proceeding with cut operation, (2) remediation of trash area, and (3) disposition of trash/soil mixture	N/A	Paul Kreitz	2/26/05	Waste materials must be removed and placed in RFETS waste management roll-off boxes
141	2/25/05	Either relocate this area of trench or advise as to methods for digging in the asbestos materials and what to do with material that is unearthed	N/A	Paul Kreitz	3/3/05	See response to RFI 152
142	2/26/05	Acknowledge receipt of (1) design sketches of east face regrade tie-ins, (2) control points for top edge of east face, (3) a line 22 feet east and parallel to above line set in final grade surface, and (4) line where final grade meets existing grade	N/A	Paul Kreitz	N/A	No response required to RFI
143	2/26/05	Advise as to path forward to removal and disposition of asbestos bags that were unearthed	N/A	Paul Kreitz	3/3/05	See response to RFI 152
144	2/26/05	Is elevation of survey control point A9 correct?	N/A	Paul Kreitz	3/2/05	Surveying discrepancies resolved.
145	2/28/05	Request written concurrence to begin hauling RFA from Centennial Pit to meet schedule requirements	Spec. 02221	Paul Kreitz	2/28/05	Accepted
146	2/28/05	Confirm that control points A1-A4 are cuts per current engineering guidance	N/A	Paul Kreitz	3/7/05	Surveying discrepancies resolved.
147	2/28/05	Advise what to do w/asbestos material or if anchor trench needs to be moved to cover it with liner	N/A	Paul Kreitz	3/3/05	See response to RFI No. 152

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RFI No.	Date Received	Description or Request	Specifications/ Drawings	Author	Response Date	Response Summary
148	2/28/05	Verify that elevations at points on the downslope of northeast section of east face are correct	N/A	Paul Kreitz	3/3/05	Surveying discrepancies resolved.
149	3/1/05	Suggest randomly selecting trucks for DOT inspections and not stopping entire fleet	N/A	Paul Kreitz	4/12/05	Suggestion noted
150	3/1/05	Would like to use track loader, D-6 LGP dozer and dump Volvos on placed 10-inch cushion	Spec. 02221	Paul Kreitz	3/3/05	LGP dozers & loaders acceptable. Volvos not allowed.
151	3/1/05	Does finished slope from C points to D points have to be 4-1?	N/A	Paul Kreitz	3/3/05	Surveying discrepancies resolved.
152	3/1/05	Provide written direction to extend PLF cap if applicable	N/A	Paul Kreitz	3/3/05	Rejected. Asbestos will be removed.
153	3/2/05	Advise as to disposition of non-asbestos, non-rad waste	N/A	Paul Kreitz	3/3/05	RFETS Waste Management Roll-off Boxes Provided.
154	3/2/05	Requesting full-time rad tech support	N/A	Paul Kreitz	3/2/05	Full time Radiation Technician provided.
155	3/2/05	Provide approval to order 87,552 sq yd of C125 erosion mat	N/A	Paul Kreitz	3/7/05	Approved
156	3/2/05	Review dimension from top of basin to top of first riser step	Dwg. 017	Paul Kreitz	4/12/05	See Response to RFI 191
157	3/3/05	Resents estimated schedule impact of extending PLF liner to cover areas w/buried asbestos outside current design	N/A	Paul Kreitz	3/8/05	Rejected. Asbestos will be removed
158	3/3/05	Request approval to start hauling 2-inch previously vegetated material from 280 alluvial area on 3/7/05	N/A	Paul Kreitz	3/7/05	Approved
159	3/3/05	Request approval to procure and install vendor-approved engineering modification for track excavators	N/A	Paul Kreitz	3/8/05	Approval to place demolition kits on excavators.

RFI Log
Present Landfill Accelerated Action Construction Project
Rocky Flats Environmental Technology Site

Revised: 05/18/05

RFI No.	Date Received	Description or Request	Specifications/ Drawings	Author	Response Date	Response Summary
160	3/3/05	Northeast section of East Face design requires 1' and .7' cuts at control points 10351 and 10376 (areas of known trash and asbestos). Evaluate and modify if appropriate	N/A	Paul Kreitz	3/7/05	Surveying discrepancies resolved.
161	3/5/05	Provide written approval to implement sampling program for 22" and 2" lifts	Spec. 02221	Paul Kreitz	3/8/05	Accepted
162	3—5-05	Requesting approval for snow removal from installed FML with skid steer loader and brush	N/A	Paul Kreitz	11/1/04	Approved with inspection of FML by QA & QC after snow removal
163	3/8/05	Supply written guidance as to grade tolerances to the final 2-inch lift (either spec change or written guidance)	Spec. 02221	Paul Kreitz	3/8/05	Tolerances remain as specified.
164	3/9/05	Request concurrence to support excavation of asbestos on East Face	N/A	Paul Kreitz	3/10/05	Accepted
165	3/10/05	Review control point 10360 and provide engineering guidance	Dwg. 005	Paul Kreitz	3/14/05	Surveying discrepancies resolved.
166	3/10/05	Provide written approval for additional ripping on 22-inch lift	Spec. 02221	Paul Kreitz	3/15/05	Rejected. See RFI 170
167	3/10/05	Provide written approval to re-excavate and modify the strip drain capture sump	N/A	Paul Kreitz	3/11/05	Accepted
168	3/11/05	Final 2-inch Lift Preparation	Spec. 02221	Paul Kreitz	3/15/05	Rejected. See RFI 170
169	3/12/05	Additional material source – 2-inch sandy RFA	Spec. 02221	Paul Kreitz	4/8/05	Provide cost estimate to obtain these materials from Centennial Pit.
170	3/14/05	Provide written confirmation that final 22"/2" lift combination bas been revised to a 24" lift	Spec. 02221	Paul Kreitz	3/15/05	Rejected
171	3/16/05	Provide written concurrence to perform two bulk gradation tests on the Rocky Flats alluvium being mined at Centennial	Spec. 02221	Paul Kreitz	3/17/05	Conduct sampling at the Centennial Pit
172	3/16/05	Design drawing – concrete aeration box	Dwg. 017	Paul Kreitz	4/8/05	See Response to RFI Nos. 179 & 191

RFI Log
Present Landfill Accelerated Action Construction Project
Rocky Flats Environmental Technology Site

Revised: 05/18/05

RFI No.	Date Received	Description or Request	Specifications/ Drawings	Author	Response Date	Response Summary
173	3/16/05	Approve D-6 dozer for disking as psi difference is negligible	Spec. 02900	Paul Kreitz	3/17/05	Accepted
174	3/19/05	Request concurrence to make the thickness of the collar 2 feet for constructability issues	Dwg. 017	Paul Kreitz	3/21/05	Accepted
175	3/21/05	Request concurrence to delete the requirement to wrap the pipe in geotextile	Dwg. 017	Paul Kreitz	3/24/05	Accepted
176	3/21/05	Provide written approval to complete work on placement/certification change – 22-inch/2-inch final lifts	Spec. 02221	Paul Kreitz	3/16/05	Provide backup for increased cost of 24-inch soil cover
177	3/22/05	Provide location and control points with elevations for new bentonite collar	Dwg. 017	Paul Kreitz	4/8/05	See Response to RFI 191
178	3/22/05	Provide written direction to construct new bentonite collar	Dwg. 017	Paul Kreitz	4/8/05	Accepted
179	3/22/05	Request engineering guidance for "gatorgrate" dimensional problem	Dwg. 017	Paul Kreitz	4/2/05	Dimensions of seep treatment structure can be adjusted to accommodate the grating dimensions
180	3/22/05	Re-evaluate control points for final construction of northeast section of PLF perimeter channel	Dwg. 006A	Paul Kreitz	3/24/05	Resolved in the field with discussions with surveyors, no RFI response required.
181	3/22/05	Supply written engineering guidance for construction of termination point in perimeter channel	Dwg. 013B	Paul Kreitz	4/2/05	Refer to Drawing 013B
182	3/23/05	Transmit engineering guidance or sketch that shows where each type/size of rip rap is to be placed	N/A	Paul Kreitz	4/2/05	Refer to Drawing 012 & 013A. Substitute grouted rip-rap with non-grouted rip-rap D50=12 inch.
183	3/23/05	Supply written engineering guidance or spec for the type and size for drainage pipe to be placed in Upper East Face anchor trench	N/A	Paul Kreitz	4/2/05	Refer to Drawing 013A
184	3/23/05	Review control points B1 and B2.	N/A	Paul Kreitz	3/27/05	Resolved in the field with discussions with surveyors, no RFI response required.

RFI Log
Present Landfill Accelerated Action Construction Project
Rocky Flats Environmental Technology Site

Revised: 05/18/05

RFI No.	Date Received	Description or Request	Specifications/ Drawings	Author	Response Date	Response Summary
185	3/23/05	Provide locations and elevations of components of passive treatment system	Dwg. 017	Paul Kreitz	4/2/05	See Response to RFI No. 189 & 191
186	3/23/05	Provide pipe, transition, and connection details for construction of bentonite collar	Dwg. 017	Paul Kreitz	4/2/05	See Response to RFI No. 189 & 191
187	3/23/05	Provide pipe, transition, and connection details for construction of passive seep treatment system	Dwg. 017	Paul Kreitz	4/2/05	See Response to RFI No. 189 & 191
188	3/24/05	Provide cross section showing relationship between liner material, drain pipe and bedding material in upper anchor trench	Dwg. 017	Paul Kreitz	4/2/05	Refer to Drawing 013A
189	3/29/05	Provide elevation for floor of manhole that captures water from existing seep	Dwg. 017	Paul Kreitz	4/2/05	Provided clarification drawing for piping at seep treatment system
190	3/29/05	Provide written engineering guidance fill material around manholes and piping	Dwg. 017	Paul Kreitz	4/2/05	Use soil that has been used for cushion layer as backfill
191	3/30/05	Provide written engineering concurrence to procure two precise concrete manholes	Dwg. 017	Paul Kreitz	4/2/05	Provided clarification of size, type and penetrations of manholes
192	3/30/05	Concur with using Volvo off-road trucks to dump on the 10-inch layer and leveling with D-6 LGP dozer	N/A	Paul Kreitz	4/2/05	Rejected
193	3/30/05	Advise where GDN finishes on north side of PLF in 20700 – 21000 area.	N/A	Paul Kreitz	4/2/05	Refer to Drawing 012, Detail 2
194	3/30/05	Should small hump in the 20900 to 21100 area outside of PLF cap slope towards the perimeter channel?	N/A	Paul Kreitz	4/2/05	Clarification that "hump" should be removed to allow surface water flow down the perimeter channel
195	3/30/05	How far do east face cleanout pipes extend above final grade surface? What should go on top of them? How far up the pipes should the slip boot extend?	N/A	Paul Kreitz	4/2/05	Clarifications provided

RFI Log
Present Landfill Accelerated Action Construction Project
Rocky Flats Environmental Technology Site

Revised: 05/18/05

RFI No.	Date Received	Description or Request	Specifications/ Drawings	Author	Response Date	Response Summary
196	3/30/05	Provide engineering guidance relative to where the north section of the upper East Face anchor trench ends.	N/A	Paul Kreitz	4/2/05	Refer to Drawing 013B
197	3/31/05	Questions on Seep Treatment System Structure Design	Dwg. 018	Paul Kreitz	4/2/05	Provided clarification on slab extension and water stop installation
198	3/31/05	Southeastern Culvert Installation Information	Dwg. 006A	Paul Kreitz	4/6/05	Size, type & backfill requirements provided
199	3/31/05	Extent of textured FML on Northern side of east slope	N/A	Paul Kreitz	4/1/05	Rejected
200	4/1/05	Northern Culvert Installation Information	Dwg. 006A	Paul Kreitz	4/6/05	Size, type & backfill requirements provided
201	4/2/05	Seep Treatment System - Slope on Steps	Dwg. 018	Paul Kreitz	4/6/05	See Response to RFI No. 191
202	4/2/05	Use of flexible couplings on Seep Treatment System Piping	Dwg. 017	Paul Kreitz	4/6/05	Flexible coupling not required for HDPE piping
203	4/2/05	Seep Treatment System Clarification Questions	Dwg. 017	Paul Kreitz	4/6/05	See Response to RFI No. 191
204	4/2/05	GWIS Piping Material	N/A	Paul Kreitz	4/6/05	Pipe materials are shown on Drawing 018, however, proposing that we make this bell & spigot piping and not solvent welded joint piping
204-Rev 1	2/4/05	GWIS Piping Material	N/A	Paul Kreitz	4/6/05	See Response to RFI 204
205	4/4/05	Equipment Use on East Slope	N/A	Paul Kreitz	4/6/05	Acceptable to use trackloaders and D6 dozer on east slope.
206	4/4/05	Seep Treatment System - North Manhole Flow	N/A	Paul Kreitz	4/6/05	Flow is not piped through manhole. Flow is allowed to enter the manhole and flow
207	4/4/05	Seep System Piping- Pipe Reducers	N/A	Paul Kreitz	4/6/05	Revised all piping to 6-inch diameter HDPE
208	4/4/05	Use of fiberglass concrete for the step section	Dwg. 018	Paul Kreitz	4/6/05	Acceptable with clarifications only

RFI Log
Present Landfill Accelerated Action Construction Project
Rocky Flats Environmental Technology Site

Revised: 05/18/05

RFI No.	Date Received	Description or Request	Specifications/ Drawings	Author	Response Date	Response Summary
209	4/4/05	Seep Treatment system Concrete Wall Pour. Leaving the east wall out to pour the step section	Dwg. 018	Paul Kreitz	4/6/05	Acceptable with clarifications only
210	4/5/05	Concrete curing time	Spec. 3300	Paul Kreitz	4/6/05	Clarification of Specification that curing time is 7 days with applied curing compound
211	4/5/05	Purchase of Flowmeter Status	N/A	Paul Kreitz	4/7/05	Flow meter deleted from Stoller scope of work
212	4/6/05	Request from Centennial for Gradation Test Results	N/A	Paul Kreitz	4/6/05	Rejected
213	4/8/05	Requests use of taller manhole	Dwg. 017	Paul Kreitz	4/7/05	Taller manhole is acceptable
214	4/8/05	Requests information on joints for 6-inch HDPE pipe	N/A	Paul Kreitz	4/19/05	Mechanical joint couplings are required
215	4/9/05	Installation approach to 22-inch lift on 4H: 1V slope	N/A	Paul Kreitz	4/12/05	Acceptable to place 22-inch lift from top of slope
216	4/20/05	Geosynthetics by back	N/A	Paul Kreitz	5/3/05	Counter offer provided
217	4/12/05	Scraper tire buy back	N/A	Paul Kreitz	5/2/05	Counter offer provided
218	4/13/05	Requests revised drawing 014	Dwg. 014	Paul Kreitz	4/28/05	Rejected, changes are field changes that will be captured in the record drawings
219	4/14/05	Presents cost of rip-rap	N/A	Paul Kreitz	4/18/05	Accepted, proceed with purchase
220	4/14/05	Presents cost of previously vegetated soils from Centennial Pit for 2-inch lift	N/A	Paul Kreitz	4/28/05	See response to RFI No. 236
221	4/15/05	Requests clarification on the installation of culverts in perimeter channel to be consistent with 10-foot channel width	N/A	Paul Kreitz	4/28/05	Culverts can be installed without flanges
222	4/16/05	Requests disposition of gates between Centennial Pit and RFETS	N/A	Paul Kreitz	4/28/05	Gates are to remain in-place
223	4/18/05	Requests clarification on grading east of seep treatment structure	N/A	Paul Kreitz	4/28/05	Grade slopes to no greater tha 4H: 1V and place a rip-rap swhale from the outlet of the seep treatment structure to the pond

RFI Log
Present Landfill Accelerated Action Construction Project
Rocky Flats Environmental Technology Site

Revised: 05/18/05

RFI No.	Date Received	Description or Request	Specifications/ Drawings	Author	Response Date	Response Summary
224	4/18/05	Requests vendor submittal for rip-rap gradation to replace field testing	Spec. 02222	Paul Kreitz	4/28/05	Rejected. QC testing of stockpiles rip-rap required
225	4/19/05	Request clarification on need to re-disc cover where hydromulch machine has traveled	Spec. 02900	Paul Kreitz	4/22/05	Light re-discing is acceptable
226	4/20/05	Request information on 30 degree bend in HDPE piping for strip drain	Dwg. 017	Paul Kreitz	4/28/05	Use mechanical joint type per manufacturer's recommendations
227	4/20/05	Request if coating is required on outside of walls of seep treatment system	N/A	Paul Kreitz	4/22/05	No coating required
228	4/20/05	GWIS Pipe Bedding	Dwg. 017	Paul Kreitz	4/22/05	Rejected
228, Rev. 1	4/20/05	Request the use of pea gravel for bedding of culverts	N/A	Paul Kreitz	4/21/05	Acceptable only for the bedding of the culverts and must obtain sample for gradation analysis
229	4/21/05	Request removal of forms on west wall of seep treatment structure	Spec. 03300	Paul Kreitz	4/22/05	Removal is acceptable. Backfilling must wait until the concrete "step" are poured and have cured for 24 hours
230	4/21/05	Use of Volclay bentonite to replace CETCO bentonite	Dwg. 017	Paul Kreitz	4/22/05	Acceptable to use Volclay
231	4/22/05	Use of manhole extensions	Dwg. 017	Paul Kreitz	4/22/05	Use of extensions or not is acceptable, but must ensure a tight and stable manhole cover
232	4/22/05	Request jointing system between existing GWIS pipe (transite) and PVC pipe		Paul Kreitz	4/22/05	Use pipe manufacturer's recommendation
233	4/22/05	When can water flow through the seep treatment structure	N/A	Paul Kreitz	4/26/05	Concrete steps strength reaches 75% of design 28-day strength
234	4/22/05	Request clarification on pipe size from manhole to seep treatment system	Dwg. 017	Paul Kreitz	4/22/05	1-inch PVC pipe
235	4/22/05	Request direction on extent of 2-inch lift down 4H: 1V slope	N/A	Paul Kreitz	4/28/05	Extend 2-inch lift to toe of 4H: 1V slope
236	4/24/05	Request approval to purchase 2-inch lift material from Centennial Pit	N/A	Paul Kreitz	4/28/05	Approved, also see response to RFI No. 220 & 241
237	4/25/05	Request clarification of an existing drainage feature west of the PLF	N/A	Paul Kreitz	4/28/05	Drainage feature to remain undisturbed & culvert removed under the roadway
238	4/25/05	Request clarification on form removal on walls of seep treatment structure	Spec. 03300	Paul Kreitz	4/25/05	Proceed with form removal and backfilling

RFI Log
Present Landfill Accelerated Action Construction Project
Rocky Flats Environmental Technology Site

Revised: 05/18/05

RFI No.	Date Received	Description or Request	Specifications/ Drawings	Author	Response Date	Response Summary
239	4/25/05	Radio buy back offer	N/A	Paul Kreitz	5/7/05	Counter offer provided
240	4/26/05	Request clarification of QC sampling of 2-inch lift at 4H: 1V slope		Paul Kreitz	4/28/05	Conduct 1 QC sample on the 2-inch lift
241	4/26/05	Written authorization to sample 2-inch lift material from Centennial Pit	QA/QC Plan and Specifications	Paul Kreitz	4/26/05	Proceed with sampling(ASTM D5519 & D422)
242	4/26/05	Seed Bed Preparation on 4H: 1V slope		Paul Kreitz	4/28/05	Disc Only on 4H: 1V slope
243	4/27/05	Grout cure time	N/A	Paul Kreitz	4/27/05	Follow manufacturer's recommendations
244	4/27/05	GFE buy back offer	N/A	Paul Kreitz	5/7/05	Counter offer provided
245	4/27/05	Clarification on material to construct diversion berm	Dwg. 013A	Paul Kreitz	4/28/05	Build berm with same materials as 2-inch lift of 24-inch soil cover
246	4/28/05	Guidance on additional structural support of grating on seep treatment system structure	N/A	Paul Kreitz	5/4/05	Structural support requirements provided
247	5/5/05	Rip-Rap Gradation Results	Spec. 02245	Paul Kreitz	5/6/05	Provide Rip-Rap that meets specification
248	05/0605	Trailer De-mob Schedule	N/A	Paul Kreitz	5/7/05	Schedule Acceptable
249	5/6/05	Grating Support Painting Requirements	N/A	Paul Kreitz	5/9/05	Painting requirements provided
250	5/6/05	Culvert Removal on western PLF roadway	N/A	Paul Kreitz	5/9/05	Remve culverts and backfill with compacted RFA
251	5/7/05	Additional erosion matting staple purchase	N/A	Paul Kreitz	5/9/05	Purchase 2 pallets of staples
252	5/9/05	Cost to stabilize the southwest side of pond	N/A	Paul Kreitz	5/10/05	Accepted
253	5/9/05	Cost to place rip-rap	N/A	Paul Kreitz	5/10/05	Accepted
254	5/9/05	Cost to rip & disc disturb soil areas	N/A	Paul Kreitz	5/10/05	Accepted
255	5/10/05	Notice of work force reduction	N/A	Paul Kreitz	5/16/05	Acknowledged
256	5/13/05	Cost for grating supports	N/A	Paul Kreitz	5/16/05	Accepted
257	5/18/05	Cost of swale construction on lower east face	N/A	Paul Kreitz	5/18/05	Accepted
258	5/18/05	Cost to "pdf" all QC records (Golder)	N/A	Paul Kreitz	Open	
259						
260						

APPENDIX E-2: TECHNICAL RFIS (INDICATING FIELD CHANGES)

Request For Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | SFP No.: SFP-001

Subcontractor: S.M. Stoller Corporation | Page 1 of 1

The subcontractor may initiate a Request for Information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: | Specifications: 02225 Linear Low Density Polyethylene Geomembrane Liner

Reference (other): | Attachments:

Problem: Please confirm your (Bob Davis) direction changing the LLDPE thickness from 40 mil to 60 mil.

Solution: Stoller will proceed with your verbal direction and prepare submittals for 60 mil LLDPE and re-price this materials line item.

Requested By:	Paul Kreitz, S.M. Stoller
Date Field Construction will be affected:	July 6

Paul Kreitz		July 2, 2004
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted X | Clarification ☐ | Rejection | ☐ Change

Please proceed with obtaining the submittal information and cost for 60 mil LLDPE. We will formally revise the design and scope next week.

Robert W. Davis	Robert W. Davis	July 2, 2004
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OK CQAE J.H. Rabe Tetra Tech

OK DM [signature] Earth Tech

SUBCONTRACTOR REQUEST FOR INFORMATION (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI-002

Subcontractor: S.M. Stoller Corporation | Page 1 Of 1

The subcontractor may initiate a Subcontractor Request for Information (RFI) at any time to request a reply to a technical issue, related to subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: | Specifications:

Reference (other): | Attachments:

Problem: Please provide analytical data, flow rate data; and as built diagrams for the seep and associated treatment system.

Solution: Stoller will review the analytical data, determine PPE requirements, and establish appropriate handing procedures. The as built diagrams will be used to determine the appropriate procedure and safety requirements for the removal of the existing system.

Requested By:	Paul Kreitz, S.M. Stoller
Date Field Construction will be affected:	July 15

Paul Kreitz		July 8, 2004
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | Change ☐

- See attached analytical data on PLF Seep for April 2004.
- As built conditions are reflected on Design Drawing 51781-015 as known by RFETS.
- Flow average of seep = 2.0gpm Range of flow = 1.5gpm to about 6.0gpm
- Note that seep is a listed F039 waste; however, it is not a characteristic hazardous waste.

Robert W. Davis	Robert W. Davis	07/31/2004
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OK CAAF J.H. Rala Tetra Tech

Environmental

SP 404213

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

RIN 04D0613

SAMPLE CROSS REFERENCE TABLE

Bottle Number	Lab ID	Matrix	LIC's	Method	Received	Date Prepared	Analyzed
04D0613-001.001	SP 404213-01	Aqueous	MET-A-013	7470A	04/29/2004	04/30/2004 05/18/2004	04/30/2004 05/19/2004

INVOICE CERTIFICATION STATEMENT

The delivery and receipt of this data deliverable constitutes an invoice for payment for this data deliverable.

CERTIFICATION STATEMENT

This package is submitted in compliance with the Rocky Flats statement of work GR03-A.4.
I certify that this electronic image, and all hardcopies produced from this image accurately represent the data and are in compliance with the BOA and RFETS specific requirements, both technically and for completeness, other than the conditions detailed above or in the sample data package narrative. Release, by submission through email, of the data contained in this electronic image and the computer-readable EDD (as applicable), has been authorized by the Laboratory Manager or the Manager's designee.

Name: Kelly A. Dunnahoo, B.S. **Date:** May 20, 2004

Title: Laboratory Director **Subcontract No.** KH020002

Case Narrative

May 20, 2004 Lab ID : SP 404213

Kaiser-Hill Company, L.L.C.
Analytical Services Division
10808 Hwy 93, Unit B
Building T130G
Golden, CO 80403-8200

Laboratory Report

Introduction:
This report package contains data and QC for RIN 04D0613-MET

Sample Description	Date Sampled	Date Received	FGL Lab Sample ID #	Matrix
04D0613-001.001	04/28/2004	04/29/2004	SP 404213-01	SW

Sampling and Receipt Information: The sample was received, prepared and analyzed within the method specified holding times. All samples arrived at 4 °C. All samples were checked for pH if acid or base preservation required (except for VOAs). For details of sample receipt information, please see the attached Chain of Custody and Condition Upon Receipt Forms.

Quality Control: All samples were prepared and analyzed according to the following tables:

Inorganic - Metals QC

3010A	05/18/2004:A207 All preparation quality controls are within established criteria, except: The following note applies to Nickel: 310 LCS above Acceptance Range (AR). Samples which were non detect for this analyte were accepted.
6020A	05/19/2004:A - IX201 All analysis quality controls are within established criteria.
7470/1A	04/30/2004:B212 All preparation quality controls are within established criteria.
7470A	04/30/2004:A - HG201 All analysis quality controls are within established criteria.

Explanation: The following equation is used to calculate the dilution factor shown on the Result Form(s).

$$\text{Dilution} = \left[\frac{\text{Initial Amount}}{\text{Final Amount}} * \text{Prep Dil.} * \text{Runlog Dil.} \right] / \text{Method Ratio}$$

Where
Initial Amount: Initial amount of sample used for prep/extraction.
Final Amount: Final volume of prep/extracted sample.

Case narrative continued on next page...

Explanation:

Prep Dil: Any dilution used prior to analysis.
Runlog Dil: Analysis dilution.
Method Ratio: Default values for Initial Amount, Final Amount, Prep Dil., and Runlog Dil. used in obtaining FGL's MDL/PQL's.

Note: If the value of the result dilution falls between 0.8 and 1.2, the dilution is set to 1.0 to mask insignificant differences.

The Concentration Flag U (Undetected) is determined by applying either the IDL (Metals) or the MDL as the reference limit. If no MDL is available then the PQL/10 is used for the reference value.

For Inorganic forms the 'M' Qualifier has been replaced by the TR# column. This column references the Preparation/Analysis Traffic Report where the 'M' qualifier for each analysis is defined.

For Inorganic Reports that include data bracketed by ICSA/AB, Forms II and III present all values upto the closing QC. Some of the QC results reported may be outside of the Data Quality Objectives (DQO), however no analytes affected by these QC results are reported.

For Inorganic Reports that include data from the Thermo Elemental ICP-MS instrument identified as IX201 the following notes apply. The instrument software only provides the peak width at 10% of the peak height instead of 5% for Tune information. Form XV has been modified to display this information. Also the raw data section for each analysis includes a reference to the Tune information which is incorrect. To overcome this limitation of the software, the Tune raw data was attached at the bottom of each data section and all bookmark references redirected to the correct information.

For Inorganic Reports that include data from the Leeman Mercury Analyzer instrument identified as HG201 the following note applies. The instrument software prints the data in an alphabetical order rather than the analytical sequence. The file includes date and time information for referencing.

FGL uses the generic term ILV (Instrument Level Verification) in the raw data to reference CRI, CRA, CRDL or CRQL standards. All detection level standards follow the ILMO 5.0 naming convention of CRQL on the reporting forms.

Inorganic Analysis Data Sheet

Date Sampled : 04/28/2004
Date Received : 04/29/2004
Matrix : AQ

Sample ID : 04D0613-001.001
Lab Sample ID : SP 404213-01

CAS No.	Parameter Name	Units	Dilution	Results	Qualifier C	Qualifier Q	TR#
Metals							
7429-90-5	Aluminum	ug/L	1.00	29.6			B03
7440-36-0	Antimony	ug/L	1.00	0.36	U		B03
7440-38-2	Arsenic	ug/L	1.00	2.1	B		B03
7440-39-3	Barium	ug/L	1.00	588			B03
7440-41-7	Beryllium	ug/L	1.00	0.029	U		B03
7440-43-9	Cadmium	ug/L	1.00	0.025	U		B03
7440-70-2	Calcium	ug/L	1.00	157000			B03
7440-47-3	Chromium	ug/L	1.00	1.7	B		B03
7440-48-4	Cobalt	ug/L	1.00	1.8	B		B03
7440-50-8	Copper	ug/L	1.00	0.36	U		B03
7439-89-6	Iron	ug/L	1.00	28900			B03
7439-92-1	Lead	ug/L	1.00	0.41	B	N	B03
7439-93-2	Lithium	ug/L	1.00	22.1	B		B03
7439-95-4	Magnesium	ug/L	1.00	37800			B03
7439-96-5	Manganese	ug/L	1.00	731			B03
7439-97-6	Mercury	ug/L	1.00	0.043	U		A04
7439-98-7	Molybdenum	ug/L	1.00	0.99	U		B03
7440-02-0	Nickel	ug/L	1.00	8	B	N	B03
7440-09-7	Potassium	ug/L	1.00	6060			B03
7782-49-2	Selenium	ug/L	1.00	3.6			B03
7440-22-4	Silver	ug/L	1.00	0.0094	U	N	B03
7440-23-5	Sodium	ug/L	1.00	62300			B03
7440-24-6	Strontium	ug/L	1.00	1090			B03
7440-28-0	Thallium	ug/L	1.00	0.16	U		B03
7440-31-5	Tin	ug/L	1.00	0.78	U		B03
11-09-6	Uranium	ug/L	1.00	9.1	B		B03
7440-62-2	Vanadium	ug/L	1.00	0.63	U		B03
7440-66-6	Zinc	ug/L	1.00	44.1			B03

U ⇒ Non-Detect

B ⇒ Estimated

N ⇒ Lab Interference

Case Narrative

May 14, 2004 Lab ID : SP 404213

Kaiser-Hill Company, L.L.C.
Analytical Services Division
10808 Hwy 93, Unit B
Building T130G
Golden, CO 80403-8200

Laboratory Report

Introduction:
This report package contains data and QC for RIN 04D0613-VOA

Sample Description	Date Sampled	Date Received	FGL Lab Sample ID #	Matrix
04D0613-001.001	04/28/2004	04/29/2004	SP 404213-02	SW
04D0613-002.001	04/28/2004	04/29/2004	SP 404213-03	SW

Sampling and Receipt Information: All samples were received, prepared and analyzed within the method specified holding times. All samples arrived at 4 °C. All samples were checked for pH if acid or base preservation required (except for VOAs). For details of sample receipt information, please see the attached Chain of Custody and Condition Upon Receipt Forms.

Quality Control: All samples were prepared and analyzed according to the following tables:

Organic QC

5030B	04/30/2004:A233 All preparation quality controls are within established criteria.
8260B	04/30/2004:A - GM207 All analysis quality controls for samples and associated preparation quality controls are within established criteria.
	05/03/2004:A - GM207 All analysis quality controls for samples and associated preparation quality controls are within established criteria.

Explanation: The following equation is used to calculate the dilution factor shown on the Result Form(s).

$$\text{Dilution} = \left[\frac{\text{Initial Amount}}{\text{Final Amount}} * \text{Prep Dil.} * \text{Runlog Dil.} \right] / \text{Method Ratio}$$

Where
Initial Amount: Initial amount of sample used for prep/extraction.
Final Amount: Final volume of prep/extracted sample.
Prep Dil: Any dilution used prior to analysis.
Runlog Dil: Analysis dilution.

Case narrative continued on next page...

Organic Analysis Data Sheet - EPA 8260

Date Sampled : 04/28/2004
Date Received : 04/29/2004
Matrix : AQ

Sample ID : 04D0613-001.001
Lab Sample ID : SP 404213-02
File : M7050308(C)

Parameter ID	Parameter Name	Units	Dilution	Results	Qualifier	TR#
Surrogates						
460-00-4	4-Bromofluorobenzene	%	1.00	92.7		C02
1868-53-7	Dibromofluoromethane	%	1.00	124		C02
17060-07-0	1,2-Dichloroethane-d4	%	1.00	119		C02
2037-26-5	Toluene-d8	%	1.00	99.1		C02
Target Analytes						
67-64-1	Acetone	ug/L	1.00	10	U	C02
71-43-2	Benzene	ug/L	1.00	0.33	J	C02
108-86-1	Bromobenzene	ug/L	1.00	1.0	U	C02
74-97-5	Bromochloromethane	ug/L	1.00	1.0	U	C02
75-27-4	Bromodichloromethane	ug/L	1.00	1.0	U	C02
75-25-2	Bromoform	ug/L	1.00	1.0	U	C02
74-83-9	Bromomethane	ug/L	1.00	1.0	U	C02
78-93-3	2-Butanone (MEK)	ug/L	1.00	10	U	C02
104-51-8	n-Butylbenzene	ug/L	1.00	1.0	U	C02
135-98-8	sec-Butylbenzene	ug/L	1.00	1.0	U	C02
98-06-6	tert-Butylbenzene	ug/L	1.00	1.0	U	C02
75-15-0	Carbon Disulfide	ug/L	1.00	1.0	U	C02
56-23-5	Carbon Tetrachloride	ug/L	1.00	1.0	U	C02
108-90-7	Chlorobenzene	ug/L	1.00	1.0	U	C02
75-00-3	Chloroethane	ug/L	1.00	1.0	U	C02
67-66-3	Chloroform	ug/L	1.00	1.0	U	C02
74-87-3	Chloromethane	ug/L	1.00	1.0	U	C02
95-49-8	2-Chlorotoluene	ug/L	1.00	1.0	U	C02
106-43-4	4-Chlorotoluene	ug/L	1.00	1.0	U	C02
96-12-8	1,2-Dibromo-3-chloropropane	ug/L	1.00	1.0	U	C02
124-48-1	Dibromochloromethane	ug/L	1.00	1.0	U	C02
106-93-4	1,2-Dibromoethane (EDB)	ug/L	1.00	1.0	U	C02
74-95-3	Dibromomethane	ug/L	1.00	1.0	U	C02
95-50-1	1,2-Dichlorobenzene	ug/L	1.00	1.0	U	C02
541-73-1	1,3-Dichlorobenzene	ug/L	1.00	1.0	U	C02
106-46-7	1,4-Dichlorobenzene	ug/L	1.00	1.0	U	C02
75-71-8	Dichlorodifluoromethane	ug/L	1.00	1.0	U	C02
75-34-3	1,1-Dichloroethane	ug/L	1.00	1.0	U	C02
107-06-2	1,2-Dichloroethane	ug/L	1.00	1.0	U	C02
75-35-4	1,1-Dichloroethylene	ug/L	1.00	1.0	U	C02
156-59-2	cis-1,2-Dichloroethylene	ug/L	1.00	1.0	U	C02
156-60-5	trans-1,2-Dichloroethylene	ug/L	1.00	1.0	U	C02
78-87-5	1,2-Dichloropropane	ug/L	1.00	1.0	U	C02

std. 1.0

Table continued on page 9

Organic Analysis Data Sheet - EPA 8260

Date Sampled : 04/28/2004
Date Received : 04/29/2004
Matrix : AQ

Sample ID : 04D0613-001.001
Lab Sample ID : SP 404213-02
File : M7050308(C)

Parameter ID	Parameter Name	Units	Dilution	Results	Qualifier	TR#	
Target Analytes							
142-28-9	1,3-Dichloropropane	ug/L	1.00	1.0	U	C02	
594-20-7	2,2-Dichloropropane	ug/L	1.00	1.0	U	C02	
563-58-6	1,1-Dichloropropene	ug/L	1.00	1.0	U	C02	
10061-01-5	cis-1,3-Dichloropropene	ug/L	1.00	1.0	U	C02	
10061-02-6	trans-1,3-Dichloropropene	ug/L	1.00	1.0	U	C02	std.
100-41-4	Ethyl Benzene	ug/L	1.00	0.29	J	C02	680
87-68-3	Hexachlorobutadiene	ug/L	1.00	1.0	U	C02	
591-78-6	2-Hexanone	ug/L	1.00	10	U	C02	
98-82-8	Isopropylbenzene	ug/L	1.00	1.0	U	C02	
99-87-6	p-Isopropyltoluene	ug/L	1.00	1.0	U	C02	
108-10-1	4-Methyl-2-pentanone (MIBK)	ug/L	1.00	10	U	C02	
75-09-2	Methylene Chloride	ug/L	1.00	1.0	U	C02	
91-20-3	Naphthalene	ug/L	1.00	1.0	U	C02	
103-65-1	n-Propylbenzene	ug/L	1.00	1.0	U	C02	
100-42-5	Styrene	ug/L	1.00	1.0	U	C02	
630-20-6	1,1,1,2-Tetrachloroethane	ug/L	1.00	1.0	U	C02	
79-34-5	1,1,2,2-Tetrachloroethane	ug/L	1.00	1.0	U	C02	
127-18-4	Tetrachloroethylene	ug/L	1.00	1.0	U	C02	
108-88-3	Toluene	ug/L	1.00	1.0	U	C02	
87-61-6	1,2,3-Trichlorobenzene	ug/L	1.00	1.0	U	C02	
120-82-1	1,2,4-Trichlorobenzene	ug/L	1.00	1.0	U	C02	
71-55-6	1,1,1-Trichloroethane	ug/L	1.00	1.0	U	C02	
79-00-5	1,1,2-Trichloroethane	ug/L	1.00	1.0	U	C02	
79-01-6	Trichloroethylene	ug/L	1.00	1.0	U	C02	
75-69-4	Trichlorofluoromethane	ug/L	1.00	1.0	U	C02	
96-18-4	1,2,3-Trichloropropane	ug/L	1.00	1.0	U	C02	
76-13-1	1,1,2-Trichlorotrifluoroethane	ug/L	1.00	1.0	U	C02	
95-63-6	1,2,4-Trimethylbenzene	ug/L	1.00	1.0	U	C02	
108-67-8	1,3,5-Trimethylbenzene	ug/L	1.00	1.0	U	C02	
75-01-4	Vinyl Chloride	ug/L	1.00	1.0	U	C02	
1330-20-7	Xylenes	ug/L	1.00	0.94	J	C02	10,000
TIC's			RT				
00075-45-6	Methane, chlorodifluoro-	ug/L	5.34	4	JN	C02	
00593-70-4	Methane, chlorofluoro-	ug/L	6.21	8	JN	C02	

Organic Analysis Data Sheet - EPA 8260

Trip Blank

Date Sampled : 04/28/2004
Date Received : 04/29/2004
Matrix : AQ

Sample ID : 04D0613-002.001
Lab Sample ID : SP 404213-03
File : M7050309(C)

Parameter ID	Parameter Name	Units	Dilution	Results	Qualifier	TR#
Surrogates						
460-00-4	4-Bromofluorobenzene	%	1.00	92.1		C02
1868-53-7	Dibromofluoromethane	%	1.00	124		C02
17060-07-0	1,2-Dichloroethane-d4	%	1.00	114		C02
2037-26-5	Toluene-d8	%	1.00	100		C02
Target Analytes						
67-64-1	Acetone	ug/L	1.00	10	U	C02
71-43-2	Benzene	ug/L	1.00	1.0	U	C02
108-86-1	Bromobenzene	ug/L	1.00	1.0	U	C02
74-97-5	Bromochloromethane	ug/L	1.00	1.0	U	C02
75-27-4	Bromodichloromethane	ug/L	1.00	1.0	U	C02
75-25-2	Bromoform	ug/L	1.00	1.0	U	C02
74-83-9	Bromomethane	ug/L	1.00	1.0	U	C02
78-93-3	2-Butanone (MEK)	ug/L	1.00	10	U	C02
104-51-8	n-Butylbenzene	ug/L	1.00	1.0	U	C02
135-98-8	sec-Butylbenzene	ug/L	1.00	1.0	U	C02
98-06-6	tert-Butylbenzene	ug/L	1.00	1.0	U	C02
75-15-0	Carbon Disulfide	ug/L	1.00	1.0	U	C02
56-23-5	Carbon Tetrachloride	ug/L	1.00	1.0	U	C02
108-90-7	Chlorobenzene	ug/L	1.00	1.0	U	C02
75-00-3	Chloroethane	ug/L	1.00	1.0	U	C02
67-66-3	Chloroform	ug/L	1.00	1.0	U	C02
74-87-3	Chloromethane	ug/L	1.00	1.0	U	C02
95-49-8	2-Chlorotoluene	ug/L	1.00	1.0	U	C02
106-43-4	4-Chlorotoluene	ug/L	1.00	1.0	U	C02
96-12-8	1,2-Dibromo-3-chloropropane	ug/L	1.00	1.0	U	C02
124-48-1	Dibromochloromethane	ug/L	1.00	1.0	U	C02
106-93-4	1,2-Dibromoethane (EDB)	ug/L	1.00	1.0	U	C02
74-95-3	Dibromomethane	ug/L	1.00	1.0	U	C02
95-50-1	1,2-Dichlorobenzene	ug/L	1.00	1.0	U	C02
541-73-1	1,3-Dichlorobenzene	ug/L	1.00	1.0	U	C02
106-46-7	1,4-Dichlorobenzene	ug/L	1.00	1.0	U	C02
75-71-8	Dichlorodifluoromethane	ug/L	1.00	1.0	U	C02
75-34-3	1,1-Dichloroethane	ug/L	1.00	1.0	U	C02
107-06-2	1,2-Dichloroethane	ug/L	1.00	1.0	U	C02
75-35-4	1,1-Dichloroethylene	ug/L	1.00	1.0	U	C02
156-59-2	cis-1,2-Dichloroethylene	ug/L	1.00	1.0	U	C02
156-60-5	trans-1,2-Dichloroethylene	ug/L	1.00	1.0	U	C02
78-87-5	1,2-Dichloropropane	ug/L	1.00	1.0	U	C02

Table continued on page 11

Organic Analysis Data Sheet - EPA 8260

Date Sampled : 04/28/2004
Date Received : 04/29/2004
Matrix : AQ

Sample ID : 04D0613-002.001
Lab Sample ID : SP 404213-03
File : M7050309(C)

Parameter ID	Parameter Name	Units	Dilution	Results	Qualifier	TR#
Target Analytes						
142-28-9	1,3-Dichloropropane	ug/L	1.00	1.0	U	C02
594-20-7	2,2-Dichloropropane	ug/L	1.00	1.0	U	C02
563-58-6	1,1-Dichloropropene	ug/L	1.00	1.0	U	C02
10061-01-5	cis-1,3-Dichloropropene	ug/L	1.00	1.0	U	C02
10061-02-6	trans-1,3-Dichloropropene	ug/L	1.00	1.0	U	C02
100-41-4	Ethyl Benzene	ug/L	1.00	1.0	U	C02
87-68-3	Hexachlorobutadiene	ug/L	1.00	1.0	U	C02
591-78-6	2-Hexanone	ug/L	1.00	10	U	C02
98-82-8	Isopropylbenzene	ug/L	1.00	1.0	U	C02
99-87-6	p-Isopropyltoluene	ug/L	1.00	1.0	U	C02
108-10-1	4-Methyl-2-pentanone (MIBK)	ug/L	1.00	10	U	C02
75-09-2	Methylene Chloride	ug/L	1.00	1.0	U	C02
91-20-3	Naphthalene	ug/L	1.00	1.0	U	C02
103-65-1	n-Propylbenzene	ug/L	1.00	1.0	U	C02
100-42-5	Styrene	ug/L	1.00	1.0	U	C02
630-20-6	1,1,1,2-Tetrachloroethane	ug/L	1.00	1.0	U	C02
79-34-5	1,1,2,2-Tetrachloroethane	ug/L	1.00	1.0	U	C02
127-18-4	Tetrachloroethylene	ug/L	1.00	1.0	U	C02
108-88-3	Toluene	ug/L	1.00	1.0	U	C02
87-61-6	1,2,3-Trichlorobenzene	ug/L	1.00	1.0	U	C02
120-82-1	1,2,4-Trichlorobenzene	ug/L	1.00	1.0	U	C02
71-55-6	1,1,1-Trichloroethane	ug/L	1.00	1.0	U	C02
79-00-5	1,1,2-Trichloroethane	ug/L	1.00	1.0	U	C02
79-01-6	Trichloroethylene	ug/L	1.00	0.57	J	C02
75-69-4	Trichlorofluoromethane	ug/L	1.00	1.0	U	C02
96-18-4	1,2,3-Trichloropropane	ug/L	1.00	1.0	U	C02
76-13-1	1,1,2-Trichlorotrifluoroethane	ug/L	1.00	1.0	U	C02
95-63-6	1,2,4-Trimethylbenzene	ug/L	1.00	1.0	U	C02
108-67-8	1,3,5-Trimethylbenzene	ug/L	1.00	1.0	U	C02
75-01-4	Vinyl Chloride	ug/L	1.00	1.0	U	C02
1330-20-7	Xylenes	ug/L	1.00	1.0	U	C02
TIC's			RT			

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | SFP No.: RFI-003

Subcontractor: S.M. Stoller Corporation | Page 1 of 1

The subcontractor may initiate a Subcontractor Field Problem (SFP) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: | Specifications:

Reference (other): | Attachments: Site Grading Plan w/ approximate debris location

Problem: At the Juy 6th site walk, Stoller observed concrete, rebar and asphalt on the surface of the existing landfill. The location on the attached map indicates that some of this debris is in cut areas. Is this material consistent with landfill waste and does the presence of this material indicate that it is likely that landfill waste will be uncovered during regrading.? How should Stoller handle this surface debris?

Solution:

Requested By:	P. Kreitz
Date Field Construction will be affected:	August 17

Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☐	Clarification ☒	Rejection	☐ Change

See attached response.

Robert W. Davis	Robert W. Davis	07/31/2004
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:		

RFI – 003: Response to Request for Information

All concrete, reinforcing bar, asphalt and other construction type debris at the surface of the Present Landfill shall be managed as sanitary wastes as specified in Specification Section 01350. Design Drawing 51781-005 presents the results of test pits at the surface of the Present Landfill showing the approximate depth to the top of waste at these locations. It is not anticipated that the top of the waste at the Present Landfill will be exposed during the initial grading of the landfill surface. However, should waste, other than concrete, reinforcing bar and other construction type debris be found, the grading work shall stop and the CTR immediately notified.

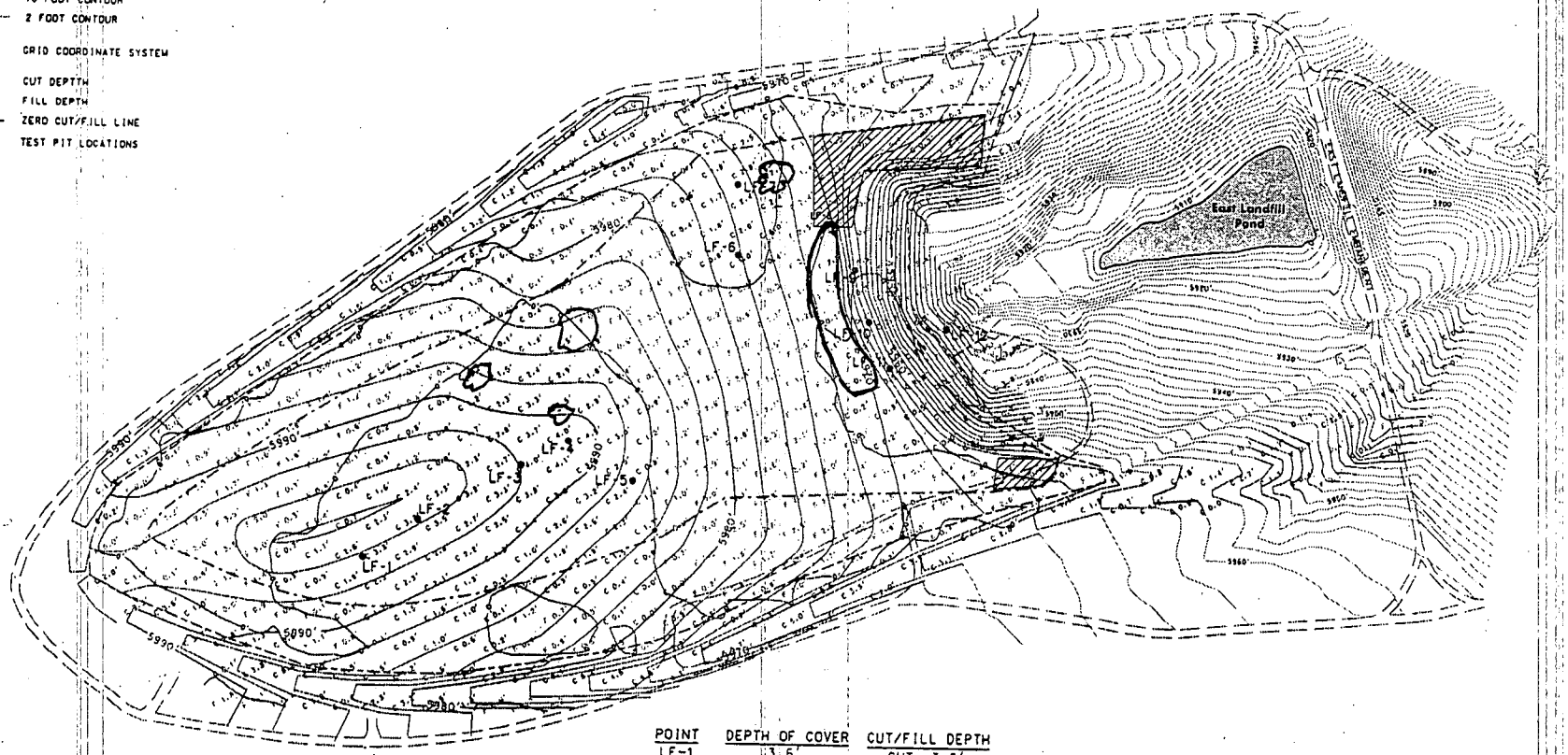
Bob Davis
July 31, 2004

OK CQA J.H. Rabe Tetra Tech

LEGEND

- CONTROL POINT
- APPROXIMATE LIMIT OF FINAL COVER (22.1 ACRES)
- GRAVEL ROAD
- APPROXIMATE LIMIT OF WASTE
- FORMER ASBESTOS DISPOSAL AREA (APPROXIMATE)
- 10 FOOT CONTOUR
- 2 FOOT CONTOUR
- GRID COORDINATE SYSTEM
- CUT DEPTH
- FILL DEPTH
- ZERO CUT/FILL LINE
- LF-1 TEST PIT LOCATIONS

{} Surface Debris Approx. Locations



POINT	DEPTH OF COVER	CUT/FILL DEPTH
LF-1	3.6'	CUT 3.5'
LF-2	4.3'	CUT 3.4'
LF-3	4.7'	CUT 3.3'
LF-4	4.7'	CUT 4.6'
LF-5	3.0'	CUT 1.9'
LF-6	3.0'	CUT 1.7'
LF-7	2.7'	CUT 2.7'
LF-8	3.7'	FILL 4.1'
LF-9	1.7'	FILL 1.5'
LF-10	3.4'	CUT 2.1'
LF-11	2.0'	CUT 1.4'
LF-12	2.8'	FILL 6.8'

LANDFILL
CUT = 22.219 (cu yd)
FILL = 25.334 (cu yd)
NET = -3.114 (cu yd)

PARAMETER CHANNEL
CUT = 19.032 (cu yd)
FILL = 1.953 (cu yd)
NET = 17.079 (cu yd)

N

0' 100 200'

KEYWORDS

U.S. DEPARTMENT OF ENERGY
ROCKY FLATS OFFICE GOLDEN, COLORADO

Rocky Flats Environmental Technology Site
GOLDEN, COLORADO

CUT/FILL ISOPACH
TOP OF REGRADED SURFACE
PRESENT LANDFILL
ACCELERATED ACTION
95% DESIGN

B 51781-005

EARTH TECH

A TYCO INTERNATIONAL LTD. COMPANY

TECHNICAL MEMORANDUM

DATE: September 21, 2004

TO: Bob Davis, RFETS

FROM: Randy Thompson, Earth Tech, Inc.

SUBJECT: Soft Spot Repair Procedures – Present Landfill

Proof-rolling on the present landfill has revealed 18 soft spots or areas of unsuitable deflection that will need to be remedied prior to subgrade surface acceptance. Several of the soft spots have been investigated and generally fall into three categories:

- Small, isolated soft spots likely due to the type of waste material below (SS5, SS9, SS11, and SS12)
- Clay soft spots characterized by over 10 feet of reworked, and likely improperly compacted, clay cover above the waste (SS3, SS6, SS7).
- Wet soft spots characterized by saturated conditions immediately below cover (SS4).

Please note that SS1, SS2, SS8, SS13, SS14, SS15, SS16, SS17, and SS18 have yet to be investigated.

Remedy for each type of soft spot is discussed below. In each case, the area will be proof-rolled following the remedy to ensure less than 1-inch of deflection.

Small Soft Spots (SS5, SS9, SS10, SS11, SS12)

- Roll area with sheep's foot compactor until minimal deflection is noted at the discretion of the Field Engineering Team (SQAM, QCSM, Design Engineer's Representative).
- Excavate surrounding soils to the depth of the deflected area. Laterally, the width of the surrounding excavations should be at least the radius of the soft area to a maximum of 10 feet (i.e. if the soft area has a diameter of 8 feet, excavate soil 4 feet laterally around the soft spot). This will allow the edges of the geogrid to be placed on stable material facilitating bridging.
- Inspect the surface of the excavation to ensure that it is suitable for geogrid (i.e. no foreign substances such as debris or large rocks are present). Inspection will be conducted by the Field Engineering Team.
- Install Tensar BX1200 or equivalent biaxial geogrid on the inspected surface. The geogrid shall be laid smooth and free of tension, stress, folds, wrinkles, or

creases. If more than one strip is necessary, the geogrid strips shall be overlapped a minimum of 24-inches and tied together with hog rings or cable ties every 5 feet. Hog rings and cable ties must meet geogrid manufacturer's recommendations.

- Backfill over geogrid with Rocky Flats Alluvium in 1-foot lifts compacted with a minimum of 6 passes with the sheep's foot compactor.
- Proof-roll area with loaded scraper per Specifications to ensure less than 1-inch of deflection.

Clay Soft Spots (SS3, SS6, SS7)

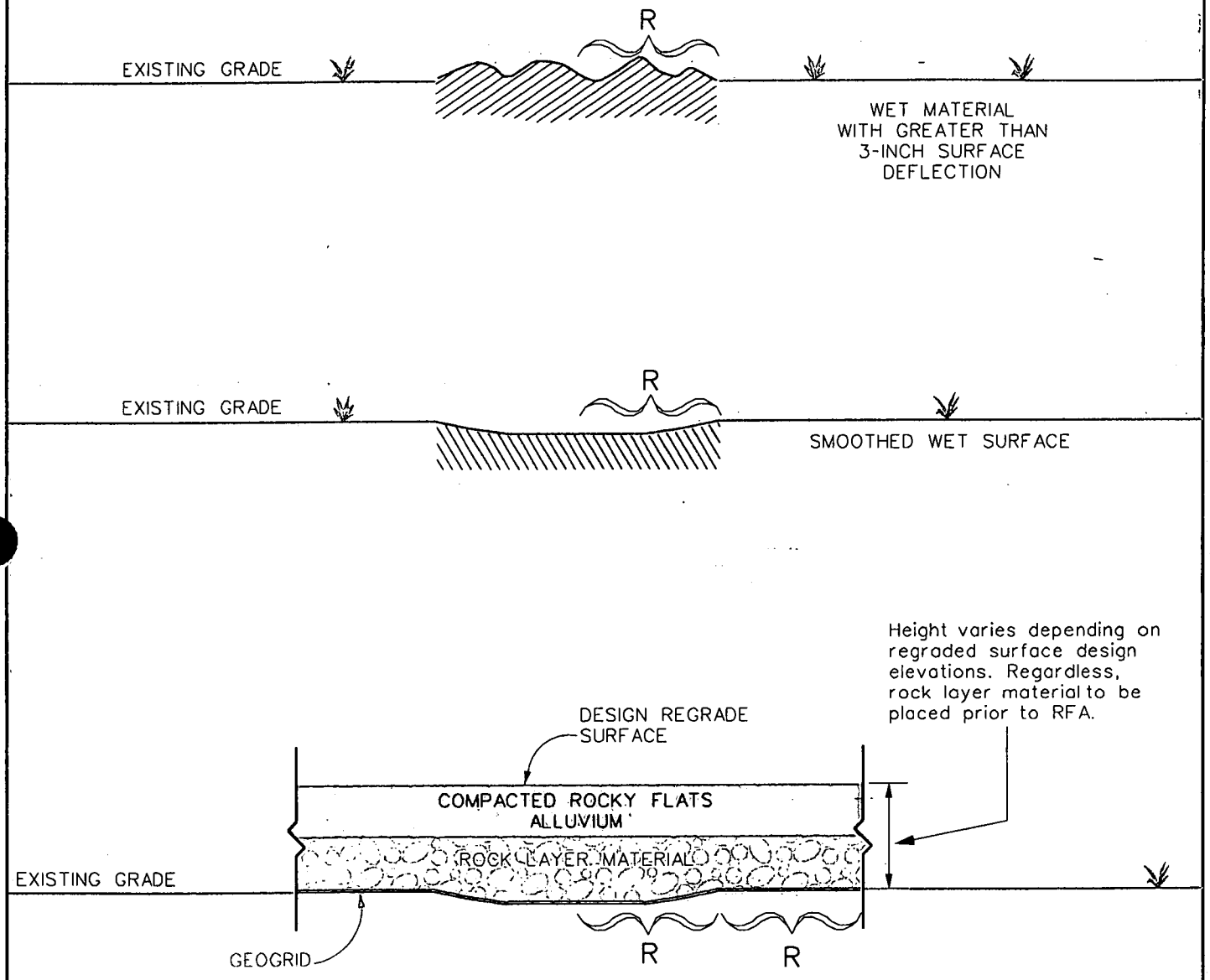
- Excavate soft area and surrounding soils until waste is encountered (or a maximum of 4-feet below ground surface). Laterally, the width of the surrounding excavations should be at least the radius of the soft area to a maximum of 10 feet (i.e. if the soft area has a diameter of 8 feet, excavate soil 4 feet laterally around the soft spot). This will allow the edges of the geogrid and bridging soils to be placed on stable material.
- Inspect the surface of the excavation to ensure that it is suitable for geogrid (i.e. no foreign substances such as debris or large rocks are present). Inspection will be conducted by the Field Engineering Team.
- Install Tensar BX1200 or equivalent biaxial geogrid on the inspected surface. The geogrid shall be laid smooth and free of tension, stress, folds, wrinkles, or creases. If more than on strip is necessary, the geogrid strips shall be overlapped a minimum of 24-inches and tied together with cable ties every 5 feet. Hog rings and cable ties must meet geogrid manufacturer's recommendations.
- Backfill over geogrid with Rocky Flats Alluvium in 1-foot lifts compacted with a minimum of 6 passes with the sheep's foot compactor.
- Proof-roll area with loaded scraper per Specifications to ensure less than 1-inch of deflection.

Wet Soft Spots (SS4)

The wet spot investigated shows water and waste material at a shallow depth (0.5 to 1 foot). Excavating into the waste/water is discouraged, as the RCT cannot survey under wet conditions. Due to this, the method of repair varies from the other soft spot repair methods. SS4 is located within a fill area and suspect wet spots SS2 and SS13 are as well. Therefore, the fill material will be laid over geogrid in these areas to bridge the soft spot as follows:

- If possible (without creating muddy, unworkable conditions), level the soft spot area to facilitate placement of the geogrid at the discretion of the Field Engineering Team.

- If necessary, excavate surrounding soils to match the depth of the smoothed-out soft area. Laterally, the width of the surrounding excavations should be at least the radius of the soft area to a maximum of 10 feet (i.e. if the soft area has a diameter of 8 feet, excavate soil 4 feet laterally around the soft spot). This will allow the edges of the geogrid and bridging soils to be placed on stable material.
- Inspect the surface of the excavation to ensure that it is suitable for geogrid (i.e. no foreign substances such as debris or large rocks are present). Inspection will be conducted by the Field Engineering Team.
- Install Tensar BX1200 or equivalent biaxial geogrid on the inspected surface. The geogrid shall be laid smooth and free of tension, stress, folds, wrinkles, or creases. If more than on strip is necessary, the geogrid strips shall be overlapped a minimum of 24-inches and tied together with cable ties every 5 feet. Hog rings and cable ties must meet geogrid manufacturer's recommendations.
- Backfill over geogrid with Rock Layer material (as defined in Specification 02222). The thickness of the rock layer material will very depending on the thickness of fill required to achieve the regrade surface in the area on the soft spot repair. Follow the revised grading plan to determine how much fill can be placed, and place rock material equal to one half of the design regrade fill.
- Backfill over the rock material with Rocky Flats Alluvium (or approved fill material) in 1-foot lifts compacted with a minimum of 6 passes with the sheep's foot compactor. Follow the revised grading plan to determine how much fill can be placed, and place Rocky Flats Alluvium in a thickness required to meet regrade design surface elevations.
- Proof-roll area with loaded scraper per Specifications to ensure less than 1-inch of deflection.



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E A R T H T E C H

FIGURE 1

WET SOFT SPOT

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE
GOLDEN, COLORADO

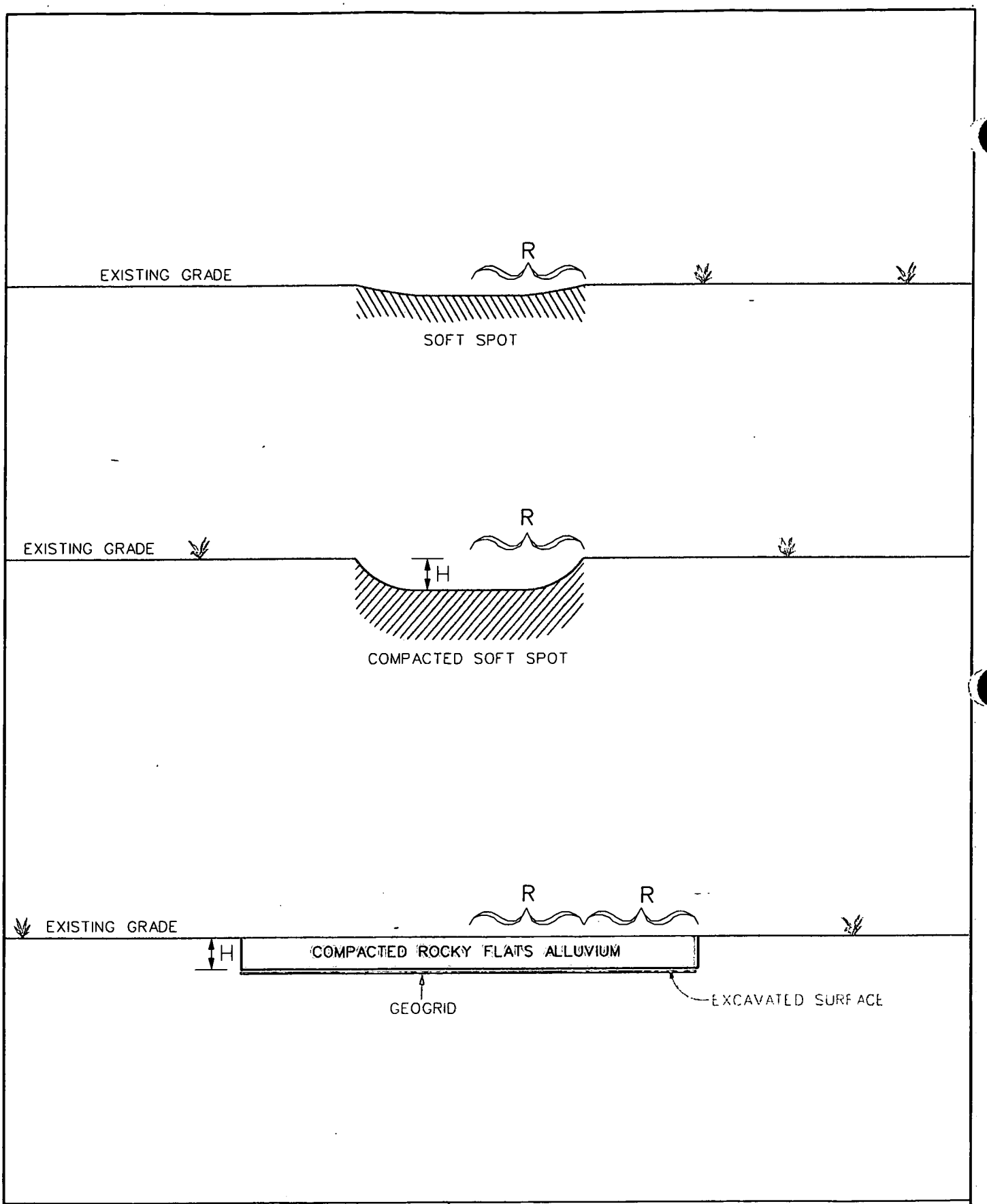

FIGURE 2

SMALL SOFT SPOT

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE
GOLDEN, COLORADO

EARTH TECH

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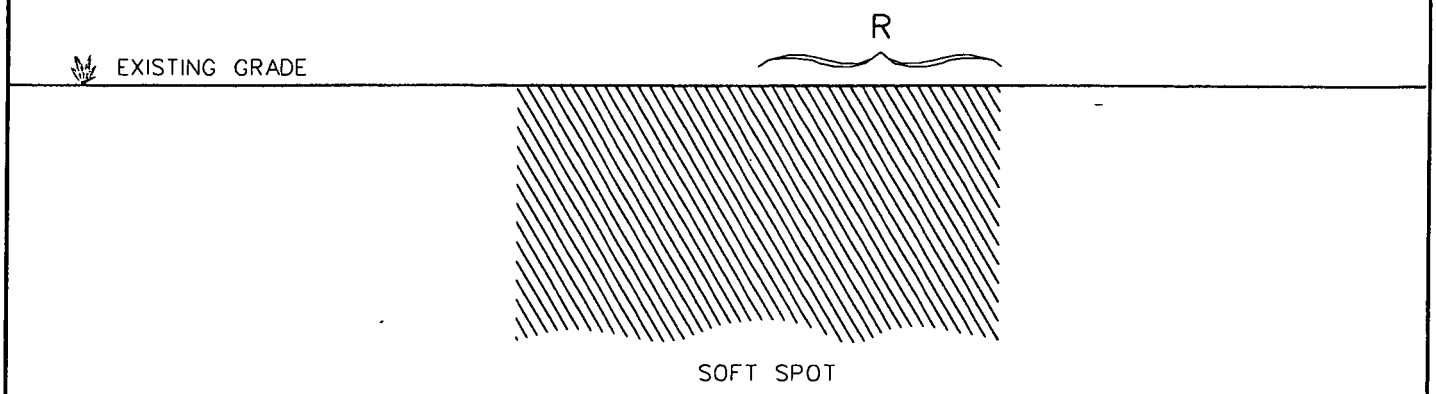

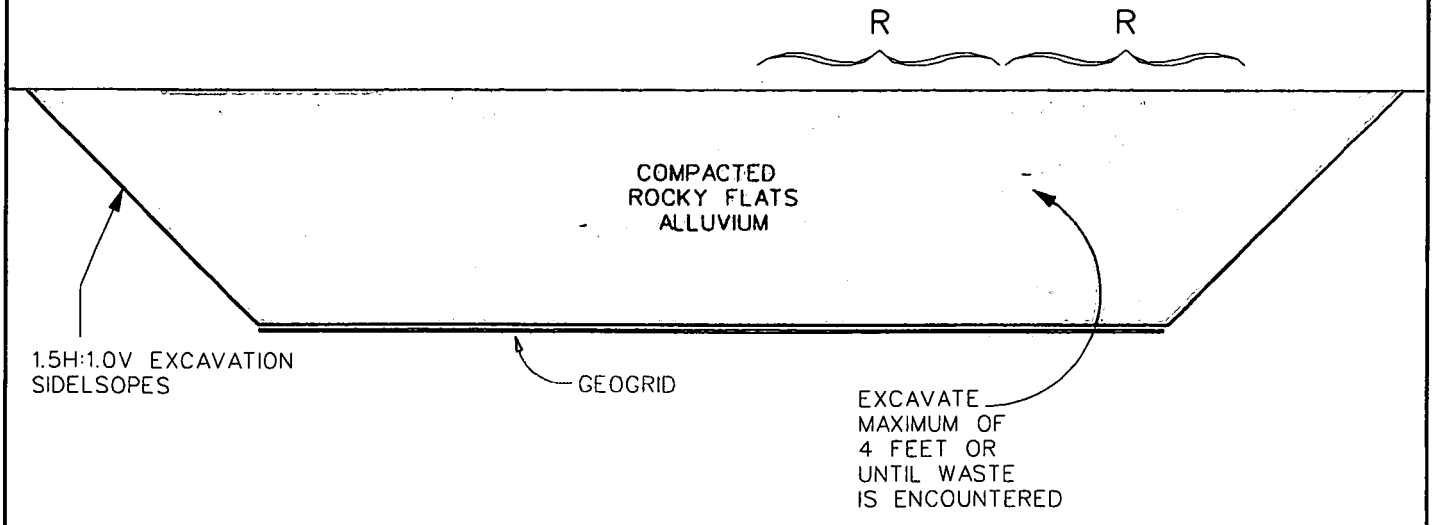

DATE: 09/24/0

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E A R T H T E C H

FIGURE 3

CLAY SOFT SPOT

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE
GOLDEN, COLORADO

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: 004

Subcontractor: S.M. Stoller Corporation | Page 1 of 1

The subcontractor may initiate a Subcontractor Field Problem (SFP) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: | Specifications: 02110 Section 3.03

Reference (other): | Attachments: Page 02110 - 2

Problem: Please clarify Specification section 02110 Section 3.03. Is it the intent of the specification that the entire existing landfill is to be close mowed and clippings collected? The decision to leave clippings on the ground or collect clippings will drive Stoller's equipment selection. The rough rocky terrain will make clipping collection difficult and the chance of equipment damage will be increased.

Solution:
Stoller suggests leaving the clippings in place or collect clippings only in very heavily vegetated areas.

Requested By:	P. Kreitz
Date Field Construction will be affected:	August 17

Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | Change ☐

See attached Response

Print/Type Name	Signature	Date
Robert W. Davis	Robert W. Davis	09/17/2004

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

Response to RFI No. 4

Vegetation from the surface of the Present Landfill is required to reduce potential future settlement and gas generation from the degradation of the organic vegetative material.

Vegetation may be removed by the use of a motor grader and scrapper to remove the top 2 to 3 inches of material, including the vegetation. This material will be stockpiled for use on the final 2-foot cover of the landfill. However, any concrete or debris must be separated from this material prior to stockpiling.

NOTE: THE AREAS WHERE ASBESTOS CONTAINING MATERIAL WAS PLACED WILL BE CLOSE-MOWED AND THE VEGETATION REMOVED FROM THE SURFACE.

For further clarification, the trees, stumps and roots of trees will be removed from the east side of the landfill as specified in the design documents.

Bob Davis/K-H/CTR
09/17/2004

OK CQA
J.H. Rala
Tetra Tech

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.01 PROTECTION

Existing utilities shall be protected against damage. Rocky Flats personnel shall be contacted by the CONTRACTOR for marking (or verifying) utility locations before beginning excavation. If excavation work is being performed within the immediate area (10 feet) of existing buried utilities, existing underground utilities shall be located by hand excavation. If uncharted utilities are encountered during excavation, stop work in the immediate area or as appropriate and notify CONTRACTOR and the appropriate utility provider. Damaged utilities shall be repaired at the SUBCONTRACTOR'S expense.

The SUBCONTRACTOR shall preserve and protect groundwater-monitoring wells. Damaged or destroyed monitoring wells shall be replaced at SUBCONTRACTOR'S expense. The SUBCONTRACTOR shall protect, support, and maintain conduits, wires, pipes or other utilities that are to remain in place during work.

3.02 PREPARATION

The SUBCONTRACTOR shall provide 3 working days notice, prior to beginning construction, to owners of existing utilities, structures, and surface features. Obstructions such as fences, culverts, end walls, and guard posts shall be removed and replaced when need for removal is completed. The SUBCONTRACTOR shall provide stormwater discharge and erosion control.

3.03 CLEARING AND GRUBBING

The SUBCONTRACTOR shall close mow all areas where grade within the landfill waste boundary is to be razed of shrubs, trees, stumps, vegetation, rubbish, and other perishable or objectionable matter. Stumps and associated roots shall be removed. Material resulting from the mowing operation shall be removed from the project site. Place any cleared material at the location specified by the CONTRACTOR. For areas to be cleared that are outside the landfill waste boundary all vegetative materials shall be removed and the resulting soil surface scarified to a depth of 6 inches. Material scraped from these areas shall be removed from the project sites.

3.04 RESTORATION

Existing utilities, surface features, and structures shall be restored to condition equal to condition which existed prior to construction. Damaged landscape work within and outside of construction limits shall be replaced to original condition or better in accordance with Section 02900: SEEDING.

END OF SECTION

Request for Information (RFI)

Project Name:	Construction of the Present Landfill Accelerated Action	Subcontractor No.:	KH020577
Contractor:	Kaiser-Hill Company, LLC	RFI No.: 5	RFI - 05
Subcontractor:	S.M. Stoller Corporation	Page	1 of 1

The subcontractor may initiate a Subcontractor Field Problem (SFP) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	N/A	Specifications:	N/A
Reference (other):	KH020577, Statement of Work – 3.2.3	Attachments:	N/A

Request:

Not to complete a draft or final version of a Field Implementation Plan (FIP). The K-H generated Type 1 Work Package will serve the same purpose.

Solution:

Delete the draft and final FIP requirement.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	N/A

Paul Kreitz	Paul Kreitz	7/7/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐	Clarification ☒	Rejection	☒ Change

Correct, a FIP will not be required for this work. However, Type I and Craft Work Packages will be prepared by K-H & Stoller to define the work controll processes and procedures to perform the PLF construction work

Robert W. Davis	Robert W. Davis	07/31/2004
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:		

OK CQAE J.A. Rule Tetra Tech

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: 6 | RFI - 006

Subcontractor: S.M. Stoller Corporation | Page 1 of 1

The subcontractor may initiate a Subcontractor Field Problem (SFP) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: N/A	Specifications: 02225, Table 1.1
Reference (other): N/A	Attachments: N/A

Request:

Please supply a revised specification for the change from 40 mil thickness to 60 mil thickness for the LLDPE Liner.

Solution:

Requested By:	Paul Kreitz
Date Field Construction will be affected:	7/7/04, Critical Path

Paul Kreitz	Paul Kreitz	7/7/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☐ | Rejection | ☒ Change

Revised Specification Section 02225 - LLDPE Geomembrane Liner is Attached, Specification Revised for 60 mil LLDPE FML

Robert W. Davis	Robert W. Davis	July 9, 2004
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:		

OK CQAE J.H. Kale Tetra Tech

Present Landfill Accelerated Action

Design Specifications Division 2

Specification No. 02225 - LLDPE Geomembrane Liner

APPROVED	APPROVED AS CORRECTED
NOT APPROVED	REVISE AND SUBMIT

APPROVAL IS FOR CONFORMANCE TO THE SITE DESIGN PROCESS AND WITH THE DESIGN CONCEPT OF THE CALCULATIONS, PLANS, AND SPECIFICATIONS.

PROJECT CHIEF ENGINEER DATE

SECTION 02225 – LINEAR LOW DENSITY POLYETHYLENE (LLDPE) GEOMEMBRANE LINER

PART 1 GENERAL

1.01 SUMMARY

A. Specifications and guidelines for MANUFACTURING and INSTALLING geomembrane liner systems. All activities performed by the SUBCONTRACTOR shall be in accordance with all applicable Federal, State, and local laws and regulations.

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM)
   1. D 1004 Test Method for Initial Tear Resistance of Plastic Film and Sheeting
   2. D 1238 Standard Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer
   3. D 1505 Test Method for Density of Plastics by the Density-Gradient Technique
   4. D 1603 Test Method for Carbon Black in Olefin Plastics
   5. D 3895 Standard Test Method for Oxidative-Induction Time of Polyolefins by Differential Scanning Calorimetry
   6. D 4833 Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products
   7. D 5199 Standard Test Method for Measuring Nominal Thickness of Geotextiles and Geomembranes
   8. D 5397 Standard Test Method for Evaluation of Stress Crack Resistance of Polyolefin Geomembranes Using Notched Constant Tensile Load Test
   9. D 5596 Standard Test Method for Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics
   10. D 5994 Standard Test Method for Measuring Core Thickness of Textured Geomembranes
   11. D 6392 Standard Test Method for Determining the Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods
   12. D 6693 Standard Test Method for Determining Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes

B. Geosynthetic Research Institute
   1. GRI GM 17 Test Properties, Testing Frequency and Recommended Warranty for Linear Low Density Polyethylene (LLDPE) Smooth and Textured Geomembranes

1.03 DEFINITIONS

A. Lot- A quantity of resin (usually the capacity of one rail car) used in the manufacture of geomembranes. Finished roll will be identified by a roll number traceable to the resin lot used.

B. Construction Quality Assurance Engineer (CQAE) - Party, independent from MANUFACTURER and INSTALLER that is responsible for observing and documenting activities related to quality assurance during the lining system construction.

C. CONTRACTOR'S TECHNICAL REPRESENTATIVE (CTR) - The individual or firm responsible for the design and preparation of the project's Contract Drawings and Specifications.

D. Geomembrane Manufacturer (MANUFACTURER) - The party responsible for manufacturing the geomembrane rolls.

E. Geosynthetic Quality Assurance Laboratory (TESTING LABORATORY)- Party, independent from the MANUFACTURER and INSTALLER, responsible for conducting laboratory tests on samples of geosynthetics obtained at the site or during manufacturing, usually under the direction of the CONTRACTOR.

F. INSTALLER- Party responsible for field handling, transporting, storing, deploying, seaming and testing of the geomembrane seams.

G. Panel- Unit area of a geomembrane that will be seamed in the field that is larger than 100 ft^2.

H. Patch- Unit area of a geomembrane that will be seamed in the field that is less than 100 ft^2.

I. Subgrade Surface- Soil layer surface which immediately underlies the geosynthetic material(s).

1.04 SUBMITTALS

A. Furnish the following product data, in writing, to CTR prior to installation of the geomembrane material:
   1. Resin Data shall include the following.
      a. Certification stating that the resin meets the specification requirements (see Section 1.09).
   2. Geomembrane Roll
      a. Statement certifying no recycled polymer and no more than 10% rework of the same type of material is added to the resin (product run may be recycled).
      b. Copy of the manufacturer's quality control program.
      c. Quality control tests and methods used and results of these tests.

B. The INSTALLER shall furnish the following information to the CTR and CONTRACTOR prior to installation:
   1. Installation layout drawings
      a. Must show proposed panel layout including field seams and details
      b. Must be approved prior to installing the geomembrane
         1. Approved drawings will be for concept only and actual panel placement will be determined by site conditions.
   2. Installer's Geosynthetic Field Installation Quality Assurance Plan
   3. Installation schedule
   4. Copy of the INSTALLER'S license or letter of approval from geomembrane manufacturer
   5. List of all proposed equipment to be used by make and model
   6. Anticipated average daily production rate on this project

C. The INSTALLER will submit the following to the CTR upon completion of installation:

1. Certificate stating the geomembrane has been installed in accordance with the Contract Documents
2. Material and installation warranties
3. As-built drawings showing actual geomembrane placement and seams including typical anchor trench detail
4. As-built drawings showing locations of destructive seam tests

D. The EPA and CDPHE will have sufficient opportunity to examine all submittals as they become available from the SUBCONTRACTOR.

1.05 QUALITY ASSURANCE

A. The independent CQAE will be responsible for coordination of laboratory services to monitor geomembrane installation.

1.06 QUALIFICATIONS

A. MANUFACTURER
1. Geomembrane shall be manufactured by the following:
   a. AGRU America
   d. GSE Lining Technology, Inc.
   e. Poly-Flex
   f. approved equal
2. MANUFACTURER shall have manufactured a minimum of 10,000,000 square feet of polyethylene geomembrane during the last year.

B. INSTALLER
2. Installation shall be performed by one of the following installation companies (or approved equal)
   a. AGRU America
   b. GSE Lining Technology, Inc.
   c. Poly-flex
   d. Approved Dealer/Installers
   e. approved equal
2. INSTALLER shall have installed a minimum of 1,000,000 square feet of LLDPE geomembrane during the last 2 years.
7. INSTALLER shall have worked in a similar capacity on projects similar in complexity to the project described in the contract documents.
8. The Installation Supervisor shall have worked in a similar capacity on projects similar in size and complexity to the project described in the Contract Documents.
9. The INSTALLER shall provide a minimum of one Master Seamer for work on the project.
   a. Must have completed a minimum of 1,000,000 square feet of geomembrane seaming work using the type of seaming apparatus proposed for the use on this project.

1.07 MATERIAL LABELING, DELIVERY, STORAGE AND HANDLING

A. Labeling - Each roll of geomembrane delivered to the site shall be labeled by the MANUFACTURER. The label will identify:
   a. manufacturer's name

b. product identification
c. thickness
d. length
e. width
f. roll number
g. lot number

B. Delivery- Rolls of liner will be prepared to ship by appropriate means to prevent damage to the material and to facilitate off-loading.

C. Storage- The on-site storage location for geomembrane material, provided by the SUBCONTRACTOR to protect the geomembrane from punctures, abrasions and excessive dirt and moisture for should have the following characteristics:
   a. level (no wooden pallets)
   b. smooth
   c. dry
   d. protected from theft and vandalism
   e. adjacent to the area being lined

D. Handling- Materials are to be handled so as to prevent damage.

1.08 WARRANTY

A. Material shall be warranted, on a pro-rata basis against Manufacturer's defects for a period of 5 years from the date of geomembrane installation.

B. Installation shall be warranted against defects in workmanship for a period of 1 year from the date of geomembrane completion.

1.09 GEOMEMBRANE

A. Material shall be smooth/textured polyethylene geomembrane as shown on the drawings.

B. Resin
   1. Resin shall be new, first quality, compounded and manufactured specifically for producing geomembrane.
   2. Natural resin (without carbon black) shall meet the following minimum requirements:

Property	Test Method	LLDPE
Density [g/cm^3]	ASTM D 1505	0.915
Melt Flow Index [g/10 min.]	ASTM D 1238 (190/2.16)	≤ 1.0
OIT [minutes]	ASTM D 3895 (1 atm/200°C)	100

C. Geomembrane Rolls
   1. Do not exceed a combined maximum total of 1 percent by weight of additives other than carbon black.
   2. Geomembrane shall be free of holes, pinholes as verified by on-line electrical detection, bubbles, blisters, excessive contamination by foreign matter, and nicks and cuts on roll edges.

3. Geomembrane material is to be supplied in roll form. Each roll is to be identified with labels indicating roll number, thickness, length, width and MANUFACTURER.
4. All liner sheets produced at the factory shall be inspected prior to shipment for compliance with the physical property requirements listed in section 1.09, B, and be tested by an acceptable method of inspecting for pinholes. If pinholes are located, identified and indicated during manufacturing, these pinholes may be corrected during installation.

D. Smooth surfaced geomembrane shall meet the requirements shown in the following table(s) for the following material(s):
   1. Table 1.1 for black LLDPE

E. Textured surfaced geomembrane shall meet the requirements shown in the following table(s) for the following material(s).
   1. Table 2.1 for black coextruded textured LLDPE

F. Extrudate Rod or Bead
   1. Extrudate material shall be made from same type resin as the geomembrane.
   2. Additives shall be thoroughly dispersed.
   3. Materials shall be free of contamination by moisture or foreign matter.

1.10 EQUIPMENT

A. Welding equipment and accessories shall meet the following requirements:
   1. Gauges showing temperatures in apparatus (extrusion welder) or wedge (wedge welder) shall be present.
   2. An adequate number of welding apparati shall be available to avoid delaying work.
   3. Power source must be capable of providing constant voltage under combined line load.

1.11 DEPLOYMENT

A. Assign and clearly label each panel a simple and logical identifying code. The coding system shall be subject to approval and shall be determined at the job site.

B. Visually inspect the geomembrane during deployment for imperfections and mark faulty or suspect areas.

C. Deployment of geomembrane panels shall be performed in a manner that will comply with the following guidelines:
   1. Unroll geomembrane using methods that will not damage geomembrane and will protect underlying surface from damage (spreader bar, protected equipment bucket).
   2. Place ballast (commonly sandbags) on geomembrane which will not damage geomembrane to prevent wind uplift.
   3. Personnel walking on geomembrane shall not engage in activities or wear shoes that could damage it. Smoking will not be permitted on the geomembrane.
   4. Do not allow heavy vehicular traffic directly on geomembrane. Rubber-tired ATV's and trucks are acceptable if wheel contact is less than 6 psi.
   5. Protect geomembrane in areas of heavy traffic by placing protective cover over the geomembrane.

D. Sufficient material (slack) shall be provided to allow for thermal expansion and contraction of the material.

E. In order to assure intimate contact, wrinkles in the geomembrane will not be allowed, a maximum of 3 inches is acceptable unless noted by CQAE or CTR.

1.12 FIELD SEAMING

A. Seams shall meet the following requirements:
1. To the maximum extent possible, orient seams parallel to line of slope, i.e., down and not across slope.
2. Minimize number of field seams in corners, odd-shaped geometric locations and outside corners.
3. Slope seams (panels) shall extend a minimum of five-feet beyond the grade break into the flat area.
4. Use a sequential seam numbering system compatible with panel numbering system that is agreeable to the CTR and INSTALLER.
5. Align seam overlaps consistent with the requirements of the welding equipment being used. A 6-inch overlap is commonly suggested.

B. During Welding Operations
1. Provide at least one Master Seamer who shall provide direct supervision over other welders as necessary.

C. Extrusion Welding
1. Hot-air tack adjacent pieces together using procedures that do not damage the geomembrane.
2. Clean geomembrane surfaces by disc grinder or equivalent.
3. Purge welding apparatus of heat-degraded extrudate before welding.

D. Hot Wedge Welding
1. Welding apparatus shall be a self-propelled device equipped with an electronic controller which displays applicable temperatures.
2. Clean seam area of dust, mud, moisture and debris immediately ahead of hot wedge welder.
3. Protect against moisture build-up between sheets.

E. Trial Welds
1. Perform trial welds on geomembrane samples to verify welding equipment is operating properly.
2. Make trial welds under the same surface and environmental conditions as the production welds, i.e., in contact with subgrade and similar ambient temperature.
3. Minimum of two trial welds per day, per welding apparatus, one made prior to the start of work and one completed at mid shift.
4. Cut four, one-inch wide by six-inch long test strips from the trial weld.
5. Quantitatively test specimens for peel adhesion, and then for shear strength.
6. Trial weld specimens shall pass when the results shown in Table 3.1 are achieved in both peel and shear test.
   a. The break, when peel testing, occurs in the liner material itself, not through peel separation (FTB).
   b. The break is ductile.

7. Repeat the trial weld, in its entirety, when any of the trial weld samples fail in either peel or shear.
8. No welding equipment or welder shall be allowed to perform production welds until equipment and welders have successfully completed trial weld.
9. Trial welds will be performed when there is a change in personnel or equipment.
10. Trial welds will be performed when the ambient temperature changes more then 20°F in a seaming period.

F. Seaming
1. Geomembranes will be performed in ambient temperatures less than 104°F and greater than 32°F, as measured 6 inches above the geomembrane surface.
2. Seaming shall not proceed when ambient air temperature or adverse weather conditions jeopardize the integrity of the liner installation. INSTALLER shall demonstrate that acceptable seaming can be performed by completing acceptable trial welds.

G. Defects and Repairs
1. Examine all seams and non-seam areas of the geomembrane for defects, holes, blisters, undispersed raw materials, and any sign of contamination by foreign matter.
2. Repair and non-destructively test each suspect location in both seam and non-seam areas. Do not cover geomembrane at locations that have been repaired until test results with passing values are available.

1.13 FIELD QUALITY ASSURANCE

A. MANUFACTURER and INSTALLER shall participate in and conform to all terms and requirements of the Owner's quality assurance program. SUBCONTRACTOR shall be responsible for assuring this participation.

B. The SUBCONTRACTOR shall provide its own Field Installation Quality Assurance/Quality Control (QA/QC) manual.

C. Field Testing
1. Non-destructive testing will be carried out as the seaming progresses.
   a. Vacuum Testing
      1) Shall be performed in accordance with ASTM D 5641, Standard Practice for Geomembrane Seam Evaluation by Vacuum Chamber.
   b. Air Pressure Testing
      1) Shall be performed in accordance with ASTM D 5820, Standard Practice for Pressurized Air Channel Evaluation of Dual Seamed Geomembranes.
   c. Other approved methods.
2. Destructive Testing (performed by CONSULTANT with assistance from INSTALLER)
   a. Location and Frequency of Testing
      1) Collect destructive test samples at a frequency of one per every 500 lineal feet of seam length.
      2) Test locations will be determined after seaming.
      3) Exercise Method of Attributes as described by GRI GM-14 (Geosynthetic Research Institute) to minimize test samples taken.
   b. Sampling Procedures are performed as follows:

1) INSTALLER shall cut samples at locations designated by the CONSULTANT as the seaming progresses in order to obtain field laboratory test results before the geomembrane is covered.
2) CONSULTANT will number each sample, and the location will be noted on the installation as-built.
3) Samples shall be twelve (12) inches wide by a minimum of 34 inches with the seam centered lengthwise.
4) Cut a 2-inch wide strip from each end of the sample for field-testing.
5) Cut the remaining sample into two parts for distribution as follows:
   a) One portion for INSTALLER, 12-inches by 12 inches
   b) One portion for the Third Party laboratory, 12-inches by 18-inches
   c) Additional samples may be archived if required.
6) Destructive testing shall be performed in accordance with ASTM D 6392, Standard Test Method for Determing the Integrity of Non-Reinforced Geomembrane Seams Produced Using Thermo-Fusion Methods.
7) INSTALLER shall repair all holes in the geomembrane resulting from destructive sampling.
8) Repair and test the continuity of the repair in accordance with these Specifications.

3. Failed Seam Procedures
   1) If the seam fails, INSTALLER shall follow one of two options:
      a) Reconstruct the seam between any two passed test locations.
      b) Trace the weld to intermediate location at least 10 feet minimum or where the seam ends in both directions from the location of the failed test.
   2) The next seam welded using the same welding device is required to obtain an additional sample, i.e., if one side of the seam is less than 10 feet long.
   3) If sample passes, then the seam shall be reconstructed or capped between the test sample locations.
   4) If any sample fails, the process shall be repeated to establish the zone in which the seam shall be reconstructed.

1.14 REPAIR PROCEDURES

A. Remove damaged geomembrane and replace with acceptable geomembrane materials if damage cannot be satisfactorily repaired.

B. Repair any portion of unsatisfactory geomembrane or seam area failing a destructive or non-destructive test.

C. INSTALLER shall be responsible for repair of defective areas.

D. Agreement upon the appropriate repair method shall be decided between CTR and INSTALLER by using one of the following repair methods:
   1. Patching- Used to repair large holes, tears, undispersed raw materials and contamination by foreign matter.
   2. Abrading and Re-welding- Used to repair short section of a seam.
   3. Spot Welding- Used to repair pinholes or other minor, localized flaws or where geomembrane thickness has been reduced.
   4. Capping- Used to repair long lengths of failed seams.

5. Flap Welding- Used to extrusion weld the flap (excess outer portion) of a fusion weld in lieu of a full cap.
6. Remove the unacceptable seam and replace with new material.

E. The following procedures shall be observed when a repair method is used:
1. All geomembrane surfaces shall be clean and dry at the time of repair.
2. Surfaces of the polyethylene which are to be repaired by extrusion welds shall be lightly abraded to assure cleanliness.
3. Extend patches or caps at least 6 inches for extrusion welds and 4 inches for wedge welds beyond the edge of the defect, and around all corners of patch material.

F. Repair Verification
1. Number and log each patch repair (performed by CONSULTANT).
2. Non-destructively test each repair using methods specified in this Specification.

1.15 MEASUREMENT AND PAYMENT

A. Measurement for Payment

Make measurements of time and materials necessary to support monthly project status reports that include an estimate of project percent complete.

B. Payment

Payment will be made as outlined in Section 01270: MEASUREMENTS AND PAYMENT.

Table 1.1: Minimum Values for Smooth Black-Surfaced LLDPE Geomembranes

Property	Test Method[1]	Requirement
Thickness, mil (mm) Minimum Average Lowest Individual Reading	ASTM D 5199	 60 (1.52) 54 (1.37)
Density, g/cm^3	ASTM D 1505	0.92
Carbon Black Content, %	ASTM D 1603, mod.	2.0
Carbon Black Dispersion	ASTM D 5596	*Note 2*
Tensile Properties: *(each direction)*	ASTM D 6693	
Strength at Break, lb/in (kN/m)		228 (40.5)
Elongation at Break, %	(2.0" gauge length)	800
Tear Resistance, lb (N)	ASTM D 1004	33 (150)
Puncture Resistance, lb (N)	ASTM D 4833	84 (373.5)

[1] Some test procedures have been modified for application to geosynthetics. All procedures and values are subject to change without prior notification.

[2] Only near spherical agglomerates are considered. 9 of 10 views shall be Category 1 or 2. No more than one view Category 3.

Table 2.1: Minimum Values for Black Surfaced Coextruded Textured LLDPE Geomembranes

Property	Test Method[1]	Requirement
Asperity, mil (mm)	GRI GM 12	10
Thickness, mil (mm) Minimum Average Lowest Individual Reading	ASTM D 5994	 60 (1.52) 54 (1.37)
Density, g/cm^3	ASTM D 1505	0.92
Carbon Black Content, %	ASTM D 1603, modified	2.0
Carbon Black Dispersion	ASTM D 5596	*Note 3*
Tensile Properties[2]: *(each direction)*	ASTM D 6693	
Strength at Break, lb/in (kN/m)		90 (16.2)
Elongation at Break, %	(2.0" gauge length)	250
Tear Resistance, lb (N)	ASTM D 1004	33 (150)
Puncture Resistance, lb (N)	ASTM D 4833	66 (294)

[1] Some test procedures have been modified for application to geosynthetics. All procedures and values are subject to change without prior notification.
[2] The combination of stress concentrations due to coextrusion texture geometry and the small specimen size results in large variations of test results. Therefore, these tensile properties are average roll values.
[3] Only near spherical agglomerates are considered. 9 of 10 views shall be Category 1 or 2. No more than one view Category 3.

Table 3.1: Minimum Weld Values for LLDPE Geomembranes

Property	Test Method	Requirement
Peel Strength (extrusion), lb/in	ASTM D 6392	75
Peel Strength (fusion), lb/in	ASTM D 6392	88
Shear Strength (fusion & ext.), lb/in	ASTM D 6392	120

*****END OF SECTION*****

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI –007

Subcontractor: S.M. Stoller Corporation | Page 1 of 1

The subcontractor may initiate a Subcontractor Field Problem (SFP) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: 51781-012 | Specifications:

Reference (other): Exhibit B Pricing Schedule | Attachments:

Request: As discussed during our meeting on July 8, 2004, the quantity of "Rock Layer" specified on Exhibit B Price List does not accurately reflect the quantity needed. Upon further review, the 10-inch Cushion Layer and 2-foot Soil Layer quantities specified on Exhibit B also do not account for the additional material shown between the anchor trench and the perimeter channel. Please re-estimate the quantities needed for the Rock Layer, 10-inch Cushion Layer, and 2-foot Soil Layer so we can collect sufficient characterization samples and pass the quantity information on to our aggregate supplier.

Solution:

Requested By:

Date Field Construction will be affected:

Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification **X** | Rejection | ☐ Change

Attached are the revised calculations for the material quantities at the Present Landfill including the 2-foot soil cover, rock layer and cushion layers (as well as the geosynthetic layers). Note that these quantities include the East Face of the landfill that is still being discussed with the EPA and CDPHE.

Robert W. Davis	Robert W. Davis	August 1, 2004
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due:

OK CQAE JHRule Tetra Tech

Rocky Flats Environmental Technology Site
Present Landfill Construction Quantities

Material	Quantity	Basis
GDN	143,105 yd^2	25.4 acres (3-D), plus 3.3 acres on east face for a double layer. 3" edge overlap, 6" end overlap, rolls 13.5' x 200'
FML	120,322 yd^2 (102,265 yd^2 smooth, 18,057 yd^2 textured)	23.4 acres (20.1 smooth and 3.3 textured on east face). 6" edge overlap, 6" end overlap, rolls 22.5' x 560' smooth, 22.5' x 520 textured.
GCL	121,561 yd^2	23.4 acres. 6" edge overlap, 24" end overlap, rolls 15' x 150'
Foundation soil (6" cushion)	18,311 byd3	22.7 acres, 6" thick
Cushion soil (10"cushion)	33,343 byd3	24.8 acres, 10" thick
Rock Layer	40,011 yd3	24.8 acres, 12" thick
Infiltration Layer (RF alluvial)	80,022 byd3	24.8 acres, 24" thick

Final Quantities may vary depending upon Final grading plan
JHR

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI – 008

Subcontractor: S.M. Stoller Corporation | Page 1 of 1

The subcontractor may initiate a Subcontractor Field Problem (SFP) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: | Specifications: 02222, Section 2.01

Reference (other): | Attachments:

Request: As discussed during the meeting on July 8, 2004, the specification for the Rock Layer has changed to include fines to fill the pore space. A new gradation specification is required. Additionally, the aggregate supplier will be given the new specification and a revised cost per ton will be determined.

Solution:

Requested By:

Date Field Construction will be affected:

Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☐ | Rejection | X Change

The Rock Layer (Specification Section 2222) has been modified to incorporate a finer soil fraction as agreed with the EPA and CDPHE. The rock specification shall have the following gradation characteristics:

Maximum Sieve Size	Percent Passing
10 inch	100
6 inch	50 – 67
3 inch	30 – 55
1 inch	15 – 35
3/8 inch	5 – 15

OK DR Earth Tech

In addition, the strength of the rock shall exhibit an unconfined compression strength of at least 4,000 psi as measured by ASTM Standard D2938.

Robert W. Davis/CTR	Robert W. Davis	September 17, 2004
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due:

OK CQAE JH Tetra Tech

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: 9 | RFI - 009

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: N/A	Specifications: N/A
Reference (other): Statement of Work, Section 2.1	Attachments: N/A

Request:

The Statement of Work, Section 2.1 mentions "combustible materials with small amounts of beryllium particulate matter".....

Based on this statement: Are any of the project personnel required to be in the Be Worker Program? Do any Be Program requirements apply? Will they apply if any landfill contents are accidentally disturbed?

Solution:

Requested By: P. Kreitz	
Date Field Construction will be affected:	8/15/04

Paul Kreitz		7/13/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☐	Clarification X	Rejection	☐ Change

Some wastes containing beryllium may have been placed into the Present Landfill; however, the design has been developed to not expose the waste during the construction. Should waste be exposed during the construction, work in that area will be stopped and the required K-H & DOE evaluation of the area will be conducted. The evaluation will be conducted by appropriately trained K-H and DOE personnel.

Robert W. Davis	Robert W. Davis	August 7, 2004
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec. Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OK CORE J.H. Kalo Tetra Tech

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: 10 | RFI - 010

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: N/A | Specifications: Specification No. 02225, LLDPE Liner

Reference (other): Section 1.11, E | Attachments: N/A

Request:

The revised specification (40 mil thickness to 60 mil thickness) contains a change that identifies the maximum wrinkle height to be 3 inches. The vendor and installer has communicated that including this addition will reduce production time to approximately 25% of the original estimate and that the specification is abnormally tight. Request elimination or relaxation of this addition to the 60 mil spec.

Solution:

Recommend deletion of "E" or increase the maximum wrinkle height to 6".

Requested By:	Paul Kreitz, Stoller PM
Date Field Construction will be affected:	9/15/04

Paul Kreitz		7/20/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☐ | Rejection | X Change

As agreed to by the EPA & CDPHE, Specification 2225, Section 1.11 (E) has been changed as follows:

The total wrinkle height shall not exceed 6-inches and the wrinkle height to width ratio shall not exceed 0.5. Wrinkles that do not meet this criteria shall be "cut-out" and repaired in accordance with Section 1.14 of Specification 2225.

Robert W. Davis/K-H/CTR	Robert W. Davis	September 17, 2004
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OK CQAE J.H. Rala Tetra Tech

OK DM Earth Tech

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: 11 | RFI - 011

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: N/A	Specifications: Spec 02221
Reference (other): CQAP 4.1.2, Table 4.2, Cover Soils	Attachments: N/A

Request:

The cushion/foundation layer cover soil is in a discrete pile located approximately 2 miles from the job site in the Centennial Aggregate Pit. The soil is uniform and was mined using the same process and procedures. The CQAP requirement is to sample this material at a frequency of 1 sample/2000 cy delivered to the job site. It is requested for safety and logistical considerations to sample the material in situ at its origin per the required frequency, rather than sampling as it is unloaded in heavy equipment traffic, 2 miles away.

Solution:

Meet the required frequency and testing requirements for the cushion/foundation soil at its discrete pile in the aggregate pit rather than as it is unloaded at the job site 2 miles away.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	8/23/04

Paul Kreitz		7/20/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☐	Clarification ☐	Rejection X	☐ Change

For the 6-inch cushion soil about 18,100 cubic yards of soil is required. At 1 sample every 2000 cubic yards, that equals 10 samples. Assuming that a truck carries about 18 cubic yards of soil, that equates to a sample about every 110 truckloads. Since observation of the trucks is also required by QC and QA, the sampling at the surface of the Present Landfill does not seem onerous nor does it seem to create a safety concern that can not be managed. QC sampling shall be implemented as specified in the design and the QA/QC plan.

Robert W. Davis/K-H/CTR	Robert W. Davis	September 17, 2004
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☒ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OK CQAE J.H. Rale Tetra Tech

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: 12 | RFI - 012

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: N/A | Specifications: N/A

Reference (other): CQAP Section 4.4.4, Conformance Testing | Attachments: N/A

Request:

Per section 4.4.4 of the CQAP, Conformance Testing: states that "Either at the manufacturer's plant or upon delivery of the geo-composite rolls at the site, the QCSM will ensure that samples are removed and forwarded to the independent QC laboratory for testing..." Stoller intends to execute the sampling of this material **at the manufacturer's plant** for the following reasons:

- Safety – opening compressed rolls of packaged LLDPE with cutting tools and taking samples from large rolls under adverse conditions is not desirable. As opposed to taking the samples in a controlled environment as they are manufactured and packaged.
- It is more efficient and cost effective to sample at the manufacturer under the CQAP requirements.

Solution:

Obtain the conformance samples at the manufacturer's plant per 4.4.4 of the CQAP rather than after delivery to the site.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	8/2/04

Paul Kreitz		7/20/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted **X** | Clarification **X** | Rejection | ☐ Change

As written in the approval of the geosynthetic materials (memo from Bob Davis dated 09/19/2004 & attached to this RFI) QA Samples shall be taken at the manufacturer at 1 sample per every 100,000 SF and sent direct to the QA laboratory (ATT). However, Kaiser-Hill reserves the right to sample the goesynthetic materials as they arrive at the Present Landfill site at the exterior corners of the material rolls or as the material is being used. Any on-site sampling of this material will be coordinated with Stoller.

Robert W. Davis/K-H/CTR	Robert W. Davis	September 17, 2004
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due:

OK CQAE J.H. Rabe Tetra Tech

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI – 013

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	Specifications: 1900 Section 3.01
Reference (other):	Attachments:

Request:The specifications require us to build an equipment decontamination pad that is designed to decontaminate contaminated equipment. We are not anticipating any contamination and would like to have this specification reviewed. The cost to build the decon pad described in the specification would approach $ 75,000, while a less stringent pad designed to remove uncontaminated mud from truck tires would be significantly less.

Solution:

Requested By:	Steve Brinkman
Date Field Construction will be affected:	8/9/04

Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted	Clarification	Rejection	Change
	☒	☐		☐

Specification 1900 has been revised to be a cleaning pad for equipment. The intent of this cleaning pad is to remove mud/soil from the equipment for maintenance/repair/or demobilization.

Print/Type Name	Signature	Date
Robert W. Davis/K-H/CTR	Robert W. Davis	September 17, 2004

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:		

OK CRAE J.H. Tate Tetra Tech

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: 14 | RFI - 014

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: N/A | Specifications: 5.3.1.1

Reference (other): N/A | Attachments: e-mail from M. McClain, Golder & Associates

Request:

Revise compaction specification for the RFETS Alluvial Layer to eliminate the ASTM reference. The quantity of oversize material present is projected to be over 30%, and this will make the ASTM 698 spec "non-applicable".

Solution:

Suggest replacing with a "method specification" as allowed in 5.3.1.1

Requested By:	Paul Kreitz
Date Field Construction will be affected:	8/2/04

Paul Kreitz		7/30/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection | ☐ Change

We are aware of this issue. Further consideration and design is underway to address this issue for the subgrade fill required below the geosynthetics and for the final 2-foot cover above the rock layer. Any changes or clarification is forthcoming.

Robert W. Davis/K-H/CTR	Robert W. Davis	September 17, 2004
Print/Type Name	Signature	Date

Kaiser-Hill Action

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OK CQAE J.H. Rabe Tetra Tech

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pkreitz@stoller.com **Inbox** message 2 of 11

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PORTS
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Help
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Save Addre
Print View
Show Heade
Repo
Junk M

From: "McClain, Mark" <MMcClain@golder.com>
Date: 30 Jul 09:04 (PDT)
To: <pkreitz@stoller.com>
Cc: <sbrinkman@stoller.com>, <aklarich@stoller.com>, "O'Sadnick, Dave" <DO'Sadnick@golder.com>, "Barrett, Matt" <MBarrett@golder.com>
Subject: R. Flats Alluvial material and ASTM 698

Paul, as we discussed the initial grain-size distribution tests for t R.Flats Alluvium Stockpile sampled on Tuesday the 27th have a significant quantity of coarse material, as we all saw. ASTM 698 Section 5.3.1 says that soils containing more than 30% oversize fract are a problem. It says there is "no ASTM method to control their compaction" if the the soils contain more than 30% oversize fraction material retained on the 3/4" sieve. The initial tests from the Roc Flats Alluvial Stockpile are all over 30% greater than 3/4", some by quite a bit. Therefore, we would not be in compliance with ASTM to proceed with current approach for compaction of this layer. I wanted bring this to the Project Team's attention as soon as possible, especially given the level over Regulatory involvement. We will continue on with the grain-size and Atterberg limits but will not proceed on any Standard Proctors until we hear back from you.

For general information for the team, Section 5.3.1.1 says one meth for controlling compaction on this material is a method specificatio developed from a test fill.

Feel free to call with questions.

Mark

Change message text width in Settings.

Test Fill Compaction Procedures

Present Landfill Accelerated Construction Project
Rocky Flats Environmental Technology Site
September 24, 2004

Overview

The test fill will determine the procedures to use in the placement and compaction of the following earth materials:

- **Rocky Flats Alluvium Dedicated Stockpile**
- **6-inch cushion layer**
- **10-inch cushion layer**

Rocky Flats Alluvium Dedicated Stockpile

Objective: Determine the method specification for the compaction of the Rocky Flats Alluvium Dedicated Stockpile material used for subgrade fill to reach the desired design grades. This performance specification will also apply to the Rocky Flats Alluvium material that is cut from the existing surface and placed in designated fill areas of the landfill.

Procedure:

1. **Place approximately 1-foot loose lift of material in the test fill area.**
2. **Mix the placed lift with 2 passes of the motor grader (blade up, rippers down), and moisture condition as needed. Do not place rippers into the existing test fill surface below the lift to be compacted.**
3. **Measure the height of the loose lift at 10 random locations across the fill.**
4. **Compact the material with four complete passes of the sheeps-foot roller.**
5. **Conduct "proof rolling" of the area per the design specifications to identify any soft spots.**
6.
   A. **If "proof-rolling" identifies soft areas, re-compact with 2 additional passes of the sheeps-foot roller, and return to step 5.**
   B. **If "proof rolling" does not identify any soft areas, conduct a minimum of 3 test pits to observe the level of compaction of the soil. If large void areas are found, re-compact with 2 additional passes of the sheeps-foot roller and return to Step 5.**
   C. **If large voids are not found from the test pitting, go to Step 7.**
7. **Measure the height of the compacted soil at 10 random locations across the fill.**
8. **Determine the method specification (number of passes) for the compaction of this material from the observations made during this procedure.**
9. **Place the next 1-foot lift (loose lift height determined by data from first lift), mix and compact as determined in Step 8 above. Repeat Steps 4 through 7.**
10. **Confirm that the performance specification is as determined in Step 8 above.**

6-Inch Cushion Soil Layer

Objective: Determine the performance specification for the compaction of the 6-inch Cushion Soil layer. This layer is to reach a compaction requirement of 95% standard Proctor dry density with a moisture requirement of +/- 2% of the optimum moisture content.

Procedure:

1. **Place approximately 8 to 9 inches of loose lift material in the test fill area and moisture condition as required to reach +/- 2% of optimum.**
2. **Measure the height of the loose lift at 10 random locations across the fill.**
3. **Compact the material with three complete passes of the sheeps-foot roller.**
4. **Conduct density and moisture content with the nuclear density gauge according to the appropriate ASTM standard at 5 random locations.**
5. **If the density and moisture requirements are met, go to Step 7. If the density and moisture requirements are not met go to the Step 6.**
6.
   A. **If measurements indicate that the soil to too dry to meet the moisture requirements, condition the soil by mixing soil with motor grader ripper (adding water as soil is mixed) and re-compact as in Step 3.**
   B. **If measurements indicate that the soil to too wet to meet the moisture requirements, condition the soil by mixing soil with motor grader ripper, allow to dry, and re-compact as in Step 3.**
   C. **If the moisture is within specifications, but the density requirement is not met, re-compact with 2 additional passes of the sheeps-foot roller. Return to Step 5.**

7. Measure the compacted height of the fill at 10 random locations to confirm that the final fill thickness is 6 inches. If the compacted height is less than 6 inches, adjust the loose lift height and repeat procedure.

10-Inch Cushion Soil Layer

Objective: Determine the performance specification for the compaction of the 6-inch Cushion Soil layer. This layer is to reach a compaction requirement of 95% standard Proctor dry density with a moisture requirement of +/- 2% of the optimum moisture content.

Procedure:

1. Place approximately 12 (or as determined in the 6-inch test fill procedures) inches of loose lift material in the test fill area and moisture condition as required to reach +/- 2% of optimum.
2. Measure the height of the loose lift at 10 random locations across the fill.
3. Compact the material with three complete passes of the sheeps-foot roller.
4. Conduct density and moisture content with the nuclear density gauge according to the appropriate ASTM standard at 5 random locations.
5. If the density and moisture requirements are met, go to Step 7. If the density and moisture requirements are not met go to the Step 6.
6.
   A. If measurements indicate that the soil to too dry to meet the moisture requirements, condition the soil by mixing soil with motor grader ripper (adding water as soil is mixed) and re-compact as in Step 3.
   B. If measurements indicate that the soil to too wet to meet the moisture requirements, condition the soil by mixing soil with motor grader ripper, allow to dry, and re-compact as in Step 3.
   C. If the moisture is within specifications, but the density requirement is not met, re-compact with 2 additional passes of the sheeps-foot roller. Return to Step 5.

7. Measure the compacted height of the fill at 10 random locations to confirm that the final fill thickness is 10 inches. If the compacted height is less than 10 inches, adjust the loose lift height and repeat procedure.

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No:: 15 | RFI - 015

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: N/A	Specifications: Section 1500
Reference (other): RFP Section 3.2.6	Attachments: See Photograph

Request:

RFP section 3.2.6 requires the office trailers to be "secured to concrete barriers by wire tie downs". The specifications (section 1500) do not specify this. Common practice at the site is not consistent (i.e. see attached photo for laundry trailers vs. other Project Trailers without this on site). What is the preferred and cost effective method directed by K-H.

Solution:

Suggest following the industry standard for construction projects on the Front Range and anchor the trailers to the ground per the recommendation of the trailer vendor. Avoid the concrete barrier/strap method.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	8/10/04

Paul Kreitz		8/4/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification X | Rejection | ☐ Change

A concrete barrier & strap arrangement is used at RFETS where intrusive anchors are not allowed or are impracticable. Attached is the RFETS trailer anchor requirements for an intrusive anchor to be used at the Present Landfill accelerated action construction project.

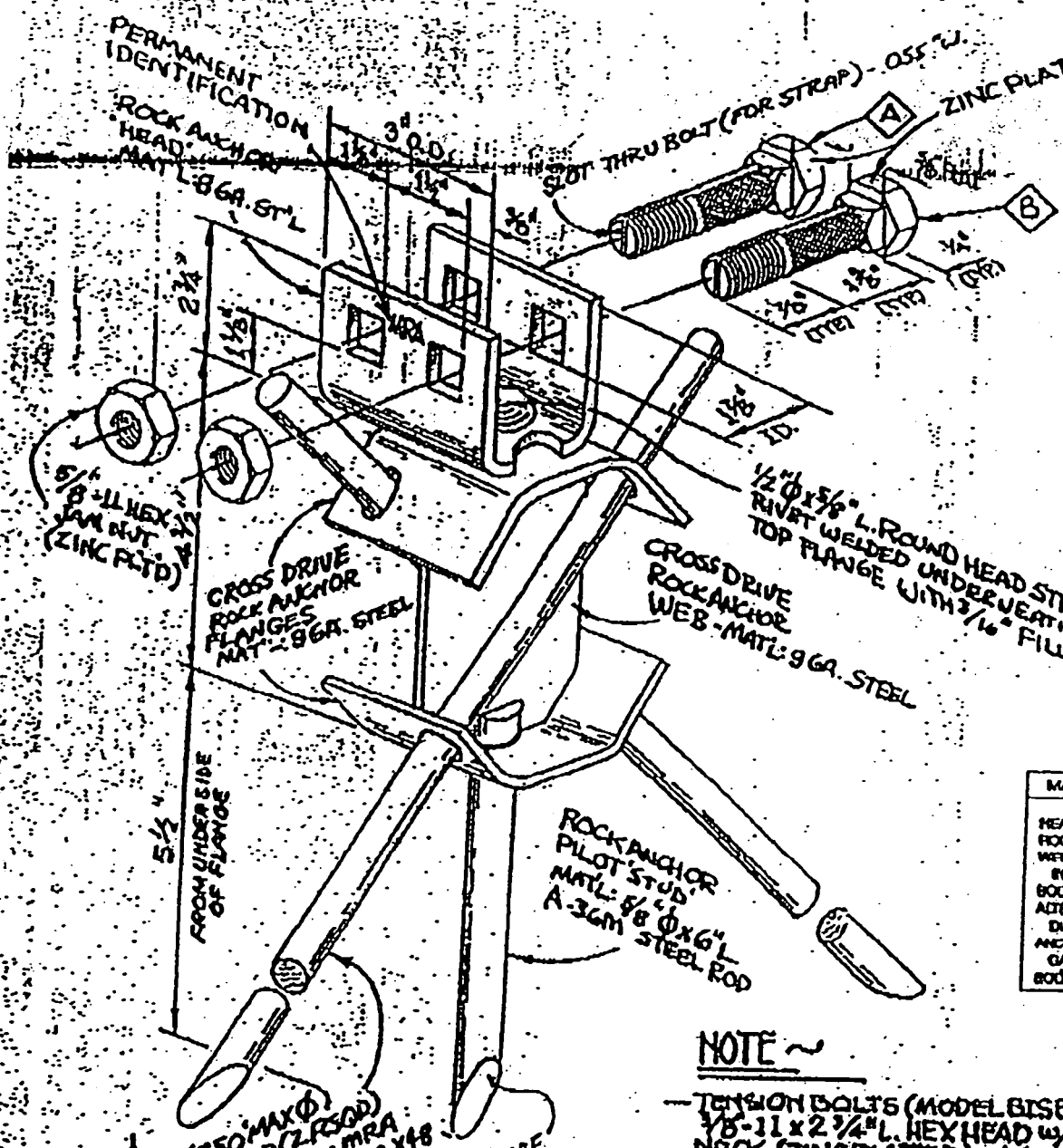
Robert W. Davis	Robert W. Davis	08/07/2004
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OK CQAE H. Tala Tetra Tech



MATERIAL SPECIFICATIONS
HEAD - AISI - C 1008 S QL
ROD - ASTM A - 36 MOD
WELDING ELECTRODES - LINCOLN INNERSHIELD NR - 311L or EQUIV.
BOOTS - ASTM A - 307
ALTERNATE ANCHOR ROD - ¼" DIAMETER (IF REQUIRED)
ANCHOR FINISH - ENAMEL DIP or GALVANIZED (IF REQUIRED)
BOLT FINISH - ZINC PLATED

NOTE ~

- TENSION BOLTS (MODEL BTS8) ARE ⅝-11 x 2¾" L. HEX HEAD w/ SQUARE NECK (ZINC PLATED) W/ NUTS.
- TENSION BOLT LABELED (A) FOR FRAME ATTACHMENT ONLY.
- TENSION BOLT LABELED (B) FOR VERTICAL TENSION.

INSTALLATION INSTRUCTIONS

DRILL ⅝" DIA. HOLE 6½" DEEP FOR PILOT STUD.

INSERT PILOT STUD INTO HOLE.

DRILL 2-¾" DIA. HOLES IN ROCK AT 45 DEGREES ANGLES, USING ANCHOR HEAD AS A LOCATING GUIDE.

PLACE ROD THROUGH TOP & CORRESPONDING BOTTOM WEB FLANGE & INTO HOLE. DRIVE ROD TO DESIRED DEPTH. (ROD MUST BE DRIVEN INTO ROCK AT LEAST 80% OF ITS LENGTH IN ORDER TO ACHIEVE MINIMUM ALLOWABLE PULLOUT RESISTANCE.) PLACE SECOND ROD THROUGH REMAINING TOP & CORRESPONDING BOTTOM WEB FLANGE & INTO HOLE. DRIVE ROD TO DESIRED DEPTH TO LOCK.

MAXIMUM PULLOUT RESISTANCE IS DEVELOPED WHEN ANCHOR HEAD IS AS LOW AS POSSIBLE AND GROUND SURFACE IS SOLID ROCK. DISTANCE FROM LOWEST EDGE OF BOTTOM FLANGE TO ROCK SURFACE SHOULD NOT EXCEED 1" (INCH).

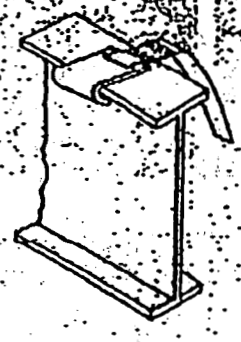
LTR.	DATE	DESCRIPTION
	7-22-87	REVISIONS

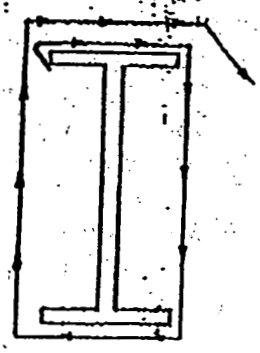
tie down engineering inc.
[illegible] Whelchel Drive
[illegible], Georgia 30318

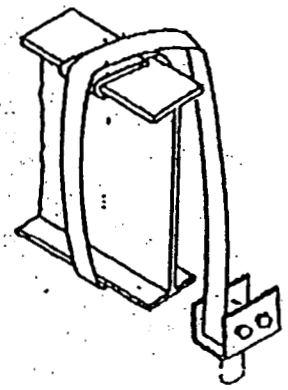
TITLE	MODEL MRA & MRAX 48 CROSS DRIVE ROCK ANCHOR
DR. BY K.NOACK	CK. BY C. MacKARVICH
SCALE NONE	DR. NO MHP-110

FRAME TIE INSTALLATION INSTRUCTIONS

Frame Tie With Hook







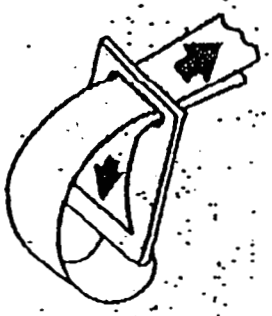
1.) Attach frame hook to top, inboard location of I-beam. (Frame hook must be attached to frame at points closest to floor supports.)

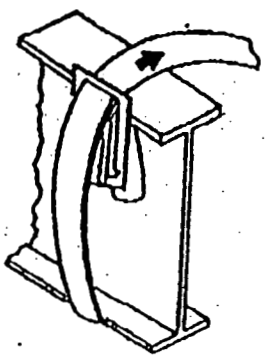
2.) Keeping in line with the hook, wrap galvanized strap completely around I-beam.

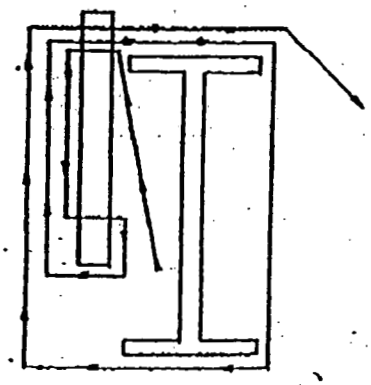
3.) *Anchor must be securely installed into the ground before proceeding with step #3.

Thread loose end of strap through slotted tensioning bolt attached to tensioning head of anchor. Tighten slotted tensioning bolt a minimum of 5 times & until all slack in strap is removed.

Frame Tie With Buckle







1.) Thread 7' length of frame tie strap through strap buckle as shown.

2.) Next, thread long end of strap between frame and floor of home. Bring strap through buckle as shown in diagram and fasten to anchor head.

3.) Diagram shows strap in position around frame and through buckle. It is important to remove all slack from system.

EARTH ANCHOR INSTALLATION INSTRUCTIONS

I. Drive Machine Installations:

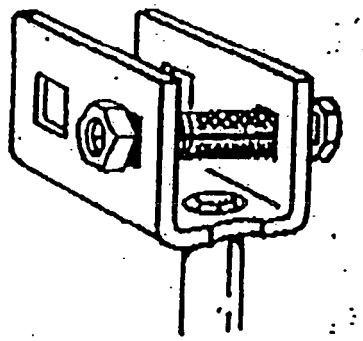
Attach the drive machine adapter head to the tensioning device that is in direct alignment with the anchor shaft. Position the helix-end of the anchor on the soil at a slight angle under the exterior side of the home. This will prevent the anchor from hindering future skirting installations. Activate the drive machine and exercise control in maintaining full penetration of the anchor.

II. Manual Installations:

1. Using a post hole digger, develop a hole approximately 24" deep in the proper position which is directly under the overhead strap and slightly underneath the home so as to allow adequate room for future skirting installations.
2. Insert the anchor; position a piece of pipe through the head for additional leverage, and rotate with downward pressure in a clockwise direction encouraging it's final penetration.
3. When the anchor has been installed to it's full depth, repack the earth 6" at a time. Saturating and compacting with each 6" increment will maximize your immediate holding capacity.

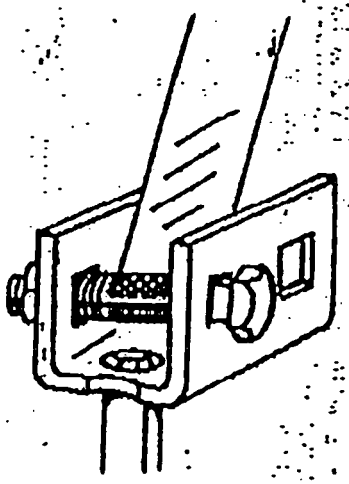
III. Strap Tensioning Instructions:

1.



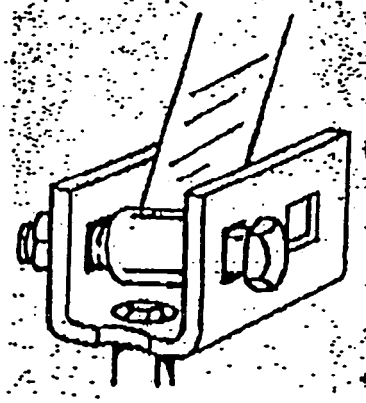
Insert the tension bolt into the anchor head and loosely attach the hex nut.

2.



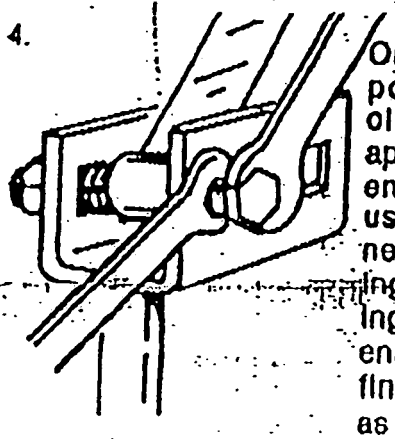
Place the strap end through the slotted shank of the tension bolt and bring flushly to the opposite side of the shank.

3.



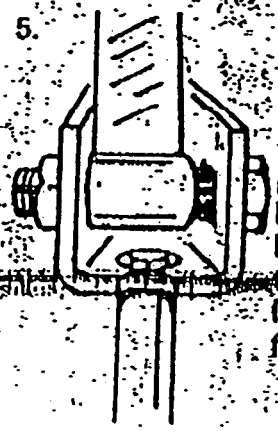
Bend the strap at 90 degrees and with the use of a 15/16" socket or open-end wrench, rotate in a clockwise manner wrapping the strap around the shank of the tension bolt.

4.



Once tensioned to the point that counter-clockwise resistance appears, a 5/8" open-end wrench should be used to hold the square neck while repositioning the 15/16" tensioning wrench which will enable continued and final tensioning. Repeat as required.

5.



Once fully tensioned, align the square neck of the bolt with the square recess in the anchor head and tighten the hex nut. This will draw the two together and lock the system into it's final position.

WARNING: Carefully inspect each anchoring location for hazardous underground wiring. Consult local utility companies or building authorities as is necessary.

TIE DOWN ENGINEERING
INDEPENDENT TESTING RESULTS

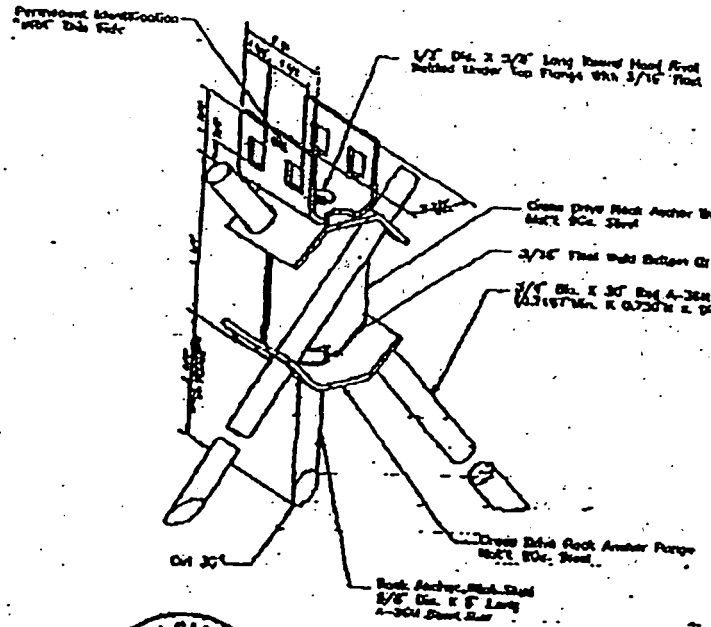
MODEL NO.	DESCRIPTION OF TEST	*ULTIMATE STRENGTH	*WORKING LOAD	SOIL CLASS	TEST DATE
MI2H (5/8"&3/4")	VERTICAL PULLOUT IN MOIST SILTY CLAY. TEST PROBE TORQUE VALUE BETWEEN 200-349 INCH POUNDS	6,133# (AVG.)	4109#	2,3,4	9/15/92
MI22 (5/8"&3/4")	VERTICAL PULLOUT IN SILTY SAND AND GRAVEL TEST PROBE TORQUE VALUE 500 INCH POUNDS AND MORE	5,733# (AVG.)	3841#	2	9/15/92
MRA	VERTICAL PULLOUT IN LABORATORY FIXTURES FOR SIMULATION, UNCONFIRMED ROCK WAS NOT AVAILABLE.	5,567#	3730#	1	3/2/93
MICS2	VERTICAL PULLOUT IN 2500 PSI CURED CONCRETE. TEST STOPPED AT 5,200 POUNDS.	5,200#	3484#	NA	3/24/94
MIJ2	VERTICAL PULLOUT IN 2500 PSI CURED CONCRETE. TEST STOPPED AT 5,200 POUNDS.	5,200#	3484#	NA	3/30/94
MIT2	VERTICAL PULLOUT IN 2500 PSI CURED CONCRETE. TEST STOPPED AT 5,200 POUNDS.	5,200#	3484#	NA	3/30/94
MI2H64 (59250)	VERTICAL PULLOUT IN SILTY CLAY. TEST PROBE TORQUE VALUE BETWEEN 200-340 INCH POUNDS	5,200#	3484#	3,4	10/6/93
ML (59292)	45 DEGREE PULL ON STABILIZER PLATE IN SILTY CLAY. TEST PROBE TORQUE VALUE BETWEEN 200-349 INCH POUNDS.	6,067# (AVG.)	3484#	NA	8/5/92
H607	VERTICAL PULLOUT IN SILTY SAND. TEST PROBE TORQUE VALUE BETWEEN 175 - 275 INCH POUNDS	6633# (AVG.)	4444#	2,3,4	5/22/95

NOTE: ALL ABOVE TESTS WERE CONDUCTED BY ATEC ASSOCIATES, PRODUCT TESTING, INC. AND GALLET & ASSOCIATES. THE INDIVIDUAL TEST RESULTS WILL BE MADE AVAILABLE UPON REQUEST. PLEASE FORWARD YOUR REQUEST FOR THIS INFORMATION TO:

TIE DOWN ENGINEERING
5901 WHEATON DRIVE
ATLANTA, GEORGIA 30336

NOTE:
Minimum Factored Load (Ultimate Strength) is 4,725 lbs
Minimum Nominal Load (Working Load) is 3,200 lbs

Nominal Load; load specified by code or standard; usually defined with reference to some possibility of being exceeded.
Factored Loads the product of the nominal load and a load factor.
Load Factors a factor that accounts for unavoidable deviations of the actual load from the nominal value and the uncertainties in the analysis that transforms the load into a load effect.



Installation Instructions

Drill 5/8" Dia. Hole 5 1/2" Deep For Pilot Rod

Insert Pilot Rod into Hole

Drill 2-1/2" Dia. Holes in Rock at 45 Degrees Angle, Using Anchor Head As A Locating Guide.

Place Rod Through Top & Corresponding Bottom Web Flange & into Hole. Drive Rod to Desired Depth. Rod Must Be Driven Into Rock At Least 60% Of Its Length In Order To Achieve Maximum Allowable Pullout Resistance. Place Second Rod Through Remaining Top & Corresponding Bottom Web Flange & Into Hole. Drive Rod to Desired Depth To Lock.

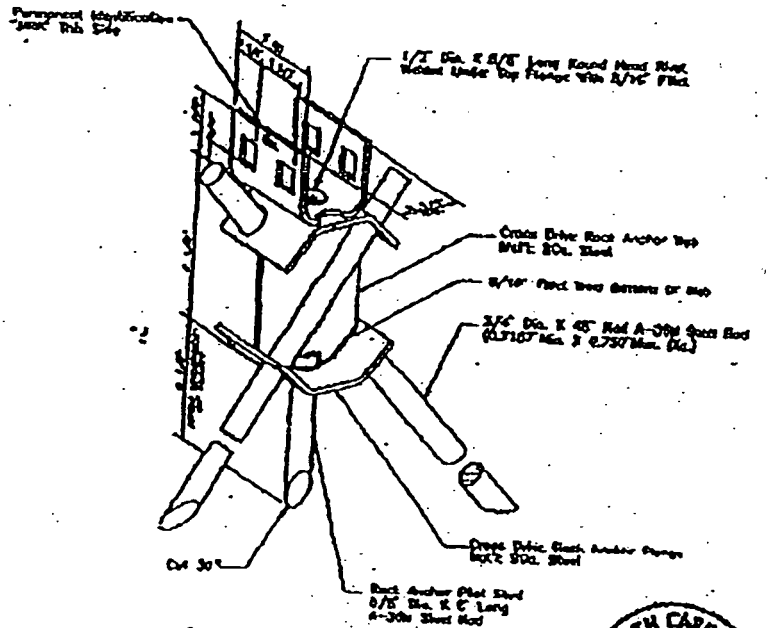
Maximum Pullout Resistance is Developed When Anchor Rod Is As Low As Possible And Crosses Surface In Solid Rock. Distance From Lowest Edge Of Bottom Flange To Rock Surface Should Not Exceed 1" (Max).

Note:
Material:
Rod-ASTM A-36Mod. 3/4" Dia.
Head-ASTM A-36 Mild 8Ga.
Web-ASTM A-36 Mild 9Ga.
Flange-ASTM A-36 Mild 9Ga.

Finish-Black Paint.

Tie Down Engineering	
SCALE None	DWG NO. 59110

Model MRA
Part # 59110



Installation Instructions

Drill 5/8" Dia. Hole 5 1/2" Deep For Pilot Rod

Insert Pilot Rod into Hole

Drill 2-1/2" Dia. Holes in Rock at 45 Degrees Angle, Using Anchor Head As A Locating Guide.

Place Rod Through Top & Corresponding Bottom Web Flange & into Hole. Drive Rod to Desired Depth. Rod Must Be Driven Into Rock At Least 60% Of Its Length In Order To Achieve Maximum Allowable Pullout Resistance. Place Second Rod Through Remaining Top & Corresponding Bottom Web Flange & Into Hole. Drive Rod to Desired Depth To Lock.

Maximum Pullout Resistance is Developed When Anchor Rod Is As Low As Possible And Crosses Surface In Solid Rock. Distance From Lowest Edge Of Bottom Flange To Rock Surface Should Not Exceed 1" (Max).

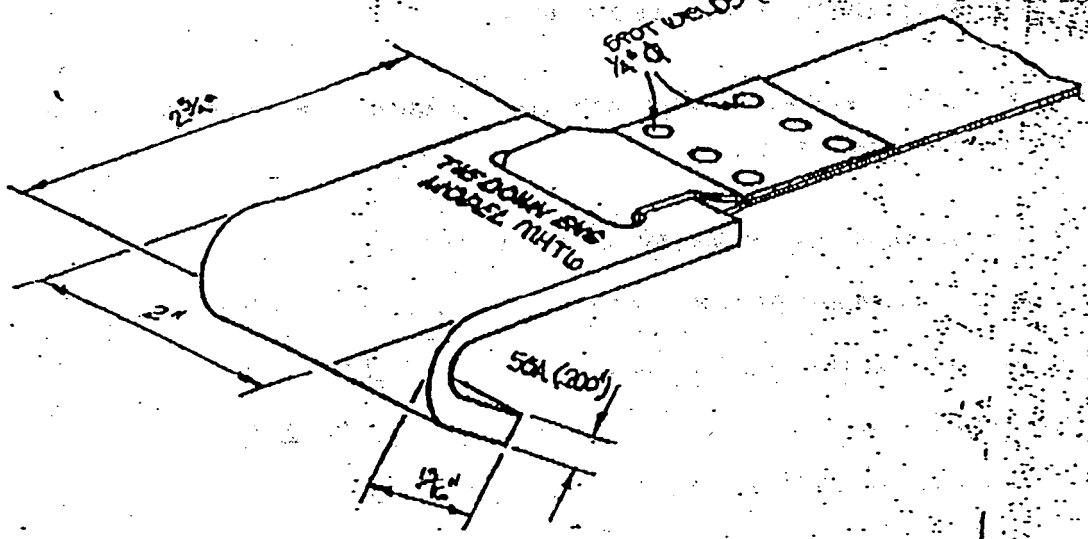
Note:
Material:
Rod-ASTM A-36Mod. 3/4" Dia.
Head-ASTM A-36 Mild 8Ga.
Web-ASTM A-36 Mild 9Ga.
Flange-ASTM A-36 Mild 9Ga.

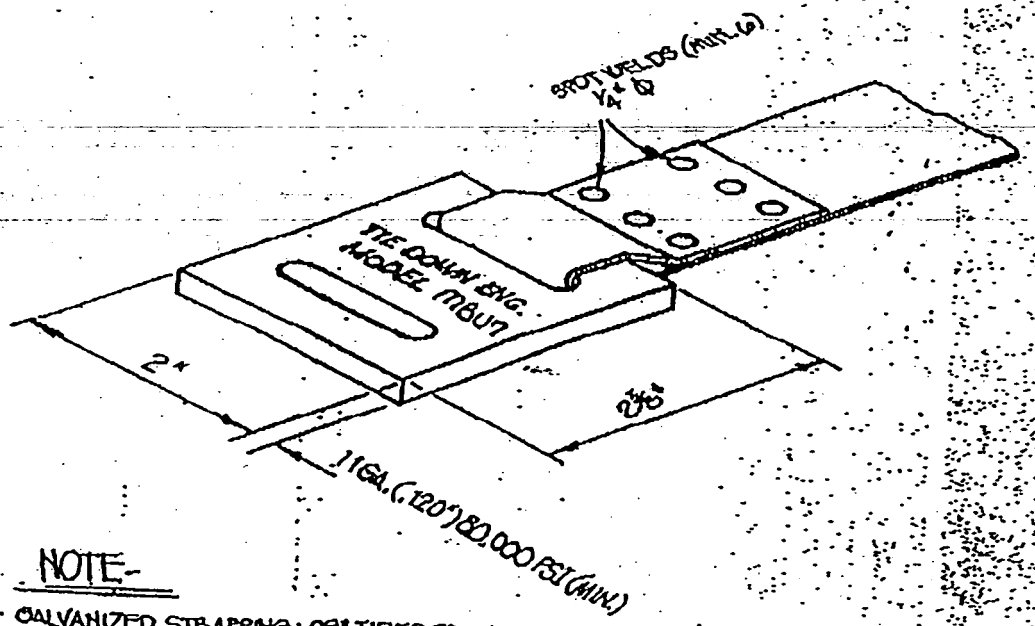
Finish-Black Paint.

Tie Down Engineering	
SCALE None	DWG NO. 59111

Model MRAX48
Part # 59111

(24)





NOTE-

- GALVANIZED STRAPPING: CERTIFIED TO ANSI A 225.1 .035" MIN. x 1 1/4" x 6 FT.
- STRAP MARKED EVERY 12" AS PER FOLLOWING: TIE DOWN ENGINEERING CERTIFIED TO ANSI 225.1 FED. SPEC. QQ-5781-B
- MODEL HT6 HOOK AND MODEL BU7 BUCKLE ARE ZINC COATED FOR CORROSION RESISTANCE.

LTR.	DATE	DESCRIPTION
	8-1-82	REVISIONS

tie down engineering inc.

TITLE: MODEL MHT6, MBU7 FRAME TIES

DR. BY	CK. BY
K. NOACK	C. MACKARVICH

SCALE	DR. NO.
NONE	MHP-305

RFETS | ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

FORM 3 (1-V51-COEM-DES-210)

ALARA Design Review Screen

Section 1: DESIGN PACKAGE IDENTIFICATION

Complete the ALARA Design Review Screen and Blocks 1 – 6. Retain the ALARA Design Review Screen in the Engineering Design Package to verify the screen was performed.

If the answer is "Yes" to any of the statements below, the Engineering Design Package will be forwarded to Radiological Engineering for review/concurrence.

Is the proposed work for new installation, modification, relocation, or removal of:

- A radioactively contaminated system or piece of equipment? ☐ Yes ☒ No
- A radioactive material processing line? ☐ Yes ☒ No
- Permanent radiation shielding? ☐ Yes ☒ No
- Major structures or equipment for radioactive material storage? ☐ Yes ☒ No
- Major structures, walls, or equipment inside radiological areas? ☐ Yes ☒ No
- Other engineering changes of radiological significance? (Explain) ☐ Yes ☒ No

1. IWCP/Authorization Project Number	2. Design Description Title	3. Page
T0100933	Relocate Various Plant Site Trailer	1 of 1
4. ECR Number		**5. Building Number**
N/A		771

6. Additional Comments
None

RFETS | ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

FORM 5 (1-V51-COEM-DES-210)

Bill of Material

Section 1: DESIGN PACKAGE IDENTIFICATION

1. WCP/Authorization Project Number	2. Modification Description Title	3. Page
T0100933	Install temporary trailers	1 of 3
4. Building No./Area	5. Parent System Title	
771		

Section 2: BILL OF MATERIAL

6. ITEM NO.	7. QUANTITY	8. DESCRIPTION/PART NO.	9. CONSEQUENCE OF FAILURE	10. CODE NO.	11. SSC/ PART AFFECTS	12. SYSTEM CATEGORY? IF YES (X)
001	1 ea	2" Conduit Body, Crouse Hinds Cat # LB67 or equal	Loss of conductor encasement	NA	NA	☐
002	1 ea	2" Conduit Body Cover, Crouse Hinds Cat # LB670 or equal	Loss of weather protection	NA	NA	☐
003	1 ea	2" Conduit Body Gasket, Crouse Hinds Cat # GASK576 or equal	Loss of weatherproof seal	NA	NA	☐
004	2 ea	Service Entrance Heads, 2" Clamp Type, Crouse-Hinds Cat # F536 or equal	Loss of weather protection	NA	NA	☐
005	40'	2" Conduit, Rigid Galvanized Steel	Loss of conductor encasement	NA	NA	☐
006	1 ea	Conduit Hub, 2", Myers Cat #ST-61	Loss of weather protection	NA	NA	☐
007	5 ea	Ground Rod, 3/4" X 10'	Loss of grounding	NA	NA	☐
008	5 ea	Ground Rod Clamp, Carolina Cat #CP34 or equal	Loss of grounding	NA	NA	☐
009	100'	Copper Wire #4 AWG, Bare, Solid	Loss of grounding	NA	NA	☐
010	250'	Copper Wire, #2 AWG, THHN, Black, stranded	Loss of power	NA	NA	☐
011	50'	Copper Wire, #6 AWG, THHN, Green, stranded	Loss of grounding	NA	NA	☐
012	10 ea	Ground Lug, Single Barrel, One-Hole, Fixed Tongue, Ilsco Cat #XT-0 or equal	Loss of grounding	NA	NA	☐
013	5 pr	1 ½" Conduit Straps, Unistrut Cat # P1115 or equal	Loss of conduit support	NA	NA	☐

Section 3: FORM INITIATION

13. Initiator's Name (Print)	14. Location	15. Phone No.	16. Pager No.
STAN CLARK	T771K	4875	212-6215

(01/99)

(26)

RFETS ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

FORM 5 (continued) (1-V51-COEM-DES-210)

Bill of Material (continued)

Section 1: DESIGN PACKAGE IDENTIFICATION

1. IWCP/Authorization Project Number	2. Modification Description Title	3. Building No./Area	4. Parent System Title	5. Page
T0100833	Install temporary trailers	771		2 OF 3

Section 2: BILL OF MATERIAL

6. ITEM NO.	7. QUANTITY	8. DESCRIPTION/PART NO.	9. CONSEQUENCE OF FAILURE	10. CODE NO.	11. SSC/ PART AFFECTS	12. SYSTEM CATEGORY? IF YES (X)
014	20'	Channel, Unistrut Cat #P4000 or equal	Loss of conduit support	NA	NA	☐
015	1 ea	2" Chase Nipples, insulated, steel, T&B Cat #1947 or equal	Loss of conductor encasement	NA	NA	☐
016	10 pr	2" Conduit Straps, Unistrut Cat # P1117 or equal	Loss of conduit support	NA	NA	☐
016	3ea	2 ½" Service entrance head, clamp type, Raco Cat # 2410 or equal	Loss of weather protection	NA	NA	☐
017	150'	4/0 THHN wire, stranded, black	Loss of power	NA	NA	☐
018	2 ea	2 ½" Chase Nipples, insulated, steel, T&B Cat #1948 or equal	Loss of conductor encasement	NA	NA	☐
019	1 ea	2 1/2" Conduit Hubs, Myers P/N ST-7	Loss of weather protection	NA	NA	☐
020	10 pr	2 ½" Conduit Straps, Unistrut Cat # P1118 or equal	Loss of conduit support	NA	NA	☐
021	20'	1 ½" Rigid Galvanized Steel Conduit	Loss of conductor encasement	NA	NA	☐
022	10'	1 ½" Flexible Liquid Tight Conduit, Type EF	Loss of conductor encasement	NA	NA	☐
023	2 ea	1 ½" Liquid Tight Conduit Fitting, Straight, insulated throat, T&B P/N 5336 or equal	Loss of conductor encasement	NA	NA	☐
024	50'	2 ½" Rigid Galvanized Steel Conduit	Loss of conductor encasement	NA	NA	☐
025	2 ea	2 ½" Conduit Body,Crouse Hinds Cat # LB77 or equal	Loss of conductor encasement	NA	NA	☐
026	2 ea	2 ½" Conduit Body Cover, Crouse Hinds Cat # LB770 or equal	Loss of weather protection	NA	NA	☐
027	2 ea	2 ½" Conduit Body Gasket, Crouse Hinds Cat # GASK578 or equal	Loss of weatherproof seal	NA	NA	☐
028	500'	#2 Service Drop Cable, Triplex w/ 2 insulated aluminum conductors and 1 aluminum messenger	Loss of power	NA	NA	☐

(47)

029	5 ea	Ballast Kits, 250 watt, 120/208/240/277 volt multi tap, Advanced P/N 71A8271-001D or equal	Loss of lighting	NA	NA	☐
030	1 ea	Circuit Breaker, 200 amp, 3pole, GE Type TFJ	Loss of power or overcurrent protection	4	Provides overcurrent protection	☐
031	2ea	2 in Expandable plumbers plug	Terminated pipe leakage	N/A	N/A	☐
032	2ea	3 in Expandable plumbers plug	Terminated pipe leakage	N/A	N/A	☐
033	2ea	4 in Expandable plumbers plug	Terminated pipe leakage	N/A	N/A	☐
034	5 bag	Non Shrink Grout	Terminated pipe leakage	N/A	N/A	☐
035	1ea	2-1/2 in Class 150, CS Blind Flange	Terminated pipe leakage	N/A	N/A	☐
036	1ea	1/8 in thick Rubber Gasket for 2-1/2 in Blind Flange	Terminated pipe leakage	N/A	N/A	☐
037	8ea	2in X 6in X 16ft Board, Pressure Treated Exterior Grade	Stair, Landing Failure	N/A	N/A	☐
038	10ea	2in X 6in X 8ft Board, Pressure treated Exterior Grade	Stair, Landing Failure	N/A	N/A	☐
039	106ea	2in X 6in X 10ft Board, Pressure treated Exterior Grade	Stair, Landing Failure	N/A	N/A	☐
040	9ea	4in X 4in X 12ft Post, Pressure Treated Exterior Grade	Stair, Landing Failure	N/A	N/A	☐
041	9ea	4in X 4in X 10ft Post, Pressure Treated Exterior Grade	Stair, Landing Failure	N/A	N/A	☐
042	4ea	2in X 12in X 12ft Board, Pressure Treated Exterior Grade	Stair, Landing Failure	N/A	N/A	☐
043	10ea	4ft X 8ft X 5/8in Plywood Sheet, Pressure Treated Exterior Grade	Stair, Landing Failure	N/A	N/A	☐
044	50ea	2in X 4in X 12ft Board, Pressure Treated Exterior Grade	Stair, Landing Failure	N/A	N/A	☐
045	64ea	2in X 6in Joist Hangers and Nails	Stair, Landing Failure	N/A	N/A	☐
046	1Box	Deck Screws, 2-1/2in	Stair, Landing Failure	N/A	N/A	☐
047	1Box	Deck Screws, 3in	Stair, Landing Failure	N/A	N/A	☐
048	1Box	Shingle Nails, 1-1/4in	Stair, Landing Failure	N/A	N/A	☐
049	1Roll	Rolled Roofing	Stair, Landing Failure	N/A	N/A	☐
050	1Roll	30# Roofing Felt	Stair, Landing Failure	N/A	N/A	☐
						☐

RFETS | ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

FORM 6 (1-V51-COEM-DES-210)

Design Work Special Instructions

Section 1: DESIGN PACKAGE IDENTIFICATION

1. IWCP/Authorization Project Number	2. Modification Description Title	3. Pages
T0100933	Relocate Various Onsite Trailers To the B771 Cluster	1 of 1

Section 2: DESIGN WORK IMPLEMENTATION REQUIREMENTS

4. Work IWCP Instructions (Provide justification if "None" is marked.) ☐ None

Disconnect from existing utilities and demobilize trailers T119A, T881A and T883C from various onsite locations at the RFETS Site and relocate to the B771 Cluster as shown on drawing excerpt 15501-0012. Breakdown, movement, leveling and anchoring of trailers will be performed by a vendor. See attached Statement of Work (SOW) for trailer breakdown, moving, leveling and anchoring requirements. Tie downs/anchors installed by the vendor must be able to withstand wind speeds up to 109 miles per hour. Utility & telecommunication disconnections/connections, installation of Life Safety/Disaster Warning circuits, emergency lighting, fire extinguishers and construction of steps & landings will be performed by RFETS personnel. Steps and landings to be built to site conditions after installation of the trailers. See attached Electrical Work Instructions portion of this engineering Order for details of electrical connection to the site power system.

5. System Interactions (Identify System Category ½ interactions that will be impacted by this Design Package and need to be addressed during implementation. Provide justification if "None" is marked.) ☐ None

No Category 1 / 2 systems are affected by this task. These trailers will be connected to the site electrical distribution system.

6. Acceptance Criteria, Standards, and Inspections (for example: acceptance, inspections, and post-maintenance tests). (Provide justification if "None" is marked.) ☐ None

HSP 2.08, LO/TO
MAN-072-OS&IH PM/36, Electrical Safety Practices
HSP 15.05, Maintenance Line Distribution
National Electric Code
SC-107 Sealing Building Penetrations
SE-101, Electrical Installation
SX-164, Labeling
Post Maintenance Testing (PMT) for electrical power will consist of taking voltage readings at the disconnect and an operability check of electrical devices in the trailers.

7. Deviation to Industry or Site Engineering Standards with Technical Justifications (to include description, purpose and scope).

None.

RFETS ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

FORM 7 (1V51-COEM-DES-210)

Baseline Document Change Form

SECTION 1: DESIGN PACKAGE IDENTIFICATION

1. IWCP/Authorization Project Number	2. Modification Description Title	3. Page 1 of 1
T0100933	Relocate Various Onsite Trailers To B771	

SECTION 2: BASELINE DOCUMENT LIST

SECTION 3: POST MOD MARKUP

(Operations Manager) Check box if document requires update prior to return to service.
(Designer) Check box if documents require update and closeout by Engineering.
(Designer) Check box if change to master drawing at closeout.
(Designer) Check box if master drawing to be voided at closeout.

☐ PHASED CLOSEOUT (Designer) Check box if phased closeout.

4.	5.	6.	7.	8. Document Identification	9. Rev	10. Final Rev	11. Engineering Walkdown Verification	12. Site Design Document Control Receipt	13. Operations Manager Receipt
☐	☐	☒	☐	15501-0012					
☐	☐	☐	☐						
☐	☐	☐	☐						
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☐	☐	☐	☐						

SECTION 4: POST MODIFICATION MARKUP ACCEPTANCE BY OPERATIONS

14. Operations Manager – Name (Print)	15. Operations Manager - Signature	16. Date

SECTION 5: DOCUMENT UPDATE/ENGINEERING DOCUMENTATION CLOSEOUT (DO NOT COMPLETE – SDDC Internal Only)

17. ☐ Incorporated redline information into masters
☐ Engineering Design Database updated
OR ☐ Did not incorporate redline information at this time. Redline information retained.

18. Site Design Document Control – Name (Print)	19. Site Design Document Control - Signature	20. Date

(01/99)

Request for Information (RFI)

Project Name:	Construction of the Present Landfill Accelerated Action	Subcontractor No.:	KH020577
Contractor:	Kaiser-Hill Company, LLC	RFI No.: 16	RFI - 016
Subcontractor:	S.M. Stoller Corporation	Page 1	1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	N/A	Specifications:	N/A
Reference (other):	Digital Maps Req'd for Project	Attachments:	List of maps required by Stoller GIS

Request:

Please supply available maps specified in the attached list.

Mr. Wendell Cheeks, MV2 will understand what is requested and can call Mr. Wes McGill or Mr. Jim Dillon at 303-546-4300 with any questions. General requirements, map should cover entire Present Landfill Project Site and be in the Colorado State Plane Projected Coordinate System.

Solution:

Supply any available maps requested in the attached List.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	September 15, 2004

Paul Kreitz	[signature]	8/10/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐	Clarification ☒	Rejection	☐ Change

Disk provided w/ requested files. Landfill topographic data will be provided by EarthTech electronically by COB Wednesday (08/18/2004)

Disk in included with this returned RFI

Robert W. Davis	[signature]	09/17/04
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:		

OF CQAE J.H. Fale Tetra Tech

MAP REQUESTS

- Ground Water Monitoring Wells
- Prebble's Mouse Habitat
- Roads (especially dirt roads between Centennial Pit and Land Fill
- Buildings and facilities (Gun range, power substation, bld 060, medical trailer location, alluvial borrow area, Centennial Pit)
- TOPOs (1 foot West gate, 1 foot landfill if possible…5 ft is OK)
- TOPOs (1 foot detail for Land Fill area)
- Design for Land Fill in CAD for the surveyor
- Fences

Note: All need to be digital files, (ESRI Shape Files)

THANKS!!

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: 17 | RFI - 017

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: N/A	Specifications: N/A
Reference (other): N/A	Attachments: None

Request:

As part of the pre-grade and rolling of the Present Landfill Cap the existing Gas Venting Piping is to be cut-off 3" below grade and **grouted.** The type of grout to be used for this task is not specified. Please specify as to the type required.

Solution:

Provide direction as to the type of grout to procure.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	8/30/04

Paul Kreitz	Paul Kreitz	8/20/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐	Clarification ☒	Rejection	☐ Change

High solids bentonite grout shall be used for plugging of the existing gas vents at the Present Landfill.

Robert W. Davis/K-H/CTR	Robert W. Davis	September 17, 2004
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐		
Revise Sketch:	Y ☐	N ☐	Revisions Due:				

OK CQAE J.H. Fala Tetra Tech

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 018

Subcontractor: S.M. Stoller Corporation | Page 1 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: Dwg #51781-014 | Specifications: Section 11110, 2.01, and 3.04

Reference (other): | Attachments:

Request:

Regarding the vent pipe system:

- What material goes underneath the ADS pipe in the gas header trench?
- The spec for the vent pipe calls for schedule 40 PVC and dwg #14 calls for sch 80....pls clarify.
- Spec 11110, section 3.04 describes installation of the "drainage fabric" but it is not shown in the dwg details...please revise the dwg or give us written guidance on installation requirements
- Dwg #14 shows the vertical vent pipe in one piece. From a constructability standpoint can we stub the pipe during cap construction and install the remaining vertical piece at the end (i.e. can it be jointed rather than one piece?

Solution:

Provide dwg revisions or written guidance to the 4 items above. These are needed for development of the work package.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	9/7/04

Paul Kreitz		8/27/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification X | Rejection | ☐ Change

1. Bedding material for the vent piping shall conform to Table SPEC-02245-1 (Bedding Material).
2. All vent piping shall be HDPE (except the perforated pipe shall be ADS as specified) as specified in Section 11111.
3. Do not install drainage fabric within the vent trenches.
4. The pipe may be stubbed; however, the joint for the HDPE pipe will be difficult to make in the vertical position. Suggest that a longer than needed pipe be installed and then cut to the correct length for final installation.

Robert W. Davis	Robert W. Davis	October 10, 2004
Print/Type Name	Signature	Date

Kaiser-Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:		

OK - CQAE J.H. Rale Tetra Tech

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: 19 | RFI - 019

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: N/A | Specifications: QA/QC Plan, page 2-7

Reference (other): None | Attachments: Copy of page

Request:

- Multiple forms are referenced by not included in the document.....these are needed for the work packages. Please advise as to where to get them or supply them to us.

Solution:

- See above request

Requested By:	Paul Kreitz
Date Field Construction will be affected:	9/5/04

Paul Kreitz		8/27/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐	Clarification X	Rejection	☐ Change

Forms have been provided to you under a separate cover; however, copies of the form are provided here in hard copy and electronic format to complete the response to this RFI.

Robert W. Davis/K-H/CTR	Robert W. Davis	September 24, 2004
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OK CQAE A.H. Pale Tetra Tech

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI – 020

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: | Specifications:

Reference (other): | Attachments:

Request: Please provide the geotechnical results for samples collected from the test pits completed on the existing landfill cap and any additional soil reports for the Present Landfill.

Solution: NA

Requested By:	Steve Brinkman
Date Field Construction will be affected:	NA

P.B. Kreitz	P.B. Kreitz	8/31/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐	Clarification ☒	Rejection	☐ Change

See attached geotechnical results of interim cover test pits at the Present Landfill, LF-1 to LF-12. No other geotechnical results exist on the interim cover.

Robert W. Davis	Robert W. Davis	September 24, 2004
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due: OK CQAE/H Fate Tetra Tech

MECHANICAL ANALYSIS - SIEVE TEST DATA
ASTM D 422

CLIENT Kaiser Hill-RFETS

JOB NO. 2195-64

BORING NO.	LF2	SAMPLED	12-23-03 DL
DEPTH	Composite	DATE TESTED	02-03-04 TSP
SAMPLE NO.	04S0102.005.001	WASH SIEVE	Yes
SOIL DESCR.	RIN #04S0102	DRY SIEVE	No
LOCATION	Present Landfill Soil Cover		

MOISTURE DATA

HYGROSCOPIC	Yes
NATURAL	No

Wt. Wet Soil & Pan (g)	86.10
Wt. Dry Soil & Pan (g)	84.77
Wt. Lost Moisture (g)	1.33
Wt. of Pan Only (g)	3.60
Wt. of Dry Soil (g)	81.17
Moisture Content %	1.6
Wt. Hydrom. Sample Wet (g)	64.66
Wt. Hydrom. Sample Dry (g)	63.62

WASH SIEVE ANALYSIS

Wt. Total Sample Wet (g)	2223.56
Weight of + #10 Before Washing (g)	1062.44
Weight of + #10 After Washing (g)	985.65
Weight of - #10 Wet (g)	1161.12
Weight of - #10 Dry (g)	1217.95
Wt. Total Sample Dry (g)	2203.60
Calc. Wt. "W" (g)	115.10
Calc. Mass + #10	51.48

Sieve Number (Size)	Pan Weight (g)	Indiv. Wt. + Pan (g)	Indiv. Wt. Retain.	Cum. Wt. Retain.	Cum. % Retain.	% Finer By Wt.	
3"	0.00	0.00	0.00	0.00	0.0	100.0	gravel 33.3%
1 1/2"	0.00	0.00	0.00	0.00	0.0	100.0	
3/4"	0.00	46.84	46.84	46.84	2.1	97.9	
3/8"	0.00	406.57	406.57	453.41	20.6	79.4	
#4	0.00	280.92	280.92	734.33	33.3	66.7	
#10	0.00	251.32	251.32	985.65	44.7	55.3	Sand 47.1%
#20	2.36	16.06	13.70	13.70	56.6	43.4	
#40	2.37	13.80	11.43	25.13	66.6	33.4	
#60	2.39	9.40	7.01	32.14	72.7	27.3	
#100	2.37	7.74	5.37	37.51	77.3	22.7	
#200	2.36	7.10	4.74	42.25	81.4	18.6	Silt/clay 18.6%

Data entered by: SR Date: 02/21/2004
Data checked by: [signature] Date: 2/21/04
FileName: EFMULF2

ADVANCED TERRA TESTING, INC.

HYDROMETER ANALYSIS - SEDIMENTATION DATA
ASTM D 422

CLIENT	Kaiser Hill-RFETS	JOB NO.	2195-64
BORING NO.	LF2	SAMPLED	12-23-03 DL
DEPTH	Composite	DATE TESTED	02-03-04 TSP
SAMPLE NO.	04S0102.005.001	WASH SIEVE	Yes
SOIL DESCR.	RIN #04S0102	DRY SIEVE	No
LOCATION	Present Landfill Soil Cover		
Hydrometer #	ASTM 152 H	Temp., Deg. C	22.6
Sp. Gr. of Soil	2.72	Temp. Coef. K	0.01298
Value of "alpha"	0.99	Wt. Dry Sample "W"	115.103
Deflocculant	Sodium Hexametaphosphate	% of Total Sample	100.0
Defloc. Corr'n	5.0		
Meniscus Corr'n	-1.8		

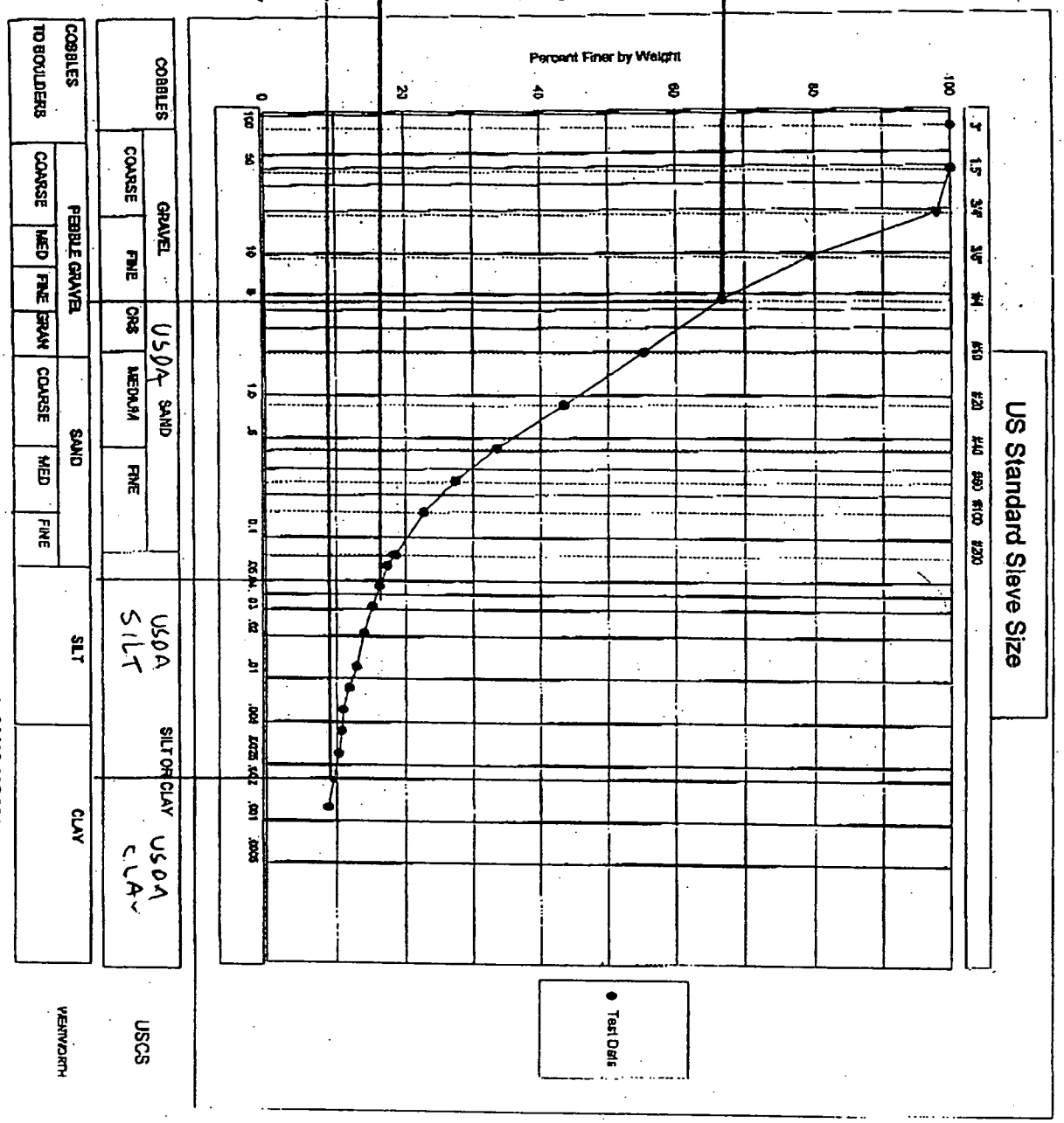
T Elapsed Time (min)	Hydrometer Reading Original	Corrected "R"	100Ra/W	% Total Sample	Effective Depth L	Grain Diameter (mm)
0.0	–	–	–	–	–	–
0.5	27.00	20.25	17.3	17.3	11.86	0.0631
1.0	25.75	19.00	16.3	16.3	12.07	0.0450
2.0	24.50	17.75	15.2	15.2	12.27	0.0321
5.0	23.00	16.25	13.9	13.9	12.52	0.0205
15.0	21.75	15.00	12.8	12.8	12.72	0.0119
30.0	20.50	13.75	11.8	11.8	12.93	0.0085
60.0	19.50	12.75	10.9	10.9	13.09	0.0061
120.0	19.25	12.50	10.7	10.7	13.13	0.0043
250.0	18.75	12.00	10.3	10.3	13.22	0.0030
1482.0	17.00	10.25	8.8	8.8	13.50	0.0012

Grain Diameter = K*(SQRT(L/T))

Data entered by: SR Date: 02/21/2004
Data checked by: [signature] Date: 2/21/04
FileName: EFMULF2

ADVANCED TERRA TESTING, INC.

LF2 USDA Conversion - Rocky Flo Alluvial
8 3 8 9



ATTERBERG LIMITS TEST
ASTM D 4318

CLIENT Kaiser Hill-REETS JOB NO. 2195-64

BORING NO.	LF2	DATE SAMPLED	12/23/03 DL
DEPTH	Composite	DATE TESTED	2/05/04 JLS
SAMPLE NO.	04S0102-005.001		2/13/04 RS
SOIL DESCR.	RIN04S0102		
LOCATION	Present Landfill Soil Cover		

Plastic Limit Determination

	1	2	3
Wt Dish & Wet Soil	5.71	6.20	5.42
Wt Dish & Dry Soil	5.12	5.57	4.87
Wt of Moisture	0.59	0.63	0.55
Wt of Dish	0.83	0.81	0.81
Wt of Dry Soil	4.29	4.76	4.06
Moisture Content	13.75	13.24	13.55

Liquid Limit Determination Device Number 0257

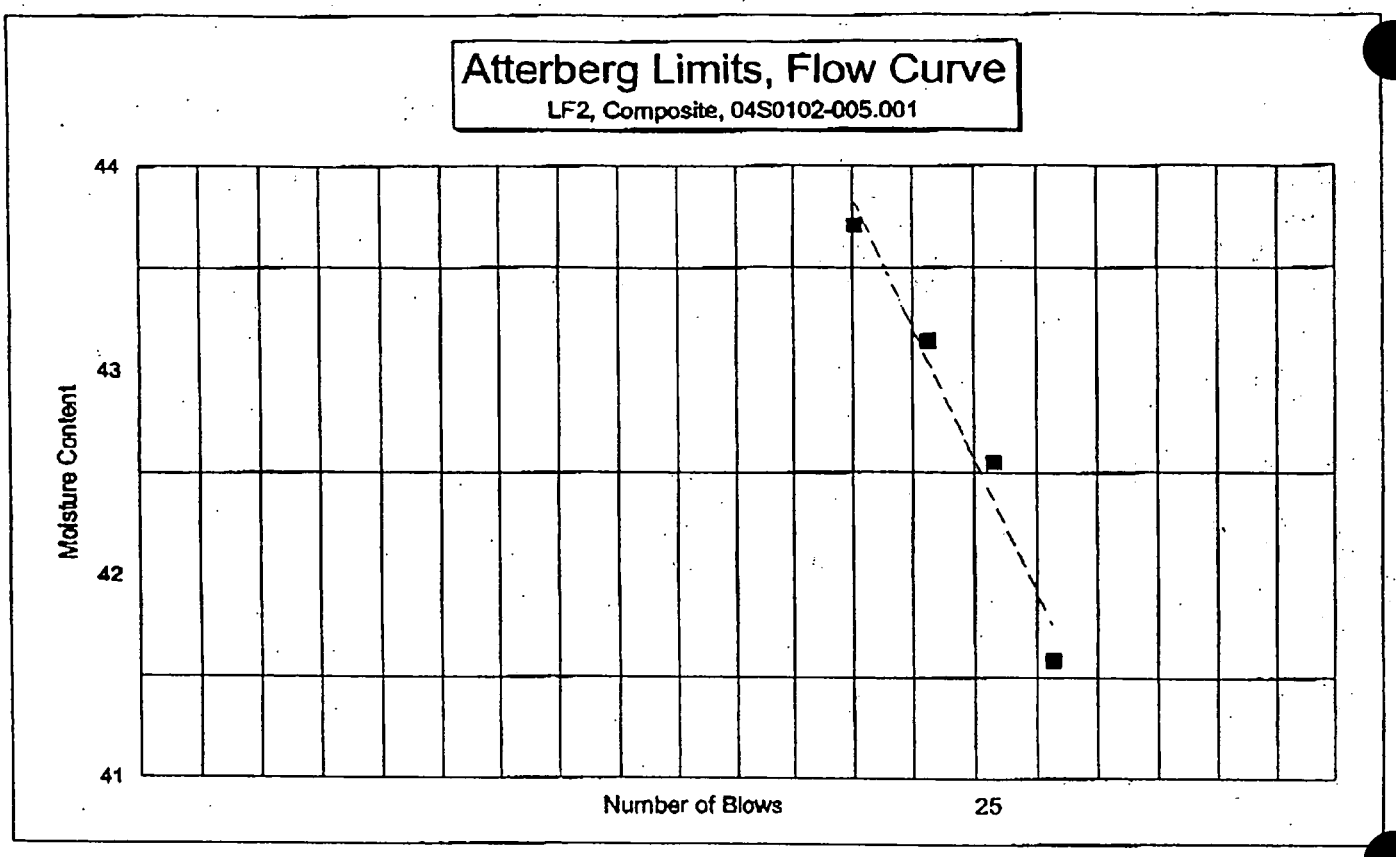
	1	2	3	4
Number of Blows	29	20	23	26
Wt Dish & Wet Soil	9.22	10.05	10.11	10.66
Wt Dish & Dry Soil	6.75	7.24	7.31	7.72
Wt of Moisture	2.47	2.81	2.80	2.94
Wt of Dish	0.81	0.81	0.82	0.81
Wt of Dry Soil	5.94	6.43	6.49	6.91
Moisture Content	41.58	43.70	43.14	42.55

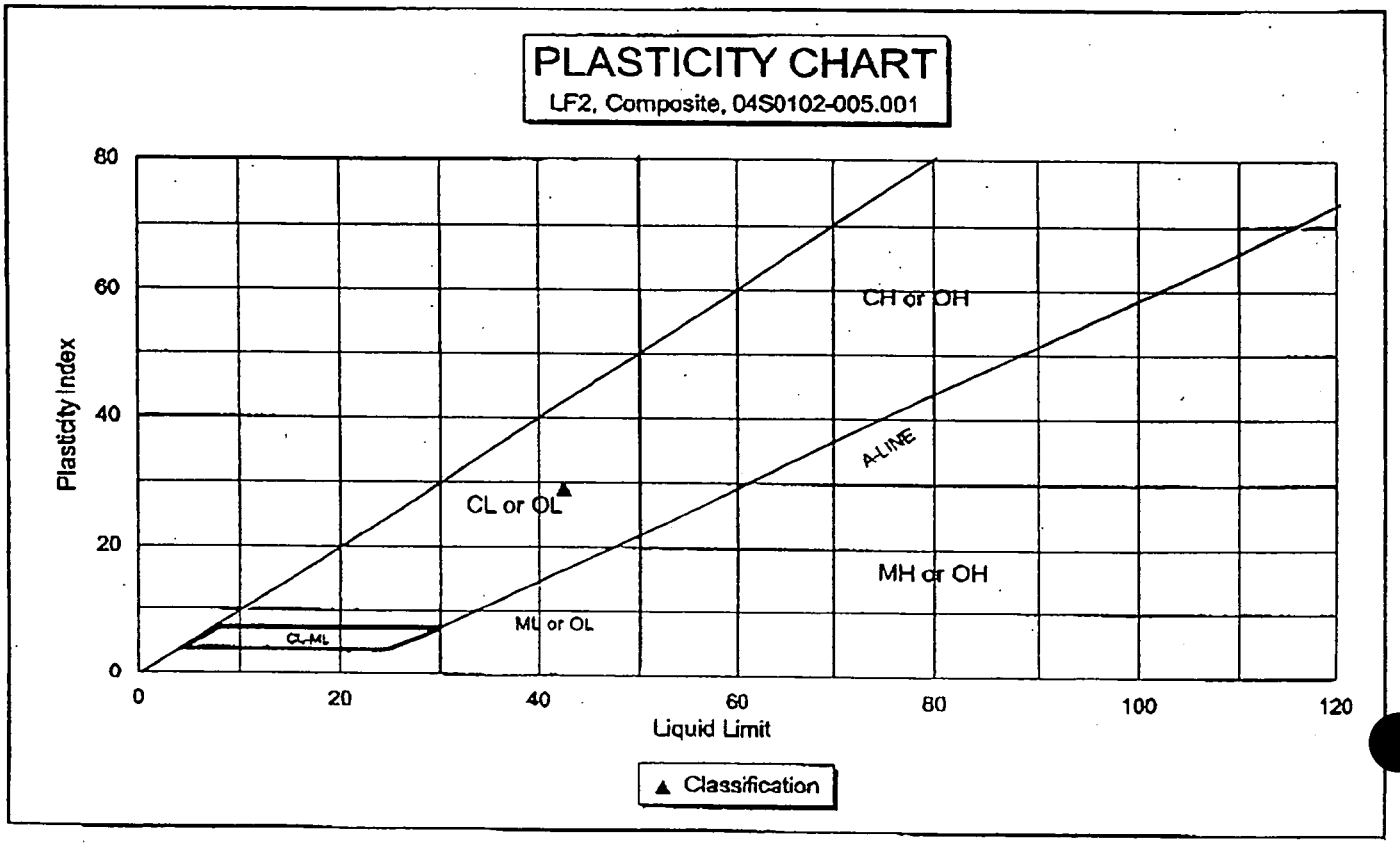
Liquid Limit	42.6
Plastic Limit	13.5
Plasticity Index	29.1

Atterberg Classification CL

Data entry by: JTR Date: 02/16/2004
Checked by: [illegible] Date: 2/16/04
FileName: EFG0LF02

ADVANCED TERRA TESTING, INC.


Atterberg Limits, Flow Curve
LF2, Composite, 04S0102-005.001
Moisture Content
44
43
42
41
Number of Blows
25


PLASTICITY CHART
LF2, Composite, 04S0102-005.001
Plasticity Index
80
60
40
20
0
CH or OH
A-LINE
CL or OL
MH or OH
CL-ML
ML or OL
0
20
40
60
80
100
120
Liquid Limit
▲ Classification

COMPACTION TEST
ASTM D 698 B

CLIENT: Kaiser Hill JOB NO. 2195-64

[redacted]RING NO. LF2 DATE SAMPLED 12/23/03 DL
[redacted]EPTH Composite DATE TESTED 02/01/04 DPM
SAMPLE NO. 04S0102-005.001 LOCATION Present Landfill Soil Cover
SOIL DESCR. RIN 04S0102

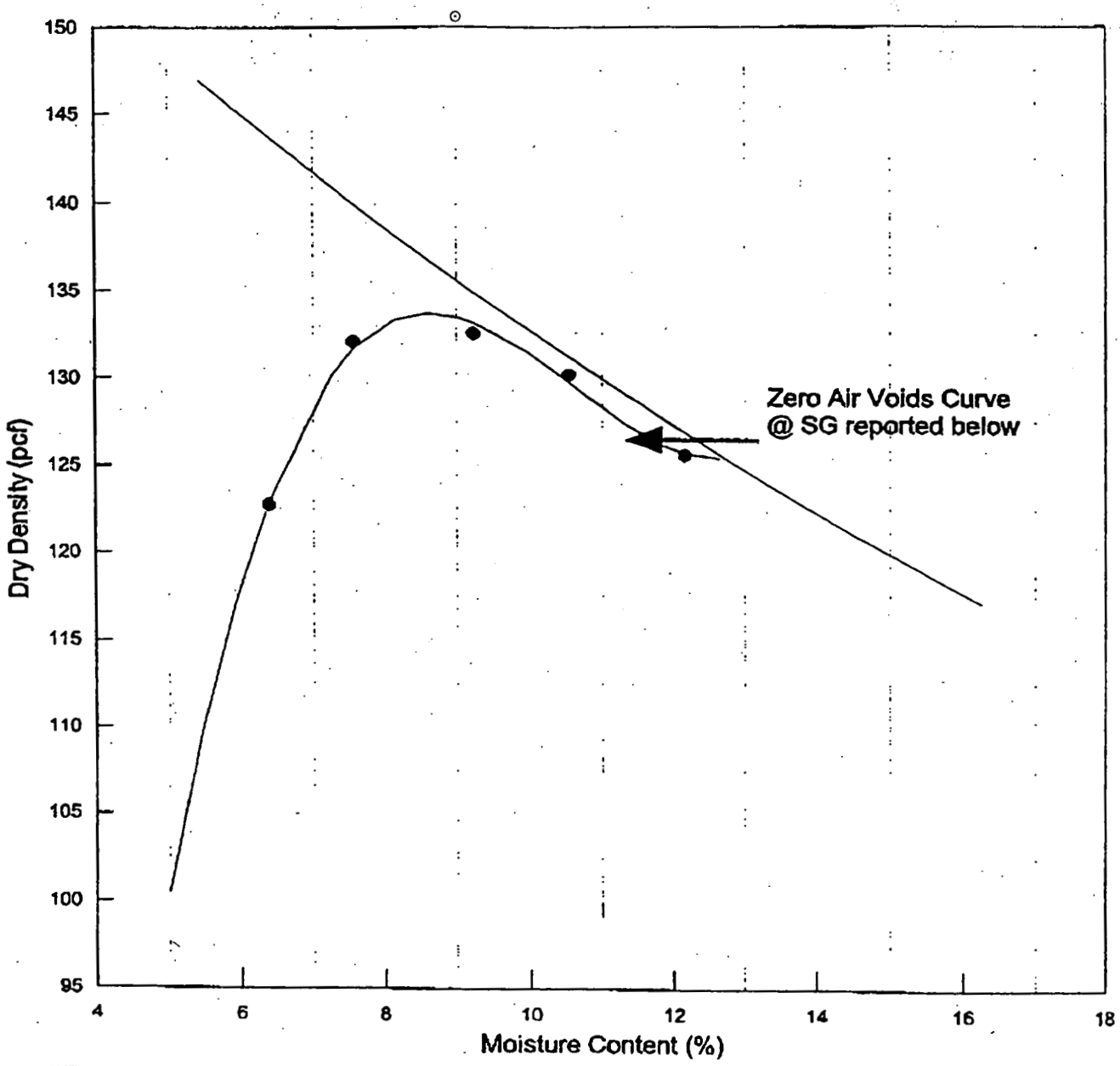
Moisture Determination	1	2	3	4	5
Wt of Moisture added (ml)	240.00	200.00	160.00	280.00	160.00
Wt. of soil & dish (g)	506.39	526.00	490.75	478.47	430.92
Dry wt. soil & dish (g)	451.06	474.86	451.04	419.15	401.19
Net loss of moisture (g)	55.33	51.14	39.71	59.32	29.73
Wt. of dish (g)	8.45	8.19	8.22	8.19	8.49
Net wt. of dry soil (g)	442.61	466.67	442.82	410.96	392.70
Moisture Content (%)	12.50	10.96	8.97	14.43	7.57
Corrected Moisture Content	10.53	9.23	7.56	12.16	6.38
Density determination					
Wt of soil & mold (lb)	14.92	14.96	14.87	14.80	14.46
Wt. of mold (lb)	10.31	10.31	10.31	10.31	10.31
[redacted]t. of wet soil (lb)	4.61	4.65	4.56	4.49	4.15
[redacted]t of dry soil (lb)	4.17	4.26	4.24	4.00	3.90
Density, (pcf)	125.12	127.71	127.19	120.10	117.03
Corrected Dry Density (pcf)	130.16	132.50	132.03	125.56	122.73
Volume Factor	30	30	30	30	30

[redacted]entered by: DPM Date: 02/02/2004
[redacted]hecked by: [redacted] Date: 2/2/04
[redacted]ame: EFPRLF2

ADVANCED TERRA TESTING, INC.

Proctor Compaction Test

LF2, Composite, 04S0102-005.001



Best Fit Curve ● Actual Data – Zero Air VoidsCurve @ SG = 2.70

OPTIMUM MOISTURE CONTENT = 8.6 MAXIMUM DRY DENSITY = 133.7
ASTM D 698 B, Rock correction applied? Y

ADVANCED TERRA TESTING, INC.

MECHANICAL ANALYSIS - SIEVE TEST DATA
ASTM D 422

CLIENT	Kaiser Hill-RFETS	JOB NO.	2195-64
BORING NO.	LF10	SAMPLED	12-23-03 DS
DEPTH	Composite	DATE TESTED	2-03-04 TSP
SAMPLE NO.	04S0102-001.001	WASH SIEVE	Yes
SOIL DESCR.	RIN#04S0102	DRY SIEVE	No
LOCATION	Present Landfill Soil Cover		

MOISTURE DATA

HYGROSCOPIC	Yes
NATURAL	No

Wt. Wet Soil & Pan (g)	58.63
Wt. Dry Soil & Pan (g)	57.04
Wt. Lost Moisture (g)	1.59
Wt. of Pan Only (g)	3.62
Wt. of Dry Soil (g)	53.42
Moisture Content %	3.0
Wt. Hydrom. Sample Wet (g)	57.40
Wt. Hydrom. Sample Dry (g)	55.74

WASH SIEVE ANALYSIS

Wt. Total Sample Wet (g)	3012.50
Weight of + #10 Before Washing (g)	1602.09
Weight of + #10 After Washing (g)	961.28
Weight of - #10 Wet (g)	1410.41
Weight of - #10 Dry (g)	1991.93
Wt. Total Sample Dry (g)	2953.21
Calc. Wt. "W" (g)	82.64
Calc. Mass + #10	26.90

Sieve Number (Size)	Pan Weight (g)	Indiv. Wt. + Pan (g)	Indiv. Wt. Retain.	Cum. Wt. Retain.	Cum. % Retain.	% Finer By Wt.
3"	0.00	0.00	0.00	0.00	0.0	100.0
1 1/2"	0.00	0.00	0.00	0.00	0.0	100.0
3/4"	0.00	169.96	169.96	169.96	5.8	94.2
3/8"	0.00	288.42	288.42	458.38	15.5	84.5
#4	0.00	266.65	266.65	725.03	24.6	75.4
#10	0.00	236.25	236.25	961.28	32.6	67.4
#20	2.30	11.68	9.38	9.38	43.9	56.1
#40	2.32	9.09	6.77	16.15	52.1	47.9
#60	2.37	6.88	4.51	20.66	57.5	42.5
#100	2.30	5.89	3.59	24.25	61.9	38.1
#200	2.37	6.03	3.66	27.91	66.3	33.7

24.0%
Gravel

41.7%
Sand

Silt + Clay 33.7%

Data entered by: JTR Date: 02/09/2004
Data checked by: DMM Date: 2/10/04
FileName: EFH0LF10

ADVANCED TERRA TESTING, INC.

HYDROMETER ANALYSIS - SEDIMENTATION DATA
ASTM D 422

CLIENT	Kaiser Hill-RFETS	JOB NO.	2195-64
BORING NO.	LF10	SAMPLED	12-23-03 DS
DEPTH	Composite	DATE TESTED	2-03-04 TSP
SAMPLE NO.	04S0102-001.001	WASH SIEVE	Yes
SOIL DESCR.	RIN#04S0102	DRY SIEVE	No
LOCATION	Present Landfill Soil Cover		

Hydrometer #	ASTM 152 H	Temp., Deg. C	22.6
Sp. Gr. of Soil	2.69	Temp. Coef. K	0.01307
Value of "alpha"	0.99	Wt. Dry Sample "W"	82.642
Deflocculant	Sodium Hexametaphosphate	% of Total Sample	100.0
Defloc. Corr'n	5.0		
Meniscus Corr'n	-1.8		

T Elapsed Time (min)	Hydrometer Reading Original	Corrected "R"	100Ra/W	% Total Sample	Effective Depth L	Grain Diameter (mm)
0.0	--	--	--	--	--	--
0.5	33.50	26.75	32.1	32.1	10.80	0.0607
1.0	32.25	25.50	30.6	30.6	11.00	0.0434
2.0	30.75	24.00	28.8	28.8	11.25	0.0310
5.0	29.00	22.25	26.7	26.7	11.53	0.0199
15.0	27.25	20.50	24.6	24.6	11.82	0.0116
30.0	25.50	18.75	22.5	22.5	12.11	0.0083
61.0	24.25	17.50	21.0	21.0	12.31	0.0059
120.0	24.00	17.25	20.7	20.7	12.35	0.0042
250.0	23.00	16.25	19.5	19.5	12.52	0.0029
1491.0	20.25	13.50	16.2	16.2	12.97	0.0012

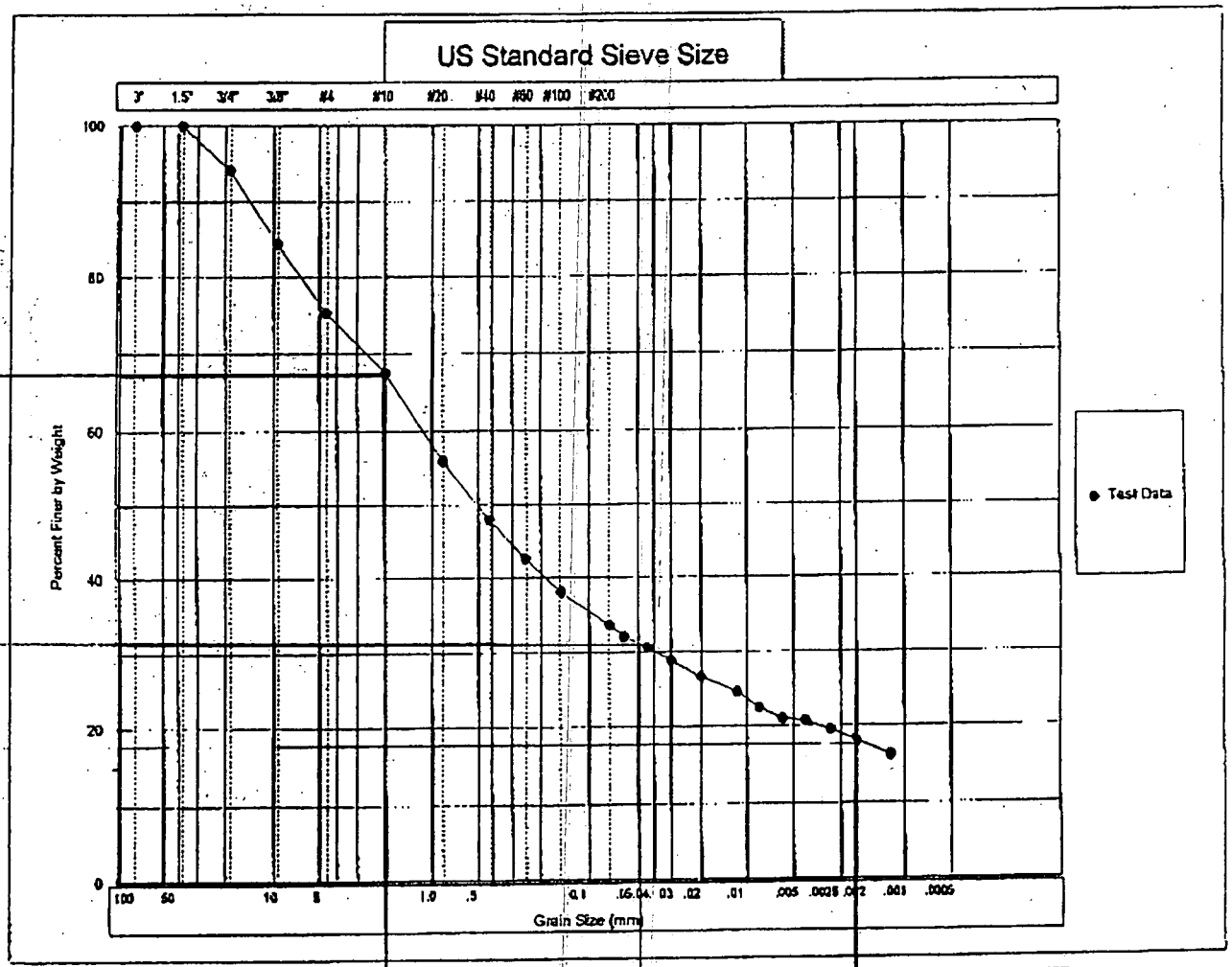
Grain Diameter = K*(SQRT(L/T))

Data entered by: JTR Date: 02/09/2004
Data checked by: [signature] Date: 2/10/04
FileName: EFH0LF10

ADVANCED TERRA TESTING, INC.

LF10 USDA Conversion - Rocky Flats Alluvial

68/14/18



33% gravel

68%

35% SAND

32%

14% Silt

18%

18% Clay

COBBLES	GRAVEL			SAND			SILT OR CLAY		USCS
	COARSE	FINE	CRS	MEDIUM	FINE	USDA SAND	USDA SILT	USDA CLAY	

COBBLES	PEBBLE GRAVEL				SAND			SILT	CLAY	WENTWORTH
TO BOULDERS	COARSE	MED	FINE	GRAN	COARSE	MED	FINE			

Client: Kaiser Hill-RFETS Boring No.: LF10 Sample No.: 04S0102-001.001

Job Number: 2185-84 Depth: Composite

Classification: SC. Clayey sand with gravel

Advanced Terra Testing, Inc.

03/01/2004 MON 14:49 [TX/RX NO 9132] 0008

ATTERBERG LIMITS TEST
ASTM D 4318

CLIENT	Kaiser Hill-REETS	JOB NO.	2195-64
BORING NO.	LF10	DATE SAMPLED	12/23/03 DL
DEPTH	Composite	DATE TESTED	2/05/04 JTR
SAMPLE NO.	04S0102-001.001		
SOIL DESCR.	RIN 04S0102		
LOCATION	Present Landfill Soil Cover		

Plastic Limit Determination

	1	2	3
Wt Dish & Wet Soil	5.94	6.04	5.89
Wt Dish & Dry Soil	5.34	5.46	5.31
Wt of Moisture	0.60	0.58	0.58
Wt of Dish	0.81	0.81	0.81
Wt of Dry Soil	4.53	4.65	4.50
Moisture Content	13.25	12.47	12.89

Liquid Limit Determination — Device Number 0860

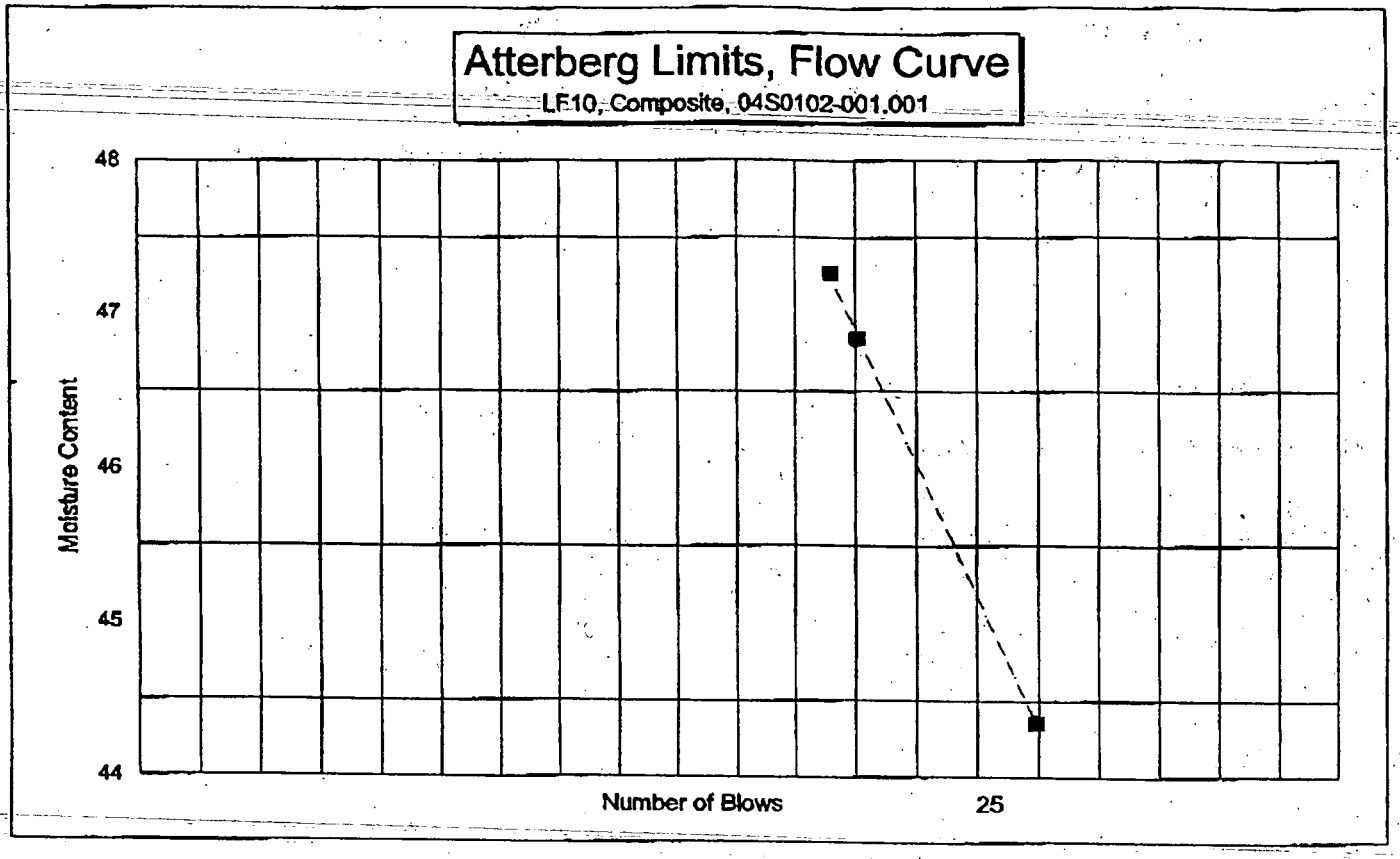
	1	2	3
Number of Blows	28	20	19
Dish & Wet Soil	7.85	9.40	8.88
Dish & Dry Soil	5.69	6.66	6.29
Wt of Moisture	2.16	2.74	2.59
Wt of Dish	0.82	0.81	0.81
Wt of Dry Soil	4.87	5.85	5.48
Moisture Content	44.35	46.84	47.26

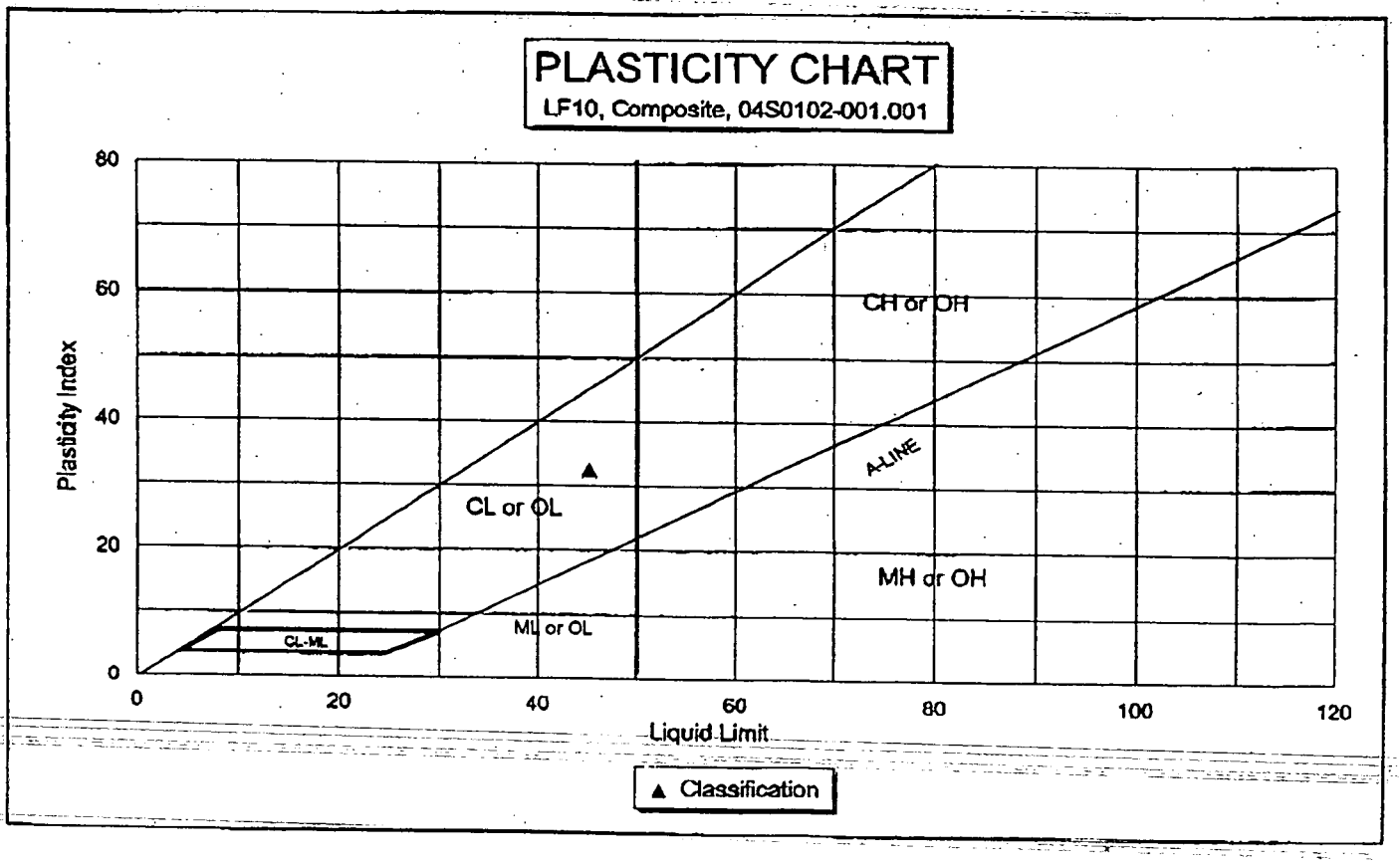
Liquid Limit	45.2
Plastic Limit	12.9
Plasticity Index	32.3

Atterberg Classification CL

Data entry by: JTR Date: 02/09/2004
Checked by: DPM Date: 02/10/04
FileName: EFG0LF10

ADVANCED TERRA TESTING, INC.


Atterberg Limits, Flow Curve
LF10, Composite, 04S0102-001.001
Moisture Content
48
47
46
45
44
Number of Blows
25


PLASTICITY CHART
LF10, Composite, 04S0102-001.001
Plasticity Index
80
60
40
20
0
CH or OH
A-LINE
CL or OL
MH or OH
CL-ML
ML or OL
0
20
40
60
80
100
120
Liquid Limit
▲ Classification

COMPACTION TEST
ASTM D 698 B

PROJECT: Kaiser Hill JOB NO. 2195-64

BORING NO.	LF10	DATE SAMPLED	12/23/03 DL
DEPTH	Composite	DATE TESTED	01/31/04 DPM
SAMPLE NO.	04S0102-001.001	LOCATION	Present Landfill Soil Cover
SOIL DESCR.	RIN 04S0102		

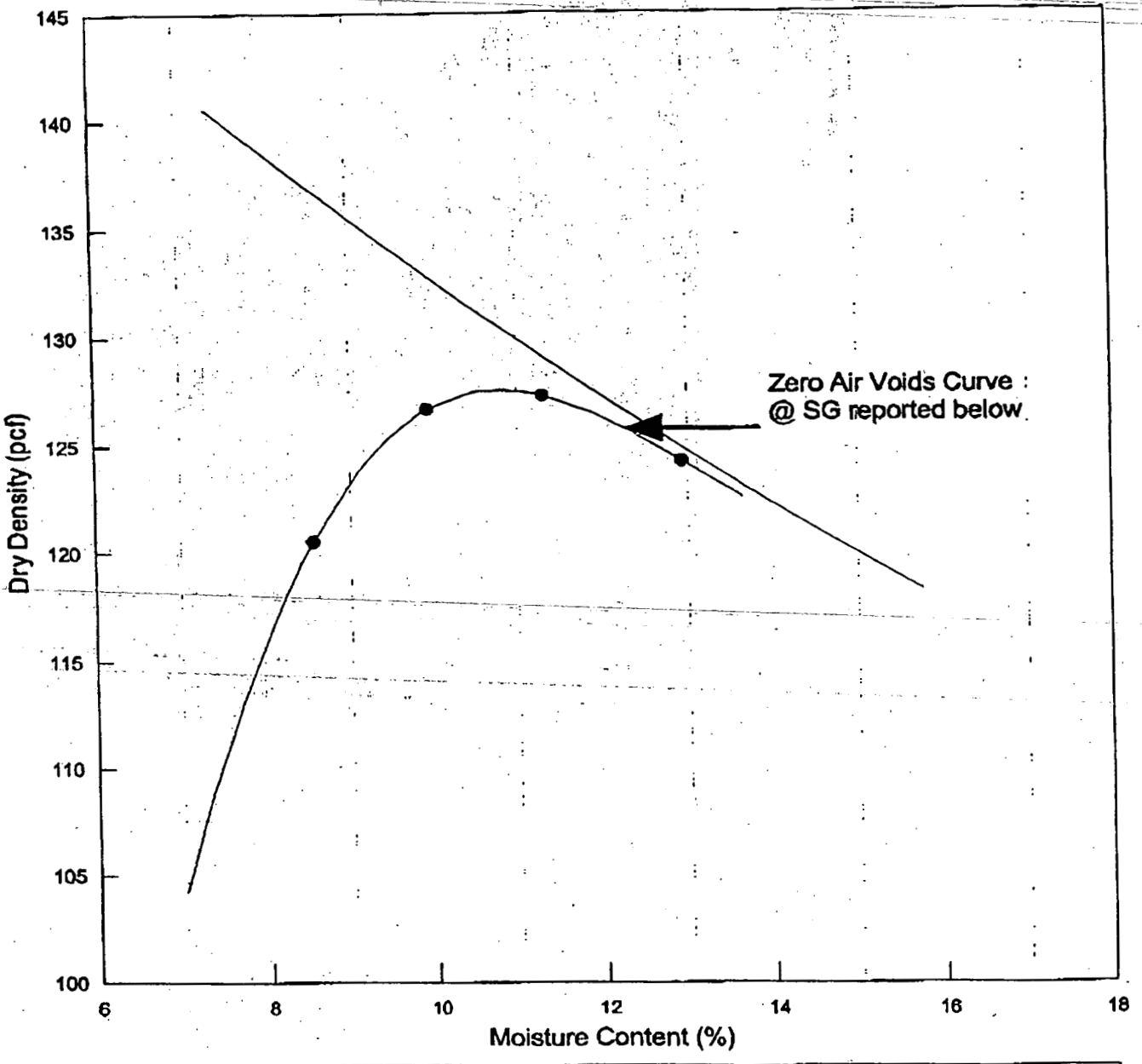
Moisture Determination	1	2	3	4
Wt of Moisture added (ml)	200.00	160.00	240.00	280.00
Wt. of soil & dish (g)	320.97	422.91	419.12	526.98
Dry wt. soil & dish (g)	287.35	384.00	369.55	456.65
Net loss of moisture (g)	33.62	38.91	49.57	70.33
Wt. of dish (g)	8.20	8.09	8.30	8.25
Net wt. of dry soil (g)	279.15	375.91	361.25	448.40
Moisture Content (%)	12.04	10.35	13.72	15.68
Corrected Moisture Content	9.93	8.54	11.32	12.93
Density determination				
Wt of soil & mold (lb)	14.73	14.43	14.81	14.75
Wt of mold (lb)	10.31	10.31	10.31	10.31
Wt. of wet soil (lb)	4.42	4.12	4.50	4.44
Wt of dry soil (lb)	4.02	3.80	4.04	3.93
Dry Density, (pcf)	120.62	113.88	121.28	117.95
Corrected Dry Density (pcf)	126.67	120.50	127.27	124.24
Volume Factor	30	30	30	30

entered by: DPM Date: 02/02/2004
checked by: CAS Date: 2/02/04
FileName: EFPRLF10

ADVANCED TERRA TESTING, INC.

Proctor Compaction Test

LF10 Composite, 04S0102-001.001

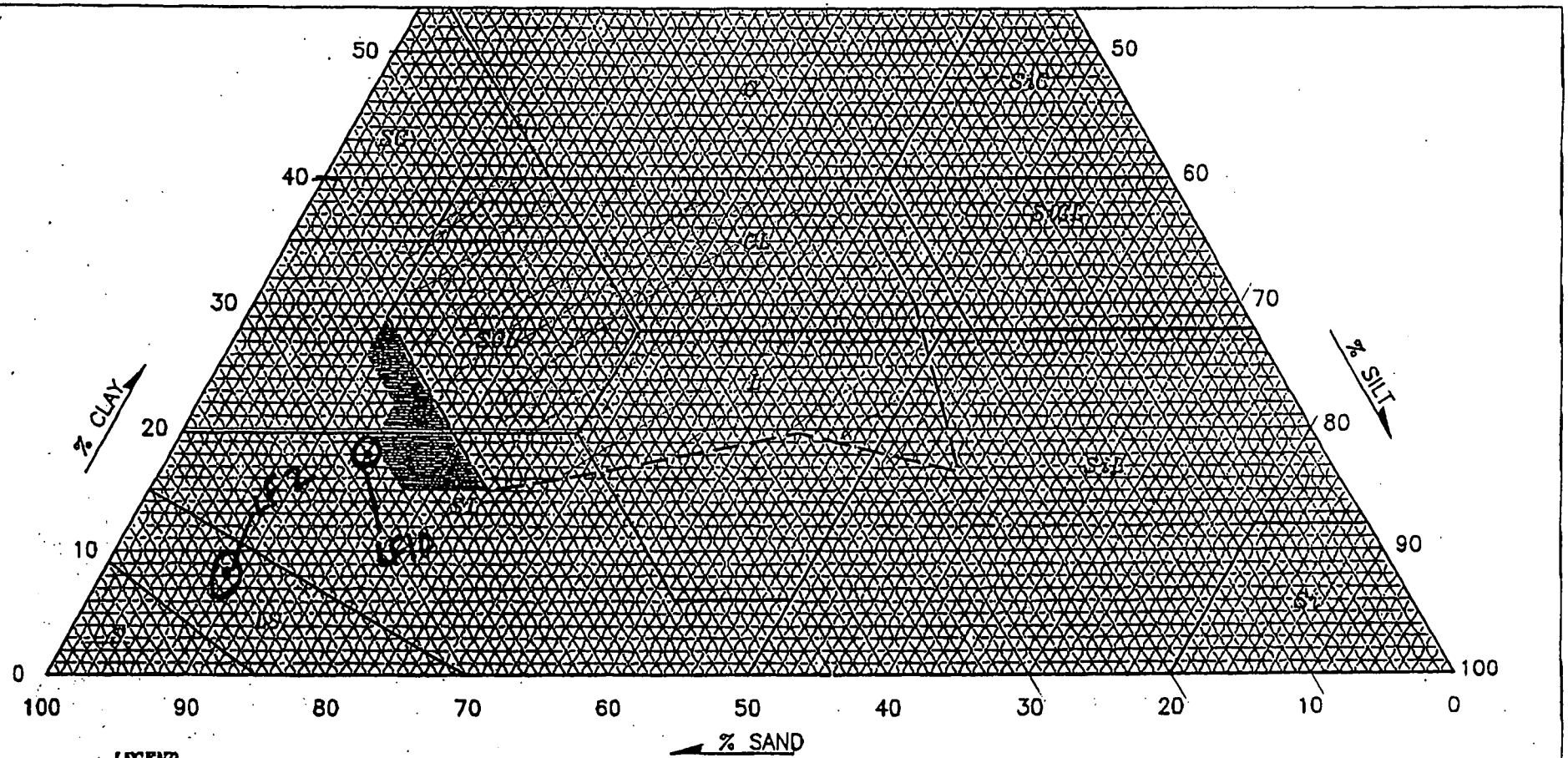


– Best Fit Curve ● Actual Data – Zero Air VoidsCurve @ SG = 2.70

OPTIMUM MOISTURE CONTENT = 10.8 MAXIMUM DRY DENSITY = 127.5
ASTM D 698 B, Rock correction applied? Y

ADVANCED TERRA TESTING, INC.

LF2 83/8/9 LF10 68/14/18



LEGEND

— — PROPOSED ACCEPTANCE ZONE

CONDITIONAL USE SOILS (ZONE 2)

20 - 68 [illegible]

28 - 50 [illegible]

30 - 50 SH

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PROJECT NAME

BASIN F COVER REMEDIATION PROJECT PART 2

TITLE

ACCEPTABLE ZONE (AZ) OF RCRA-EQUIVALENT COVER SOILS

CAD FILE:	DATE	FIGURE NUMBER
ISODEN TRIANGLE FIG 4.dwg	11.17.03	4

EARTH TECH

A tyco INTERNATIONAL LTD. COMPANY

TEST PIT REPORT

TEST PIT NO. LF-1

PROJECT: PLF-Cover Soil Test Pits
CLIENT: RFETS
CONTRACTOR: Earth Tech
EQUIPMENT USED: John Deere 500c Backhoe

JOB NO: 57379.0402
LOCATION: Southern Cut
ELEVATION: 5998'
DATE START: 12/23/03
DATE FINISH: 12/23/03
LOGGED BY: Ryan Archibald

DEPTH (FT)	SAMPLE NO./ DEPTH RANGE	STRATA CHANGE (FT)	FIELD CLASSIFICATION	REMARKS
1'		MH	Sandy elastic silt with gravel (MH) >50% fines with estimated >30% to pass #200 sieve. % Sand > % gravel with large cobbles down to gravel. Rocky Flats Alluvial material reworked as cover. Cobbles >6" and difficult for backhoe to excavate. Red color.	Typical red silt cover material but difficult to excavate with old Backhoe (no teeth on bucket). Blue 3/4" thick plastic material with white plastic underneath encountered similar to LF-4. Same type of pin flag in the ground as well.
2'				
3'				
3'7"			Waste Encountered (Blue plastic rubberoid like sheet, white plastic underneath, black trash bag plastic, wood)	No sample taken. Hole filled.

ASTM COMPONENT %

MOSTLY	50 - 100 %
SOME	30 - 45 %
LITTLE	15 - 25 %
FEW	5 - 10 %
TRACE	< 5 %

GROUND WATER

DATE	TIME *	DEPTH FT.

NOT ENCOUNTERED ☐ * HRS. AFTER COMPLETION

PIT DIMENSIONS (FT)

6' (L) x 2 (W) x 3'7" (D) = _____ CU. FT.

BOULDERS

12 INCH TO 18 INCH DIAM: NO. _____ = VOL. _____ CU. FT.
OVER 18 INCH DIAM: NO. _____ = VOL. _____ CU. FT.

TEST PIT NO. _____

A R T H T E C H

A tyco INTERNATIONAL LTD. COMPANY

TEST PIT REPORT

TEST PIT NO. LF-2

PROJECT: RLF-Cover Soil Test Pits
CLIENT: RFETs
CONTRACTOR: Earth Tech
EQUIPMENT USED: John Deere 500 C

JOB NO: 57376.0202
LOCATION: Solitary Cut
ELEVATION: 5499'
DATE START: 12/23/03
DATE FINISH: 12/23/03
LOGGED BY: Ryan Archibald

DEPTH (FT)	SAMPLE NO./ DEPTH RANGE	STRATA CHANGE (FT)	FIELD CLASSIFICATION	REMARKS
1'			Red Sandy elastic silt with gravel (MH). Rocky Flats alluvial material with less evidence of rework. Very consistent with less cobbles and gravel than other test pits.	Soil appears to be a less disturbed example of Rocky Flats Alluvial.
2'		MH		
3'				* Geotech Sample taken. 2 5-gallon buckets packaged by Stoller and Shipped to ATT.
4'				
4'4"			Waste encountered (typical municipal waste - plastic/paper).	

ASTM COMPONENT %

MOSTLY	50 - 100 %
SOME	30 - 45 %
LITTLE	15 - 25 %
FEW	5 - 10 %
TRACE	< 5 %

GROUND WATER

DATE	TIME *	DEPTH FT.
NOT ENCOUNTERED		* HRS. AFTER COMPLETION

PIT DIMENSIONS (FT)

6' (L) x 2' (W) x 4'4" (D) = _____ CU. FT.

BOULDERS

12 INCH TO 18 INCH DIAM: NO. _____ = VOL. _____ CU. FT.
OVER 18 INCH DIAM: NO. _____ = VOL. _____ CU. FT.

TEST PIT NO. _____

EARTH TECH

A tyco INTERNATIONAL LTD. COMPANY

TEST PIT REPORT

TEST PIT NO. LF-3

PROJECT: PLF- Cover Soil Test Pits
CLIENT: RFETS
CONTRACTOR: Earth Tech
EQUIPMENT USED: John Deere 500C

JOB NO: 57376.0207
LOCATION: Southern Cut
ELEVATION: 5998
DATE START: 12/23/03
DATE FINISH: 12/23/03
LOGGED BY: Ryan Archibald

DEPTH (FT)	SAMPLE NO/ DEPTH RANGE	STRATA CHANGE (FT)	FIELD CLASSIFICATION	REMARKS
1'		MH	Red sandy elastic soil with gravel (MH). Rocky Flats Alluvial material with moist top 6". No cobbles >6". No concrete or asphalt evident in chunks >2".	Profile similar to LF-5. Mostly reworked/mixed soils. No Sample taken.
2'			(MH) mixed with clay clumps (claystone?) Reworked, non-native soils.	
3'				
4'				
4'9"			MH mixed with Clay clumps and black residue possibly associated with waste.	
			Waste encountered (municipal waste - styrofoam / plastic bags)	

ASTM COMPONENT %

MOSTLY	50 - 100 %
SOME	30 - 45 %
LITTLE	15 - 25 %
FEW	5 - 10 %
TRACE	< 5 %

GROUND WATER

DATE	TIME *	DEPTH FT.

NOT ENCOUNTERED ☐ * HRS. AFTER COMPLETION

PIT DIMENSIONS (FT)

5 (L) x 2 (W) x 4'9" (D) = _____ CU. FT.

BOULDERS

12 INCH TO 18 INCH DIAM: NO. _____ = VOL. _____ CU. FT.
OVER 18 INCH DIAM: NO. _____ = VOL. _____ CU. FT.

TEST PIT NO. _____

ARTH TECH

A tyco INTERNATIONAL LTD. COMPANY

TEST PIT REPORT

TEST PIT NO. LF-4

PROJECT: PLF-Cover Soil Test Pits
CLIENT: RPETs
CONTRACTOR: Earth Tech
EQUIPMENT USED: John Deere 500c Backhoe

JOB NO: 57378.0207
LOCATION: Southern Cell
ELEVATION: 5497
DATE START: 12/23/03
DATE FINISH: 12/23/03
LOGGED BY: Ryan Archibald

DEPTH (FT)	SAMPLE NO./ DEPTH RANGE	STRATA CHANGE (FT)	FIELD CLASSIFICATION	REMARKS
1'		MH	Red Sandy elastic soil with gravel. Rocky Flats alluvial	The cobbly cement colored soil not seen in any other test pit so not sampled. Plastic similar to that seen in LF-1. Some Pin Flag on surface. No geotech Sample taken.
3'			Cobbly/gravelly non-native fill material with portland cement colored dusting.	
4'			Reworked clay stone material with cement color and cobbles >6" in diameter.	
4'8"			Waste encountered (plastic rubbermaid like sheet blue similar to LF-1. Folded over so appears to be a pipe but not venting system is constructed)	

ASTM COMPONENT %

MOSTLY	50 - 100 %
SOME	30 - 45 %
LITTLE	15 - 25 %
FEW	5 - 10 %
TRACE	< 5 %

GROUND WATER

DATE	TIME *	DEPTH FT.

NOT ENCOUNTERED ☐ * HRS. AFTER COMPLETION

PIT DIMENSIONS (FT)

6 (L) x 2 (W) x 4'8" (D) = _____ CU. FT.

BOULDERS

12 INCH TO 18 INCH DIAM: NO. _____ = VOL. _____ CU. FT.
OVER 18 INCH DIAM: NO. _____ = VOL. _____ CU. FT.

TEST PIT NO. _____

A R T H T E C H

A tyco INTERNATIONAL LTD. COMPANY

TEST PIT REPORT

TEST PIT NO. LF-5

PROJECT: PLF- Cover Soil Test Pits

CLIENT: RFETS

CONTRACTOR: Earth Tech

EQUIPMENT USED: John Deere 200c Backhoe

JOB NO: 57376.0202

LOCATION: Saltern Cut

ELEVATION: 5990'

DATE START: 12/23/03

DATE FINISH: 12/23/03

LOGGED BY: Ryan Archibald

DEPTH (FT)	SAMPLE NO./ DEPTH RANGE	STRATA CHANGE (FT)	FIELD CLASSIFICATION	REMARKS
1'		MH	Relatively Consistent MH (Sandy elastic Soil with gravel). Cobble, > 1' down to ~1". Mixed with reworked claystone.	Good Rocky Flats alluvial Consistency but LF2 better No geotech sample taken.
2'				
3'			Waste encountered (Odorous. Plastic trash bag)	

ASTM COMPONENT %

MOSTLY	50 - 100 %
SOME	30 - 45 %
LITTLE	15 - 25 %
FEW	5 - 10 %
TRACE	< 5 %

GROUND WATER

DATE	TIME *	DEPTH FT.

NOT ENCOUNTERED

* HRS. AFTER COMPLETION

PIT DIMENSIONS (FT)

5' (L) x 2' (W) x 3' (D) = _____ CU. FT.

BOULDERS

12 INCH TO 18 INCH DIAM: NO. _____ = VOL. _____ CU. FT.

OVER 18 INCH DIAM: NO. _____ = VOL. _____ CU. FT.

TEST PIT NO. _____

EARTH TECH

A tyco INTERNATIONAL LTD. COMPANY

TEST PIT REPORT

TEST PIT NO. LF-6

PROJECT: PLF-Cover Soil Test Pits

CLIENT: RFETS

CONTRACTOR: Earth Tech

EQUIPMENT USED: John Deere 500c Backhoe

JOB NO: 57378.0202

LOCATION: Northern Cut

ELEVATION: 5971'

DATE START: 12/23/03

DATE FINISH: 12/23/03

LOGGED BY: Ryan Archibald

DEPTH (FT)	SAMPLE NO./ DEPTH RANGE	STRATA CHANGE (FT)	FIELD CLASSIFICATION	REMARKS
1'		MH	Red sandy elastic soil with gravel (MH)	
2'			MH mixed with reworked claystone. Asphalt chunks >1" in diameter. Large cobbles >1'.	No geotech sample taken.
3'			Waste encountered (trash bag, diet Pepsi can, plastic tarp, paper).	

ASTM COMPONENT %

MOSTLY	50 - 100 %
SOME	30 - 45 %
LITTLE	15 - 25 %
FEW	5 - 10 %
TRACE	< 5 %

GROUND WATER

DATE	TIME *	DEPTH FT.

NOT ENCOUNTERED | * HRS. AFTER COMPLETION

PIT DIMENSIONS (FT)

4' (L) x 2' (W) x 3' (D) = _____ CU. FT.

BOULDERS

12 INCH TO 18 INCH DIAM: NO. _____ = VOL. _____ CU. FT.

OVER 18 INCH DIAM: NO. _____ = VOL. _____ CU. FT.

TEST PIT NO. _____

A R T H T E C H

A tyco INTERNATIONAL LTD. COMPANY

TEST PIT REPORT

TEST PIT NO. LF-7

PROJECT: PLF - Cover Soil Test Pits
CLIENT: RFETS
CONTRACTOR: Earth Tech
EQUIPMENT USED: John Deere 500c Backhoe

JOB NO: 57378.0202
LOCATION: Northern CU4
ELEVATION: 5979'
DATE START: 12/23/03
DATE FINISH: 12/23/03
LOGGED BY: Ryan Archibald

DEPTH (FT)	SAMPLE NO./ DEPTH RANGE	STRATA CHANGE (FT)	FIELD CLASSIFICATION	REMARKS
1'		MH	Red Sandy elastic soil with gravel (MH). Rocky Flats alluvial mixed with Cobbles up to 1.5' in diameter	
2'		MH	Same as above mixed with Cobbles > 1.5' in diameter	No geotech sample taken.
2'8"			Waste encounterd (Styrofoam, plastic sheeting, plastic straps. Minimal asplalt or concrete encountered).	

ASTM COMPONENT %

MOSTLY	50 - 100 %
SOME	30 - 45 %
LITTLE	15 - 25 %
FEW	5 - 10 %
TRACE	< 5 %

GROUND WATER

DATE	TIME *	DEPTH FT.
NOT ENCOUNTERED		* HRS. AFTER COMPLETION

PIT DIMENSIONS (FT)

4' (L) x 2' (W) x 2'8" (D) = _____ CU. FT.

BOULDERS

12 INCH TO 18 INCH DIAM: NO. _____ = VOL. _____ CU. FT.
OVER 18 INCH DIAM: NO. _____ = VOL. _____ CU. FT.

TEST PIT NO. _____

EARTH TECH

A tyco INTERNATIONAL LTD. COMPANY

TEST PIT REPORT

TEST PIT NO. LF-8

PROJECT: PLF - Cover Soil Test Pits
CLIENT: RFETS
CONTRACTOR: Earth Tech
EQUIPMENT USED: John Deere 500c Backhoe

JOB NO: 57378.0202
LOCATION: Top of East Slope
ELEVATION: 5966
DATE START: 12/23/03
DATE FINISH: 12/23/03
LOGGED BY: Ryan Archibald

DEPTH (FT)	SAMPLE NO./ DEPTH RANGE	STRATA CHANGE (FT)	FIELD CLASSIFICATION	REMARKS
6"		MH	Red sandy elastic soil with gravel (MH) Rocky Flats alluvial	
1'			Large asphalt chunks >1' in diameter mixed with MH and Claystone chunks	* Geotech sample taken of claystone material. 2-5-gallon buckets packaged by Stoller and shipped to ATT. Will be held pending RFETs decision to sample or not.
2'				
2'6"			Reworked Claystone material	
3'				
3'9"			waste encountered (plastic/paper - typical municipal)	
4'				

ASTM COMPONENT %

MOSTLY	50 - 100 %
SOME	30 - 45 %
LITTLE	15 - 25 %
FEW	5 - 10 %
TRACE	< 5 %

GROUND WATER

DATE	TIME *	DEPTH FT.
NOT ENCOUNTERED		* HRS. AFTER COMPLETION

PIT DIMENSIONS (FT)

6' (L) x 2' (W) x 3'9" (D) = _____ CU. FT.

BOULDERS

12 INCH TO 18 INCH DIAM: NO. _____ = VOL. _____ CU. FT.
OVER 18 INCH DIAM: NO. _____ = VOL. _____ CU. FT.

TEST PIT NO. _____

ARTH TECH

A tyco INTERNATIONAL LTD. COMPANY

TEST PIT REPORT

TEST PIT NO. LF-9

PROJECT: PLF - Cover Soil Test Pits

CLIENT: RFETS

CONTRACTOR: Earth Tech

EQUIPMENT USED: John Deere 500c Backhoe

JOB NO: 57378.0202

LOCATION: Top of east slope

ELEVATION: 5366'

DATE START: 12/23/03

DATE FINISH: 12/23/03

LOGGED BY: Ryan Archibald

DEPTH (FT)	SAMPLE NO./ DEPTH RANGE	STRATA CHANGE (FT)	FIELD CLASSIFICATION	REMARKS
6"		MH	Red Sandy elastic silt with gravel (MH) Top 6" organic horizon.	No geotech sample taken.
1'				
1'8"			Waste encountered (Intermittent asphalt chunks. Municipal waste typified by plastic bags, styrofoam, paper. Odorous waste material)	
2'				

ASTM COMPONENT %

MOSTLY	50 - 100 %
SOME	30 - 45 %
LITTLE	15 - 25 %
FEW	5 - 10 %
TRACE	< 5 %

GROUND WATER

DATE	TIME *	DEPTH FT.

NOT ENCOUNTERED

* HRS. AFTER COMPLETION

PIT DIMENSIONS (FT)

5 (L) x 2 (W) x 1'8" (D) = _____ CU. FT.

BOULDERS

12 INCH TO 18 INCH DIAM: NO. _____ = VOL. _____ CU. FT.

OVER 18 INCH DIAM: NO. _____ = VOL. _____ CU. FT.

TEST PIT NO. _____

A R T H T E C H

A tyco INTERNATIONAL LTD. COMPANY

TEST PIT REPORT

TEST PIT NO. LF-10

PROJECT: PIF-Cover Soil Test Pits
CLIENT: RFETS
CONTRACTOR: Earth Tech
EQUIPMENT USED: John Deere 500 C Backhoe

JOB NO: 57376.0202
LOCATION: Top of east slope
ELEVATION: 5768'
DATE START: 12/23/02
DATE FINISH: 12/23/03
LOGGED BY: Ryan Archibald

DEPTH (FT)	SAMPLE NO/ DEPTH RANGE	STRATA CHANGE (FT)	FIELD CLASSIFICATION	REMARKS
1'			Red Sandy elastic silt w/gravel (MH) Top 6" organic horizon	Backhoe had difficulties excavating.
2'			MH mixed with larger cobbles/gravel intermixed with Claystone Chunks. Asphalt/wood debris.	# Geotech sample taken of MH material. Good example of alluvial present on the east face. Two 5-gallon buckets packaged by Stoller and shipped to ATT.
3'				
3'5"			waste encountered (Municipal waste with interspaced concrete/asphalt chunks < 8" in diameter).	

ASTM COMPONENT %

MOSTLY	50 - 100 %
SOME	30 - 45 %
LITTLE	15 - 25 %
FEW	5 - 10 %
TRACE	< 5 %

GROUND WATER

DATE	TIME *	DEPTH FT.

NOT ENCOUNTERED ☐ * HRS. AFTER COMPLETION

PIT DIMENSIONS (FT)

5 (L) x 2 (W) x 3'5" (D) = _____ CU. FT.

BOULDERS

12 INCH TO 18 INCH DIAM: NO. _____ = VOL. _____ CU. FT.
OVER 18 INCH DIAM: NO. _____ = VOL. _____ CU. FT.

TEST PIT NO. _____

EARTH TECH

A tyco INTERNATIONAL LTD. COMPANY

TEST PIT REPORT

TEST PIT NO. LF-11

PROJECT: RLF- Cover Soil Test Pits
CLIENT: RFETS
CONTRACTOR: Earth Tech
EQUIPMENT USED: John Deere 500c Backhoe

JOB NO: 57378.0202
LOCATION: Top of east slope
ELEVATION: 5968'
DATE START: 12/23/03
DATE FINISH: 12/23/03
LOGGED BY: Ryan Archibald

DEPTH (FT)	SAMPLE NO./ DEPTH RANGE	STRATA CHANGE (FT)	FIELD CLASSIFICATION	REMARKS
1'		MH	Red sandy elastic silt with gravel (MH).	
2'			MH mixed with cobbles/gravel >4" in diameter.	No geotech sample taken.
			waste encountered (concrete chunks <8" in diameter and plastic trash bag debris)	

ASTM COMPONENT %

MOSTLY	50 - 100 %
SOME	30 - 45 %
LITTLE	15 - 25 %
FEW	5 - 10 %
TRACE	< 5 %

GROUND WATER

DATE	TIME *	DEPTH FT.
NOT ENCOUNTERED		* HRS. AFTER COMPLETION

PIT DIMENSIONS (FT)

5' (L) x 2' (W) x 2' (D) = _____ CU. FT.

BOULDERS

12 INCH TO 18 INCH DIAM: NO. _____ = VOL. _____ CU. FT.
OVER 18 INCH DIAM: NO. _____ = VOL. _____ CU. FT.

TEST PIT NO. _____

EARTH TECH

A tyco INTERNATIONAL LTD. COMPANY

TEST PIT REPORT

TEST PIT NO: LF-12

PROJECT: PLF-Cover Soil Test Pits
CLIENT: RFETs
CONTRACTOR: Earth Tech
EQUIPMENT USED: John Deere 500c Backhoe

JOB NO: 57376.0207
LOCATION: Toe of east face
ELEVATION: 5530'
DATE START: 12/23/03
DATE FINISH: 12/23/03
LOGGED BY: Ryan Archibald

DEPTH (FT)	SAMPLE NO/ DEPTH RANGE	STRATA CHANGE (FT)	FIELD CLASSIFICATION	REMARKS
1'			Possibly an elastic soil but dense in organics so difficult to classify. Cobbles >6". Is not a red soil like cover soils encountered on PLF.	Test pit not placed on east slope as proposed due to slope/backhoe issues. Placed at toe of east slope in an area that will recieve fill so no geotech sample taken.
2'			Claystone	
2'10"			No waste material encountered	No geotech sample taken.

ASTM COMPONENT %

MOSTLY	50 - 100 %
SOME	30 - 45 %
LITTLE	15 - 25 %
FEW	5 - 10 %
TRACE	< 5 %

GROUND WATER

DATE	TIME *	DEPTH FT.

NOT ENCOUNTERED ☐ * HRS. AFTER COMPLETION

PIT DIMENSIONS (FT)

3 (L) x 2 (W) x 2'10" (D) = _____ CU. FT.

BOULDERS

12 INCH TO 18 INCH DIAM: NO. _____ = VOL. _____ CU. FT.
OVER 18 INCH DIAM: NO. _____ = VOL. _____ CU. FT.

TEST PIT NO. _____

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI – 021

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: NA	Specifications:
Reference (other):	Attachments:

Request: Jason with RTG informed us that all Groundwater Monitoring Wells located on the Present Landfill Cap have been abandoned. The surface casing has not been removed. We plan on pushing over the surface casing and cutting off any parts that remain sticking above grade. All well parts are PVC and will be cut with a hand saw. Does this procedure meet with your approval?

Solution:

Requested By:	Steve Brinkman
Date Field Construction will be affected:	

Subcontractor Print/Type Name	Subcontractor Signature	Date
P.B. Kreutz	P.B. Kreutz	8/31/04

REPLY TO SUBCONTRACTOR

Reply:	Accepted	Clarification	Rejection	Change
	☒	☐		☐

This procedure is approved.

Print/Type Name	Signature	Date
Robert W. Davis	Robert W. Davis	September 29, 2004

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CORE/H. Pole Tetra Tech	

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: 22 | RFI - 022

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	Equipment Wash Pad (attached)	Specifications:	N/A
Reference (other):	Mobilization Work Package	Attachments:	Nielsons Skanska Dwg. (attached)

Request:
Requesting the ability to construct the Equipment Wash Pad per the attached drawing.

Solution:
Construct Equipment Wash Pad per attached drawing. (Interim approval given by R. Davis, K-H PM on 8/31/04)

Requested By:	Paul Kreitz
Date Field Construction will be affected:	N/A

Paul Kreitz	Paul Kreitz	8/31/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☒ | Clarification ☐ | Rejection | ☐ Change

This Equipment Cleaning Pad is approved and meets the intent of Specification Section 01900.

Robert W. Davis	Robert W. Davis	September 24, 2004
Print/Type Name	Signature	Date

Kaiser Hill Action:

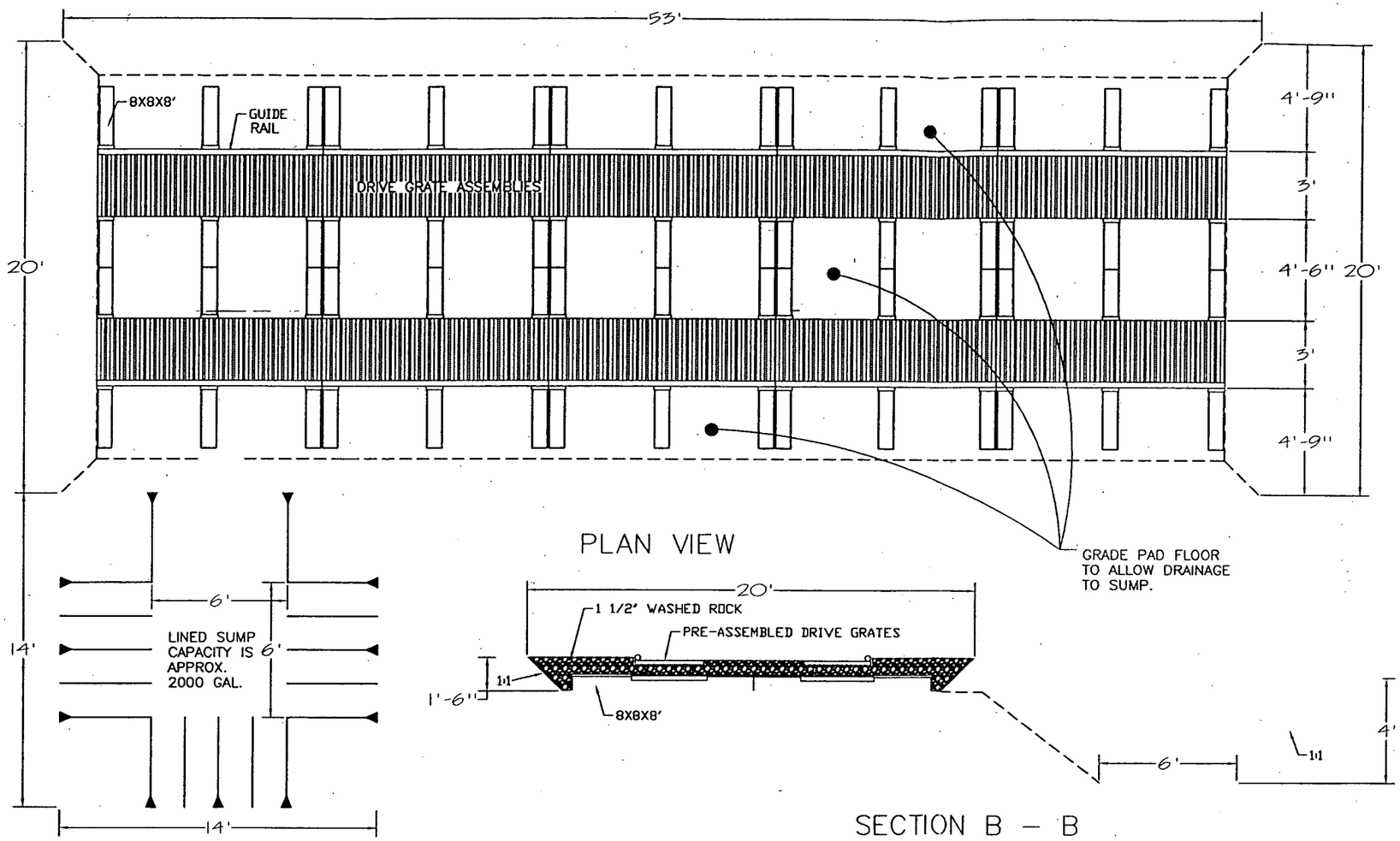
Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CQAE/T. H. Kale Tetra Tech	

ENTIRE PAD TO BE FILLED WITH 1 1/2" WASHED ROCK

GAS POWERED PRESSURE WASHER BY OTHERS

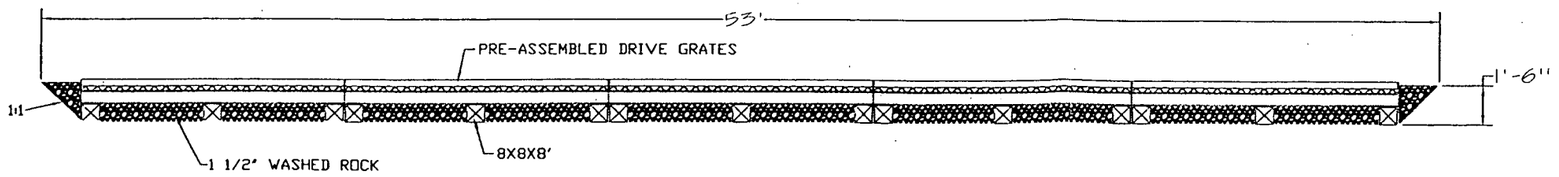
5000 GAL. WATER TANK BY OTHERS

60 mil LLDPE LINER TO BE INSTALLED THROUGHOUT PAD AND SUMP.



PLAN VIEW

SECTION B – B



SECTION A – A

Proposed Wash Pad

Nielsons

SKANSKA

August 30, 2004
Scale: 1/4" = 1'

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 023

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: N/A | Specifications: N/A

Reference (other): K-H to Construct Landfill Seep Capture System | Attachments: None

Request:
In order to construct the Landfill Seep Capture System (to keep the pond dry) we need the following information:

- Can the 2 gal/min flow be verified please. Observing it at the source it seems higher than that.
- Is there power to the air monitor located on the north side of the road leading over the dam? If it is active can we tie in to it (greatly reduces the cost)?
- Can we drain the storage tank (pumped water) by tapping into the line flowing in to the other pond (used to pump out the pond by RTG)? Does the water have to be sampled prior to draining to the line (it's the same water as was pumped out of the pond to start with)?
- Does our tank (for the pumped water) have to have any secondary containment?

Solution:
Please supply written or verbal answers to the questions above as they are required for the design effort.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	9/2/04

Paul Kreitz	Paul Kreitz	9/1/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☐	Clarification ☒	Rejection	☐ Change

See attached response.

Robert W. Davis	Robert W. Davis	September 24, 2004
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

OR CQAE J.H. Cole Tetra Tech

Response to RFI No. 23

1. Flow from the Present Landfill Seep averages around 2 to 3 gpm. It has been seen to flow as high 6 gpm just after periods of high precipitation.
2. Electrical power is available at the power pole located at the area air sampling and monitoring station. It is active and can be used for power to pump seep water into the seep storage tank.
3. Yes, the seep storage tank can be connected to the existing piping system that transfers water from the East Landfill Pond to the A-Series Ponds.
4. The seep storage tank does not need secondary containment; however, should a leak in the tank develop, the tank must be emptied immediately and the either the tank repaired or replaced.

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 024

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for Information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: 51781-014 Detail 3 | Specifications: N/A

Reference (other): | Attachments: N/A

Request: Can we use PVC for the Header Access Riser instead of the specified HDPE.

Solution: Pls advise ASAP.

Requested By:	Steve Brinkman
Date Field Construction will be affected:	9/15/04

Paul Kreitz	[signature]	9/3/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☐ | Rejection ☒ Rwo | ☐ Change

Vent System Header Access Riser Must HDPE as Specified In Specification Section 11111

Robert W. Davis	Robert W. Davis	10/09/2004
Print/Type Name	Signature	Date

OK CQAE J.H. Kale Tetra Tech

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI – 25

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: 51781-013 | Specifications: 02221, Sections 1.02 and 3.05

Reference (other): | Attachments:

Request: Please confirm that the foundation layer soil defined in specification section 02221 is the same layer as the 6-inch layer shown on drawing 51781-013. Stoller intends to use the soil approved by submittal 020 for this layer. Is this an appropriate interpretation?

Solution:

Requested By:	Paul Kreitz	
Date Field Construction will be affected:	September 24, 2004	
Paul Kreitz Subcontractor Print/Type Name	Paul Kreitz Subcontractor Signature	September 7, 20004 Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☐	Clarification ☒	Rejection	☐ Change

The "foundation layer" soil as specified in Spec. Section 02221 is the same as the 6-inch cushion layer soil in the drawings. This layer is to use soils as submitted and approved in Stoller Submittal #20.

Robert W. Davis	Robert W. Davis	September 24, 2004
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CRAE Jeff Kala Tetra Tech	

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 026

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: 51781-012 | Specifications: N/A

Reference (other): None | Attachments: See attached sketch

Request:

Request to change to dwg # 51781-012 to extend GDN to toe of perimeter channel (see attached sketch).

Solution:

Please approve change and revise dwg # 51781-012 to reflect attached sketch.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	9/30/04

Paul Kreitz	Paul Kreitz	9/8/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☒ | Clarification ☐ | Rejection ☐ | ☐ Change

Extending the GDN to the toe of the perimeter channel is accepted.

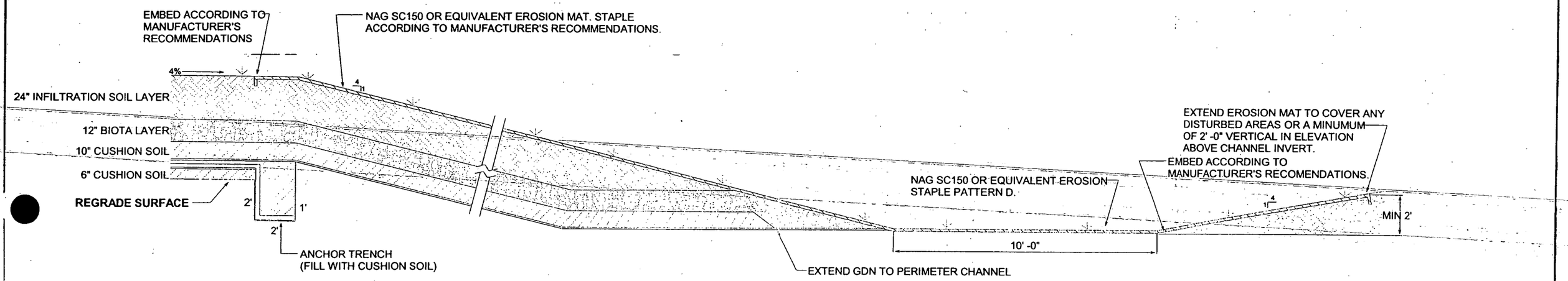
The design drawing #51781-012 has been revised.

Robert W. Davis	Robert W. Davis	September 24, 2004
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due: OK C&A J.H. Kahe Tetra Tech



Present Landfill
Accelerated Action

Proposed Change to The Slope of Ditch

Stoller

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 027

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	N/A	Specifications:	N/A
Reference (other):	Memo, 8/31/04 Davis to Kreitz re: Present Landfill Geosynthetics	Attachments:	Colorado Lining Response, K-H Memo

Request:
Please see attached responses to the questions posed in the 8/31/04 memo re: "Present Landfill Geosynthetics". Please respond to the answers in the following sections:

- 1) GDN, Question #5, Can the vendor cut the samples himself rather than the K-H QA or independent QA people?
- 2) LLDPE, Question #2, Is the testing method (air testing) in the response acceptable?
- 3) LLDPE, Question, #4, Same as GDN question above.
- 4) GCL, Question #2, See the vendor response.....Is this acceptable?

Solution:
Please review the answers to your questions and reference the 4 items above and let us know.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	

Paul Kreitz	Paul Kreitz	9/8/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☒ | Clarification ☐ | Rejection ☐ | Change ☐

1. Acceptable for manufacturer to cut samples
2. Testing method is acceptable
3. Acceptable for manufacturer to cut samples
4. Geotextile on GCL acceptable

1) Yes - vendor can (and has) cut samples
2) Yes
3) "
4) OK

CQAE J.H. Rahe - Tetra Tech

Robert W. Davis	Robert W. Davis	09/16/04
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI – 030

Subcontractor: S.M. Stoller Corporation | Page 1 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	Specifications: 02225 1.12.F
Reference (other): QA/QC Plan	Attachments: GRI Test Method GM9, GSE letter, CETCO memo

Request:
Stoller is requesting permission to seam LLDPE down to 5°F.

Solution:
Attached please find a September 15 letter from GSE to Colorado Lining Company and the Geosynthetic Research Institutes Test Method GM9 supporting seaming down to 5°F. Stoller is also submitting a September 9 Memo from CETCO stating that their installation guidelines do allow cold weather installations.

If cold weather seaming is done, Stoller recommends that the number of trial seams taken be increased from 2 tests per day to 3 tests per day.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	October 14, 2004

Paul Kreitz	Paul Kreitz	9/17/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☒	Clarification ☒	Rejection	☐ Change

Cold Weather Seaming has been approved by regulators in accordance to the attached GRI standard and additional requirements that must be conducted as buttetted items on attached cover sheet

Robert W. Davis	Robert W. Davis	December 18, 2004
Print/Type Name	Signature	Date

iser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CORE J.H. Bale Tetra Tech	

FML Cold Weather Seaming Notes

Present Landfill Accelerated Action Construction Project
Rocky Flats Environmental Technology Site
November 2004

Attached is the Standard of Practice for Cold Weather Seaming of Geosynthetics prepared by the Geosynthetic Research Institute (GRI). The construction of the Subtitle C RCRA cover at the Present Landfill is planning to implement this Standard of Practice to install the 60-mil LLDPE over the next several weeks until the FML installation is complete.

In addition to the Standard of Practice, the construction project will adhere to the following:

- The GRI Standard of Practice recommends one trial seam for each 13.5 degrees below freezing. The Present Landfill project will be conducting two trial seams instead of the recommended one.
- The FML will not be placed on frozen soil that has any snow, ice or visible signs of frost heaving lenses at or near the surface.

Except for the above bullets, the Present landfill Project will implement the Standard of Practice as presented by GRI.

We are requesting your review and approval of this Standard of Practice for the Present Landfill Accelerated Construction Project as soon as possible, and preferably by Friday, November 19, 2004.

Please contact Bob Davis (303-966-7026) if you have any questions.

1500 W. Shure Dr., Arlington Heights, Illinois 60004 USA
Phone: +1-847-392-5800 • Fax: +1-847-506-6150
www.cetco.com

MEMO

To: John Heap

From: Bill Urchik

Company: CETCO

No. Pages: 1 – including cover

Date: September 9, 2004

Re: Rocky Flats GCL Installation

Fax: 847-506-6150
Ph: 800-527-9948

Dear Joe,

Please accept this memo regarding the GCL and Geocomposite installation for the Rocky Flats project. It is acceptable to install both GCL and Geocomposite in cold conditions at this project provided the installation is performed in accordance with the CETCO installation guidelines and the project specifications for Rocky Flats. Section 4.3 of the CETCO GCL installation guidelines provides further information regarding frozen subgrade.

Should you require further information, please do not hesitate to contact me at 1-800-527-9948 x 7939.

Best Regards,

WmUrchik

William Urchik
Project Engineer
CETCO
Ph: 800.527.9948x7939
Fx: 847.394.7839
bill.urchik@cetco.com

3.7 Rolls should be stored at the job site away from high-traffic areas but sufficiently close to the active work area to minimize handling. The designated storage area should be flat, dry and stable. Moisture protection of the GCL is provided by its packaging; however, an additional tarpaulin or plastic sheet is recommended.

3.8 Rolls should be stacked in a manner that prevents them from sliding or rolling. This can be accomplished by frequent chocking of the bottom layer of rolls. Rolls should be stacked no higher than the height at which they can be safely handled by laborers (typically no higher than four layers or rolls). Rolls should never be stacked on end.

4 SUBGRADE PREPARATION

4.1 Subgrade surfaces consisting of granular soils or gravel may not be acceptable due to their large void fracture and puncture potential. In high head (greater than one foot) applications subgrade soils should possess a particle size distribution such that at least 80 percent of the soil is finer than a #60 sieve (0.250 mm) unless a membrane laminated GCL Bentomat CL, Bentomat CLT, or Claymax CL is used.

4.2 When the GCL is placed over an earthen subgrade, the subgrade surface must be in accordance with the project specifications. Engineer's approval of the subgrade must be obtained prior to installation. The finished surface should be firm and unyielding, without abrupt elevation changes, voids, cracks, ice, or standing water.

4.3 The subgrade surface must be smooth and free of vegetation, sharp-edged rocks, stones, sticks, construction debris, and other foreign matter that could contact the GCL. The subgrade should be rolled with a smooth-drum compactor to remove any wheel ruts, footprints, or other abrupt grade changes. Furthermore, all protrusions extending more than 0.5 inch (12 mm) from the subgrade surface shall be removed, crushed, or pushed into the surface with a smooth-drum compactor. The GCL may be installed on a frozen subgrade, but the subgrade soil in the unfrozen state should meet the above requirements.

5 INSTALLATION

5.1 GCL rolls should be taken to the work area of the site in their original packaging. The orientation of the GCL (i.e., which side faces up) may be important if the GCL has two different types of geosynthetics. Unless otherwise specified the GCL is deployed with the outward side down. The arrow sticker on the plastic sleeve indicates the direction the roll will unwind when placed on the ground, (see figure 5). Prior to deployment, the packaging should be carefully removed without damaging the GCL.

GSE®
GSE Lining Technology, Inc.

19103 Gundle Road
Houston, Texas 77073
800-435-2008
713-443-8564
Fax: 281 - 230 - 8663

September 15, 2004

Mr. John Heap
Colorado Lining Company
1062 Singing Hills Road
Parker, CO 80138

RE: RFETS Landfill
Cold Weather Seaming Methods

Mr. Heap:

GSE recognizes the Geosynthetic Research Institute's (GRI) methods and specifications as the current industry standard for HDPE geomembranes (smooth & textured). In regards to Cold Weather Seaming Methods, GSE recognizes and utilizes GRI Test Method GM9. GM9 provides guidelines for the field seaming of geomembranes in cold weather temperatures ranging from 0° C to – 15° C (32° F to 5° F).

If you should have any further questions, please do not hesitate to call me at 800 – 435 – 2008, ext. 8655 or Jimmy Youngblood at ext. 2523.

Sincerely,

Terry Baker
GSE Technical Support

Geomembranes

adopted - 1995

GRI Test Method GM9

Standard Practice for

"Cold Weather Seaming of Geomembranes"

1. Scope

1.1 This standard provides guidelines for the field seaming of geomembranes in cold weather. The applicable temperature range of the geomembrane sheet is from 0deg. to -15deg.C (32deg. to 5deg.F). This practice, however, is not to be considered as all-encompassing since each material and site specific condition presents its own challenges and special conditions.

1.2 This practice is focused on thermal fusion and extrusion fillet seaming methods for the seaming of thermoplastic geomembranes.

1.3 This practice is intended to be a guide for those monitoring geomembrane installations as well as an aid to installers for the seaming of geomembranes in cold climates and conditions.

1.4 This standard may involve hazardous operations, equipment and climates. This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. Reference Documents

2.1 ASTM Standards:

2.2 EPA Documents:
EPA/530/SW-91/051, "Inspection Techniques for Fabrication of Geomembrane Field Seams"

EPA/600/R-93/182, "Quality Assurance and Quality Control for Waste Containment Facilities"

3. Terminology

3.1 Definitions of Generic Terms

3.1.1 *geomembrane* - An essentially impermeable geosynthetic composed of one or more

synthetic sheets. (ASTM definition)

3.1.2 *destructive tests* - Tests performed on geomembrane samples cut from a field installation or test strip to verify specification performance requirements, e.g., shear and peel tests of geomembrane seams during which the specimens are tested to failure.

3.1.3 *seam shear test* - A destructive test in which two seamed sheets on opposite sides of the seam are pulled in tension placing the seam in a shear mode of stress.

3.1.4 *seam peel test* - A destructive test in which two seamed sheets on the same side of the seam are pulled in tension placing the seam in a tensile mode of stress.

3.1.5 *Construction Quality Control (CQC)* - A planned system of inspections that is used to directly monitor and control the quality of a construction project. Construction quality control is normally performed by the geosynthetics installer and is necessary to achieve quality in the constructed or installed system. Construction quality control (CQC) refers to measures taken by the installer or contractor to determine compliance with the requirements for materials and workmanship as stated in the plans and specifications for the project.

3.1.6 *Construction Quality Assurance (CQA)* - A planned system of activities that provides the owner and permitting agency assurance that the facility was constructed as specified in the design. Construction quality assurance includes inspections, verifications, audits, and evaluations of materials and workmanship necessary to determine and document the quality of the constructed facility. Construction quality assurance (CQA) refers to measures taken by the CQA organization to determine if the installer or contractor is in compliance with the plans and specifications of the project.

3.2 Description of Terms Specific to This Standard

3.2.1 *field seams* - The seaming of geomembrane rolls or panels together in the field making a continuous liner system. Synonymous with *production seams.*

3.2.2 *trial seams* - Trial sections of seamed geomembranes used to establish machine settings of temperature, pressure and travel rate for a specific geomembrane under a specific set of atmospheric conditions for machine-assisted seaming as well as establishing procedures to be correctly used by the installation personnel.

3.2.3 *test strips* - Synonymous with "trial seams".

3.2.4 *test welds* - Synonymous with "trial seams".

3.2.5 *thermal fusion seams* - A seam which involves the temporary, thermally-induced reorganization in the polymer structure at the surface of two opposing geomembrane sheets which, after the application of pressure and the passage of a certain amount of time, results in the two geomembranes being permanently joined together.

3.2.6 *mouse* - Synonymous term for hot wedge, or hot shoe, seaming device.

3.2.7 *extrusion fillet seams* - A seam between two geomembrane sheets achieved by heat-extruding a ribbon of molten polymer over the overlap areas followed by the application of a

nominal amount of pressure which results in the two geomembrane sheets being permanently joined together.

3.2.8 *gun* - Synonymous term for hand held extrusion fillet seaming device.

4. Significance and Use

4.1 Most federal and state environmental regulations call for special procedures for field seaming of geomembranes when sheet temperatures are less than 0deg.C (32deg.F). This standard practice is meant to give procedural guidance for seaming of geomembranes at sheet temperatures down to -15deg.C (5deg.F). Geomembrane seaming at temperatures below -15deg.C (5deg.F) is not generally recommended from both material and personnel perspectives.

4.2 The standard is focused on the two main types of thermal seaming methods, thermal fusion and extrusion fillet methods, where trial seam tests and production seam tests can be conducted within minutes after the seam is fabricated.

5. Procedure

5.1 Preparation of the geomembrane surfaces to be seamed:

5.1.1 Seaming is not to take place when it is snowing, sleeting or hailing on the geomembrane in the area to be seamed.

5.1.2 In the area to be seamed, all frost must be removed from the opposing surfaces of the geomembrane sheets in the regions where the actual seaming is to be performed.

5.1.3 The residual moisture left after removing frost must be wiped dry.

Note 1: Perhaps the most difficult surfaces to prepare in this regard are textured geomembranes where the texturing extends to the roll edges or roll ends.

5.1.4 The application of heat to remove moisture using a hand held hot air device can be used providing care against excessive heat application is taken. An assessment using trial seams is recommended.

5.1.5 The specific area to be seamed must be free of soil particles and other foreign matter.

5.1.6 For thermal fusion welding, such as the hot wedge method, the under side of the lower sheet should be free of frost so that the lower drive wheels of the device can move evenly and do not slip.

Note 2: It may be necessary to use a rub sheet beneath the area being seamed to separate the geomembrane from frozen soil subgrade.

5.1.7 For fillet extrusion welding the thermal tacking of the sheets together should proceed as with similar welding at temperatures above freezing.

5.1.8 Preheating of the geomembrane area to be seamed is common but the amount of preheat and its timing preceding the actual production seaming is at the option of the installer based upon past

practice and experience. An assessment using trial seams is recommended.

5.2 Thermal fusion seaming (e.g., using a hot wedge welding device):

5.2.1 In general, the rate of seaming, i.e., the speed of the hot wedge device, is usually slower than when seaming at temperatures above 0deg.C (32deg.F). Furthermore, the rate should decrease with decreasing sheet temperature.

5.2.2 Cold temperature seaming requires more frequent trial seams than when welding at temperatures above freezing. For example, if the CQA plan calls for two trial seams a day at temperatures above freezing, the number should be increased by one per day for each 7.5deg.C (13.5deg.F) less than freezing. Trial seams should be made at the discretion of the CQA Engineer.

5.2.3 Cold temperature seaming may also require more destructive tests on production seams than when welding above freezing. For example, in addition to the CQA plan written around above freezing temperatures, additional destructive seam samples may be taken at the end(s) of each continuous production seams.

Note 3: The actual schedule for destructive test samples is at the discretion of the CQA Engineer.

5.2.4 Movable enclosures (i.e., tents) traveling along with the welding device and personnel are particularly effective at sites with high wind. Cold temperature, per se, will not demand the use of protective tents. The decision to use tents is that of the installer and CQC personnel.

5.3 Extrusion fillet seaming:

5.3.1 The necessary grinding of the geomembrane surfaces in preparation of placing extrudate should be no further ahead of the extrusion gun than 10 m (30 ft.), or as stated in the CQA plan.

5.3.2 At the discretion of the parties involved, the profile of the base of the extrusion gun barrel is often shaped more rectangularly than when seaming at temperatures above freezing. The reason for this is to minimize the cooling rate in the thinner extrudate regions, see Figure 1.

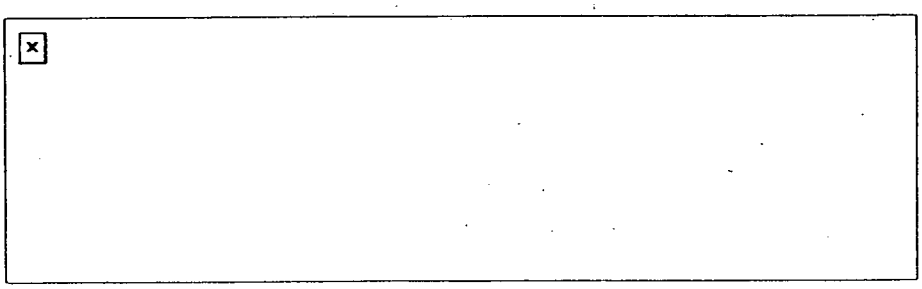


Figure 1 - Extrusion Fillet Patterns

5.3.3 In general, the rate of seaming, i.e., the speed of travel, is slower than when seaming at temperatures above 0deg. (32deg.F). Furthermore, the rate should decrease with decreasing sheet temperatures.

5.3.4 Cold temperature seaming requires more frequent trial seams than when welding at

temperatures above freezing. For example, if the CQA plan calls for two trial seams a day at temperatures above freezing, the number should be increased by one per day for each 7.5deg.C (13.5deg.F) less than freezing. Trial seams should be made at the discretion of the CQA Engineer.

5.3.5 Cold temperature seaming may also require more destructive tests on production seams than when welding above freezing. For example, in addition to the CQA plan written around above freezing temperatures, additional destructive seam samples may be taken at the end(s) of each continuous production seam.

Note 4: The actual schedule for destructive test samples is at the discretion of the CQA Engineer.

5.3.6 Movable enclosures (i.e., tents) traveling along with the welding device and personnel are particularly effective at sites with high wind. Cold temperature, per se, will not demand the use of protective tents. The decision to use tents is that of the installer and CQC personnel.

5.4 Seam Testing

5.4.1 In general, destructive testing of seams (both shear and peel) made in cold temperatures should follow the same protocol and test methods as for temperatures above freezing.

5.4.2 Destructive seam samples for CQA purposes should be taken as described previously and sent to the laboratory for testing at the designated test method conditions for above freezing temperatures.

5.4.3 Seam tests from trial seams can be taken to a field trailer, allowed to equilibrate to the designated test temperature and tested accordingly. However, seam tests from trial seams which are tested with a tensiometer on-site at temperatures less than freezing cannot be compared to geomembrane sheet strengths at room temperature. Numerous invalid results will occur if this procedure is practiced. Instead, the field tensiometer must be used to determine the strength of the unseamed geomembrane sheets at the same temperature as the seam test. The apparent strength will be higher as the temperature of the test specimen decreases. Acceptance of the trial seam is then based on the percentages of sheet strength as prescribed in the CQA plan, e.g., 95% in shear and 62% in peel for HDPE geomembranes.

Note 5: This type of testing whereby the seam test specimen results are compared to a single value of sheet strength is contentious since the value of sheet strength is not statistically reliable. Caution in this regard is necessary.

6. CQA Report

6.1 The report should include hourly temperatures during cold weather seaming which includes the actual temperature of the surface of the geomembrane (using a pyrometer) and the ambient air temperature measured approximately 1 m (3 ft.) above the geomembrane.

6.2 The method of removing frost from the area to be seamed (if any is present), as well as drying and cleaning of the surfaces involved, should be described.

6.3 The condition of the subgrade beneath the area being seamed should be assessed. If a rub sheet is used during the seam process it should be noted.

6.4 Complete identification of the field seaming system used, including material, methods, preheat, seaming rate, use of tents or enclosures and other details of the procedure should be documented.

6.5 The type, nature, number, condition and details of trial seams, as well as the results of such tests, should be detailed.

6.6 The type, nature, number and details of destructive samples and disposition of sections of the sample should be described. Proper identification is required to identify results of CQA laboratory testing in the final as-built plans of the project.

6.7 Any unusual condition with respect to personnel, equipment, sampling and/or testing that may be attributable to the cold weather should be described and documented.

Davis, Robert W.
From: LARRY Bruskin [larry.bruskin@state.co.us]
Sent: Friday, November 19, 2004 2:59 PM
To: Davis, Robert W.
Cc: nng-a-qui@burnsmcd.com; Spreng, Carl
Subject: Re: Cold Weather Seaming Standard of Practice

Bob -

I have read the information concerning cold weather seaming of the FML. Based on the information provided, CDPHE agrees that the revision is acceptable.

Larry Bruskin
CDPHE/HMWMD/FF

****
*** TX REPORT ***
****

TRANSMISSION OK

TX/RX NO	1564
CONNECTION TEL	303 721 0563
SUBADDRESS	
CONNECTION ID	BURNS McDONNELL
ST. TIME	11/16 13:30
USAGE T	03'47
PGS. SENT	12
RESULT	OK

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 031

Subcontractor: S.M. Stoller Corporation | Page 1 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: N/A	Specifications: Section 2.2.2.1
Reference (other): None	Attachments: None

Request:

One area of the landfill cap (eastern section) contains re-bar which protrudes from the ground. This precludes proof-rolling using rubber tired equipment due to tire punctures and safety concerns. Please provide an acceptable alternate method to complete the proof-rolling task in this area.

Solution:

Suggestions: Cut the re-bar off flush with the ground and use a Sheep's Foot (steel wheels) or put in a 6" lift of soil and then roll with a craper.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	9/20/04

Paul Kreitz	Paul Kreitz	9/20/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | Change ☐

The Sheep's Foot roller may not have sufficient ground pressure to adequately find "soft-spots." The preferred method would be to cover with a layer of soil (6"-to 9") and then conduct proof-rolling with a loaded scraper as specified. However, Stotler may try the "sheeps foot" roller with the understanding that it may not be acceptable based on QA/Engineering Observations

Robert W. Davis	Robert W. Davis	October 25, 2005
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:		

OK CQA J.H. Fala Tetra Tech

Request for Information (RFI)

ject Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 033

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None | Specifications: 3.06B, Vertical Re-grade Tolerances

Reference (other): QA/QC Plan, 4.6.3 | Attachments: None

Request:

The vertical re-grade tolerance for the 6" foundation layer, the 10" cushion layer, and the 24" infiltration layer(s) is plus/minus .1 foot. This will be extremely difficult to maintain, in particular with the 24" infiltration layer due to its constituents and its compaction (rapid and limited).

Solution:

Suggest revising the specification to minus 0 (zero) and plus .2 (two tenths). This meets the intent to ensure the minimum thickness and allows enough latitude on the plus side to facilitate installation. This has been discussed and concurred with by the K-H QASM.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	10/15/04

Paul Kreitz		10/6/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☒ | Clarification ☐ | Rejection ☐ | Change ☐

The final earthwork specification has been revised to indicate that the survey requirements shall be with 0.0ft to +0.2 ft. See Specification Section 02221; Subsection 3.08(B)(2).

Robert W. Davis	Robert W. Davis	November 13, 2004
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK C QAE J.H. Rale TetraTech 11/16	

Request for Information (RFI)

Project Name:	Construction of the Present Landfill Accelerated Action	Subcontractor No.:	KH020577
Contractor:	Kaiser-Hill Company, LLC	RFI No.:	RFI - 034
Subcontractor:	S.M. Stoller Corporation	Page 1:	1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	None	Specifications:	02224
Reference (other):	None	Attachments:	None

Request:

Requesting approval of a sealing method for the cable tie holes required to attach at the overlap joints.....Due to the 6" shingle requirement we would like to cover the holes with a strip of the 8 oz non-woven and seal the seam with heat seaming instruments. This is a common and accepted industry practice per the liner installing subcontractor (Colorado Lining).

Solution:

Please provide approval for the above method as it is to be included in the liner installation work package.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	10/15/04

Paul Kreitz	[signature]	10/6/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☒	Clarification ☐	Rejection	☐ Change

Specification Section 02224 requires the the GDN be installed per the Manufacturer's Recommendations & Instructions, therefore this approach is acceptable

Robert W. Davis	[signature]	November 13, 2004
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CQAE J.H. Rabe Tetra Tech 11/16	

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 035

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None	Specifications: None
Reference (other): None	Attachments: None

Request:

Water from the Present Landfill perimeter ditch finds its way into the pond directly to the east (sediment removal objective). Please provide the ground rules for the disposition of this water during sediment removal (i.e. in case we have rain or snow melt that might impact us during sediment removal). Is it listed waste? Can we dam the ditches? Can we divert (where?)

Solution:

Please provide guidance related to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	10/31/04

Paul Kreitz	Paul Kreitz	10/6/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☐	Clarification ☒	Rejection	☐ Change

The PLF design clearly shows that the flow from the perimeter ditches is directed around the East Landfill Pond. As the new perimeter ditches are established, the flow can be diverted around the East Landfill Pond subject to erosion control as specified and proposed in Stoller's surface water management plan. Provide proposal for method planned to divert this water and submitto K-H

Robert W. Davis	Robert W. Davis	November 13, 2004
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK - need to review proposed div. method CR AE, Jeff. Rale TetraTech 11/16	

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI – 036

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: 51781-012	Specifications: None
Reference (other): Attached Drawing	Attachments: None

Request:

Stoller is proposing the attached method for establishing the offset to the outside of the anchor trench.

Solution:

See the attached drawing.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	10/8/04

Paul Kreitz		10/12/04 ~~10/6/04~~
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted	Clarification ☐	Rejection	☐ Change
☒			

Agree with attached sketch

OK CQAE, J.H. Rale
TetraTech 10/20/04

Robert W. Davis	Robert W. Davis	10/18/2004
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:		

EARTH TECH

A Tyco Infrastructure Services Company

CALCULATION SHEET PAGE 1 OF 1

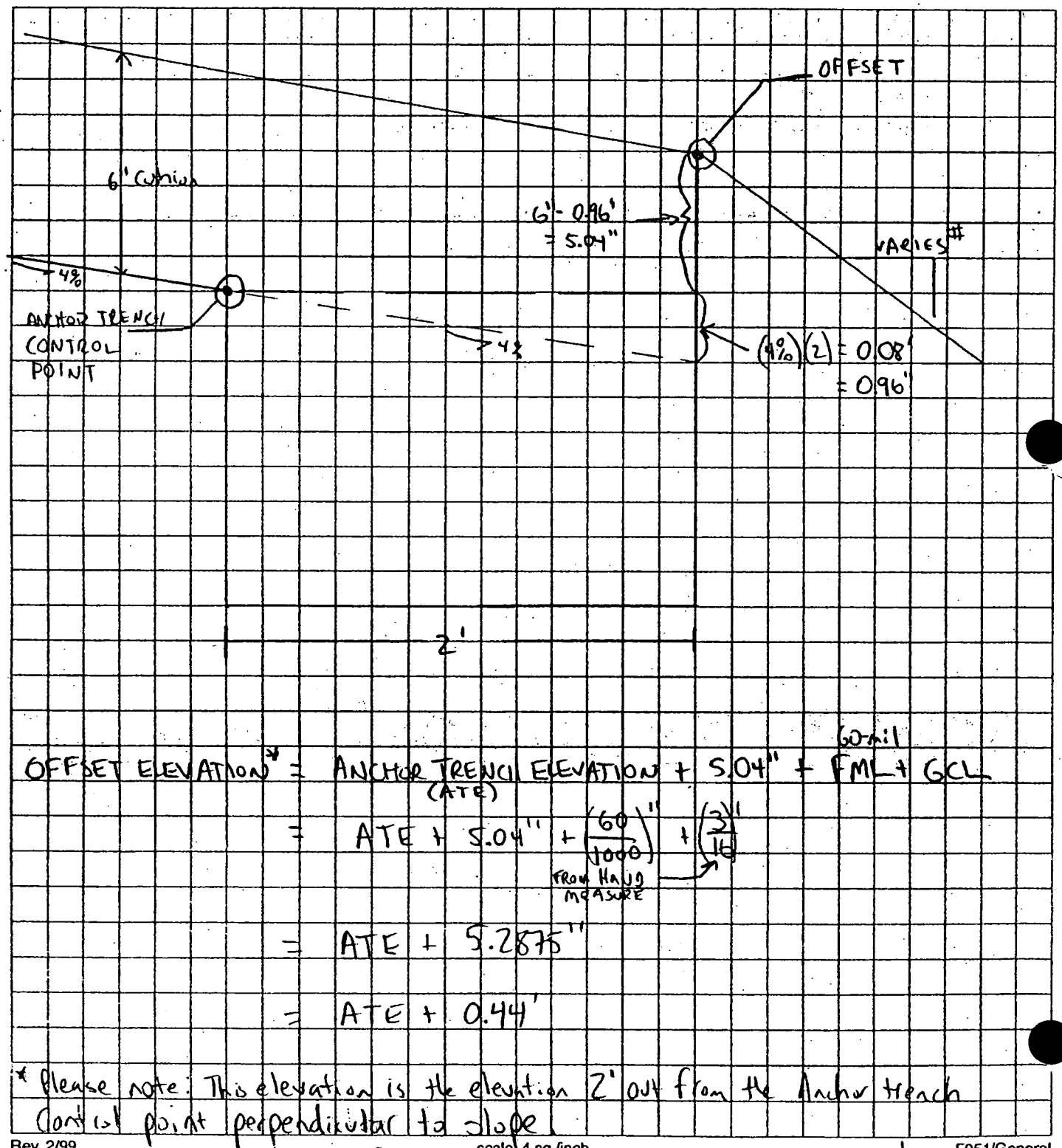
PROJECT NO. 57378

CLIENT K-H SUBJECT Offset Elevations of Anchor trench

PROJECT Prepared By REA DATE 10/11/06

Reviewed By DATE

Approved By DATE



OFFSET ELEVATION* = ANCHOR TRENCH ELEVATION (ATE) + 5.04" + 60-mil FML + GCL

$$= ATE + 5.04'' + \left(\frac{60}{1000}\right)'' + \left(\frac{3}{16}\right)''$$

(60/1000)" FROM HAND MEASURE

$$= ATE + 5.2875''$$

$$= ATE + 0.44'$$

* Please note: This elevation is the elevation 2' out from the Anchor trench control point perpendicular to slope.

Varying slope will result in different pinch-out lengths which will affect 10' bottom channel. If necessary, channel will be widened after slope is built.

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI – 037

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None | Specifications: 2224, 3.03 B1

Reference (other): None | Attachments: None

Request:

- The specification (referenced above) requires a 6" overlap on GDN butt seams (not horizontal seams). Common industry practice is to overlap the GDN butt seams by 24" to avoid any separation during covering operations (10" cushion soil). Request to use 24" overlap rather than 6" overlap for the GDN butt seams.

Solution:

- Use 24" overlap for GDN butt seams

Requested By:	Paul Kreitz
Date Field Construction will be affected:	11/08/04

Paul Kreitz Subcontractor Print/Type Name	Subcontractor Signature	10/25/04 Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☒	Clarification ☐	Rejection	☐ Change

A 24-inch overlap is acceptable.

Robert W. Davis Print/Type Name	Robert W. Davis Signature	October 27, 2004 Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CQAE J.H. Rale Tetra Tech	

Request for Information (RFI)

roject Name:	Construction of the Present Landfill Accelerated Action	Subcontractor No.:	KH020577
Contractor:	Kaiser-Hill Company, LLC	RFI No.:	RFI – 038
Subcontractor:	S.M. Stoller Corporation	Page 1	1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	51781-0014, Gas Mgmt Details	Specifications:	None
Reference (other):	None	Attachments:	None

Request:

Related to the liner "boots" around the gas vent stand-pipes:

- Please provide specifications for the materials with which to construct the slip boots
- Please provide a specification related to the amount of bentonite to place between the slip boot and the riser stand-pipe
- Please provide guidance as to placing dry or hydrated bentonite between the slip boot and the riser stand-pipe. (We assume it will be placed dry)

Solution:

- Provide quidance to the three items above.

uested By:	Paul Kreitz
Date Field Construction will be affected:	11/8/04

Paul Kreitz		10/25/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☐	Clarification ☒	Rejection	☐ Change

An 8-inch SDR 17 HDPE pipe section should be cut to length to fit around the vent riser. It should be long enough to extend from 2 feet above grade to the FML. An 8-inch boot (Landtec WBS-100-8 well bore seal, or similar - see attached) can be fusion welded to the FML and the 8-inch HDPE pipe section. Alternatively, the FML can be fused to the pipe section directly

Contractor shall place no less than 19 pounds of hyrdated benonite (Baroid Hole Plug 3/8, or similar) per linear foot of pipe section (approximately 1/2 bag per foot). The bentonite shall be placed to 4 inches of the top of the 8 inch HDPE pipe section.

Robert W. Davis	Robert W. Davis	11/02/2004
Print/Type Name	Signature	Date

Kaiser-Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

vise Sketch: Y ☐ N ☐ Revisions Due:

OK CQA J.H. Rale
Tetra Tech 11/04

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI – 039

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None | Specifications: QA/QC Plan Page 2-7

Reference (other): RFI 019 | Attachments: None

Request:

Stoller requesting to use alternate forms to document liner installation and liner testing.

Field Density Log
Extrusion Seam Destructive Test
Panel Deployment Log
Fusion Seam Destructive Test
Panel Deployment Log – 60 mil LLDPE
Panel Deployment Log – GCL
Panel Deployment Log - GDN
Geomembrane Repair Log
Vacuum Testing
Seam Vacuum Testing
Extrusion Seaming Log
Fusion Seaming Log
Pressure Test Log
Fusion Trial Seam Test
Extrusion Trial Seam Test

Solution:

Alternate forms are attached. These forms capture all of the information included in the Trial Weld Information Log, Panel Placement Form, Field Density Test Report, FML Non-Destructive Testing Log, Repair Report, and FML Destructive Testing Log provided in the answer to RFI 019.

Requested By:	Paul Kreitz	
Date Field Construction will be affected:	10-27-04	
Paul Kreitz Subcontractor Print/Type Name	Jim Erickson for Paul Kreitz Subcontractor Signature	10-25-04 Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☐	Clarification ☒	Rejection	☐ Change

These forms may be used by Stoller/Golder; however, other information requested on the forms in the PLF QA/QC plan must also be provide as required in RFI #19

Robert W. Davis — Print/Type Name | Robert W. Davis — Signature | 10/27/2004 — Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due: OK CRAE J.H. Rule Tetra Tech 11/3/04

FIELD DENSITY TEST LOG

							Moisture Contents			Proctor Results		-1 to 2	> 95%	
Date	Soil ID	Test #	Northing	Easting	Elevation	WD	Nuke MC	Oven MC	DD	Optimum MC	Optimum DD	% off MC	% Comp.	Pass/Fail

EXTRUSION SEAM DESTRUCTIVE TEST

PROJECT NUMBER: 043-2246 **PROJECT TITLE:** Rocky Flats, Present Landfill
LINER INSTALLER: Colorado Lining **CONTRACTOR:** S.M. Stoller
LOCATION: Rocky Flats **SITE MANAGER:** Kaiser Hill Company LLC

Specimen #	SHEAR (ppi)						PEEL (ppi)					Teste d by	Date Tested	Defect Code	Comments
	S1	S2	S3	S4	S5		P1	P2	P3	P4	P5				

PANEL DEPLOYMENT LOG

PROJECT TITLE: Rocky Flats
LINER INSTALLER: Colorado Lining
LOCATION: Rocky Flats, Present Landfill
WORK ELEMENT:
PROJECT NO: 043-2256
CONTRACTOR: S.M. Stoller
MATERIAL TYPE: GCL FML GDN

GEOMEMBRANE: SECONDARY PRIMARY TERTIARY

DATE:

TRANSPORTATION EQUIPMENT

SHEET NUMBER

DESCRIPTION	PANEL NUMBER	PANEL NUMBER	PANEL NUMBER
ROLL NUMBER			
DEPLOYED LENGTH AND WIDTH (FT.)			
TIME			
AMB. AIR TEMP (F)*			
VISUAL OBSERVATION			
OBSERVED OVERLAP (IN)			
MONITOR			
REMARKS			
AREA (SF)			
THICKNESS (MILS)	LEAD L SIDE R SIDE	LEAD L SIDE R SIDE	LEAD L SIDE R SIDE
AVERAGE			

DESCRIPTION	PANEL NUMBER	PANEL NUMBER	PANEL NUMBER
ROLL NUMBER			
DEPLOYED LENGTH AND WIDTH (FT)			
TIME			
AMB. AIR TEMP. (F)*			
VISUAL OBSERVATION			
OBSERVED OVERLAP (IN)			
MONITOR			
REMARKS			
AREA (SF)			
THICKNESS (MILS)	LEAD L SIDE R SIDE	LEAD L SIDE R SIDE	LEAD L SIDE R SIDE
AVERAGE			

* AIR TEMPERATURE AS RECORDED ONCE EACH HOUR

CQA Monitor: Date:

Reviewed by: Date:

Approved by: Date:

FUSION SEAM DESTRUCTIVE TEST

PROJECT NUMBER: 043-2246
LINER INSTALLER: Colorado Lining
LOCATION: Rocky Flats

PROJECT TITLE: Rocky Flats, Present Landfill
CONTRACTOR: S.M. Stoller
SITE MANAGER: Kaiser Hill Company LLC

	SHEAR (ppi)					PEEL-Top (ppi)					PEEL-Bottom (ppi)					Tested	Date	Defect	
Specimen #	S1	S2	S3	S4	S5	P1T	P2T	P3T	P4T	P5T	P1B	P2B	P3B	P4B	P5B	by	Tested	Code	Comments

PANEL DEPLOYMENT LOG

PROJECT NUMBER: 043-2246 **MATERIAL TYPE:** 60 mil LLDPE **PROJECT TITLE:** Rocky Flats, Present Landfill
LINER INSTALLER: Colorado Lining **CONTRACTOR:** S.M. Stoller
LOCATION: Rocky Flats **SITE MANAGER:** Kaiser Hill Company LLC

PANEL NUMBER	ROLL NUMBER	DEPLOYMENT DATE	CQA MON.	OBSERVED OVERLAP	VISUAL PANEL CONDITION	PANEL DIMENSIONS (FT)		PANEL AREA	TOTAL AREA PLACED	PANEL THICKNESS						NOTES
						LENGTH	WIDTH			T1	T2	T3	T4	T5	AVERAGE	
								0	0						0	
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PANEL DEPLOYMENT LOG

PROJECT NUMBER: 043-2246 **MATERIAL TYPE:** GCL **PROJECT TITLE:** Rocky Flats, Present Landfill
LINER INSTALLER: Colorado Lining **CONTRACTOR:** S. M. Stoller
LOCATION: Rocky Flats **SITE MANAGER:** Kaiser Hill Company LLC

PANEL NUMBER	ROLL NUMBER	DEPLOYMENT DATE	CQA MON.	OBSERVED OVERLAP	VISUAL PANEL CONDITION	PANEL DIMENSIONS (FT)		PANEL AREA	TOTAL AREA PLACED	NOTES
						LENGTH	WIDTH			
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PANEL DEPLOYMENT LOG

PROJECT NUMBER: 043-2246 MATERIAL TYPE: GDN PROJECT TITLE: Rocky Flats, Present Landfill
LINER INSTALLER: Colorado Lining CONTRACTOR: S. M. Stoller
LOCATION: Rocky Flats SITE MANAGER: Kaiser Hill Company LLC

PANEL NUMBER	ROLL NUMBER	DEPLOYMENT DATE	CQA MON.	OBSERVED OVERLAP	VISUAL PANEL CONDITION	PANEL DIMENSIONS (FT)		PANEL AREA	TOTAL AREA PLACED	NOTES
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GEOMEMBRANE REPAIR LOG

PROJECT NUMBER:	043-2246	PROJECT TITLE:	Rocky Flats, Present Landfill
LINER INSTALLER:	Colorado Lining	CONTRACTOR:	S.M. Stoller
LOCATION:	Rocky Flats	SITE MANAGER:	Kaiser Hill Company LLC

REPAIR TYPE: P - PATCH, C - CAP, RS - RECONSTRUCTED SEAM, G&W - GRIND WELD

DEFECT CODE	REPAIR DATE	MACHINE NUMBER	APPROX. TIME	REPAIR TYPE	APPROX. DIMENSIONS	WELD TECH	MONITOR	REMARKS

VACUUM TESTING

PROJECT NUMBER: 043-2246
PROJECT TITLE: Rocky Flats, Present Landfill
LINER INSTALLER: Colorado Lining
CONTRACTOR: S.M. Stoller
LOCATION: Rocky Flats
SITE MANAGER: Kaiser Hill Company LLC

DEFECT CODE	TEST DATE	TECH ID	DEFECTS	OBS. TEST	MONITOR	REMARKS

SEAM VACUUM TESTING

PROJECT NUMBER: 043-2246 **PROJECT TITLE:** Rocky Flats, Present Landfill
LINER INSTALLER: Colorado Lining **CONTRACTOR:** S.M. Stoller
LOCATION: Rocky Flats **SITE MANAGER:** Kaiser Hill Company LLC

SEAM NUMBER	SEAM SECTION FROM	TO	TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE NO	YES	OBS. TEST	MON.	REMARKS
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EXTRUSION SEAMING LOG

PROJECT NUMBER: 043-2246
LINER INSTALLER: Colorado Lining
LOCATION: Rocky Flats

PROJECT TITLE: Rocky Flats, Present Landfill
CONTRACTOR: S.M. Stoller
SITE MANAGER: Kaiser Hill Company LLC

MACHINE NUMBER_____

SEAM NUMBER	SEAM SECTION START POINT	SEAM SECTION FINISH POINT	APPROX. START TIME	AMB. AIR TEMP	WELD TECH	PRE-HEAT MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS
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FUSION SEAMING LOG

PROJECT NUMBER: 043-2246
LINER INSTALLER: Colorado Lining
LOCATION: Rocky Flats

PROJECT TITLE: Rocky Flats, Present Landfill
CONTRACTOR: S.M. Stoller
SITE MANAGER: Kaiser Hill Company LLC

MACHINE NUMBER_____

SEAM NUMBER	SEAM SECTION START POINT	SEAM SECTION FINISH POINT	APPROX. START TIME	AMB. AIR TEMP	WELD TECH	PRE-HEAT MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS
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PRESSURE TEST LOG

PROJECT NUMBER: 043-2246
LINER INSTALLER: Colorado Lining
LOCATION: Rocky Flats

PROJECT TITLE: Rocky Flats, Present Landfill
CONTRACTOR: S.M. Stoller
SITE MANAGER: Kaiser Hill Company LLC

SEAM NUMBER	SEAM SECTION* FROM	TO	GAUGE NUMBER	TECH ID	TIME START	TIME FINISH	PRESSURE INITIAL	PRESSURE FINISH	OBS. TEST	RESULTS PASS / FAIL	SEAM COMPLETE NO	SEAM COMPLETE YES	MON.	REMARKS
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FUSION TRIAL SEAM TEST

PROJECT NUMBER: 043-2246 **PROJECT TITLE:** Rocky Flats, Present Landfill
LINER INSTALLER: Colorado Lining **CONTRACTOR:** S.M. Stoller
LOCATION: Rocky Flats **SITE MANAGER:** Kaiser Hill Company LLC

	SHEAR (ppi)				PEEL-Top (ppi)				PEEL-Bottom (ppi)			Tested	Date	Defect	
Specimen #	S1	S2	S3		P1T	P2T	P3T		P1B	P2B	P3B	by	Tested	Code	Comments

EXTRUSION TRIAL SEAM TEST

PROJECT NUMBER: 043-2246 **PROJECT TITLE:** Rocky Flats, Present Landfill
LINER INSTALLER: Colorado Lining **CONTRACTOR:** S.M. Stoller
LOCATION: Rocky Flats **SITE MANAGER:** Kaiser Hill Company LLC

	SHEAR (ppi)				PEEL-Top (ppi)						
Specimen #	S1	S2	S3		P1T	P2T	P3T	Tested by	Date Tested	Defect Code	Comments

Request for Information (RFI)

Project Name:	Construction of the Present Landfill Accelerated Action	Subcontractor No.:	KH020577
Contractor:	Kaiser-Hill Company, LLC	RFI No.:	RFI – 040
Subcontractor:	S.M. Stoller Corporation	Page 1	1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	None	Specifications:	Section 02221 – Earthwork 1.02.B
Reference (other):	None	Attachments:	None

Request:

Stoller was directed to use the 280 pile as a source of Rocky Flats Alluvium / Grade fill. The specification for grade fill limits particle size to no greater than 6-inches in any direction. Stoller has observed occasional rocks greater than 6-inches. Is it acceptable to use Rocky Flats Alluvium with limited rock greater than 6-inches as grade fill?

Solution:

Requested By:	Paul Kreitz
Date Field Construction will be affected:	10-27-04

Paul Kreitz	[signature]	10-~~25~~ 26-04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☒	Clarification ☐	Rejection	☐ Change

The Rocky Flats Alluvium does occasionaly [redacted] RWD 10/29/04 contain rocks greater than 6-inches and is acceptable for subgrade fill at the PLF.

Robert W. Davis	Robert W. Davis	10/29/04
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	Latest Spec. 02221, 1.02B does not limit grade fill to 6"; RF Alluv. w/ MSA 12" ± OK CQAE J.H. Rabe Tetra Tech 11/3/04	

Request for Information (RFI)

Project Name:	Construction of the Present Landfill Accelerated Action	Subcontractor No.:	KH020577
Contractor:	Kaiser-Hill Company, LLC	RFI No.:	RFI – ~~040~~ 41 JAE
Subcontractor:	S.M. Stoller Corporation	Page 1	1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	None	Specifications:	Section 02221 – Earthwork
Reference (other):	QA/QC Plan Section 4.1.1	Attachments:	None

Request:

Section 4.1.1, verification of Landfill Cover Subgrade Continuity states to, "verify that the soil within the top 6 inches of the subgrade does not contain refuse, debris, vegetation, or any material that may leave voids in the subgrade." Based on the existing grading plan, meeting this requirement will require extensive excavation and debris removal. Is it acceptable to leave refuse and debris in the top six inches of the subgrade as long as the subgrade passes proof rolling?

Solution:

Requested By:	Paul Kreitz
Date Field Construction will be affected:	10-28-04

Paul Kreitz	Jim Erickson for Paul Kreitz	10-26-04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐	Clarification ☒	Rejection	☐ Change

Based on the types of debris that has been encountered at the surface of the landfill, it is generally acceptable to have some debris with the last 6-inches of the subgrade fill. However, metal and large pieces of wood are not acceptable. QC must inspect the area during final grading & Stoller shall remove the undesirable debris as directed.

Robert W. Davis	Robert W. Davis	10/29/2004
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CQAE J.H. Rule Tetra Tech 11/3/04	

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI – 042

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None | Specifications: None

Reference (other): RFI 019 Response | Attachments: None

Request:

Attached is the Geomembrane Defect Log form that Stoller intends to use to track Liner quality. This form will be used in addition to those submitted with RFI 39. Is this form acceptable?

Solution:

Requested By:	Paul Kreitz
Date Field Construction will be affected:	10/27/04

Paul Kreitz	[signature]	10/27/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☐	Clarification ☒	Rejection	☐ Change

This form may be used by Stoller/Golder; however other information requested on the forms in the PLF QA/QC plan must also be provided as required in RFI # 19 rev 0

Robert W. Davis	Robert W. Davis	October 27, 2004
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CQAE JH Rule Tetra Tech	

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 043-2246
LINER INSTALLER: Colorado Lining
LOCATION: Rocky Flats

PROJECT TITLE Rocky Flats, Present Landfill
CONTRACTOR: S.M. Stoller
SITE MANAGER: Kaiser Hill Company LLC

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	LOG DATE	MON.	REMARKS	** REPAIR DATE	** TEST DATE
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION						
A								
B								
C								
D								
E								
F								
G								
H								
I								
J								
K								
M								
N								
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Q								
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S								
T								
W								
X								

AD - ANIMAL RELATED DAMAGE
B - UNDISPERSED RESIN BEAD
BO - FUSION WELDER BURN
BS - BOOT/SKIRT FOR FML PENETRATION
CO - CHANGE OF OVERLAP
CR - CREASE
D - INSTALLATION DAMAGE
DS-# - DESTRUCTIVE TEST NUMBER

EE - EARTHWORK EQUIPMENT DAMAGE
EXT - EXTENSION
FM - FISHMOUTH
FS - FAILED SEAM LENGTH
FTS - FIELD TEST STRIP
HT - HEAT TACK BURN
IO - INSUFFICIENT OVERLAP (UNDER SPEC.)
MD - MANUFACTURER / DELIVERY DAMAGE

PT - PRESSURE TEST CUT
SI - SOIL SURFACE IRREGULARITY
SL - SLAG ON TEXTURED SHEET
T - THREE PANEL INTERSECTION
VL - VACUUM TEST LEAK
WR - WRINKLE
WS - WELDER RESTART
OTHER _____

** COLUMNS TO BE USED BY THE DATA REVIEWER ONLY.

GAI FORM: G18
(OCT 2003)

REVIEWED BY: _____ DATE: _____

GOLDER ASSOCIATES

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI – 043

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 Of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None | Specifications: None

Reference (other): QA/QC Plan | Attachments: None

Request:

Stoller intends to locate pertinent liner data using GPS. Attached is a cut sheet for the Trimble 4800 we intend to use. Is this unit acceptable?

Solution:

Requested By:	Paul Kreitz	
Date Field Construction will be affected:	10/29/04	
Jim Erickson Subcontractor Print/Type Name	 Subcontractor Signature	10/29/04 Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☒ | Clarification ☐ | Rejection ☐ | Change ☐

This GPS Instrument is approved for locating liner data as outlined in the PLF QA/QC Plan

OK - CCAE
Jeff Baker Tetra Tech

Robert W. Davis Print/Type Name	Robert W. Davis Signature	November 5, 2004 Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐		
Revise Sketch:	Y ☐	N ☐	Revisions Due:				

Request for Information (RFI)

ect Name: Construction of the Present Landfill Accelerated Action Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC RFI No.: RFI - 044

Subcontractor: S.M. Stoller Corporation Page 1 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None	Specifications: 02224-0945, 3.03
Reference (other): None	Attachments: GSE QA Manual, applicable section

Request: Follow the GSE "Installation Quality Assurance Manual" recommendations for spacing of cable ties in lieu of what is detailed in the specification above. This will meet the QA requirements for attachment and improve efficiency greatly.

IV, C: A plastic cable tie should be placed once per every five linear feet in the machine direction and once per every liner foot in the transverse direction.

Solution:
Follow the GSE QA Manual recommendations in Section IV "Overlaps and Seams, item C (attached).

Requested By:	Paul Kreitz
Date Field Construction will be affected:	11/6/04

Paul Kreitz	Paul Kreitz	11/04/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☒	Clarification ☒	Rejection	☐ Change

As specified in Section 02224, the manufacturer's recommendations shall be followed in the installation of the GDN. The propored tie spacing is acceptable, except where the GDN seam crosses the anchor trench. Here, the ties shall be spaced 6-inches apart.

Robert W. Davis	Robert W. Davis	November 13, 2004
Print/Type Name	Signature	Date

Kaiser Hill Action:

Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐	
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CAKE J.H. Reba Tetra Tech 11/16		

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 046

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: 51781-012, General Landfill Perimeter Cover Termination Detail	Specifications: None
Reference (other): None	Attachments: None

Request:

Please confirm that the 1/23/04 version of the referenced drawing, which details the liner **not** extending up the back wall of the anchor trench is the current version and meets the intent of the engineering design. This is in response to questions by the regulator on their 11/5/04 site visit.

Solution:

Provide written confirmation of this aspect of the anchor trench design.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	11/6/04

Paul Kreitz		11/06/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted X	Clarification X	Rejection	☐ Change

It is acceptable to place the GCL and FML only on the inside face and bottom of the trench as long as the minimum trench dimensions are as shown on the design drawings (2-feet deep and 2-feet wide). In addition, the GCL and FML shall be placed the full width of the anchor trench before the anchor trench is backfilled. Drawing 511781-012 will be revised.

Robert W. Davis	Robert W. Davis	November 13, 2004
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:		

OK CQAE H. Rale Tetra Tech 11/16

Request for Information (RFI)

...ct Name:	Construction of the Present Landfill Accelerated Action	Subcontractor No.:	KH020577
Contractor:	Kaiser-Hill Company, LLC	RFI No.:	RFI - 047
Subcontractor:	S.M. Stoller Corporation	Page 1	1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	None	Specifications:	02224-0945-3.03.A GDN Seam and Overlap Procedures
Reference (other):	None	Attachments:	None

Request:

It has been requested by the geo-textile installer (Colorado Lining)..that under wet conditions an equivalent and industry standard method of seaming the GDN overlaps is by **sewing** (machine). It is requested that sewing be an alternate method at our disposal under wet conditions.

Solution:

Approve the above method.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	11/11/04

Paul Kreitz		11/10/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted X	Clarification ☐	Rejection	☐ Change

This method of seaming of the GDN is accepted as a standard methodology of the Manufacturer. And this is consistent with the design specifications (Section 02224).

Robert W. Davis	Robert W. Davis	November 13, 2004
Print/Type Name	Signature	Date

Kaiser Hill Action:

...rawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OK CQAE J.H. Rale Tetra Tech 11/16

Request for Information (RFI)

Project Name:	Construction of the Present Landfill Accelerated Action	Subcontractor No.:	KH020577
Contractor:	Kaiser-Hill Company, LLC	RFI No.:	RFI - 048
Subcontractor:	S.M. Stoller Corporation	Page 1	1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	N/A	Specifications:	Spec 02224-0945, 3.03 B
Reference (other):	N/A	Attachments:	None

Request: Prior to the deployment of the GDN on the western most section a shallow layer of pea gravel (approx. ¼ to ½ inch layer) is requested to be applied to the inner slope of the perimeter trench due to wet conditions. This will allow us to work without damaging the grade and tracking mud onto the liner.

Solution:
Approve a small amount of pea gravel on the inner slope during GDN installation until sufficiently dry soil conditions exist.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	11/12/04

Paul Kreitz		11/12/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted	X	Clarification	X	Rejection	☐	Change

This proposal is acceptable; however, little to no pea gravel shall be placed onto the bottom of the trench (drainage ditch).

Robert W. Davis	Robert W. Davis	November 13, 2004
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Sketch: Y ☐ N ☐ Revisions Due:

OK CQAE J.H. Rale
Tetra Tech 11/16

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 049

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	None	Specifications:	02224-0945-3.03 B
Reference (other):	None	Attachments:	None

Request: GDN extending down-slope into the perimeter channel is being heat welded on less than 5 to 1 slopes. On greater than 5 to 1 slopes, the GDN will be either wedge welded or sewed depending on weather conditions. Request concurrence on this standard industry practice.

Resubmitted with updated manufacturer recommendations

Solution: Concur with the above methodology.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	11/12/04

Paul Kreitz	Paul Kreitz	11/20/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted	Clarification	Rejection	Change
	☒	☐		☐

Manufacturer's Recommendations Acceptable

OK CQAE
J.H. Rale TA

Robert W. Davis	Robert W. Davis	11/22/04
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:		

Request for Information (RFI)

Project Name:	Construction of the Present Landfill Accelerated Action	Subcontractor No.:	KH020577
Contractor:	Kaiser-Hill Company, LLC	RFI No.:	RFI - 049
Subcontractor:	S.M. Stoller Corporation	Page 1	1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	None	Specifications:	02224-0945-3.03 B
Reference (other):	None	Attachments:	None

Request: GDN extending down-slope into the perimeter channel is being heat welded on less than 5 to 1 slopes. On greater than 5 to 1 slopes, the GDN will be either wedge welded or sewed depending on weather conditions. Request concurrence on this standard industry practice.

Solution: Concur with the above methodology.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	11/12/04

Paul Kreitz		11/12/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☐	Clarification ☐	Rejection X	☐ Change

This RFI is rejected. Please provide the written manufacturer's instructions for this seaming condition, and clarify why this is an issue at the PLF construction project. Then, resubmit this RFI.

OK, CQAE [illegible]

Robert W. Davis	Robert W. Davis	November 13, 2004
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:		

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 050

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: | Specifications:

Reference (other): CETCO QA Installation Manual | Attachments: Manufacturer's Letter

Request: Colorado Lining would like to heat bond seams on slopes greater than 10:1. The QA manual requires continuously sewing of GDN seams on slopes greater 10:1. Attached is a letter from the GDN manufacturer that updates installation guidelines to include continuous heat bonding as an approved method for seaming on slopes greater than 10:1.

Solution: Concur with the above methodology.

Requested By:

Date Field Construction will be affected:

Paul Kreitz	Paul Kreitz	11/20/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☒	Clarification ☐	Rejection	☐ Change

Manufacturer's Recommendations Acceptable

Robert W. Davis	Robert W. Davis	11/24/04
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due: OK CQAE (11/17/04 CETCO Ltr.) J.H. Kale Tt

CETCO
LINING TECHNOLOGIES

November 17, 2004

John Heap
Colorado Lining Company
1062 Singing Hills Road
Parker, CO 80138

RE: RFETS – Golden, CO

Dear John:

While it is not specifically stated in the attached CETCO Texdrain GDN installation guidelines, the proper end of roll seaming practice is as follows:

In order to create a "net to net" tying area it is necessary to carefully melt the geotextiles off of the end of rolls areas to be tied. This will allow the technicians to place ties across the end of roll area at a 12" minimum spacing. Once tied and inspected the effected area is then patched with a like geotextile as per the attached installation guidelines (Section 3.1). This practice should be followed on all end of roll or "butt seam" areas.

Additionally in Section 2.3, the installation guidelines state that "on slopes steeper than 10:1 it is recommended that the GDN geotextile be continuously sewn." Please note that CETCO also approves continuous heat bonding in this situation.

Please feel free to contact me or our representative, Joe Kaul at Kaul Corporation, with any questions on these issues.

Sincerely,

Chuck Hornaday
Group Manager
CETCO/ Lining Technologies Group
1500 West Shure Drive
Arlington Heights, IL 60004
Phone: (800) 527-9948
Fax: (847) 577-5571

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 051

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: 51781-014, Gas Management Details | Specifications: None

Reference (other): Typical Geo-synthetic Cap Penetration | Attachments: Sketch – Suggested change

Request:

The attached sketch shows the standard boot/vent configuration constructed by Colorado Lining for their usual installations. It has advantages over the current design in that it:

- Is easier to construct
- Eliminates the cumbersome 8" pipe sleeve
- Allows for inner pipe movement and expansion while adequately sealing

Solution:

Review and approve if it meets the design criteria for the landfill.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	12/15/04

Paul Kreitz	Paul Kreitz	11/22/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | Change ☐

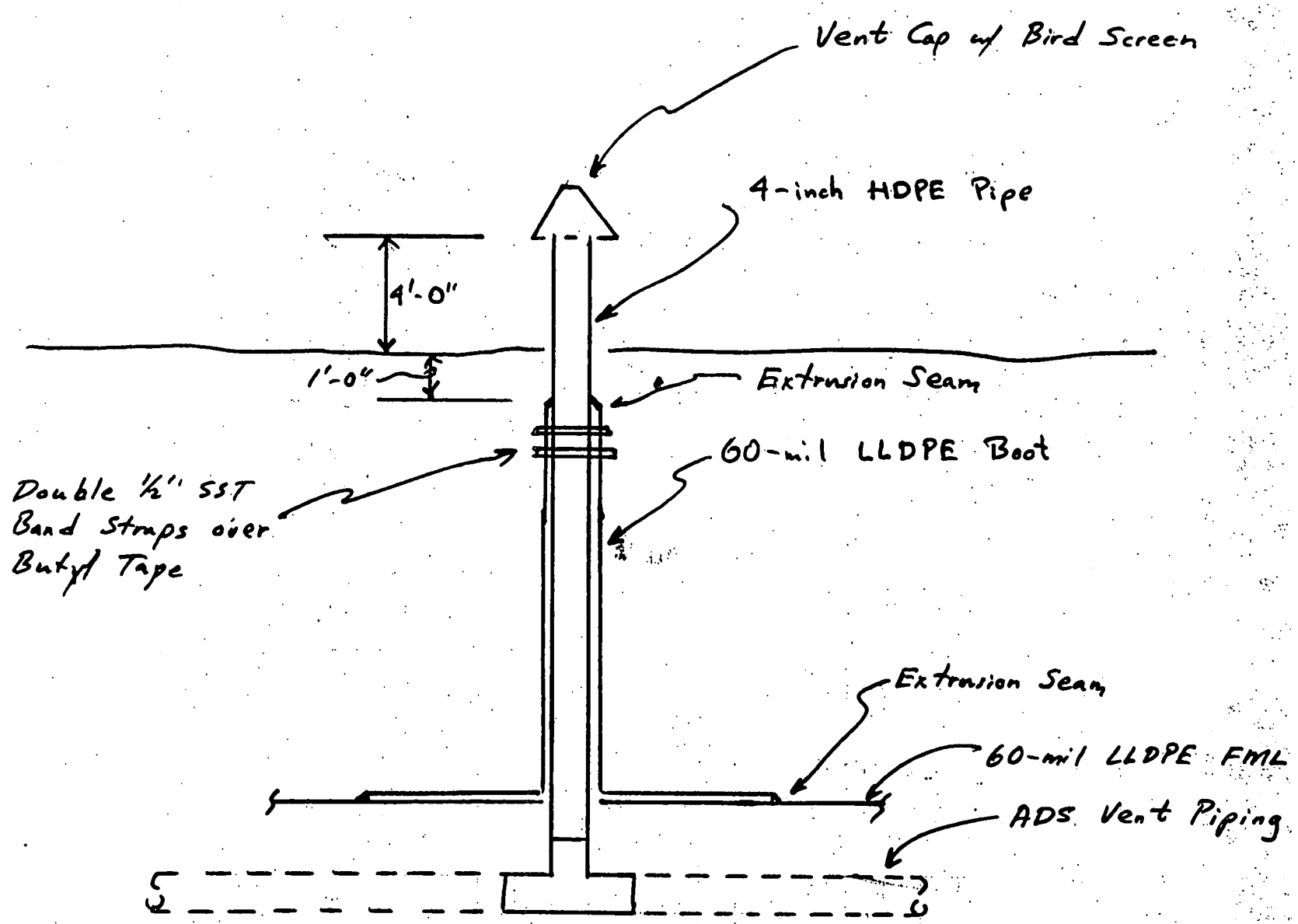
See attached sketch for final resolution of boot configuration for passive vent system. Since differential settling will not be experienced at these vent locations, a simple boot will be required.

Robert W. Davis	Robert W. Davis	12/4/04
Print/Type Name	Signature	Date

Kaiser-Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due: OK CGAF J.H. Fale 12


Vent Cap w/ Bird Screen
4-inch HDPE Pipe
4'-0"
1'-0"
Extrusion Seam
60-mil LLDPE Boot
Double ½" SST
Band Straps over
Butyl Tape
Extrusion Seam
60-mil LLDPE FML
ADS Vent Piping

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 052

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None	Specifications: None
Reference (other): None	Attachments: None

Request:

The liner vendor would like to have the ability to drive a "mule" (small 4 wheel vehicle) on areas of the cap covered with GDN (not FML). The tire pressures are: 5.5 psi front, and 7.25 psi rear.

This will enable the project to reduce the labor required for long pulls of GDN from the perimeter trenches and also allow the crews to perform GDN work during conditions where light snow is on adjacent FML.

Solution:

Provide concurrence to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	12/1/04

Paul Kreitz		11/29/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | ☐ Change

This is acceptable only after a test drive has been done on the liner under the observation of the QA and RFETS construction team. The use of the mule must not in any way damage the geosythetic liner materials. This direction was verbally provided to Stoller on or about 12/03/04.

Robert W. Davis	Robert W. Davis	04/27/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☒ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OK CQAE
Jeff. Rale TX

Request for Information (RFI)

Project Name:	Construction of the Present Landfill Accelerated Action	Subcontractor No.:	KH020577
Contractor:	Kaiser-Hill Company, LLC	RFI No.:	RFI - 053
Subcontractor:	S.M. Stoller Corporation	Page 1	1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	Gas Extraction Ventilator	Specifications:	N/A
Reference (other):	Stoller Sketch – proposed vendor details and materials	Attachments:	K-H Original Dwg, Stoller Sketch

Request:

Vendor and installer experience has identified structural issues with the proposed Gas Extraction Ventilator installation. Based on suggested vendor and installer experience it is requested to connect the ventilator to the 4" ABS trench pipe per the attached Stoller sketch in lieu of the present configuration. Also it is requested that the ventilator pipe be constructed of ONE of the materials below:

- **4" schedule 80 PVC pipe**
- **4" Thin wall schedule 10 SS pipe**
- **4" schedule 80 HDPE pipe**

Solution:

Perform engineering review and advise as to disposition.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	12/25/04

Paul Kreitz		12/1/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☐	Clarification ☒	Rejection	☐ Change

Use 4" Sch. 80 HDPE Pipe.

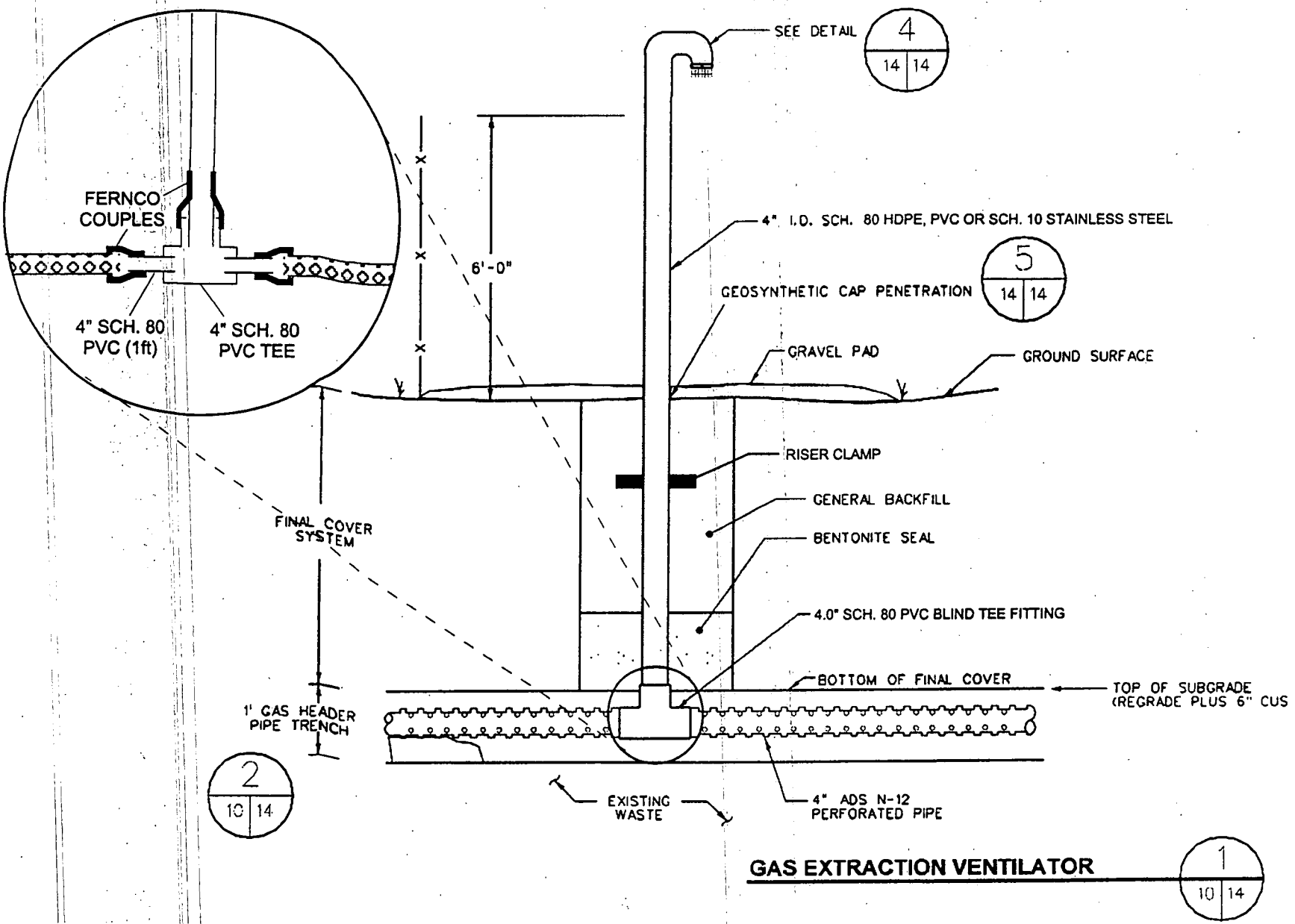
Also see response to RFI 51

Sch. 40 steel Pipe above grade is preferred, but Sch. 80 (SDR 11) HDPE Pipe may be acceptable CQAE ffl Take. Tetra Tech

Robert W. Davis	Robert W. Davis	12/4/04
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐



GAS EXTRACTION VENTILATOR 1 10 14

Present Landfill
Accelerated Action

Suggested Modification to
Drawing 51781 - 014
December 1, 2004

Stoller

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 054

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None	Specifications: None
Reference (other): None	Attachments: None

Request: Can we install the 10" cushion material on the GDN if the 6" cushion layer below the GDN is frozen?

Solution: Provide written guidance in response to the question above.

Requested By:	Paul Kreitz	
Date Field Construction will be affected:	12/4/04	
Paul Kreitz Subcontractor Print/Type Name		12/3/04 Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☒ | Clarification ☐ | Rejection ☐ | ☐ Change

It is acceptable to place 10-inch cushion soil on top of the GDN if the 6-inch cushion soil is frozen. Since the 6-inch cushion soil is covered by the FML, the moisture conditions of the soil can not change. This direction was verbally provided to Stoller on or about 12/06/04.

Robert W. Davis Print/Type Name	Robert W. Davis Signature	04/27/05 Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due:

OR CQAE (6" covered by GCL+FML)
JH Rule TX

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 055

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	None	Specifications:	02221-0943-3.01, No. 6
Reference (other):	Verbal Direction – Cushion/Fill placement on frozen material	Attachments:	None

Request:

Current verbal direction from K-H is; that it is acceptable to place material on frozen (clear of snow or ice) fill or cushion material that meets compaction and moisture specifications.

Specification 02221-0943-3.01 says "Assure fill area is not impacted by ice, snow, and/or frozen material prior to beginning placement."

Please provide written clarification relative to the current K-H position on what "impacted" means and the placement of material on frozen fill/cushion soil.

Solution:

Please provide written clarification to the above questions.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	12/2/04

Paul Kreitz		12/5/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | ☐ Change

Material may be placed on frozen fill/cushion soil, only if the moisture content and density requirements have been meet before the soil froze, and only if the placed/tested soil has not gained more moisture as a result of precipitation before the soil froze. Placement of material shall be approved by the RFETS and QA team before it can be placed. A sample of the frozen soil shall also be obtained to look for ice crystals (free moisture) before the decision is made to place the material on frozen fill/cushion soil. This direction was verbally provided to Stoller, QA, RFETS and engineering on or about 12/10/04.

Robert W. Davis	Robert W. Davis	04/27/05
Print/Type Name	Signature	Date

Kaiser-Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:		

OK CQAE
J.H. Rabe TX

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 056

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None | Specifications: 02245-0950, 2.01

Reference (other): None | Attachments: None

Request: Can we use Cushion Soil material from the LaFarge Bluestone Pit to supplement the Centennial Pit production of Cushion Material. LaFarge Cushion material will be predominantly used for 10" Cushion, but will also be used for the last 100' of 6" cushion. The Cushion material at LaFarge has been previously tested by Earth Tech, and will be tested as part of the regular QC.

Solution:
Supply approval to use the pit fines at the Bluestone Pit as liner cushion material.

Approximate Quantity Required – 20,000 tons

Prices – Centennial – 3.10/ton FOB job site (note – only available what is being made, no stock pile)
Pioneer - 4.10/ton FOB job site
LaFarge – 4.59/ton FOB job site

Schedule Impact – *Day for day slip in delivery of 10" cushion layer and greatly reduce delivery of 6" cushion layer*

Requested By:	Paul Kreitz
Date Field Construction will be affected:	12/14/04

Paul Kreitz		12/14/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☒ | Clarification ☐ | Rejection ☐ | ☐ Change

Use of the cushion soil material from the LaFarge Bluestone Pit is acceptable since this material has already been tested and approved by the regulatory agencies. This direction was verbally provided to Stoller on or about 12/17/04.

Robert W. Davis	Robert W. Davis	04/27/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due:

OK CQAE
J.H. Rale TT

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 057

Subcontractor: S.M. Stoller Corporation | Page 1 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None | Specifications: None

Reference (other): None | Attachments: None

Request: To facilitate the cushion soil haul from the Lafarge Bluestone Pit it is desirable from both a cost and safety perspective to route the trucks through the Centennial Aggregate Pit to reach the Present Landfill job-site. The safety impact centers on keeping large numbers of trucks off CO 93 and the cost savings are approximately 30 cents/ton for approximately 20,000 tons. There are also efficiency gains in using our present truck routes and avoiding the congested RFETS West Gate.

To accomplish this, minor road improvements are required from the Bluestone Pit to the Centennial pit (cost estimate $1500) and centennial requests a 10% progress payment (approximately $100k) on the rock layer that has currently been produced (to be subtracted from the total rock invoice). No wheelage charges will be incurred for the trucks crossing through the Centennial Pit.

olution:

Please advise as to the above actions required to route trucks through the centennial pit.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	12/16/04

Paul Kreitz		12/16/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☒ | Clarification ☒ | Rejection ☐ | ☐ Change

Road improvements to facilitate the hauling of the cushion soils from LaFarge are acceptable. The advance payment for rock layer material to the Centennial Pit is not a RFETS issue to address and is between Stoller and Centennial only. This direction was verbally provided to Stoller on or about 12/18/04.

Robert W. Davis	Robert W. Davis	04/27/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due:

OF CQAE
J.A. Pole TL

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 058

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None | Specifications: None

Reference (other): None | Attachments: None

Request: Proof rolling the asbestos burial areas located at the eastern-most portions of the Present Landfill prior to grading presents a potential problem posed by exposure of asbestos materials near the surface. There will be multiple QA/QC and engineering personnel in close proximity to the tires of the scraper doing the proof-rolling. Additionally, one soft spot has already been identified by routine equipment movement on the periphery of these areas.

It is requested that we either defer proof rolling until the initial sub-grade has been installed or remediate the areas in some way prior to initial proof rolling.

Solutions:

- Defer proof-rolling until sub-grade is installed – no cost and schedule impacts
- Geo-grid the areas; Approx 2 acres, Approx. $50k in materials, approx. $10k in equipment and labor, 3 day delay in placing sediment on these areas.
- Geo-textile the areas, Approx. $15k in materials, approx $5k in labor, 2 days delay in placing sediment in these areas
- Do nothing and respond if we have an issue with any potential asbestos exposure

Requested By:	Paul Kreitz
Date Field Construction will be affected:	12/17/04

Paul Kreitz		12/17/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☒ | ☐ Change

Conduct proof rolling in the asbestos area as specified. This direction was verbally provided to Stoller on or about 12/20/04.

Robert W. Davis	Robert W. Davis	04/27/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due:

OR CQAE
J.H. Eckle TA

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 059

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None | Specifications: None

Reference (other): None | Attachments: None

Request: The northern asbestos area has numerous trees on its southern boundary. The current design calls for these trees to be removed, including the roots. Due to the uncertainty associated with the location of landfill contents on the project it is requested that these trees be removed flush to the ground with minimal disturbance of the existing sub-grade (i.e. no grubbing the roots with heavy equipment). This will minimize the potential exposure of workers to buried asbestos debris.

Solution: Issue guidance similar to what is requested above.

Cost impact – none

Schedule impact – none

Safety impact – reduces potential exposure to unexpected asbestos debris.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	1/3/04

Paul Kreitz		12/18/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☐ | Rejection ☒ | ☐ Change

Rejected. To provide a stable area to build the east face buttress (4H: 1V slope), the tree roots/stumps must be removed as specified. This direction was verbally provided to Stoller on or about 12/21/04.

Robert W. Davis	Robert W. Davis	04/27/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OK CRAE
J.A. Fale TA

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 063

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None | Specifications: 02224-0945, 3.03 B

Reference (other): None | Attachments: None

Request: The high wind (110 mph gusts) event that occurred on 12/20/04 stretched a portion of the deployed GDN on the Present Landfill Cap. The stretching caused zip ties holding the side seams of significant portions of approximately 14 N/S seams to pull through the mesh interior leaving a gap of 3-4 inches. Please give guidance to either:

- Repair the gaps by either cutting the affected panels apart, pulling them back to overlap and retying or overlapping affected seams with a lapping piece of GDN and retying on both sides
- Not repair the gaps if the design function is not sufficiently impacted by this issue.

Solution:

Provide written guidance to the above.

Cost Impact – Repairing the seams will cost approximately $40,000

Schedule impact – Repairing the seams will require two liner crews, 3 days.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	12/22/04

Paul Kreitz		12/21/04
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☒ | Clarification ☐ | Rejection ☐ | ☐ Change

Repair of the GDN is accepted. Please provide a separate accounting number to track this work. This direction was verbally provided to Stoller on 12/21/04.

Robert W. Davis	Robert W. Davis	04/27/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due:

OK CQAE (Repair by retying w/ zip-ties & re-sewing geotextile for all damaged areas) J.H. Rale TX

Request for Information (RFI)

Project Name:	Construction of the Present Landfill Accelerated Action	Subcontractor No.:	KH020577
Contractor:	Kaiser-Hill Company, LLC	RFI No.:	RFI - 064
Subcontractor:	S.M. Stoller Corporation	Page 1	1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	None	Specifications:	02222-944, 3.02
Reference (other):	None	Attachments:	None

Request:
The current specification, section 02222-944, 3.02, states "Equipment must not drive directly on top of the rock surface".

A test performed on a rock/10" cushion layer, that was witnessed by the regulators, showed that a low ground pressure bulldozer can be driven directly on the rock layer with no impact to the liner layers below. Permission was granted by Kaiser-Hill to adjust the work control documents to reflect the ability to do this.

Please revise the specification to reflect the ability to drive directly on the rock layer.

Solution:

Revise specification 02222-944, 3.02.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	1/4/05

Subcontractor Print/Type Name	Subcontractor Signature	Date
Paul Kreitz		1/3/05

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☐	Clarification ☒	Rejection ☒	☐ Change

The specification already states that the placement of the rock layer is based on a test fill demonstration as approved by the design and QA team. This was done as a part of the test fill. No specification change is required. This was verbally provided to Stoller on or about 01/07/05.

Print/Type Name	Signature	Date
Robert W. Davis	Robert W. Davis	04/27/05

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OK CQAE
J.H. Rake TA

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 066

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None | Specifications: None

Reference (other): None | Attachments: None

Request:

Due to the volume of pond sediment transported to the east crest of the present landfill, it is requested to extend the area on which we are depositing this material onto the north asbestos burial area (i.e. northern "wing" area). This will allow us to utilize several fill areas at its western edge to evenly spread the pond sediment and more effectively cover it with alluvial material.

Solution:

Provide concurrence with the above request.

No cost or schedule impact.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	1/5/05

Paul Kreitz		1/3/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☐ | Rejection ☒ | ☐ Change

Rejected. The placement of the pond sediments must remain in the area designated by RFETS. This direction was verbally provided to Stoller on or about 01/06/05.

Robert W. Davis	Robert W. Davis	04/27/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:		

OK CRAE
J.H. Rule TA

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 067

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None | Specifications: None

Reference (other): None | Attachments: None

Request:

The temporary seep capture system pumped the seep water to dual (2) Baker tanks on the hill south of the pond. Iron oxide sediment settled out of the water and the decanted water was discharged to the A-ponds. In order to de-mob the Baker tanks, the sediment (approx. 6-8 inches) in the bottoms must be removed. Can the sediment in the tanks be flushed with water into the A-ponds or into the present landfill pond? If not...please advise as to the preferred disposition.

Solution:

Flush tanks and remove sediment to an approved location. Return Baker tanks to vendor.

Rental for both tanks is $1000/month and they are no longer required

Requested By:	Paul Kreitz
Date Field Construction will be affected:	

Paul Kreitz		1/6/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☐ | Rejection ☒ | ☐ Change

The sediment in the bottom of the Baker tanks must be removed and handled as incidental water in accordance with the RFETS policies and procedures. RFETS will coordinate with Stoller on the removal of the sediment in the Baker tanks. This direction was provided to Stoller on or about 01/08/05.

Robert W. Davis	Robert W. Davis	04/27/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due:

OK CQAE
J.A. Pale TA

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 068

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None | Specifications: 02222-0944, 3.02

Reference (other): None | Attachments: None

Request:

The current specification for the thickness tolerance of the rock layer is +0.0, +.2 feet. Due to the nature of the material (size differentials) it is requested that the rock layer tolerances be -.1 to +.3. This is the current differential we are experiencing during initial placement operations.

Solution:

Change the specification to allow -.1 to +.3.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	1/4/05

Paul Kreitz		1/6/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☐ | Rejection ☒ | ☐ Change

Rejected. The tolerances must remain as specified at 0.0 to +0.2 ft. as verbally directed on or about 01/07/05.

Robert W. Davis	Robert W. Davis	04/27/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due:

OF CRAE
J.H. Kale TX

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 070

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None | Specifications: 02222-0944-3, B "Rock Layer Material

Reference (other): None | Attachments: None

Request:

The current specification states: "Equipment must not drive directly on the rock surface."

The recent finalization of the vertical and liner boot design on the gas vent system requires us to return to the gas vent riser locations and install the risers. To do this we will have to drive a track hoe and a bob cat directly to the riser location, install the riser, and drive off the the cap. Several of these riser locations are now surrounded by rock.

Request approval to drive a trac-hoe and a bobcat on the rock layer to the riser locations for installation and drive off when complete.

Solution:

Approve the above request or an alternate method.

No schedule or cost impact.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	1/13/05

Paul Kreitz		1/11/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☐ | Rejection ☒ | ☐ Change

Rejected. This equipment cannot drive directly on the rock layer. At least 1 foot of soil cover must be in place to drive the equipment to the vent locations. This direction was verbally provided to Stoller on or about 01/14/05.

Robert W. Davis	Robert W. Davis	04/27/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due:

OK CRAE
J.H. Rale TT

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 072

Subcontractor: S.M. Stoller Corporation | Page 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None	Specifications: None
Reference (other): Construction of Passive Vent Risers	Attachments: None

Request:
Please specify what to put on the top of the vertical passive vent system risers (i.e. screen, ...) to finish the installation and complete the as-builts.

Solution:
Specify what to install or supply a sketch.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	1/24/05

Paul Kreitz		1/18/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | ☐ Change

An aluminum or galvanized steel vent cover with a bird screen from locally available supply companies is required for the cover of the passive vent piping system. Proceed with the purchase of the vent cover.

Robert W. Davis	Robert W. Davis	04/27/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OK CRAE (Submit info. as needed)
J.H. Rabe TT

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 074

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None	Specifications: None
Reference (other): East Face Clearing and Grubbing	Attachments: None

Request:

Please provide guidance as to whether erosion controls are required at the base of the east face of the Present Landfill during clearing and grubbing operations. It is unclear as to whether this is required as run off from the slope goes to the east pond.

Solution:

Provide written guidance as to what (if any) controls are required

Requested By:	Paul Kreitz
Date Field Construction will be affected:	1/19/05

Paul Kreitz		1/19/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☐	Clarification ☒	Rejection ☐	☐ Change

As directed in the design specifications, any runoff from an active construction area must have erosion controls. Provide berms and erosion protection at the east face during construction. This direction was verbally provided to Stoller on or about 01/20/05.

Robert W. Davis	Robert W. Davis	04/27/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OK CQAE
J.A. Fale TT

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 075

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None | Specifications: None

Reference (other): East Face – North Rip Rap Area | Attachments: None

Request:

Clearing and grubbing of the East Face of the Present Landfill was started on 1/19/05. At the direction of K-H the activity was started on the North section. In this section there exists an area containing large rip-rap rock. Please advise as to whether to:

- Leave the rip-rap in place
- Remove the rip-rap
- Place flow-fill over the top of the rip-rap

Solution:

Advise in writing as to the desired disposition of the rip-rap.

Cost impact – TBD based on design direction.

Schedule impact – need decision by 1/21/05 to not delay completion of the activity

Requested By:	Paul Kreitz
Date Field Construction will be affected:	1/21/05

Paul Kreitz		1/19/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | ☐ Change

As verbally directed on 01/20/05, proceed with removing the rip-rap and stockpiling the material for future use at the site.

Robert W. Davis	Robert W. Davis	04/27/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due:

OK CRAE
J.H. Fale TX

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 079

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None | Specifications: 02224-0945, 02225-0946, 02226-0947

Reference (other): East Face Geo-synthetic Liner Materials | Attachments: None

Request:
Additional geo-synthetic materials are required for completion of the current East Face design of the Present Landfill. To meet the current schedule these materials were ordered per verbal approval by the K-H Project Manager in late December 04. The liner materials (GCL, LLDPE, and GDN) are scheduled to arrive beginning the week of 1/31/05 pending QA testing results.

Please provide written approval of the material order.
GDN – 18,300 sq.yrds @ $3.75/sq.yrd $68,625
LLDPE – 18,200 sq.yrds @ $4.84/sq.yrd $88,088
GCL – 18,367 sq.yrds @ $4.27/sq.yrd $78,427

Total - $235,140

Solution:
Provide written approval for purchase of this material.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	1/31/05

Paul Kreitz		1/21/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☒ | Clarification ☐ | Rejection ☐ | ☐ Change

Accepted. Proceed with purchase of additional geosynthetic liner materials. This direction was verbally provided to Stoller on or about 12/22/04.

Robert W. Davis	Robert W. Davis	04/27/05
Print/Type Name	Signature	Date

Kaiser-Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:		

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 080

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None	Specifications: None
Reference (other): Present Landfill Baseline Schedule	Attachments: None

Request:

The current baseline project schedule requires re-mobilization of liner installation activities on 2/1/05. This is contingent on completion and certification of adequate grade work on the East Face Design. Initial activities (clearing and grubbing) are now on hold (effective 1/21/05) pending re-design based on regulatory concerns. This is causing schedule slippage.

Please advise as to when the East Face Final Design is expected to be revised so we can adjust the construction schedule.

Solution:

Provide the revised design for the East Face as soon as possible.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	1/22/05

Paul Kreitz		1/22/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☐	Clarification ☒	Rejection ☐	☐ Change

Re-design of the east face is not required. Proceed with work on the east face as directed by the DOE and as currently designed. This direction was verbally provided to Stoller on or about 01/24/05.

Robert W. Davis	Robert W. Davis	04/27/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:		

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 081

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: East Face Design Dwgs, January 2005 | Specifications: None

Reference (other): None | Attachments: East Face Design – Questions/Comments

Request:
Attached is a summary of the questions and comments on the preliminary East Face Design of the Present Landfill we received from K-H on 1/20/05. A construction meeting on this design was held at 0900 on 1/21/05 involving Stoller, Nielsen Skanska, and Colorado Lining.

Please review the questions and comments and give us written guidance as appropriate.

Solution:
Supply written guidance related to questions and comments.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	1/22/05

Paul Kreitz		1/22/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | ☐ Change

These questions were addressed and resolved in several meetings with the construction team over a period of several weeks. Resolution of the questions are included in the listing of questions attached. The resolution did not result in any design or specification changes.

Robert W. Davis	Robert W. Davis	04/27/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OF CGAE
J.H. Rabe TX

Date: January 21, 2005

Subject: Constructability Review: K-H East Face Design (preliminary)

Comments & Questions:

1. Ref: Dwg 51781-006A, Perimeter Channel Design – Q: The north perimeter channel pts. 11000 – 11014 had little detail. Is that all there is or is more needed in this area to complete the design? Sufficient Detail on Drawing.
2. Ref: Dwg 51781-006A, Perimeter Channel Design – Q: The culvert area in the vicinity of control point 11130 lacks sufficient detail. It has been constructed per the verbal direction of the Site Design Engineer. Stoller has been informed that changes are now required (RFI to follow), Can additional control points or a drawing be supplied to allow us to construct what is needed? Issue resolved in the field.
3. Ref: Dwg 51781-006B, Anchor Trench Top of Re-graded Surface – Q: The construction depth of the anchor trench is 24". Control points 12032 and 12033 show the anchor trench crossing through the know asbestos burial area. Does K-H clearly wish us to excavate in these areas? Yes!
4. Ref: Dwg 51781-006B, Anchor Trench Top of Re-graded Surface – Q: The anchor trench at points 12032 and 12033 appears to be less than 10 feet from the East Face Slope as required. Is this a problem with drawing scale or does K-H intend for the trench to be this close to the crest of the slope? Drawing is correct.
5. Ref: Dwg 51781-012, Landfill Cover and Surface Water Detail – Detail 3; C: Please provide detail or written guidance as to how far up the channel slope the rip-rap extends. Rip-Rap is not on slope. Drawing 12 in correct
6. Ref: Dwg 51781-013A, Landfill Cover Details East Face – Detail 1; Q: Please provide either coordinates or an off-set distance for location of the diversion berm. Generally follow anchor trench
7. Ref: Dwg 51781-013A, Landfill Cover Details East Face – Detail 1, C; The current GCL configuration in the upper anchor trench will be extremely difficult to construct as configured. The GCL extending up the back wall is not anchored or attached and will not stay. Suggest the alternate configuration that meets the same function and is shown in a vendor sketch attached to the RFI hard copy. No change in anchor trench detail
8. Ref: Dwg 51781-013A, Landfill Cover Details East Face – Detail 1, C; The current GDN configuration in the upper anchor trench will present unnecessary material and personnel safety issues. Suggest the alternate configuration that meets the same function and allows the upper anchor trench to be backfilled in a timely manner. This configuration is shown in the vendor sketch attached the hard copy of the RFI. No change in anchor trench detail
9. Ref: Dwg 51781-013B, Anchor Trench East Face – Detail 1, Q: Do the "vertical" strip drain "fingers" tie horizontally to the other drains at the anchor trench or do they just "end" there? Tie is made per manufacturers instructions

10. Ref: Dwg 51781-013B, Anchor Trench East Face – Panel Layout, C: We will be submitting a revised GDN placement layout to meet constructability concerns. Awaiting Layout

11. Ref: Dwg 51781-014, Gas Management Details, C: Dwg does not represent the current construction directions and installation. Please revise per Submittal 70. Will be revised as constructed and reflected in as-builts

12. Ref: Dwg 51781-017, New Seep Passive Treatment System Detail, Detail 1; Q: Are the locations of the two, smaller man-holes critical? If so please supply location coordinates or distances. If not direct to field fit. coordinates provided see #1 RFI

13. Ref: Dwg 51781-016, New Seep Passive Treatment System Layout, Detail 2, Q: Can a section showing the designed grade combined with the new piping, manhole, and aerator be supplied to clarify our construction sequence?

14. Ref: Dwg 51781-016, New Seep Passive Treatment System Layout, Detail 2, Q: Can additional detail regarding installation or specification of the 40 mil pvc liner be supplied? provided, see other RFI

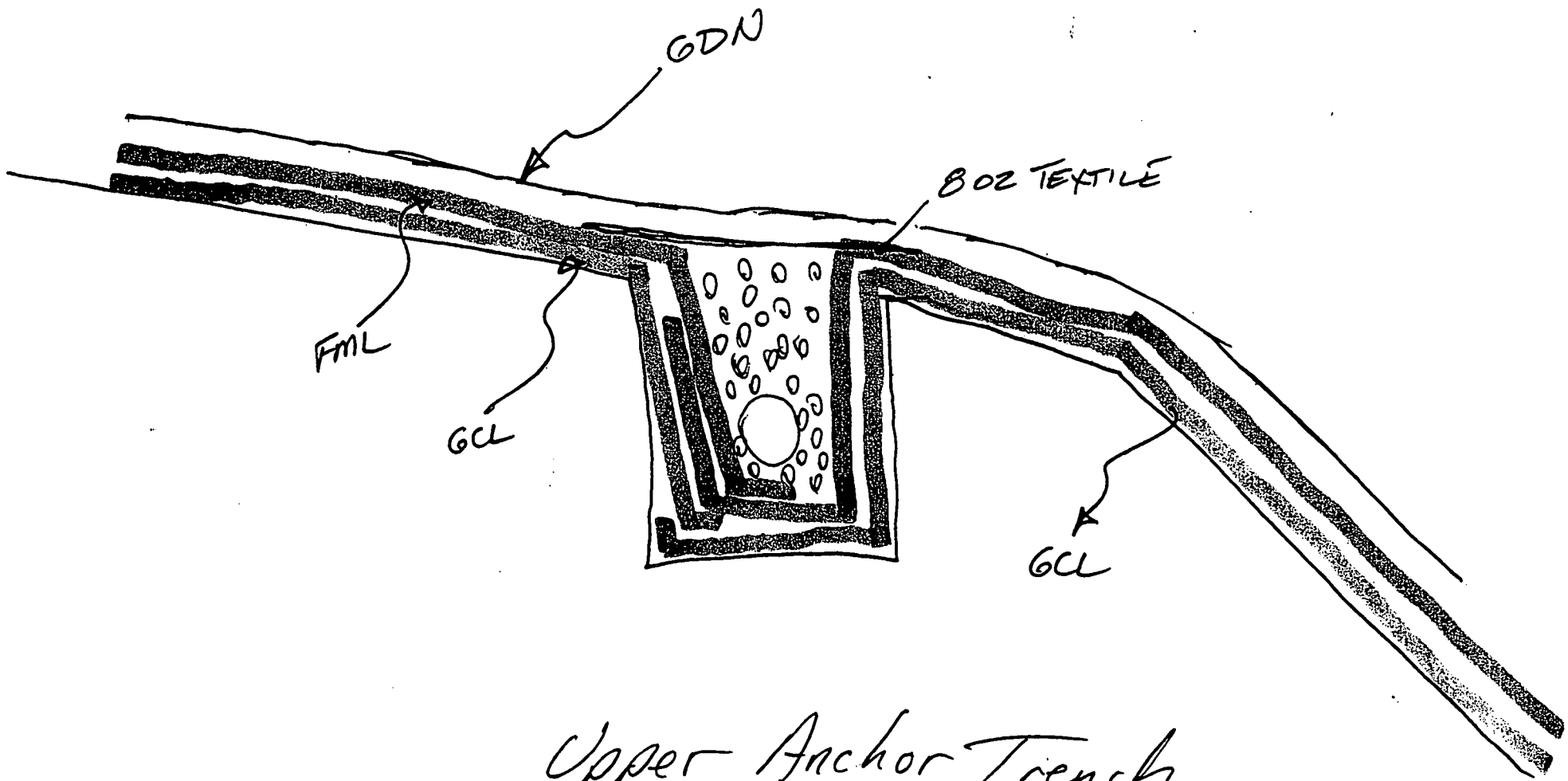
None available!

OK CQAE
JH Role TX

GCL

FML

GDN



Upper Anchor Trench

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 082

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None	Specifications: None
Reference (other): 12" Rock Layer	Attachments: None

Request:
The current specification for construction of the 12" rock layer restricts the type of traffic allowed on top of the rock layer during construction. The final 24" alluvial layer is being installed in conjunction with the rock layer installation.

Q: In the event of snow:

- How much snow can be on the 12" rock layer for us to continue installation of the final 24" alluvial lift?
- What type of snow removal (equipment) can be used on the 12" rock layer?

Solution:
Provide written guidance to the above questions as snow will be coming and will impact the installation of the final 24" lift.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	TBD (next bad weather)

Paul Kreitz		1/24/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | ☐ Change

About 1-inch of snow is acceptable on the rock layer to continue to place the 24-inch soil cover. Only low ground pressure track equipment (dozers) can be used on the rock layer to assist in the removal of snow on the top of the rock layer. This direction was verbally provided to Stoller on or about 01/26/05.

Robert W. Davis	Robert W. Davis	04/27/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OF CRAF
J.H. Folk TT

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 085

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: 51781-006A | Specifications: None

Reference (other): Perimeter Channel | Attachments: None

Request:
The perimeter channel at approximately control point 11068 has a water seep.

Please provide guidance as to how to remediate or if this is an issue. Currently we are excavating but this does not seem to be making any improvements leading us to believe that water is moving in to this area.

Solution:
Provide written guidance as to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	1/24/05

Paul Kreitz		1/24/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | ☐ Change

This is not an issue that needs to be addressed by the construction team. Proceed with construction of the perimeter channels. This direction was verbally provided to Stoller on or about 01/26/05.

Robert W. Davis	Robert W. Davis	04/27/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due:

OK CQAE
Jt Rule TX

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 088

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: 51781-005 | Specifications: None

Reference (other): Northern Asbestos Burial Area | Attachments: None

Request:
Please review controls points 10350, 10351, & 10376. These points are located in the northern asbestos burial area of the present landfill and have been surveyed as cuts of approximately .4' in magnitude. It is desirable to avoid cutting in this area due to the potential of encountering buried asbestos material.

Solution:
Provide written guidance as to how to proceed at these points.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	1/24/05

Paul Kreitz		1/24/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☐ | Rejection | ☐ Change

Control Point 10350 – New design elevation of 5965.7'. In addition, change the elevation on 10349 to 5967.0' and 10377 to 5964.1'. This change also eliminates 13060 and 13061 as grade break control points.
Control Point 10351 – The point is located on the current ridgeline. Bring the area to grade using an excavator to remove excess dirt and riprap.
Control Point 10376 – This point is currently at grade but the adjacent soft spot has been filled above this grade. Replace any RFA material used in the soft spot repair with cushion soil to the subgrade elevation. Proof-roll the soft spot after cushion soil placement.

Robert W. Davis	Robert W. Davis	01/27/05
Print/Type Name	Signature	Date

aiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OF CRAE
J.H. Kole, Tetratech

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 089

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None	Specifications: 02222-0944-3
Reference (other): Placing of 22" Lift	Attachments: None

Request:
If the strategy to rapidly place a 12" final alluvial lift is implemented (to mitigate the effects of a snow event);

Q: Can low ground pressure machinery drive on a 12" rock layer lift? (OK'd for 24" rock layer lift)

Solution:
Provide written response to the above question.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	1/27/05

Paul Kreitz		1/25/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐	Clarification ☐	Rejection ☒	☐ Change

No, equipment can not drive on the rock layer. This direction was verbally provided to Stoller on or about 01/26/05.

Robert W. Davis	Robert W. Davis	04/13/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OK CRAE
Ft. Collins TX

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 090

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: 51781-013A, detail 2 | Specifications: none

Reference (other): none | Attachments: none

Request:
The current East Face design calls for the installation of vertical and horizontal strip drains below the buttress fill of the east face. During the constructability review of the preliminary East Face design it was identified that the drains must be protected during installation of the buttress fill to prevent crushing and damage. Please provide written guidance as to the preferred method to protect the strip drains from damage during the installation of the buttress fill.

Solution:
Provide written guidance to the above.

Suggestions:
Installation of the drains in trenches and cover with sand or plywood covers where applicable (plywood removed as each lift is completed)

Requested By:	Paul Kreitz
Date Field Construction will be affected:	

Paul Kreitz		1/26/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☐ | Rejection ☐ | ☐ Change

As was discussed in various construction planning meetings, the construction of the 4H: 1V buttress fill will be conducted in layers of RFA that will be placed and compacted. Use care in compacting the placed soil to not roll over the strip drain material without at least 1-foot of soil covering the strip drain. This direction was provided to Stoller on or about 01/28/05. Observations in the field during the construction of the buttress fill did not indicate the any of the strip drain materials were crushed.

Robert W. Davis	Robert W. Davis	04/13/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

vise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due: OK w/ sand cover over strip drains CQAE J.H. Rale TT

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 091

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: none	Specifications: none
Reference (other): Installation of 22" Lift	Attachments: None

Request:
To efficiently complete the installation of the nearly final 22" lift it is requested to use a motor grader to set the grade. Due to regulator concerns with soil compaction we are requesting written approval to do so.

Solution:
Provide written approval to use a motor grader to set the grade for the nearly final 22" inch lift.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	1/31/05

Paul Kreitz		1/26/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☐ | Rejection ☐ | ☐ Change

Due to the survey tolerances that must be met in the design of the layers of the PLF cover, a grader is acceptable to use on the cover. Field observations indicate that the soil will need to be ripped and disced to reduce compaction and prepare the seed bed for the seeding operations even without the use of a grader. This direction was verbally provided to Stoller on or about 01/27/05.

Robert W. Davis	Robert W. Davis	04/13/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due: OK CQAE J.H. Rale TA

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 093

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None | Specifications: None

Reference (other): 2" Final Alluvial Lift | Attachments: None

Request:

The material placed for the final 2" lift will contain rocks larger than 2". Q: Do we:

- Leave them in the lift as they occur
- Wind row them up and remove them
- Screen them out before we place the material ($$$$)

Solution:

Please provide written guidance as to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	2/7/05

Paul Kreitz		1/28/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | ☐ Change

The rocks encountered in the 2-inch lift of the final 24-inch soil cover naturally occur throughout the surface of the RFETS and are not to be removed. However, if final grading results in a windrow area of rocks, they may be removed to the PLF temporary stockpile area north of the PLF. Direction was verbally provided to Stoller on or about 01/29/05.

Robert W. Davis	Robert W. Davis	04/13/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due:

OK CQAE
Lt Role TT
(only 12"+ rocks removed from surface)

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 097

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	51781-015, Detail 2	Specifications:	None
Reference (other):	Vertical PVC Clean-out Pipes-Existing Seep Treatment System	Attachments:	None

Request:
Please advise as to the disposition of the vertical PVC Clean-out Pipes (5) that currently exist at the seep treatment system.
Do we:

- Demo them and remove.
- Cap them and bury
- Continue them upwards vertically through the new buttress fill ($$$$ as it will greatly affect our ability to maneuver in that area)

Solution:
Please advise as to the solution. If it is the third bullet we will supply a cost and schedule estimate.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	1/30/05

Paul Kreitz		1/28/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☐	Clarification ☒	Rejection ☐	☐ Change

The clean-out piping of the existing seep collection system must be extended above the final cover of the PLF. These clean-outs can be capped with a PVC pipe end cap but not cemented in place to allow future access.

Robert W. Davis	Robert W. Davis	04/13/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due: OK EQAE (3 cleanouts @ seep + 1 @ strip drain sump)

J.H. Rabb II

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 100

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None | Specifications: None

Reference (other): Grading and Finishing the 22"/2" Final Lifts | Attachments: None

Request:
As a follow-on to the question posed in RFI-091: It is requested to use the following equipment to set the grade and finish the final 22" and 2" soil lifts: This equipment would drive directly on the 22"/2" lifts (not the rock layer)

- Motor grader
- Scraper
- D-6/D-8 standard bulldozers (not LGPDs)
- Front End Loaders

Solution:
Please provide written approval for the use of this equipment for this activitiy.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	2/3/05

Paul Kreitz		2/1/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | ☐ Change

In order to construct the 22-inch and 2-inch lifts of the 24-inch final soil cover, the above listed equipment is acceptable, except for the D-8 dozers. Provide the D-6 LGP and D-6 dozers to reduce the amount of compaction of the overall 24-inch soil cover. This direction was verbally provided to Stoller on or about 02/04/05.

Robert W. Davis	Robert W. Davis	04/12/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due: OK CQAE JHRale 4/12

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 104

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	51781-012 Detail 2 Installation of Temporary Turf Reinforcement Material in Perimeter Channel	Specifications:	N/A
Reference (other):		Attachments:	None

Request:
Please clarify the distance the temporary erosion mat extends up and over the liner anchor trench. Can we assume 2 feet? This is required for material quantity take-offs and installation.

Solution:
Please give written guidance to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	2/14/05

Paul Kreitz		2/2/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☐ | Rejection ☐ | ☐ Change

See Design Drawing No. 013 for the extent of the erosion matting.

Robert W. Davis	Robert W. Davis	04/12/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CQAE JH Rala TX	

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 105

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None | Specifications: None

Reference (other): Installation of C-350 Permanent Turf Reinforcement | Attachments: None

Request:
Please provide a sketch or map that delineates the areas on which the C-350 Permanent Turf Reinforcement is to be installed.

Solution:
Please provide the above information as it is needed for material take-offs and installation.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	2/28/05

Paul Kreitz		2/2/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☐	Clarification ☒	Rejection ☐	☐ Change

The extent of the erosion matting is shown on Design Drawing 013.

Robert W. Davis	Robert W. Davis	04/12/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CQAE J.H. Rabe TT	

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 106

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None	Specifications: None
Reference (other): None	Attachments: None

Request:
Please provide direction on the methods and total scope for required remediation of all soil disturbed surfaces on the Present Landfill Project. (which ones, what to do with them, i.e roads?, laydown areas?, soil stock-pile areas?, pond area?)

Solution:
Please provide written guidance to clarify the above work scope.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	3/1/05

Paul Kreitz		2/2/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | ☐ Change

As we have discussed during the month of April, all disturbed areas must be returned (as close as practical) to the conditions found at the start of the project construction as required by the design specifications. At a minimum:

- Areas must be graded to match the existing grades around the disturbed areas
- Rock and gravel must be removed or worked into the soil within the disturbed area
- Compacted areas must be ripped and disced to prepare the area for re-vegetation
- Stockpile soils must be distributed over the disturbed area
- Roadways are to remain in current conditions

Robert W. Davis	Robert W. Davis	04/28/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CQAE JH Rabe TA	

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 109

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: 51781-017, Structural Details	Specifications: None
Reference (other): Location of 3" PVC Check Vlv	Attachments: None

Request:
A 3" PVC Check Valve is described in both the parts list in dwg. 51781-017 and mentioned in the Plan View.....however it is not shown on the drawing. Please advise (mark dwg or describe the location) as to where the 3" check valve is to be installed.

Solution:
Supply revised dwg or written description to define the location of the 3" check valve.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	2/14/05

Paul Kreitz		2/5/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐	Clarification ☐	Rejection ☐	☐ Change

The check valve is no longer needed in the seep system piping. See RFI Response No. 191. Verbal direction was provided to Stoller on this RFI on or about 02/10/05.

Robert W. Davis	Robert W. Davis	04/12/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CRAE JH Rale TT			

Request for Information (RFI)

Project Name:	Construction of the Present Landfill Accelerated Action	Subcontractor No.:	KH020577
Contractor:	Kaiser-Hill Company, LLC	RFI No.:	RFI - 110
Subcontractor:	S.M. Stoller Corporation	Page 1	1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	51781-017, Plan View	Specifications:	none
Reference (other):	Installation location of flow meter	Attachments:	none

Request:
Dwg 51781-017 shows the plan view for the layout of the new seep treatment system for the Present Landfill. The installation of the flow meter in the central manhole seems to disregard the flows from the two adjacent manholes (where flow from the sub-grade collection trench will come). Is the location of the flow meter up-stream from the collection trench flows correct? Please advise and correct the drawing if required.

Solution:
Evaluate the location of the flow meter and advise what to do (if anything). Revise dwg 51781-017 if necessary.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	2/14/05

Paul Kreitz		2/5/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐	Clarification ☐	Rejection ☐	☐ Change

Flow measurement of the existing seep was required in the accelerated action design; however, the flow of the existing seep has greatly reduced during the construction of the PLF cover and is at a rate that is impractical to electronically measure. See Response to RFI No. 211.

Robert W. Davis	Robert W. Davis	04/12/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due: OK CQAE
J.H. Rabe TA

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 114

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: 51781-006A | Specifications: None

Reference (other): Outside Slope – PLF P-channel | Attachments: None

Request:
Is a 4 to 1 slope required for the entire outside slope of the perimeter channel for the PLF? If so, control points are required so the grade can be set prior to installation of the erosion control materials.

Please provide direction. If a 4 to 1 is required, please specify where and provide the required control points.

Solution:
Provide written guidance to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	2/14/05

Paul Kreitz		2/8/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | ☐ Change

No, as shown on the drawings and as determined in the field, the outside slope of the perimeter channels can be modified in the field as discussed with the surveyor, engineering, and the construction team and as verbally approved by engineering and the QA team. Direction was provided to Stoller on this RFI on or about 02/11/05.

Robert W. Davis	Robert W. Davis	04/12/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due:

OK DM
Earth Tech

OK CQAE
J.H. Rale Tt

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 115

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	51781-012, Detail 3	Specifications:	None
Reference (other):	Field Change – Riprap-lined channel detail, 2/8/05, S. Powell	Attachments:	Earthtech Sketch

Request:
The attached sketch was provided to Nielson Skanska by Earthtech Engineering on 2/8/05. It shows a field change to design dwg. 51781-012. Please advise if this change has been reviewed and approved for construction.

Solution:
Provide written notice to proceed with the change and to red-line the applicable dwg.

Cost and schedule impact will be addressed in a subsequent RFI if applicable.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	2/14/05

Subcontractor Print/Type Name	Subcontractor Signature	Date
Paul Kreitz		2/9/05

REPLY TO SUBCONTRACTOR

Reply:	Accepted	Clarification	Rejection	Change
	☐	☒	☐	☐

Yes, the changes to the taper of the rip-rap at the top of the rip-rap and the placement of the geotextile under the granular bedding is required as shown on the attached sketch. Design Drawing No. 012 will be revised as a part of the record drawings. Verbal direction was provided to Stoller on this RFI on or about 02/11/05.

Print/Type Name	Signature	Date
Robert W. Davis	Robert W. Davis	04/12/05

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CRAE (Des. Chg. ft. Earthtech) JH. Rabe TT	

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 116

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: 51781-017 | Specifications: 03300, Cast-in-place Concrete

Reference (other): None | Attachments: None

Request:
Please review the testing requirements in the specification (1.05) and clarify which are to be performed and the required certifications for the personnel performing them.

Also: The testing requirements are in the QA section. Traditionally, this has referred to the K-H QA function (i.e. Tetratech for the PLF). Is the intention that Stoller perform the testing via its QC function?

Solution:
Please provide written clarification to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	2/21/05

Paul Kreitz		2/9/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | ☐ Change

Stoller and the QC team (Golder) must perform the testing of the cast-in-place concrete as required in the design specifications. Tetra Tech will observe the "in-the –field" concrete testing during the concrete pours required of the PLF accelerated action design. Direction was verbally provided to Stoller on this RFI on or about 02/11/05.

Robert W. Davis	Robert W. Davis	04/12/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due: OK CRAE J.H. Rale TT

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action — Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC — RFI No.: RFI - 117

Subcontractor: S.M. Stoller Corporation — Page 1 — 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None	Specifications: None
Reference (other): East Face Excavation Task	Attachments: None

Request:
The current East Face Design requires clearing grubbing of the face surface (2"-4") and sub-excavation of soil that is not suitable for the base of the buttress fill. Currently this surface and sub-excavated soil is being stockpiled adjacent to the landfill cap (north side).

Please advise as to the disposition of this material (use in 2" lift?, spread?).

Solution:
Please advise as to the disposition of this East Face material.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	2/28/05

Paul Kreitz		2/9/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐	Clarification ☒	Rejection	☐ Change

The grubbed soil may be used for the 2-inch lift of the 24-inch final soil cover of the Present Landfill. If it is not needed for this lift, it may be stockpiled in the areas already in use for stockpile storage immediately north of the PLF. Verbal direction was provided to Stoller on this RFI on or about 02/11/05.

Robert W. Davis	Robert W. Davis	04/12/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due: OK CQAE (soft sub-exc. soil spread elsewhere) J.H. Rale 4/12

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 119

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None | Specifications: None

Reference (other): East Face PLF Construction | Attachments: None

Request:

Verbal direction has been given by the K-H PM to:

- Proceed with sub-excavation of the northern section of the east face
- Guidance to fill with RFA to the elevation at the top of the seep capture vault east to the proposed location of the new seep treatment system.

Please supply written verification of the above.

Note: The cost and schedule impact of this change will be captured in the total East Face estimate under development.

Solution:

Please provide written guidance confirming the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	

Paul Kreitz		2/10/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☒ | Clarification ☐ | Rejection ☐ | ☐ Change

As shown on the design drawings, the softer soils at the base (toe) of the east face buttress fill must be removed at the direction of the Kaiser-Hill geotechnical engineer. Authorization is provided to proceed with this excavation under K-H field representatives direction. Verbal direction was provided to Stoller on or about 02/10/05.

Robert W. Davis	Robert W. Davis	04/12/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due: OK CRAE J.H. Rale TT

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC RFI No.: RFI - 120

Subcontractor: S.M. Stoller Corporation Page 1 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None Specifications: None

Reference (other): Project Schedule – 2" Final Lift Attachments: None

Request:
Per our current schedule we would like to initiate the final 2" lift on 2/16/05.

Request approval to start on that date or ASAP thereafter.

Note:
Also need responses to RFIs 93, 100, 107 (associated with 2" final lift) please.

Solution:
Give approval to proceed with 2" final lift.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	2/16/05

Paul Kreitz		2/14/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ Clarification ☒ Rejection ☐ ☐ Change

Authorization to begin the installation of the 2-inch lift as presented in RFI No. 170 was provided to Stoller on 03/15/05. Prior to that date, the 2-inch lift was placed using the grubbed soils from the interim cover of the PLF to reach a total height of 24 inches for the final soil cover. During this installation, the 2-inch lift is generally thicker than 2-inches and on the order of 4 to 5 inches thick.

Robert W. Davis	Robert W. Davis	04/12/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due: OK CQAE J.H. Rabe TA

Request for Information (RFI)

Project Name:	Construction of the Present Landfill Accelerated Action	Subcontractor No.:	KH020577
Contractor:	Kaiser-Hill Company, LLC	RFI No.:	RFI - 121
Subcontractor:	S.M. Stoller Corporation	Page 1	1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	51781-016, New Seep Passive Treatment System Layout	Specifications:	
Reference (other):	Installation of seep drain pipe.	Attachments:	

Request:
The following questions address the installation of the seep drain pipe connecting the existing seep sump (to be repaired) and the new seep system (to be constructed).

- The current design drawing indicates a 2% slope from the sump to the new treatment system. With the design changes is this still the case?
- With the proposed repair plan for the seep sump (bentonite wall, gravel), please give the details on how the geotextile envelope for the piping will be constructed at the transition from the seep sump...through the bentonite wall.
- Please clarify the specification for the drainage rock around the pipe and in the channel it will be buried in.

Solution:
Please provide written guidance to the above by 2/16/05.

Cost impact - 0
Schedule impact – per the current construction estimate the repairs to the seep sump will begin 2/15 or 2/16. At that time we are scheduled to begin installation of the pipe and will need answers to the above. Thanks

Requested By:	Paul Kreitz
Date Field Construction will be affected:	2/16/05

Paul Kreitz		2/14/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☐	Clarification ☐	Rejection ☐	☐ Change

See Response to RFI No. 191.
The geotextile used to line the pipe trench will butt up against the bentonite wall. No connection is required. The geotextile is for structural stability of the pipe trench.
The rock in the pipe trench is shown on design drawing 017 and refers to design specification 02245 for the rock material specifications.

Direction on the pipe installation was verbally provided to Stoller on or about 02/15/05.

Robert W. Davis	Robert W. Davis	04/12/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:		

OK CQAE
J.H. Rale Tt
(minor field rev. 4/21 to provide all coll. of water in pipe gravel bedding)

Request for Information (RFI)

Project Name:	Construction of the Present Landfill Accelerated Action	Subcontractor No.:	KH020577
Contractor:	Kaiser-Hill Company, LLC	RFI No.:	RFI - 125
Subcontractor:	S.M. Stoller Corporation	Page 1	1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	51781-013A & 51781-016	Specifications:	None
Reference (other):	East Face Construction	Attachments:	None

Request:

With respect to the bottom anchor trench on the East Face:

1. Please provide details or a sketch showing where and how the GDN, 10" cushion, and rock layers, finish at the bottom of the 4:1 East Face slope.
2. If they stop past the anchor trench: Is another collection trench required to capture water coming from the GDN and rock layer?
3. To begin construction of the 4:1 slope: Is the toe of the slope the sub-grade point? Or is the toe the sub-grade plus all the layers of material (6", geo, 10", rock, 22", and 2")?
4. Will the new seep system use the existing collection basin/point with piping directly to the new treatment system?
5. With regard to sequence: Is the new seep system to be constructed first, with the permanent drain pipe connected and then buried by the construction of the buttress fill? Or will the permanent pipe be buried in the construction of the buttress fill and have to be re-excavated to connect to the new seep system once it is built?

Solution:

Please give written guidance regarding the above questions.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	2/28/05

Paul Kreitz		2/15/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐	Clarification ☒	Rejection ☐	☐ Change

The details of the anchor trench are shown on design drawing 013A, detail 1.
The termination of the GDN, rock and 24-inch soil cover is shown on design drawing 013A, detail 2.
See response to RFI 136 for tie-in locations of the various layers.
See response to RFI 191 for details of the seep treatment system.
The construction sequence would be to place any piping planed to be under the buttress fill first and then build the fill over the top of the piping.

The details of this have been resolved with discussions with the surveying, engineering and the construction team over the last 30 days, and are documented in RFIs dated after this RFI.

Robert W. Davis	Robert W. Davis	04/12/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CQAE J.H. Rale TA	

Request for Information (RFI)

Project Name:	Construction of the Present Landfill Accelerated Action	Subcontractor No.:	KH020577
Contractor:	Kaiser-Hill Company, LLC	RFI No.:	RFI - 127
Subcontractor:	S.M. Stoller Corporation	Page 1	1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	51781-009	Specifications:	None
Reference (other):	Southeast Perimeter Channel	Attachments:	None

Request:
Please provide the following guidance relative to the construction of the southeast perimeter channel of the PLF:

- At the point the channel cuts through the road that crosses the dam the drawing indicates a culvert. Please specify the size and shape of the desired culvert and any other relevant details pertinent to its installation.
- At the far southeast portion of the channel there is an existing concrete structure (weir?). Can it be removed? Does anything go back in its place.

Solution:
Please provide written guidance to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	2/23/05

Paul Kreitz		2/19/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐	Clarification ☒	Rejection ☐	☐ Change

The design team is working on the information needed for the culverts. See RFI No. 198.

The concrete structure at this location can be removed. It was a historical discharge location for the southern section of the GWIS, which will no longer be active. This direction was verbally provided to Stoller on or about 02/21/05.

Robert W. Davis	Robert W. Davis	04/28/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OK CQAE
J.H. Rabe Tt

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 128

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None | Specifications: Rock Layer

Reference (other): None | Attachments: None

Request:
Material already placed and meeting specifications was requested by the regulators to K-H to be "re-covered" with cushion soil to cover what they observed to be "exposed rock with not enough fines". K-H identified approximately 30 locations on the PLF cap that had been already installed for addition of cushion material. Direction was given by the K-H project manager to complete the task.

Schedule impact - 0
Cost impact - $1200

Solution:
Please give written concurrence for the above work.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	2/18/05

Paul Kreitz		2/19/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☒	Clarification ☐	Rejection ☐	☐ Change

The addition of a small amount of cushion soil will account for the fines/rock segregation that has been seen in some areas of the rock layer. Proceed with adding cushion soil in the identified areas. This direction was verbally provided to Stoller on or about 02/18/05.

Robert W. Davis	Robert W. Davis	04/12/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due: OK CQAE J.H. Kale TX

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 131

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None | Specifications: None

Reference (other): Final 2" Lift – "Sandy" RFA | Attachments: None

Request:
Q: Can we use scrapers to deposit the final 2" lift on the 22" RFA layer? It is requested to deposit the 2" lift material with scrapers and rip the surface to eliminate compaction concerns. This technique will also expedite the work. We would like to start this lift as soon a possible.

Solution:
Provide written guidance to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	2/21/05

Paul Kreitz		2/21/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☒ | Clarification ☐ | Rejection ☐ | ☐ Change

Accepted. The use of scraper should be minimized; however, a scraper will generally limit the amount of dozer and grader compaction since the material can be placed at its final placement location at about the correct thickness. In addition, the entire surface will be ripped and diced to prepare the seed bed for planting to reduce compaction prior to planting.

Robert W. Davis	Robert W. Davis	04/12/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due:

OK CQAE (use of scraper minimized)
J.H. Rale TT

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action — Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC — RFI No.: RFI - 133

Subcontractor: S.M. Stoller Corporation — Page 1 — 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	None	Specifications:	None
Reference (other):	Construction QA/QC Manual, Surface Water Control Material, 4-25	Attachments:	None

Request:
The QA/QC Manual does not mention any QC requirements for the placement of the Erosion Matting materials.
Q: Are any hold points or documented inspection points required prior to or during installation of the erosion mat materials?

Solution:
Please advise in writing to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	2/28/05

Paul Kreitz		2/21/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐	Clarification ☒	Rejection ☐	☒ Change

The erosion matting will be placed by TP Enterprises and not the Stoller Team. The QC team will not have a role in the placement of the matting. However, QA will still provide final inspection & documentation of the placement and anchoring of the erosion mats. This was verbally communicated to Stoller on or about 03/04/05.

Further estimates of project EAC's should have the installation of the erosion matting deleted from the Stoller scope of work.

Robert W. Davis	Robert W. Davis	04/12/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due: OK CQAE
J.H. Fale TA

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 136

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: 51781-013A | Specifications: none

Reference (other): 4 to1 and South Bench Catch points – East Face Design | Attachments: none

Request:
Please supply the design coordinates (eastings, northings, and elevations for the toe of the East Face Slope (entire 52" lift). These are required to complete construction. Please include the changes to the Southern section of the east face toe that requires a greater than 4 to 1 section and a bench out area.

Solution:
Provide the required design coordinates and elevations to complete the work.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	2/24/05

Paul Kreitz		2/23/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | ☐ Change

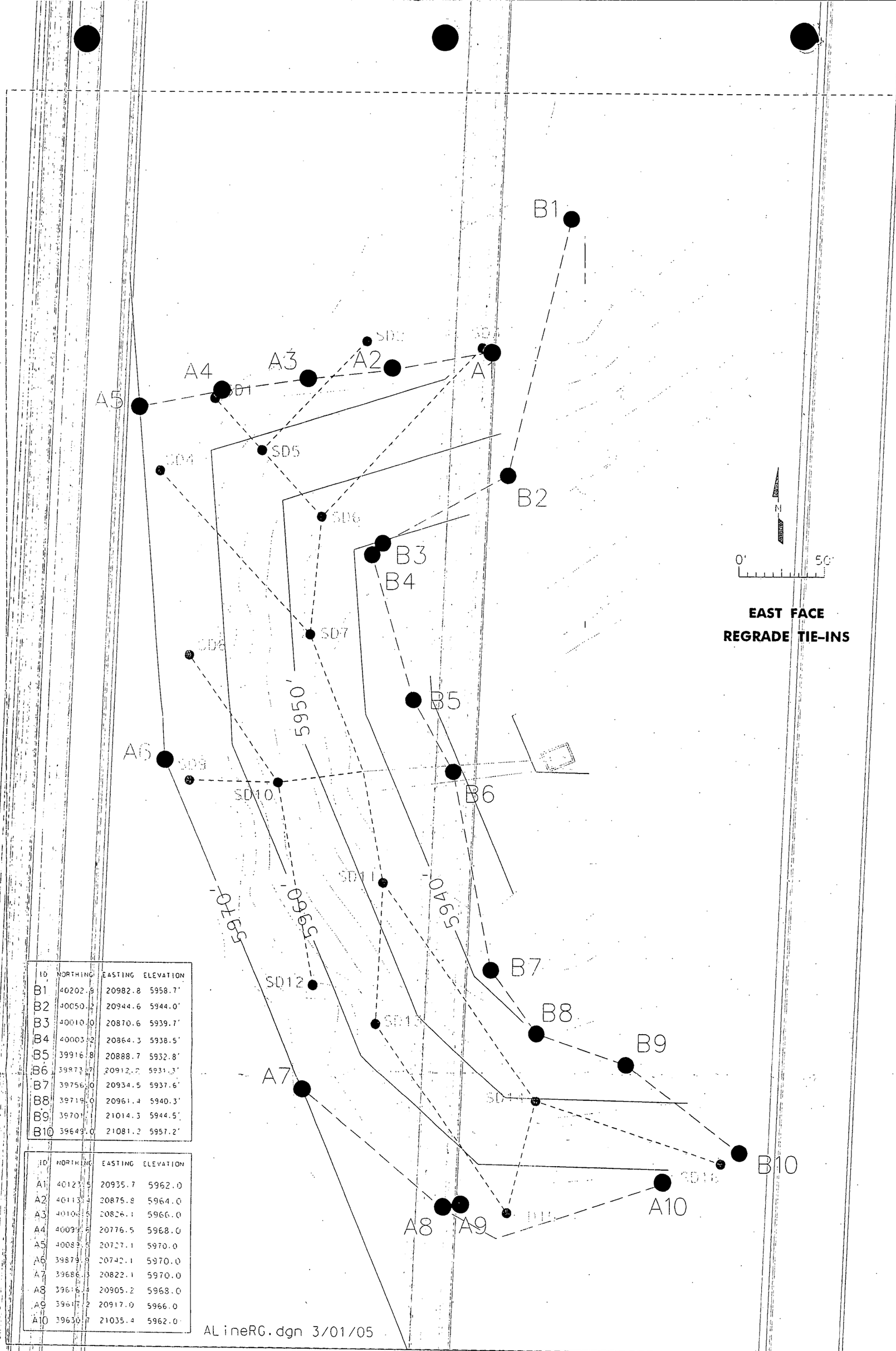
A control point drawing is attached to the RFI response to assist the construction team in the layout and construction of the 4H: 1V slope. These control points do not constitute a design change. These control points were provided to Stoller on 03/01/05.

Robert W. Davis	Robert W. Davis	04/12/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due: OK CQAE J.H. Rale TT



ID	NORTHING	EASTING	ELEVATION
B1	40202.9	20982.8	5958.7'
B2	40050.2	20944.6	5944.0'
B3	40010.0	20870.6	5939.7'
B4	40003.2	20864.3	5938.5'
B5	39916.8	20888.7	5932.8'
B6	39873.7	20912.2	5931.3'
B7	39756.0	20934.5	5937.6'
B8	39719.0	20961.4	5940.3'
B9	39701.1	21014.3	5944.5'
B10	39649.0	21081.2	5957.2'

ID	NORTHING	EASTING	ELEVATION
A1	40127.5	20935.7	5962.0
A2	40113.4	20875.8	5964.0
A3	40106.5	20826.1	5966.0
A4	40094.6	20776.5	5968.0
A5	40082.3	20727.1	5970.0
A6	39879.9	20742.1	5970.0
A7	39686.3	20822.1	5970.0
A8	39616.4	20905.2	5968.0
A9	39611.2	20917.0	5966.0
A10	39630.7	21035.4	5962.0

ALineRG.dgn 3/01/05

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 138

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: East Face Design Sketch – Strip Drain Locations | Specifications: none

Reference (other): North Section of East Face – upper area | Attachments: none

Request:
The current Strip Drain installation sketch for the upper portion of the northern section of the East Face has been identified by the K-H Field Engineer to be modified. Please supply the revised locations and installation directions for this section of strip drains.

Solution:
Provide design changes in writing or a revised sketch.

Requested By: Paul Kreitz

Date Field Construction will be affected:

Paul Kreitz		2/24/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☐ | Rejection ☐ | ☐ Change

These modifications to the location and number of strip drains in the northern section of the east face will be a part of the as-built drawings for the PLF accelerated action. Stoller should survey the locations of the strip drains for the as-built drawings. This direction was provided to Stoller on or about 02/25/05.

Robert W. Davis	Robert W. Davis	04/12/05
Print/Type Name	Signature	Date

iiser Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due: OK CQAE Jt Rale Tt

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - ~~028~~ 190 PHR

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: East Face Re-grade Sketch | Specifications: None

Trash in Cuts – Area close to Control Pts

Reference (other): A7-A8 | Attachments: None

Request:
The current East Face Design require approximately 1 foot cuts just below the crest of the East Face in the area of Control pts A7 and A8. The first pass with the dozer (approximately 4 -6" deep) unearthed landfill debris (plastic, metal, etc).

Please advise the path forward with regards to:

- Proceeding with the cut operation
- Remediation of the trash area (to meet sub-grade requirements
- Disposition of the trash/soil mixture (note, the trash is heavily integrated with soil and is extensive)

Solution:
Provide written direction to the above unexpected condition.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	2/25/05

Paul Kreitz		2/25/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | Change ☐

Since the topography of the east face is critical (slope = 4H: 1V), the waste material must be removed to allow the proper cuts. RFETS will provide the appropriate roll-off type boxes for the waste material to be transferred. RFETS will handle the movement of the roll-off boxes and disposal of the contents in accordance with RFETS waste management policies and procedures.

Robert W. Davis	Robert W. Davis	04/12/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OK CQAE
J.H. Fab. TA

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 145

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None | Specifications: None

Reference (other): Fill Material, East Face Buttress Fill | Attachments: None

Request:
The Rocky Flats Alluvial (RFA) coming from the 371 bldg borrow area is rapidly being depleted. It is estimated that with our five (5) Volvos the material will be gone by 3/2/05. Additionally, the fill rate for the buttress is not meeting schedule requirements since the west berm of the former shooting range is not available for our scraper haul due to regulatory concerns.

Request written concurrence to begin hauling RFA from the Centennial Pit to meet schedule requirements since on-site sources are inadequate for our needs. Verbal concurrence given by the K-H Project Manager per telecon on 2/28/05.

Solution:
Begin importing RFA from the Centennial Pit for the East Face buttress fill as soon as their trucks can safely navigate in and out of that area.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	3/2/03

Paul Kreitz		2/28/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☒ | Clarification ☐ | Rejection ☐ | Change ☐

Accepted. As previously implemented, the Centennial Pit is a borrow source for Rocky Flats Alluvium when other sources are not available or depleted. Verbal direction was provided to Stoller on 02/28/05.

Robert W. Davis	Robert W. Davis	04/12/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due: OK CQAE JH Fake TA

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 150

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None | Specifications: 3.06 - 2

Reference (other): Placement of 10" cushion soil on 4-1 GDN Slope | Attachments: None

Request:
Relative to placement of 10" cushion material: Specification 3.06, item #2 states, "soil will be spread using a Low Ground Pressure dozer or equivalent."

10" cushion is required to be placed on the GDN that will be installed on the 4 to 1 slope of the East Face from the lower portion upward to minimize the potential for shear damage to the liner materials (rather than from the top down).

What type of equipment is allowed on placed 10" while extending 10" placement upwards.

Solution:
Would like to use a track loader, D-6 LGP dozer and dump Volvos on placed 10" cushion.

Requested By:	Paul Kreitz	
Date Field Construction will be affected:	3/10/05	
Paul Kreitz		3/1/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | ☐ Change

A low ground pressure track loader and dozer are acceptable for the placement of the 10-inch cushion soil on the 4H: 1V slope. At this time Volvo trucks will not be allowed on the 4H: 1V slope for placement of the cushion soils. As always the loader must place the soil out in front of the leading edge of the placed soil (and not pushed with the dozer) to avoid wrinkles in the GDN. This direction was provided to Stoller verbally on or about 03/03/05.

Robert W. Davis	Robert W. Davis	04/12/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due: OK CQAE J.H. Rale Tt

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action — Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC — RFI No.: RFI - 151

Subcontractor: S.M. Stoller Corporation — Page 1 — 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	East Face Design Sketch – Final Grade Tie-ins	Specifications:	None
Reference (other):	Slope from C points to D points	Attachments:	None

Request:
Q: Does the finished slope from the C points to the D points have to be 4-1? Can it be less of a slope (i.e. variable)?

Solution:
Please advise in writing to the above question.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	3/10/05

Paul Kreitz		3/1/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐	Clarification ☒	Rejection ☐	☐ Change

Yes. This discrepancy was resolved in the field with the surveyors, engineering and construction team on or about 03/03/05. No further response is required to this RFI.

Robert W. Davis	Robert W. Davis	04/12/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due: OK CQAE

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 152

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None | Specifications: None

Reference (other): ROM for extension of East Face Liner area to capture newly discovered asbestos material | Attachments: None

Request:
The K-H Field Engineer supplied the following quantities to develop a Rough Order of Magnitude cost estimate for extending the current liner cap design to cover newly uncovered asbestos materials. Re-grade – 1268 cu.yrds., cushion soil – 705 cu.yrds, rock – 523 cu.yrds., RFA (22" lift) – 1,057 cu.yrds, and geosynthetics (GCL, LLDPE, GDN) – 1,442 sq.yrds.

Based on the above quantities and existing unit rates the ROM for extending the PLF cap would be approximately $150 k. Please provide the engineering data and procurement approvals at the earliest convenience if this path is to be followed.

Solution:
Provide written direction to extend the PLF cap if applicable.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	3/1/05

Paul Kreitz		3/1/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☐ | Rejection ☒ | ☐ Change

Rejected. RFETS has decided that the asbestos will be removed in accordance with the RFETS asbestos management policies and procedures. The geosynthetic liner materials will end as currently shown on the design drawings. This direction was verbally provided to Stoller on or about 03/03/05.

Robert W. Davis	Robert W. Davis	04/12/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CQAE J.H. Rabe TT	

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 162

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	None	Specifications:	02225-09456-5, 1.11C
Reference (other):	Snow removal from FML w/skid steer loader and brush	Attachments:	None

Request:

Approval was granted by the K-H PM in November, 2004 to remove snow from the FML with a skid-steer loader and a brush. Please revise the specification or give written approval for snow removal from installed FML with a skid steer loader and brush.

Solution:

Provide written approval for the above practice.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	TBD

Paul Kreitz		3/5/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☒	Clarification ☐	Rejection	☐ Change

Use of the skid-steer and brush is acceptable for the removal of snow from the FML. However, the FML shall be inspected to ensure that no damage has been done to the FML before being covered with GDN.

This direction was provided to Stoller in November 2004.

Robert W. Davis	Robert W. Davis	04/08/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due: OK CQAE J.H. Rala TT

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 163

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None	Specifications: None
Reference (other): Certification of 2" Final Lift - tolerances	Attachments: None

Request:
The new, final 2" "sandy" Rocky Flats Alluvium lift requires specifications for the final tolerances (ref RFI 086). Please supply written guidance as to the grade tolerances for the final 2" lift (either spec change or written guidance).

Solution:
Provide written response to the above request.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	3/8/05

Paul Kreitz		3/8/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | ☐ Change

Grade tolerances are as specified in the earthwork specification (02222), and are as follows: -0.0 feet to +0.2 feet.

This direction was provided to Stoller on or about 03/08/05.

Robert W. Davis	Robert W. Davis	04/08/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CQAE J.H. Rale TT	

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 170

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None	Specifications: None
Reference (other): Final 22"/2" Lift	Attachments: None

Request:
Per the K-H Project Manager the final 22"/2" lift combination has been revised effective 3/14/05 to a 24" lift of RFA material followed by a "cover" of "sandy" RFA. Please provide written confirmation of this change and also guidance as to expectations on how much final cover material (sandy RFA) is acceptable.

Schedule Impact – 0 (not on critical path)
Cost Impact – import and place additional RFA, $55k

Solution:
Provide written guidance to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	3/14/05

Paul Kreitz		3/14/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☐ | Rejection ☒ | ☐ Change

Rejected. The 24-inch soil cover shall be constructed in the following manner: A 22-inch layer of Rocky Flats Alluvium (RFA) shall be placed, graded and certified by QA/QC. Then a 2-inch layer of previously vegetated RFA shall be placed on top of the 22-inch layer, graded and certified by QA/QC. Then the total 24-inch layer shall be ripped on both directions with the grader and followed by discing to prepare the surface for seeding. This direction was given to Stoller on or about 03/15/05.

The previously vegetated RFA shall come from the following stockpiles: The grubbing of the interim cover of the PLF and the 280 stockpile as directed by PLF RFETS Construction Team.

Robert W. Davis	Robert W. Davis	04/08/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due: OK CQAE JA Rale TT

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 171

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	None	Specifications:	None
Reference (other):	Sampling and Testing – RFA in Centennial Pit Used for 22" Lift	Attachments:	None

Request:
The K-H PM has requested that two (2) bulk gradation tests be performed on the Rocky Flats Alluvial material being mined in the Centennial Aggregate pit. Please provide written concurrence to perform this work.

Schedule Impact – 0
Cost Impact - $1500

K-H PM has verbally approved this work to be conducted on 3/16/05.

Solution:
Please provide written concurrence for the above work.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	3/16/05

Subcontractor Print/Type Name	Subcontractor Signature	Date
Paul Kreitz		3/16/05

REPLY TO SUBCONTRACTOR

Reply: Accepted ☒ | Clarification ☐ | Rejection ☐ | ☐ Change

These tests have been requested by the EPA and CDPHE, and agreed to by the DOE. Conduct the testing of the Rocky Flats Alluvium borrow source at the Centennial Pit. As agreed with the agencies, the testing shall be by ASTM D5519 and ASTM D422 for two representative samples at the borrow source. This direction was given verbally to Stoller on 03/16/05. Stoller was also asked to obtain these samples no later than 03/18/05.

Print/Type Name	Signature	Date
Robert W. Davis	Robert W. Davis	04/08/05

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CQAE J.H. Eale TA			

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 173

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None | Specifications: None

Reference (other): Final Disking of the 2" Lift | Attachments: None

Request:
Request approval to use our standard D-6 dozer to pull the disking rig for final preparation of the 2" cover. It is the equipment specifically brought to the site for this purpose as it is small and possesses the required hydraulic connections. The ground pressure for the D-6 is 7.83 psi as opposed to 5.04 for a LGP D-6.

Impact of not using the D-6:
Schedule – will not have 2" ready for seeding on Monday/Tuesday (3/21 – 3/22) as we will have to acquire another piece of equipment.
Cost – TBD, if equipment is available via Nielson/Skanska there will be a transport charge to bring it to the site, if nothing is available we will have to rent some type of equipment.

Solution:
Approve the D-6 Dozer for disking as the psi difference is negligible.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	3/18/05

Paul Kreitz		3/16/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☒ | Clarification ☐ | Rejection ☐ | ☐ Change

The use of the D6 dozer for the discing of the soil cover is acceptable as verbally discussed on or about 03/17/05.

Robert W. Davis	Robert W. Davis	04/08/05
Print/Type Name	Signature	Date

Kaiser-Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due: OK CQAE Jeff Rale TT

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 174

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: Design Sketch – Bentonite Collar	Specifications: None
Reference (other): Collar Thickness	Attachments: None

Request:
The design sketch for the Bentonite Collar references a "minimum thickness of 1 foot". Request concurrence to make the thickness of the collar 2 feet for constructability issues. (i.e. can use a backhoe rather than having to hand dig the trench)

Solution:
Please provide written approval for the above request.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	3/21/05

Paul Kreitz		3/19/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☒ | Clarification ☐ | Rejection ☐ | ☐ Change

A two-foot thick bentonite collar is acceptable as was verbally conveyed on or about 03/21/05.

Robert W. Davis	Robert W. Davis	04/08/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CQAE J.A. Rale FA	

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 175

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: Bentonite Collar Design Sketch	Specifications: None
Reference (other): 6 oz geotextile wrap	Attachments: None

Request:
The current design sketch specifies wrapping the perforated pipe with 6 oz geo-textile. Due to the amount of iron oxide in the water we suggest not wrapping the pipe to avoid fouling problems. The packed rock bed should be sufficient.

Request: Concur with deleting the requirement to wrap the pipe in geotextile.

Solution:
Provide written concurrence to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	3/23/05

Subcontractor Print/Type Name	Subcontractor Signature	Date
Paul Kreitz		3/21/05

REPLY TO SUBCONTRACTOR

Reply: Accepted ☒ | Clarification ☐ | Rejection ☐ | ☐ Change

Geotextile will not be required on the piping that collects the pipe bedding flow on the seep and strip drain collection system as verbally directed on or about 03/24/05.

Print/Type Name	Signature	Date
Robert W. Davis	Robert W. Davis	04/08/05

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due: OK CQAE J.H. Fole TT

Request for Information (RFI)

Project Name:	Construction of the Present Landfill Accelerated Action	Subcontractor No.:	KH020577
Contractor:	Kaiser-Hill Company, LLC	RFI No.:	RFI - 179
Subcontractor:	S.M. Stoller Corporation	Page 1	1 of 1

The subcontractor may initiate a Request for Information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	51781-017, Plan View, Proposed Passive Treatment System	Specifications:	None
Reference (other):	Gatorgrate	Attachments:	None

Request:
The "Gatorgrate" specified in drawing 51781-017 for the top of the Passive Treatment System comes in standard 10 foot widths. The drawings for the Passive Treatment System require a 10' opening. This will allow the grate to fall in the box.

Request engineering guidance relative to the dimensional problem.

Suggest, installation of an angle iron collar to support the grate, or form a lip to hold the grate, or make the box width smaller.

Solution:
Provide written guidance to the above problem.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/1/05

Paul Kreitz		3/22/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐	Clarification X	Rejection ☐	☐ Change

The seep treatment system width can be adjusted to accommodate the 10-foot width of the grating. As provided in the response to Submittal No. 107, fiberglass embedment angles supplied by Gatorgrate must be purchased to provide the edge support to the specified grating. The inside width of the seep treatment structure can be adjusted when the dimensions of the embedment angles are known. Provide the dimensions of the embedment angles as soon as possible to ensure that the dimensions of the concrete structure can be adjusted appropriately.

Robert W. Davis	Robert W. Davis	04/02/2005
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due: OK - if str. width reduced a few inches, max. - best w/ 10' span grating
CQAE J.H. Rale Tt

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 181

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: Dwg 51781-13B Termination of drainage pipe from Upper East Face anchor trench in Perimeter Channel

Specifications: None

Reference (other):

Attachments: None

Request:

Dwg 51781-13B has a detail showing the termination of the drain pipe coming from the upper East Face Anchor trench in the perimeter channels in "rock materials". Please supply the requirements for the termination point such as:

- Dimensional requirements for the rock area
- Type of rock to use
- Any dimensional requirements such as location of the point, depth of rock, cover depth over drain pipe.....

Solution:

Supply written engineering guidance or sketch for the construction of the termination point in the perimeter channel.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/1/05

Paul Kreitz		3/22/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☐	Clarification X	Rejection ☐	☐ Change

As shown on Design Drawing 013B, the rock that is specified on the drawing is the same rock used for the rock layer for the cover. The drawing also shows the extent of the rock to be 10-feet on each side of pipe as it "daylights" from the trench. The rock layer thickness shall be about 10-inches thick (size of the largest rock)

Robert W. Davis	Robert W. Davis	04/02/2005
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OK CRAE
J.H. Fole PE

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 182

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None	Specifications: Table 2245-2
Reference (other):	Attachments: None

Request:
Table 2245-2, "RipRap Gradation Requirements" species three types/sizes of material for placement in the perimeter channels. Please transmit engineering guidance or a sketch that shows where each type/size of Rip Rap is to be placed.

Solution:
Provide written engineering guidance or a sketch defining the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/1/05

Paul Kreitz		3/23/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐	Clarification X	Rejection ☐	☐ Change

The sizing of the rip-rap is shown on the drawings, specifically Design Drawings Nos. 012 and 013A. In addition, replace the grouted rip-rap with **non-grouted rip-rap, size D50 = 12-inch** (instead of D50=9-inch) for the rip-rap shown on Design Drawing No. 012, Detail 3.

Robert W. Davis	Robert W. Davis	04/02/2005
Print/Type Name	Signature	Date

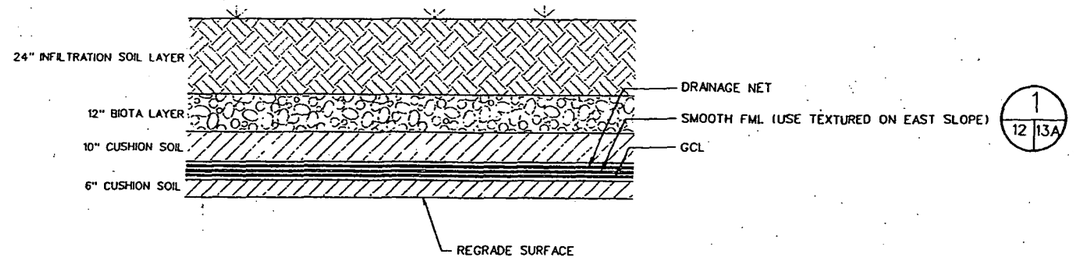
Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OK CQAE (9" D50 eliminated)
J.H. Rule TX (attach note Ft. Earth Tech Re Des. Chg.)

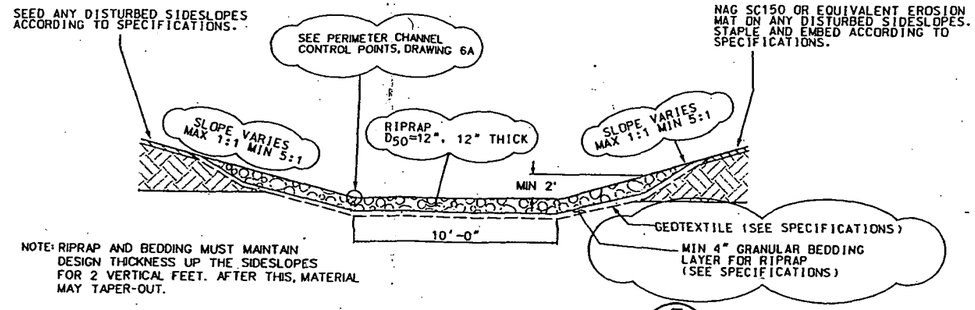
OK DM
Earth Tech



GEOSYNTHETIC COMPOSITE FINAL COVER

NTS

1 / 9 12

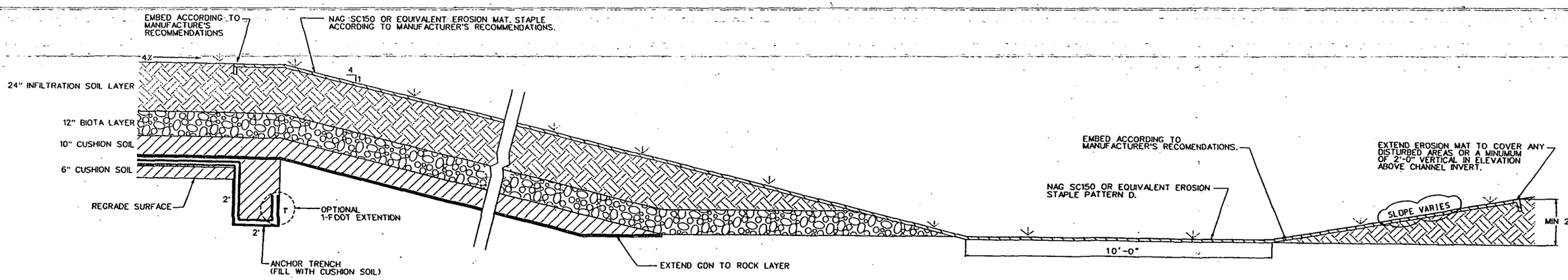


NOTE: RIPRAP AND BEDDING MUST MAINTAIN DESIGN THICKNESS UP THE SIDESLOPES FOR 2 VERTICAL FEET. AFTER THIS, MATERIAL MAY TAPER-OUT.

RIPRAP LINED CHANNEL DETAIL

NTS

3 / 9 12



ANCHOR TRENCH *

NTS

2 / 9 12

* NOTE: IF WASTE IS ENCOUNTERED DURING THE EXCAVATION OF THE ANCHOR TRENCH, WASTE MATERIAL WILL BE OVER EXCAVATED. AN ADDITIONAL 1-FOOT OVER EXCAVATIONS WILL BE FILLED WITH CUSHION LAYER SOIL TO THE DESIGN DIMENSIONS OF ANCHOR TRENCH.

COLORADO REGISTERED PROFESSIONAL ENGINEER
RANDALL C. THOMPSON
30638
4/14/05

ISSUE	DESCRIPTION	DATE	DSGN	DWN	CHKD	IV	APVD		CLASS	PROJECT/CHARGE NO.
2	ADDED DETAIL TO RIPRAP LINED CHANNEL DRAWING									
0	ORIGINAL ISSUE									

REVISION DESCRIPTION

KEYWORDS: 1. 2. 3. 4. 5.

BLDG./FACILITY: SITE

ROOM/AREA: NA

GRID COORD./COL NO.: NA

TOLERANCES: FRACT. ±; ANGLE ±; DEC. ±; UNLESS NOTED OTHERWISE

REMOVE BURRS AND SHARP EDGES

NEXT ASSEMBLY: NA

SCALE: AS SHOWN

DESIGN COMPANY: DESIGNED BY R. ARCHIBALD RA 8/9/04; DRAWN BY A. SHOTNIX AS 8/10/04; CHECKED BY R. THOMPSON RJ 8/10/04; INDEPENDENT VERIFIER S. LAWRENCE SL 11/10/04; APPROVED BY R. THOMPSON RJ 8/11/04

CLASSIFIER

LANDLORD

PROJECT/WCF NO. 020525

U.S. DEPARTMENT OF ENERGY
ROCKY FLATS OFFICE GOLDEN, COLORADO

Rocky Flats Environmental Technology Site
GOLDEN, COLORADO

LANDFILL COVER AND SURFACE WATER DETAIL
PRESENT LANDFILL ACCELERATED ACTION 100% DESIGN

SIZE: B | DRAWING NUMBER: 51781-012 | ISSUE: 2

L:\GROUP\CAD\ROCKY_FLATS\NEW_DESIGN_2004_\DETAILS\LNDFILLCVR.DGN 1/23/04

EARTH TECH

A tyco INTERNATIONAL LTD. COMPANY

TECHNICAL MEMORANDUM

DATE: June 16, 2005

TO: Bob Davis, RFETS

FROM: Randy Thompson, Earth Tech, Inc.

SUBJECT: Calrification for RFI 182 – Present Landfill

The final design for the riprap sections of the perimeter channel are found in Appendix H of the PLF Design Submittal. The riprap calculations found in Appendix H called for a minimum of D_{50} = 6 inch, non-grouted riprap. As an added measure, the final design (Drawing 012) specified D_{50} = 9 inch, grouted riprap.

In response to RFI 182, the Design Team approved eliminating grout from the riprap so long as the D_{50} was increased to 12 inches. Since the original calculations required 6 inch non-grouted riprap, the use of 12 inch non-grouted was a more conservative approach and the calculation was not revised.

Request for Information (RFI)

Project Name:	Construction of the Present Landfill Accelerated Action	Subcontractor No.:	KH020577
Contractor:	Kaiser-Hill Company, LLC	RFI No.:	RFI - 183
Subcontractor:	S.M. Stoller Corporation	Page 1	1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	East Face Design Sketch	Specifications:	None
Reference (other):	Upper Anchor Trench – Drain Pipe	Attachments:	None

Request:
Please supply written engineering guidance or a specification for the type and size for the drainage pipe to be placed in the Upper East Face Anchor trench and extended to the PLF perimeter trenches.

Solution:
Supply written engineering guidance for the above pipe.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	3/30/05

Paul Kreitz		3/23/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐	Clarification X	Rejection ☐	☐ Change

The pipe specification is provided on Design Drawing No. 013A. See Detail No. 1 with reference to the note on the drawing.

Robert W. Davis	Robert W. Davis	04/02/2005
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:		

OK CQAE
J.H. Rule Tt (need subm. w/ pipe certs. Ft. contr.)

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 188

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None | Specifications: None

Reference (other): | Attachments: None

Request: Please provide detail, in the form of a cross section, showing the relationship between the liner materials, the drain pipe, and the bedding material in the upper anchor trench. Please also provide specifications for the bedding material and pipe.

Solution:

Requested By:	Steve Brinkman, Stoller
Date Field Construction will be affected:	Friday, March 25, 2005

Steve Brinkman, Stoller		
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☐	Clarification X	Rejection ☐	☐ Change

The detailed cross-section of the upper anchor trench is shown on Design Drawing No. 013A, including the pipe and gravel bedding requirements, and the geosynthetic liner relationships in the anchor trench.

Robert W. Davis	Robert W. Davis	04/02/2005
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OK CQAE
J.H. Fale TT

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 189

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	Rocky Flats Present Landfill Seep Treatment System	Specifications:	None
Reference (other):	Floor Elevation – manhole for Existing Seep Tie-in	Attachments:	None

Request:
The Design sketch provided on 3/29/05 for the construction of the Seep Treatment System has no elevation for the floor of the manhole that captures the water from the existing seep.

Please provide this elevation.

Solution:
Revised the sketch to include this elevation or provide written engineering guidance.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	3/29/05

Paul Kreitz		3/29/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

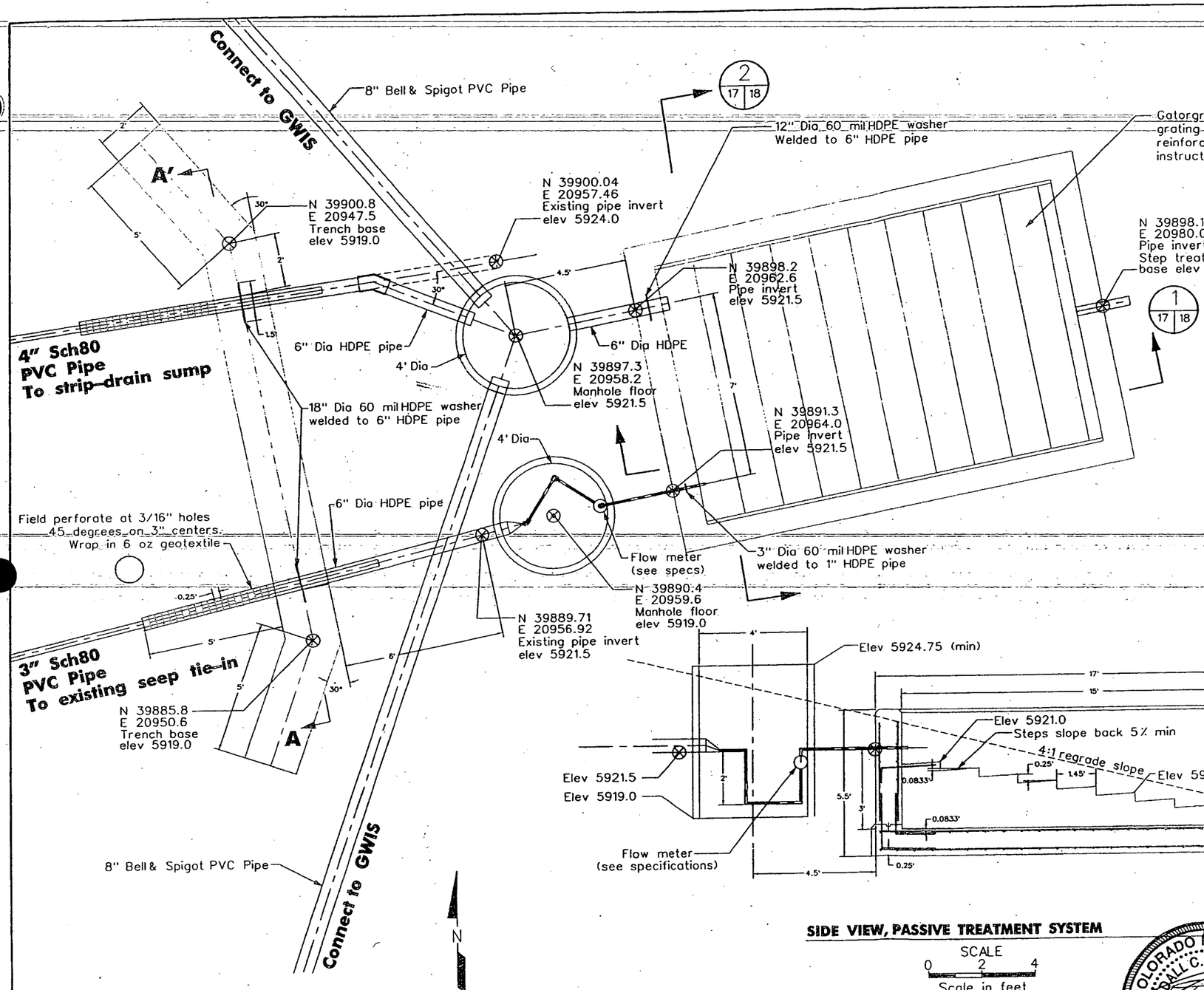
Reply:	Accepted ☐	Clarification X	Rejection ☐	☐ Change

As we discussed (and presented) with Stoller, K-H & Earth Tech at our meeting on 04/01/2005, the elevations and control points for the structures of the Seep Treatment System were provided to Stoller at our meeting and are attached to this RFI response.

Robert W. Davis	Robert W. Davis	04/02/2005
Print/Type Name	Signature	Date

Kaiser Hill Action:

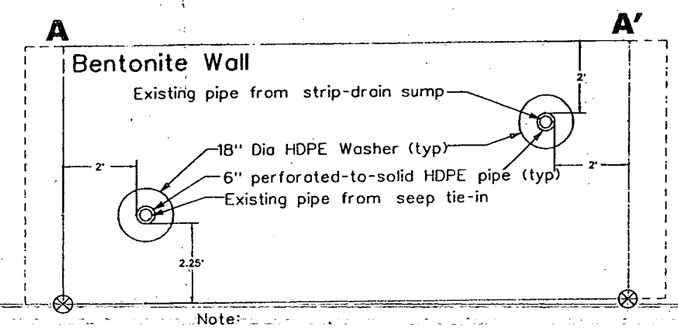
Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CQAE J.H. Rale TT	



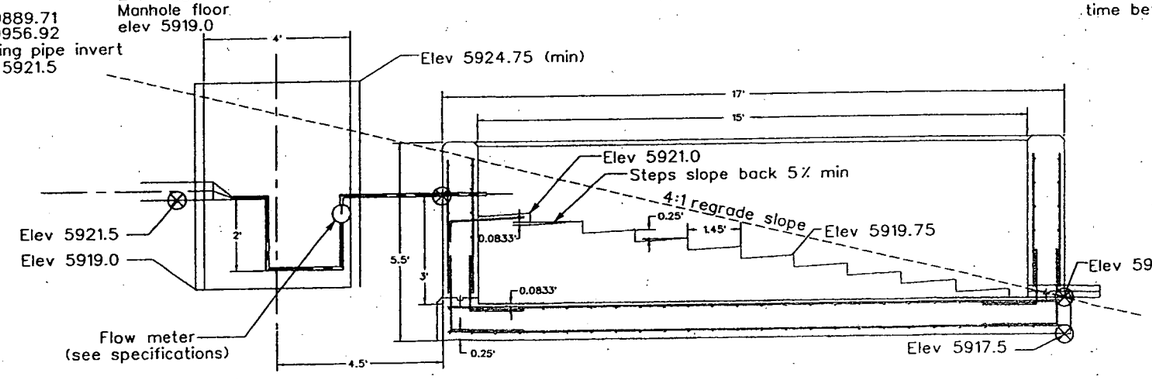
PLAN VIEW, PASSIVE TREATMENT SYSTEM

1
16 17

SCALE
0 2 4
Scale in feet

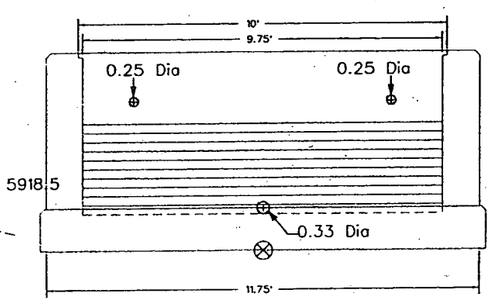


Note:
Use CETCO Pure Gold bentonite crumbles or chips (or equivalent). Install bentonite in 6" lifts. Hydrate each lift with 1 gallon water to 20 lbs bentonite. Allow 15 minutes hydration time before next lift.



SIDE VIEW, PASSIVE TREATMENT SYSTEM

SCALE
0 2 4
Scale in feet



COLORADO REGISTERED PROFESSIONAL ENGINEER
RANDALL C. THOMPSON
30638
4/14/05

QUAN.	DESCRIPTION	MATERIAL

REVISED PIPING, MANHOLES, AND BENTONITE WALL DETAILS

REVISION DESCRIPTION

ISSUE	DESIGN COMPANY	DATE	DSGN	DWN	CHKD	IV	APVD			CLASS	PROJECT/CHARGE NO.
2	EARTH TECH	4/13/05	SP	SP	RA	SL	RJ				

0 ISSUE — ORIGINAL ISSUE — DESCRIPTION

PROJECT/WCF NO. 020525

U.S. DEPARTMENT OF ENERGY
ROCKY FLATS OFFICE GOLDEN, COLORADO

Rocky Flats Environmental Technology Site
GOLDEN, COLORADO

KEYWORDS
1.
2.
3.
4.
5.

TOLERANCES
FRACT. ±
ANGLE ±
DEC. ±
UNLESS NOTED OTHERWISE
REMOVE BURRS AND SHARP EDGES
NEXT ASSEMBLY
SCALE AS SHOWN

DESIGN COMPANY: EARTH TECH
DESIGNED BY R. THOMPSON RJ 8/9/04
DRAWN BY A. SHOTNIK AS 8/10/04
CHECKED BY R. ARCHIBALD RA 8/10/04
INDEPENDENT VERIFIER S. LAWRENCE SL 11/10/04
APPROVED BY R. THOMPSON RJ 8/11/04
CLASSIFIER

NEW SEEP PASSIVE TREATMENT SYSTEM LAYOUT
PRESENT LANDFILL ACCELERATED ACTION
95% DESIGN

SIZE	DRAWING NUMBER	ISSUE
B	51781-017	2

GROUP\CAD\ROCKY_FLATS\New_Design2005\Details\Seep0405.dgn Date: 4-2005

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 190

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	Rocky Flats Present Landfill Seep Treatment System – design sketch	Specifications:	None
Reference (other):	Fill Material around manholes and piping	Attachments:	None

Request:
The design sketch (issued 3/29/05) for the Present Landfill Seep Treatment System shows a Bentonite Wall, numerous pipe runs, manholes, and an aeration basin. From a constructability perspective the entire area should be excavated prior to locating the components due to their very close proximity to each other. Please advise as to a suitable fill material for surrounding the manholes, piping and bentonite wall. Rocky Flats alluvial will be difficult to place and compact without damaging piping due to the close quarters.

Solution:
Provide written engineering guidance to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/4/05

Paul Kreitz		3/29/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☐	Clarification X	Rejection ☐	☐ Change

As we discussed with Stoller, K-H & Earth Tech at our meeting on 04/01/2005, the materials used for the cushion soil layers should be used as backfill around the structures of the seep treatment system, and compacted to the same density requirements in the earthwork specifications (95% standard proctor dry density with +/- 2% of optimum moisture).

Robert W. Davis	Robert W. Davis	04/02/2005
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CQAE J.H. Pole TT	

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 191

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	Present Landfill Seep Treatment System Design Sketch	Specifications:	None
Reference (other):	Manhole Order Requirements	Attachments:	None

Request:
To meet the current completion schedule we need to place our order for pre-cast manholes by 4/1/05. To avoid delays associated with final engineering decisions, special sizes, and hole configurations, we intend to order:

Two (2), precast , concrete, manholes, 4 feet in diameter, 3 feet tall, no pre-cast penetrations (we will cut them per field fit)

Request concurrence to order on 4/1/05 to meet current installation schedule.

Solution:

Provide written engineering concurrence to procure these materials.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/1/05

Paul Kreitz		3/30/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐	Clarification X	Rejection ☐	☐ Change

As we discussed at our meeting with Stoller, K-H and Earth Tech on 04/01/2005, the two manholes that are required as a part of the seep treatment system shall be standard precast concrete manholes with a minimum diameter of 4-feet. The north manhole shall be 4 feet deep and south manhole shall be 6-feet deep. It would be best if the penetrations into the manholes were factory cut to avoid cracking of the manhole wall as sometimes happens with field cutting of the opening. The invert elevations of the pipe penetrations and elevation of the manholes were provided to Stoller at the referenced meeting above and is attached to this RFI response.

Robert W. Davis	Robert W. Davis	04/02/2005
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CQAE J.H. Rule TX	

QUAN.	DESCRIPTION	MATERIAL

Connect to GWIS

8" Bell & Spigot PVC Pipe

2

17 | 18

12" Dia 60 mil HDPE washer
Welded to 6" HDPE pipe

Gatorgrate GG-4010 Fiberglass grating or approved equal. Provide reinforcing bars as per manufacturers instructions.

N 39900.04
E 20957.46
Existing pipe invert
elev 5924.0

N 39900.8
E 20947.5
Trench base
elev 5919.0

N 39898.1
E 20980.0
Pipe invert elev 5918.5
Step treatment system
base elev 5917.5

N 39898.2
E 20962.6
Pipe invert
elev 5921.5

1

17 | 18

4" Sch80
PVC Pipe
To strip-drain sump

6" Dia HDPE pipe

4' Dia

6" Dia HDPE

N 39897.3
E 20958.2
Manhole floor
elev 5921.5

18" Dia 60 mil HDPE washer
welded to 6" HDPE pipe

N 39891.3
E 20964.0
Pipe invert
elev 5921.5

4' Dia

6" Dia HDPE pipe

Field perforate at 3/16" holes
45 degrees on 3" centers.
Wrap in 6 oz geotextile

Flow meter
(see specs)

3" Dia 60 mil HDPE washer
welded to 1" HDPE pipe

N 39890.4
E 20959.6
Manhole floor
elev 5919.0

N 39889.71
E 20956.92
Existing pipe invert
elev 5921.5

3" Sch80
PVC Pipe
To existing seep tie-in

N 39885.8
E 20950.6
Trench base
elev 5919.0

A

A'

8" Bell & Spigot PVC Pipe

Connect to GWIS

N

PLAN VIEW, PASSIVE TREATMENT SYSTEM

1

16 | 17

SCALE
0 2 4
Scale in feet

A

A'

Bentonite Wall

Existing pipe from strip-drain sump

18" Dia HDPE Washer (typ)

6" perforated-to-solid HDPE pipe (typ)

Existing pipe from seep tie-in

Note:
Use CETCO Pure Gold bentonite crumbles or chips (or equivalent). Install bentonite in 6" lifts. Hydrate each lift with 1 gallon water to 20 lbs bentonite. Allow 15 minutes hydration time before next lift.

Elev 5924.75 (min)

Elev 5921.0
Steps slope back 5% min

4:1 regrade slope

Elev 5919.75

Elev 5921.5

Elev 5919.0

Elev 5918.5

Elev 5917.5

Flow meter
(see specifications)

SIDE VIEW, PASSIVE TREATMENT SYSTEM

SCALE
0 2 4
Scale in feet

0.25 Dia

0.25 Dia

0.33 Dia

COLORADO REGISTERED
RANDALL C. THOMPSON
30638
4/14/05
PROFESSIONAL ENGINEER

2 ISSUE	REVISED PIPING, MANHOLES, AND BENTONITE WALL DETAILS										
1 ISSUE	EARTH TECH DESIGN COMPANY	4/13/05 DATE	SP DSGN	SP DWN	RA CHKD	SL IV	RT APVD			CLASS	PROJECT/CHARGE NO.
0 ISSUE	ORIGINAL ISSUE										
	DESCRIPTION	REVISION DESCRIPTION									

KEYWORDS
1.
2.
3.
4.
5.
BLDG./FACILITY
ROOM/AREA
GRID COORD. PCN. NO.

TOLERANCES
FRACT. ±
ANGLE ±
DEC. ±
UNLESS NOTED OTHERWISE
REMOVE BURRS AND SHARP EDGES
NEXT ASSEMBLY
SCALE: AS SHOWN

DESIGN COMPANY: E A R T H T E C H
DESIGNED BY
W. THOMPSON — RT — 8/9/04
DRAWN BY
A. SHOTNIK — AS — 8/10/04
CHECKED BY
R. ARCHIBALD — RA — 8/10/04
INDEPENDENT VERIFIER
S. LAWRENCE — SL — 11/10/04
APPROVED BY
R. THOMPSON — RT — 8/11/04
CLASSIFIER

PROJECT/WCF NO. 020525
U.S. DEPARTMENT OF ENERGY
ROCKY FLATS OFFICE GOLDEN, COLORADO
Rocky Flats Environmental Technology Site
GOLDEN, COLORADO

NEW SEEP PASSIVE TREATMENT SYSTEM LAYOUT
PRESENT LANDFILL
ACCELERATED ACTION
95% DESIGN

SIZE B | DRAWING NUMBER 517781-017 | ISSUE 2

GROUP\CAD\ROCKY_FLATS\New_Design2005\Details\Seep0405.dgn Date: 4-2005

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 192

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	None	Specifications:	None
Reference (other):	Equipment for East Face Rock Layer Placement	Attachments:	None

Request:
After placement of the 10" cushion soil layer on the East Face slope the 12" rock layer must be installed. Request concurrence to back Volvo off-road trucks down the slope and dump rock material then level with the D-6 LGP dozer. Not installing this way will require us to obtain an additional track loader and will double the time to place the material.

Solution:
Concur with using Volvo off-road trucks to dump on the 10" layer and leveling with D-6 LGP Dozer.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/3/05

Paul Kreitz		3/30/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted	☐	Clarification	☐	Rejection	X	☐ Change

Calculations have shown that the pressure of a loaded Volvo Truck is too great for the friction angle strengths of the geosynthetic liner materials. The Volvo Truck can not drive on the 10-inch rock layer nor can it drive on top of the 10-inch cushion layer on the 4H: 1V slope. The use of the Volvo Trucks must be kept on the flat portions of the cover. I suggest that the Volvo Trucks dump their rock layer load at the crest of the 4H: 1V slope and that the D-6 LGP dozer push the rock layer material into place. However, care must be taken to not drive any rock into the 10-inch cushion layer. If this happens, work must stop and we will collectively review the work processes for placement of the rock layer on the 4H: 1V slope. This process may also result in the segregation of the fines away from the rock. If this happens, additional fines will need to be added to the surface of the rock layer.

Another approach is to place about 18-inches of final soil cover on top of the placed rock layer (on the 4H: 1V slope and flat portions). This could be done in about 50-foot sections down the 4H: 1V slope to reduce the length of dozer work and possibly reduce the segregation of fines from the rock. This would allow the Volvo Trucks to drive up to the edge of the 18-inch soil cover area to dump their load of material.

Robert W. Davis	Robert W. Davis	04/02/2005
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y	☐	N	☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y	☐	N	☐	Revisions Due:	OK CQAE J.H. Rule TA	

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 193

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	None	Specifications:	None
Reference (other):	PLF GDN, 20700 – 21000 lines, North side	Attachments:	None

Request:
Please advise as to where the GDN finishes on the north side of the PLF in the 20700 – 21000 area. Does it extend all the way to the perimeter channel in this area (25' +) or stop short (22')

Solution:
Provide written engineering guidance to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/2/05

Paul Kreitz		3/30/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification X | Rejection ☐ | ☐ Change

Since the 24-inch soil cover, rock layer and 10-inch cushion soil will be sloping at 4H: 1V slope from the outside edge of the anchor trench in this area (See Design Drawing No. 012, Detail 2), the GDN must also extend to where the rock layer "daylights" into the perimeter channel (on the order of 22 feet).

Robert W. Davis	Robert W. Davis	04/02/2005
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CQAE J.H. Rale TA	

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 194

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	None	Specifications:	None
Reference (other):	PLF North Side, 20900 to 21100 Area, Slope to Perimeter Channel	Attachments:	None

Request:
The current grade plan has a small "hump in the 20900 to 21100 area outside of the landfill cap. This may divert run-off from the perimeter channel and allow it to run east instead. Is it the intention that this area slope towards the perimeter channel? Please advise.

Solution:
Provide written engineering guidance to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/2/05

Paul Kreitz		3/30/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification X | Rejection ☐ | ☐ Change

As shown on Design Drawing No. 009 and 006A, the northern perimeter ditch is to be graded to drain into the surrounding grade from elevation 5960. If a "hump" of higher elevation exists at the end of the perimeter channel, the soil must be removed to allow the channel to drain into the surrounding topography as shown on the design drawings.

Robert W. Davis	Robert W. Davis	04/02/2005
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OF COAE J.H. Rule TA	

Request for Information (RFI)

Project Name:	Construction of the Present Landfill Accelerated Action	Subcontractor No.:	KH020577
Contractor:	Kaiser-Hill Company, LLC	RFI No.:	RFI - 195
Subcontractor:	S.M. Stoller Corporation	Page 1	1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	None	Specifications:	None
Reference (other):	East Face Vent "Slip Boots"	Attachments:	None

Request:
Please provide written engineering guidance relative to:

- How far (high) do the East Face clean out pipes extend above the final surface grade
- What should go on top of them (i.e. caps)?
- How are up the pipes should the slip boot extend?

Solution:
Provide written guidance to the above three questions relative to the East Face clean-out pipes.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/3/05

Subcontractor Print/Type Name	Subcontractor Signature	Date
Paul Kreitz		3/30/05

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☐	Clarification X	Rejection ☐	☐ Change

1. The clean-out pipes should extend to the same height as shown on the vent system piping details on design drawing no. 014 or as shown 4-feet.
2. The cap should be a rain shield with a bug/bird screen that is readily available at most building supply stores. Since the piping is plastic, eliminate the 180-degree bend in the piping to reduce leaning of the vertical pipe.
3. The boot for these pipes should follow the penetration detail shown on design drawing no. 014 (detail 5). The boot should extend at least 1-foot above the final surface of the cover

Print/Type Name	Signature	Date
Robert W. Davis	Robert W. Davis	04/02/2005

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK - need sketch fr. CO Linings for their proposed conn. det. (#3 above) CGAE [illegible] TA rain shield & bird screen for top vents	

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC RFI No.: RFI - 196

Subcontractor: S.M. Stoller Corporation Page 1 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: East Face Design Sketch	Specifications: None
Reference (other): Upper Anchor Trench – north side	Attachments: None

Request:
Please provide engineering guidance relative to "where" the north section of the upper East Face anchor trench "ends". Standard practice would have it draining to the perimeter channel but the current design sketch does not show this. Please review and either give written confirmation of the current configuration or issue a revised sketch.

Solution:
Provide written engineering guidance or a revised engineering sketch.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/3/05

Paul Kreitz		3/30/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification X | Rejection ☐ | ☐ Change

The northern section of the upper (east face crest) anchor trench drains into the perimeter drainage channel just like the southern section of the upper anchor trench. See design drawing 13B and note reference to call-out detail shown for northern section of the anchor trench (same as for the southern section).

Robert W. Davis	Robert W. Davis	04/02/2005
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CQAE J.H. Rale TT	

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 197

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: PLF Seep Treatment System	Specifications: None
Reference (other): Concrete Pours – constructability issue	Attachments: None

Request:
In the kick-off meeting with the concrete subcontractor the following constructability issues were raised:

The exterior walls of the aeration box show a offset between the base pour and the walls.
Q: Can the walls be flush with the outside of the base pour?

The base pour shows a small riser that supports the wall pours.
Q: is the riser required? Can the bottom of the wall pours be flush with the top of the base pour?

Solution:
Please supply written engineering guidance relative to the above questions.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/4/05

Paul Kreitz		3/31/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐	Clarification ☐	Rejection X	☐ Change

1. The extension of the slab past the wall is to provide positive support of the wall forms. The seep treatment structure must be poured in three stages: The slab, the walls & then the treatment steps. I recommend that the slab be extended at least 2-1/2 inches on each side to accommodate the wall forms and bracing whalers. The chamfered edge can be eliminated on the slab edges.
2. It is a common practice to have a raised section on a slab where a wall with a water stop is required. This raised section allows for adequate spacing between the water stop and the reinforcing bars to pass each other and not crimp the water stop. The height of this section depends on the height of the water stop. However, the height of this section can typically be from 1-1/2 to 3 inches.

Robert W. Davis	Robert W. Davis	04/02/2005
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CQAE J.H. Rule TT	

Request for Information (RFI)

Project Name:	Construction of the Present Landfill Accelerated Action	Subcontractor No.:	KH020577
Contractor:	Kaiser-Hill Company, LLC	RFI No.:	RFI - 198
Subcontractor:	S.M. Stoller Corporation	Page 1	1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	None	Specifications:	None
Reference (other):	Intersection of North East Perimeter channel and Pond access road – culvert specification	Attachments:	None

Request:
At approximately 21000 the northeast PLF perimeter channel and the Pond Access road intersect. Please provide the design and culvert specifications for the required road crossing.

Solution:
Provide written engineering guidance or a specification for the construction of this road/channel crossing.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/11/05

Paul Kreitz		3/31/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐	Clarification ☒	Rejection	☐ Change

See attached requirements for the culvert installation on the southeastern side of the PLF.

Robert W. Davis	Robert W. Davis	04/06/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due: OK CQAE for North & SE (RFI 200) but J.H. Rabe Tt NE w/o culv.

Davis, Robert W.
From: Powell, Scott [Scott.Powell@earthtech.com]
Sent: Wednesday, April 06, 2005 10:27 AM
To: Davis, Robert W.; Jack Woo (E-mail)
Cc: Thompson, Randy; Calderon, Marco T.; Archibald, Ryan
Subject: Rocky Flats culvert details

Hey Bob and Jack,

Here is some information for using corrugated HDPE culvert piping in place of concrete:

Structure #5 (southeastern culvert): Two each 20-foot long, 36-inch diameter single-wall corrugated HDPE culvert pipes sloped at 4%.

Also, for review,
Structure #12 (northern culvert): Two each 80-foot long, 36-inch diameter single-wall corrugated HDPE culvert pipes sloped at 2%.

All culverts must have 2 feet of cover soil over top of them. Culverts must have flared end sections. When using multiple culverts, they must be spaced no less than 2 feet apart. Culvert excavation and backfill should be done in accordance with CDOT Specification Section 206.03. Bedding material must conform to AASHTO M 43 Coarse Aggregate No. 8 (also in CDOT Specification Table 703-1):

Sieve Size	Percent Passing
½"	100
3/8"	85-100
#4	10-30
#8	0-10
#16	0-5

Structure backfill must meet the requirements of CDOT specification Section 703.08 for Class I backfill.

Thanks,
-Scott

Scott Powell, P.E.
Project Engineer
Earth Tech, Inc.
303-804-2435
303-589-8511 (Cell)

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Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 199

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None | Specifications: None

Reference (other): Textured Liner Area | Attachments: None

Request:
The current PLF Project liner plan calls for another approximately 60,000 square feet of area to be covered with textured FML. This is approximately the amount of textured FML that remains assuming a 15% scrap factor. Currently the scrap factor is slightly higher at about 20%. There is a possibility that with the current plan we would run short of textured FML.

Q: Can we limit the extent of the northern textured area to the 4 to 1 slope and 10 feet beyond the crest as was the case on the southern section? The only difference would be more smooth FML on the northern flat area in front of the upper anchor trench, welding the textured FML to the smooth FML on the flat in front of the northern, upper anchor trench, and that smooth and smooth FML would meet in the upper anchor trench on the northern section

This would ensure that we have enough textured FML for the slopes.

Solution:
Please provide written engineering guidance to the above request.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/2/05

Paul Kreitz		3/31/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☐ | Rejection ☒ | ☐ Change

Proposal is rejected. Current area/quantity calculations indicate that there is enough textured FML to over the entire area in question.

Robert W. Davis	Robert W. Davis	04/01/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due: OK CRAE

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 200

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	None	Specifications:	None
Reference (other):	Intersection of South East Perimeter channel and Dam access road – culvert specification	Attachments:	None

Request:
At approximately control point 11104, the southeast PLF perimeter channel and the dam Access road intersect. Please provide the design and culvert specifications for the required road crossing.

Solution:
Provide written engineering guidance or a specification for the construction of this road/channel crossing.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/11/05

Paul Kreitz		4/1/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection | ☐ Change

See attached requirements for the culvert installation at the northern side of the PLF.

Robert W. Davis	Robert W. Davis	04/06/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CRAE Jeff Rabe TT	

Davis, Robert W.
From: Powell, Scott [Scott.Powell@earthtech.com]
Sent: Wednesday, April 06, 2005 10:27 AM
To: Davis, Robert W.; Jack Woo (E-mail)
Cc: Thompson, Randy; Calderon, Marco T.; Archibald, Ryan
Subject: Rocky Flats culvert details

Hey Bob and Jack,

Here is some information for using corrugated HDPE culvert piping in place of concrete:

Structure #5 (southeastern culvert): Two each 20-foot long, 36-inch diameter single-wall corrugated HDPE culvert pipes sloped at 4%.

Also, for review,
Structure #12 (northern culvert): Two each 80-foot long, 36-inch diameter single-wall corrugated HDPE culvert pipes sloped at 2%.

All culverts must have 2 feet of cover soil over top of them. Culverts must have flared end sections. When using multiple culverts, they must be spaced no less than 2 feet apart. Culvert excavation and backfill should be done in accordance with CDOT Specification Section 206.03. Bedding material must conform to AASHTO M 43 Coarse Aggregate No. 8 (also in CDOT Specification Table 703-1):

Sieve Size	Percent Passing
½"	100
3/8"	85-100
#4	10-30
#8	0-10
#16	0-5

Structure backfill must meet the requirements of CDOT specification Section 703.08 for Class I backfill.

Thanks,
-Scott

Scott Powell, P.E.
Project Engineer
Earth Tech, Inc.
303-804-2435
303-589-8511 (Cell)

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Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 202

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: PLF Seep Treatment System | Specifications: None

Reference (other): Expansion Coupling for Seep Piping | Attachments: None

Request:
Please provide written engineering guidance or a specification for the procurement of the requested expansion couplings for the Seep Piping in the PLF Seep Treatment System. This information is not given or shown on the design sketch.

Solution:
Provide written engineering guidance, a specification, or cut sheets for the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/11/05

Paul Kreitz		4/2/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection | ☐ Change

Since the selected pipe is HDPE, flexible couplings will not be required at connections to the manholes or the seep treatment structure. HDPE piping is not like rigid steel pipe and can accommodate considerable movement without pipe failure.

Robert W. Davis	Robert W. Davis	04/06/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CQAE J.K. Rule TT	

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI – 204

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: PLF Seep Treatment System	Specifications: None
Reference (other): GWIS Piping	Attachments: None

Request:
Please provide written engineering guidance, a specification, or cut sheet for the type of 8" piping required to connect the GWIS system to the PLF Seep Treatment System. The material is not noted on the drawing.

Solution:
Provide written engineering guidance to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/11/05

Paul Kreitz		4/2/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐	Clarification ☒	Rejection	☐ Change

The GWIS piping is 8-inch Schedule 80 piping as shown on drawing 018 of the design drawings. However, we will be providing a revised pipe specification to change this pipe to 8-inch PVC bell & spigot jointed piping.

Robert W. Davis	Robert W. Davis	04/06/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due: OK CQAE J.H. Rohe Tt

Request for Information (RFI)

Project Name:	Construction of the Present Landfill Accelerated Action	Subcontractor No.:	KH020577
Contractor:	Kaiser-Hill Company, LLC	RFI No.:	RFI - 205
Subcontractor:	S.M. Stoller Corporation	Page 1	1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	None	Specifications:	None
Reference (other):	Equipment Use – Rock Layer/10" layer	Attachments:	None

Request:
The D6 LGP Dozer is out of commission due to a maintenance problem. The repair will require an outage that will impact our current work schedule associated with rock layer placement (flats and east face slope) and 10" placement (flats and east face slope). There are no rental D6 LGPs available in the area. The ground pressure for a D6 LGP dozer is 7.73 psi (for reference)

Request concurrence to use: D6 standard dozer on the rock layer (flats and slope) – 8.82 psi
953C Trackloader (currently using on slope 10" lift) – 9.3 psi
963C Trackloader (bringing in to use) – 10.2 psi

Solution:
Please provide written engineering guidance as to where we can use this equipment relative to the rock layer installation and 10" cushion installation.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/5/05

Paul Kreitz		4/4/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☒	Clarification ☐	Rejection	☐ Change

It is acceptable to use the standard D6 and both track-loaders on the 10-inch cushion and rock layer installation as verbally agreed to on Monday, April 4, 2005.

However, the process of starting and stopping the equipment on the east slope should be carefully watched. Quick turns, stops and starts will not be allowed during the placement of these materials with this equipment.

Robert W. Davis	Robert W. Davis	04/06/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CQAE Jeff. Fale Tt	

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 206

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	PLF Seep Treatment System, 4/4/05 Revision	Specifications:	None
Reference (other):	North Manhole – manifold for combination of flows	Attachments:	None

Request:
The 4/4/05 revision to the design sketch for the PLF Seep Treatment System shows three (3) flows coming into the north manhole with one exit pipe leading into the aeration box. The sketch does not indicate how the flows are to be combined (i.e. a manifold ?).

Please provide written engineering guidance on how to connect these pipes in the manhole.

Solution:
Provide written guidance to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/11/05

Paul Kreitz		4/4/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection | ☐ Change

The flow, if any, will combine in the manhole and the as the manhole fills, it will overflow into the outlet pipe of the manhole (which has a lower invert elevation than the inlet piping. This allows separate sampling, and if needed, flow measurement of the three flows into the manhole.

Robert W. Davis	Robert W. Davis	04/06/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due: OK CQAE JH. Rule TT

Request for Information (RFI)

Project Name:	Construction of the Present Landfill Accelerated Action	Subcontractor No.:	KH020577
Contractor:	Kaiser-Hill Company, LLC	RFI No.:	RFI - 207
Subcontractor:	S.M. Stoller Corporation	Page 1	1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	PLF Seep Treatment System, 4/4 rev.	Specifications:	None
Reference (other):	Reducer From 6" line to 1" line – existing seep manhole	Attachments:	None

Request:
The 6" HDPE Line that runs into the existing seep manhole is reduced to a 1" line per the 4/4/05 revision of the PLF Seep Treatment System design sketch. The reduction shown shows an eccentric reducer of some sort that is flat on the bottom at an elevation of 5921.5 feet. This type of reducer in not typically available on short notice.

Q: Are concentric reducers OK for reducing the 6" to 1" line?

Solution:
Provide written engineering guidance to the above question.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/11/05

Paul Kreitz		4/4/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☐	Clarification ☒	Rejection ☐	☐ Change

Since the flow meter for the existing seep is being removed, a 6-inch pipe will be entering the manhole and a 6-inch pipe will be leaving the manhole and entering the concrete box (stepped) seep treatment system.

Note that this is a modification of the 1-inch sized piping that is show on the most recent drawing of the seep treatment system modifications.

Robert W. Davis	Robert W. Davis	04/06/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CQAE J.H. Rabe Tt	

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC RFI No.: RFI - 208

Subcontractor: S.M. Stoller Corporation Page 1 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	PLF Seep Treatment System Design Sketch, 4/4/05 rev	Specifications:	None
Reference (other):	Concrete Steps	Attachments:	None

Request:
Is reinforced (fiberglass) concrete an acceptable substitute for placing the re-bar reinforced steps?

If it Is....it will cut the schedule by two (2) days.

Solution:
Please give written engineering guidance to the above request.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/15/05

Paul Kreitz		4/4/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted X	Clarification ☐	Rejection	☐ Change

The use of fiberglass reinforced concrete is acceptable for use on the step section of the passive seep treatment system. However, additional rebar must be placed in the wall and then into the steps (from the wall) as shown on the attached revised drawing.

Stoller must also provide the concrete mix design for the fiberglass concrete to be used at this location and the concrete must still meet the 03300 specifications.

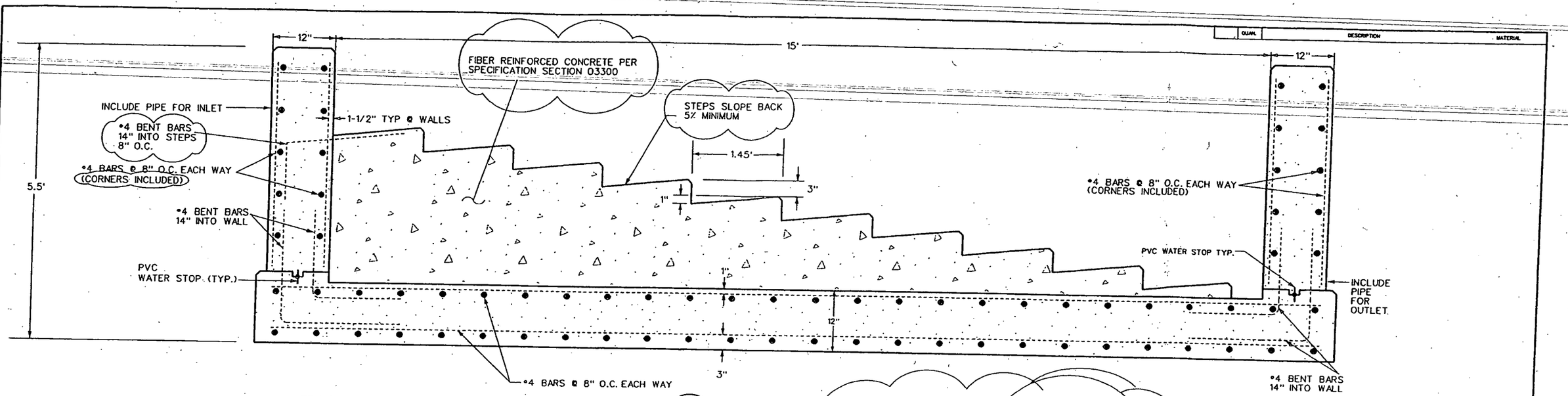
Robert w. Davis	Robert W. Davis	04/06/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

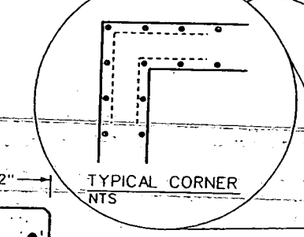
Revise Sketch: Y ☐ N ☐ Revisions Due: OK CQAE (incl. des. rev. sketch)

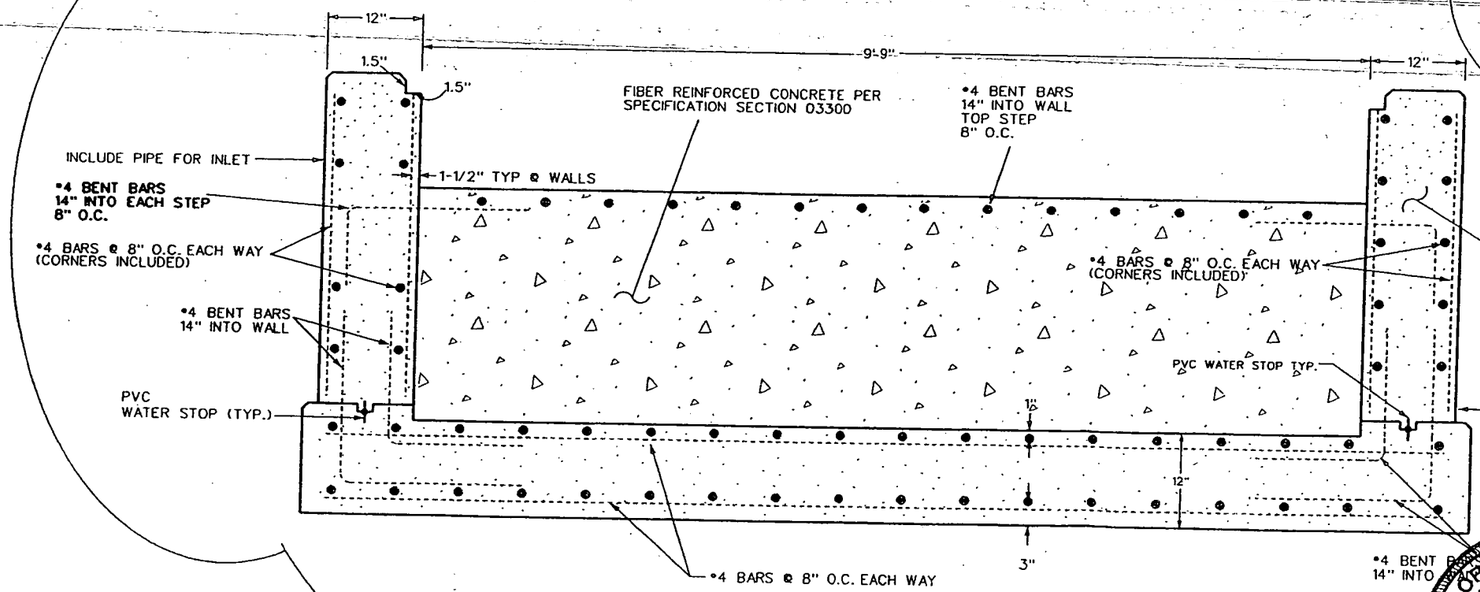
OK DM [signature] Earth Tech Jtt. Rabe Tt



CROSS - SECTION A - A'

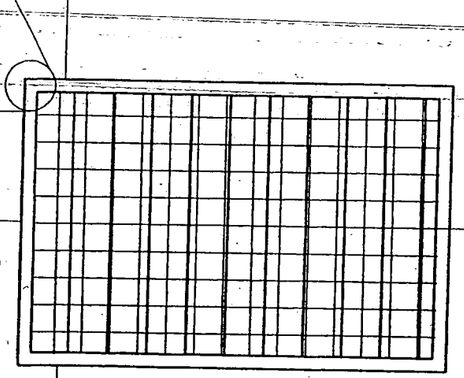
1 | 17 | 18





CROSS - SECTION B - B ' (TYPICAL STEP SECTION)

2 | 17 | 18



PLAN VIEW - TREATMENT UNIT

REINFORCED CONCRETE PER SPECIFICATION SECTION 03300

COLORADO REGISTERED RANDALL C. THOMPSON 30638 PROFESSIONAL ENGINEER 4/14/05

QUAN.	DESCRIPTION	MATERIAL

	REVISION DESCRIPTION								
1 ISSUE	REVISED PER RFI 208.							CLASS	PROJECT/CHARGE NO.
	EARTH TECH DESIGN COMPANY	4/13/05 DATE	SK DSGN	RJ DRN	RJ CHKD	SP IV	RO APVD		
0 ISSUE	ORIGINAL ISSUE								

KEYWORDS

1. 2. 3. 4. 5.

BLDG./FACILITY: SITE

ROOM/AREA: NA

GRID COORD./COL NO.: NA

TOLERANCES: FRACT. ±, ANGLE, DEC., UNLESS NOTED OTHERWISE

REMOVE BURRS AND SHARP EDGES

NEXT ASSEMBLY: NA

SCALE: AS SHOWN

DESIGN COMPANY: EARTH TECH

DESIGNED BY	S. KEITH	SK 4/13/05
DRAWN BY	R. ARCHBALD	RJ 4/14/05
CHECKED BY	R. ARCHBALD	RJ 4/14/05
INDEPENDENT VERIFIER	S. LAWRENCE	SL 4/14/05
APPROVED BY	R. THOMPSON	RO 4/14/05

CLASSIFIER

LANDLORD

PROJECT/WCF NO. 020525

U.S. DEPARTMENT OF ENERGY
ROCKY FLATS OFFICE GOLDEN, COLORADO

Rocky Flats Environmental Technology Site
GOLDEN, COLORADO

NEW SEEP PASSIVE TREATMENT SYSTEM DETAIL
PRESENT LANDFILL ACCELERATED ACTION 100%-DESIGN

SIZE: B | DRAWING NUMBER: 51781-018 | ISSUE: 1

L:\GROUP\CAD\ROCKY_FLATS\NEW_DESIGN_2004\DETAILS\Seep2005r.DGN 4/13/05

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 209

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: PLF Seep Treatment System Design Sketch, 4/4/05 revision | Specifications: None

Reference (other): Wall Concrete Pour | Attachments: None

Request:
The concrete constructor has requested the latitude to pour the west, south, and north walls in one continuous pour. Leaving the east wall as a separate pour to ease access for working the interior steps. Is this acceptable? Please advise.

Solution:
Provide written engineering guidance to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/9/05

Paul Kreitz		4/4/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☒ | Clarification ☒ | Rejection | ☐ Change

This concept is acceptable, however several items must be done to allow this construction sequence:

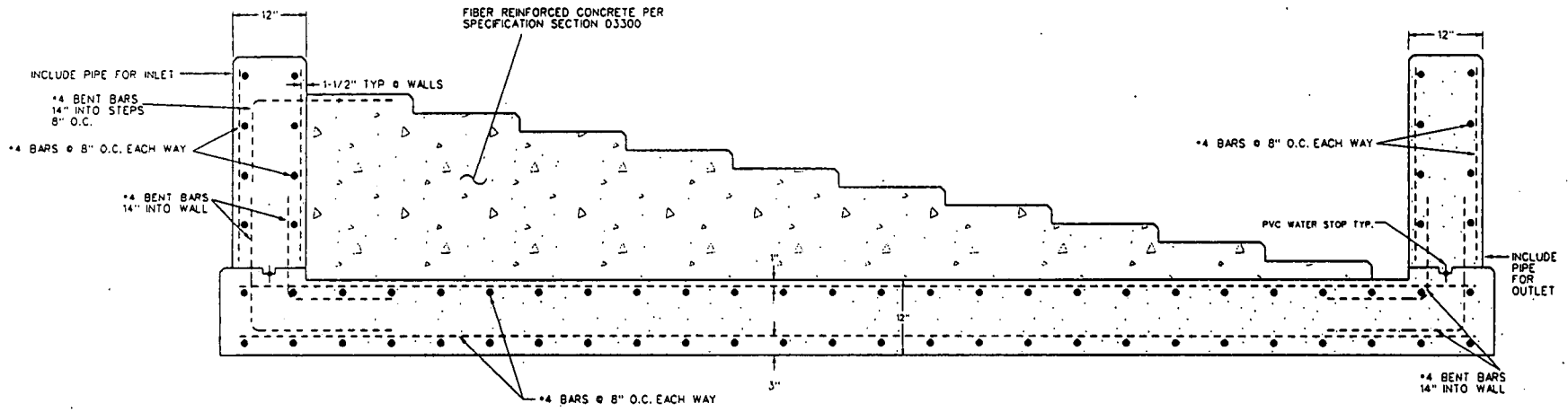
1. Corner Bent Bars must be placed as shown on the drawings up the full length of the wall, and extend a minimum of 1-foot past the edge of the wall.
2. The wall (east wall) must extend at least 9-inches after the corner.
3. The wall must be keyed with a 3-inch wide & 2 inch deep key.
4. A plastic water stop must be installed on both sides up the wall and to within 6-inches to the top of the wall.
5. Before the east wall is poured, the exposed edge must be "scored".

Robert W. Davis	Robert W. Davis	04/06/05
Print/Type Name	Signature	Date

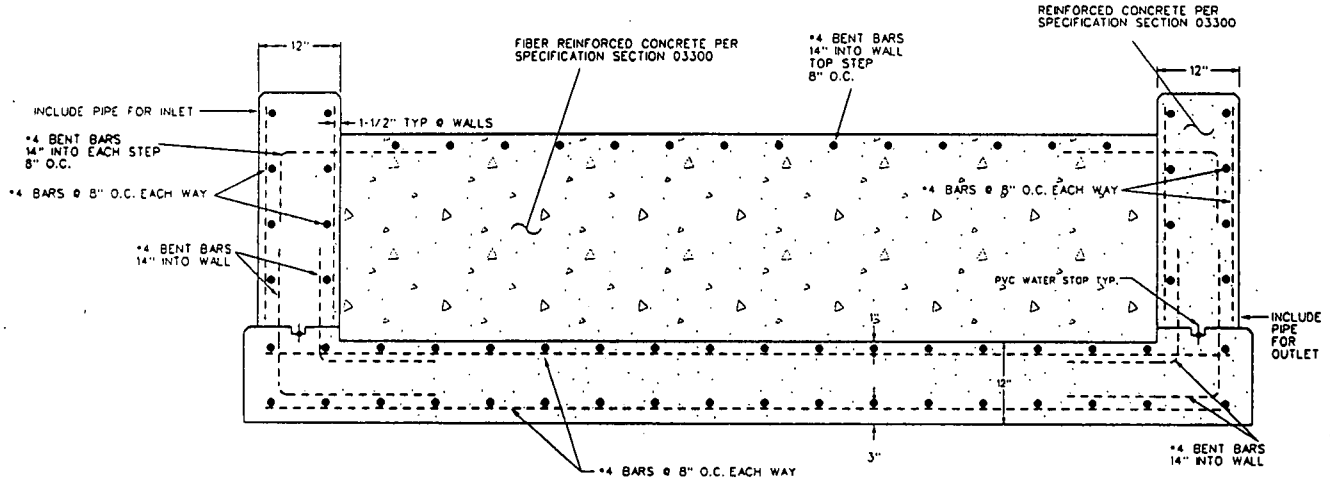
Kaiser-Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

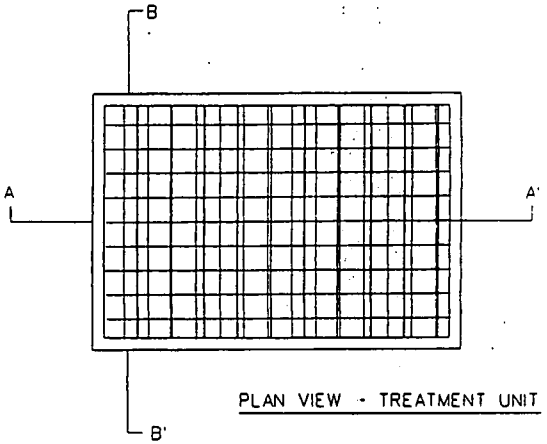
Revise Sketch: Y ☐ N ☐ | Revisions Due: OF COAE Jt. Rule TL



CROSS - SECTION A - A ' 1 17 18



CROSS - SECTION B - B ' (TYPICAL STEP SECTION) 2 17 18



PLAN VIEW - TREATMENT UNIT

KEYWORDS	U.S. DEPARTMENT OF ENERGY, ROCKY FLATS OFFICE GOLDEN, COLORADO	
	Rocky Flats Environmental Technology Site, GOLDEN, COLORADO	
	NEW SEEP PASSIVE TREATMENT SYSTEM DETAIL	
	PRESENT LANDFILL ACCELERATED ACTION 100% DESIGN	
	B	51781-018	0

L:\GROUP\CAD\ROCKY FLATS\NEW DESIGN 2004\DETAILS\Seep2005.DGN 4/4/05

Request for Information (RFI)

Project Name:	Construction of the Present Landfill Accelerated Action	Subcontractor No.:	KH020577
Contractor:	Kaiser-Hill Company, LLC	RFI No.:	RFI - 210
Subcontractor:	S.M. Stoller Corporation	Page 1	1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	None	Specifications:	Spec 3300, Section 3.08, A
Reference (other):	Concrete Curing Time	Attachments:	None

Request:
Specification 3300, section 3.08, A states, "minimum curing period of 7 days". This seems overly restrictive particularly if the structures are not "loaded" with external forces. Request concurrence to eliminate the 7 day minimum curing time to facilitate the multiple concrete pours needed to complete the cast-in-place structure.

Solution:
Provide written engineering guidance related to the above request.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/8/05

Subcontractor Print/Type Name	Subcontractor Signature	Date
Paul Kreitz		4/5/05

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☐	Clarification X	Rejection	☐ Change

The specification states that the concrete must be keep moist & protected from frost and rapid drying. The specification further states that curing compound can be applied to meet this requirement. It is common practice on this type of structure to remove the forms and apply curing compound after 24 hours of curing. This allows for the construction of other forms in preparation for another concrete pour as soon as possible. In addition, the outside wall forms must be left in place until we obtain a concrete cylinder break that indicates that the concrete has met the required strength. This also allows for the forming of the steps while the concrete is curing. We suggest that one or two test cylinders of concrete be obtained to determine concrete strength after 3 days of curing.

The concrete must have also reached the design strength before the backfilling of the structure is completed.

Print/Type Name	Signature	Date
Robert W. Davis	Robert W. Davis	04/06/05

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CQAE (7 day cure recommended) JH Pale Tt w/ curing compound	

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 211

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	PLF Seep Treatment System Design Sketch	Specifications:	None
Reference (other):	Flow Meter Specification/Installation	Attachments:	None

Request:
The flow meter originally specified for installation in the PLF Seep Treatment System has been put on hold.

Please advise as to a new flow meter specification or to its deletion from the system altogether. Need by 4/7 to support the current construction schedule

Solution:
Provide written engineering guidance to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/11/05

Paul Kreitz		4/5/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | ☐ Change

At this time, no flowmeter will be required on the existing seep flow since the flow is so low (less than 0.50 gpm). Remove this equipment and installation from the Stoller scope of work. This direction was verbally provided to Stoller on 04/07/05.

Robert W. Davis	Robert W. Davis	04/28/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due: OK CQAE JH Rob TA

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 213

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: PLF Seep Treatment System	Specifications: None
Reference (other): Manhole – GWIS Seep Collection	Attachments: None

Request:
With the existing bottom of GWIS manhole elevation there is not enough room to allow pipe entry and access. Please revise the engineering sketch to account for this.

Note: Verbal direction given by K-H PM to procure a taller manhole to remedy the problem (change from 4 feet to 5 feet in height).

Solution:
Please revise the engineering sketch or give written engineering guidance to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/11/05

Paul Kreitz		4/8/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | ☐ Change

Extend the height of the manhole (1 to 2 feet) to account for entry of the pipe within the shaft of the manhole and not within the joint between the shaft of the manhole and the cover section of the manhole. The direction was verbally provided to Stoller on 04/07/05.

Robert W. Davis	Robert W. Davis	04/28/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OK CQAE
J.H. Fale Tt

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 214

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: PLF Seep Treatment System | Specifications: None

Reference (other): HDPE Pipe - Existing Seep | Attachments: None

Request:
The 6" HDPE pipe comes in 10 foot joints. Approximately five (5) additional feet is required to pass through the bentonite wall per the drawing and enter the manhole. Please advise as to what type of coupling/method we should use (other than fusion welding) to connect the 10 foot section to an additional piece.

Solution:
Please provide written engineering guidance to the above request.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/11/05

Paul Kreitz		4/8/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | ☐ Change

Mechanical joint type fittings/couplings can be used to joint the HDPE pipe. Install couplings as recommended by the pipe manufacturer. See attached catalog "cut" sheets for additional information. This direction was verbally provided to Stoller on 04/19/05.

Robert W. Davis	Robert W. Davis	04/28/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

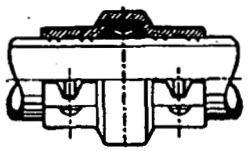
Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due:

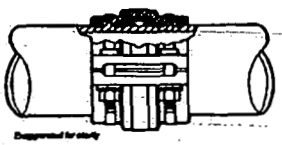
OK CRAE
J.H. Rale Tt

Style 995 Coupling for HDPE Pipe

PRODUCT DESCRIPTION



3 - 12" (80 - 300 mm) Sizes
(2"/50 mm has 1 bolt per side)



14 - 20" (350 - 500 mm) Sizes

Victaulic Style 995 HDPE couplings have sharp gripping teeth on both sides of the coupling which grip into the HDPE pipe around the circumference. As the housings are tightened pad-to-pad, the four bolts (two on 2"/50 mm sizes) force the teeth to engage into the pipe wall. This design permits direct joining of HDPE pipe without fusing equipment.

The 14 - 20" (350 - 500 mm) sizes use a T-bolt (patent pending) which is designed to ease alignment of the bolt pad during assembly.

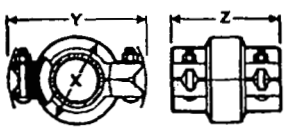
Couplings are supplied with plated carbon steel bolts and nuts and hardened steel washers. A choice of either U.S. Imperial or ISO metric bolts and nuts is available. Clearly specify choice on order. For special conditions, Type 304 or Type 316 stainless steel bolts and nuts are available. Contact Victaulic for details.

For metric size HDPE pipe couplings request 19.05.

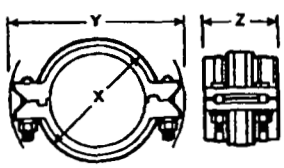
FM APPROVED

See Victaulic publication 10.01 for details.

DIMENSIONS



(2"/50 mm has one bolt per side)



14 - 20" (350 - 500 mm) sizes

Pipe Size Nom. Dia. in./mm	Pipe Size Actual Out. Dia. in./mm	Coupling Dim. Inches/mm X	Y	Z	Bolt/Nut No. – Size Inches	Aprx. Wgt. Ea. Lbs. kg
2 50	2.375 60.3	3.69 94	5.94 151	3.63 92	2 – ½ X 2½	3.5 1.6
3 80	3.500 88.9	4.63 118	7.00 178	4.56 116	4 – ½ X 2¾	7.7 3.5
4 100	4.500 114.3	5.88 149	8.13 207	5.81 148	4 – ½ X 2¾	11.6 5.3
5 125	5.563 141.3	6.94 176	9.88 251	5.88 149	4 – ⅝ X 3¼	15.0 6.8
6 150	6.625 168.3	8.00 203	10.88 276	5.88 149	4 – ⅝ X 3¼	16.4 7.4
8 200	8.625 219.1	10.19 259	13.25 337	6.00 152	4 – ⅝ X 3¼	24.9 11.3
10 250	10.750 273.0	12.38 314	15.88 403	6.50 165	4 – ¾ X 5	37.4 17.0
12 300	12.750 323.8	14.38 365	18.00 457	7.00 178	4 – ⅞ X 5	49.0 22.2
14 350	14.000 355.6	16.25 413	19.88 505	8.58 218	4 – 1 X 7 §	81.0 36.7
16 400	16.000 406.4	18.30 465	23.88 607	9.00 229	4 – 1 X 7 §	100.0 45.5
18 450	18.000 457.0	20.30 516	25.63 651	9.50 241	4 – 1 X 7 §	127.0 57.7
20 500	20.000 508.0	22.30 566	27.44 697	10.00 254	4 – 1 X 7 §	142.0 64.5

§ Supplied with T-bolts and rocker washers (patent pending).

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Victaulic Europe • Phone:32-9-381-1500 • Fax: 32-9-380-4438 • e-mail: vicauro@victaulic.be
Victaulic America Latina • Phone: 610-559-3300 • Fax: 610-559-3608 • e-mail: vical@victaulic.com
Victaulic Asia Pacific • Phone: 65-6235-3035 • Fax: 65-6235-0535 • e-mail: vicap@victaulic.com

Victaulic®

19.02

PERFORMANCE

⚠ CAUTION

- **Victaulic Style 995 products are qualified for use on HDPE ONLY. These products should not be used on other plastic materials.**
- **Failure to follow this instruction could result in personal injury, improper installation, leakage or joint separation.**

Always refer to Victaulic I-900 instruction handbook before assembly.

Victaulic HDPE products are designed to mechanically join HDPE (*high density polyethylene/polybutylene conforming to ASTM D-2447, D-3000, D-3035 or F-714, at ambient temperatures) pipe of wall thicknesses from SDR 32.5 to 7.3. Victaulic HDPE products have integral rows of gripping teeth in each side of the housing which bite into HDPE pipe around the entire circumference. This eliminates special heat fusion, solvent joining or special adapters.

Victaulic HDPE products are not intended for use on PVC pipe or other materials. Victaulic lubricant should **not** be used with HDPE pipe.

HDPE pipe brands we have tested indicate that the working pressure of Victaulic HDPE products are dictated by the working pressure of the pipe. The pipe manufacturers listing is dependent upon wall thicknesses, pipe composition and temperature. Pipe tolerances shown in the charts are *at +70°F (+21°C) and for rigid pipe with SDR of 20 or lower.

*At ambient temperatures.

Pipe – In./mm		Dimensions – In./mm			Pipe – In./mm		Dimensions – In./mm		
Nom. Dia.	Act. Out. Dia.	Outside Dia. Size	Outside Dia. Tol.*	Max. Out of Round Tol.*	Nom. Dia.	Act. Out. Dia.	Outside Dia. Size	Outside Dia. Tol.*	Max. Out of Round Tol.*
2 50	2.375 60.3	2.375 60.3	± 0.016 0.406	± 0.040 1.016	10 250	10.750 273.0	10.750 273.0	± 0.048 1.219	± 0.075 1.905
3 80	3.500 88.9	3.500 88.9	± 0.016 0.406	± 0.040 1.018	12 300	12.750 323.9	12.750 323.9	± 0.057 1.448	± 0.075 1.905
4 100	4.500 114.3	4.500 114.3	± 0.020 0.508	± 0.040 1.016	14 350	14.000 355.6	14.000 355.6	± 0.063 1.600	± 0.075 1.905
5 125	5.563 141.3	5.563 141.3	± 0.025 0.635	± 0.050 1.270	16 400	16.000 406.4	16.000 406.4	± 0.072 1.830	§
6 150	6.625 168.3	6.625 168.3	± 0.030 0.762	± 0.050 1.270	18 450	18.000 457.2	18.000 457.2	± 0.081 2.060	§
8 200	8.625 219.1	8.625 219.1	± 0.039 0.990	± 0.075 1.905	20 500	20.000 508.0	20.000 508.0	± 0.090 2.290	§

*At ambient temperatures.

§ See pipe manufacturer for maximum out of round tolerance.

MATERIAL SPECIFICATIONS

Housing: Ductile Iron conforming to ASTM A-395, grade 65-45-15, and ASTM A-536, grade 65-45-12.

Housing Coating: Orange enamel

- **Optional:** Hot dip galvanized
- **Optional:** Zinc electroplated

Gasket: (specify choice*)

- **Grade "E" EPDM**
  EPDM (Green color code). Temperature range –30°F to +230°F (–34°C to +110°C). Recommended for cold and hot water service within the specified temperature range plus a variety of dilute acids, oil-free air and many chemical services. UL classified in accordance with ANSI/NSF 61 for cold +86°F (+30°C) and hot +180°F (+82°C) potable water service. NOT RECOMMENDED FOR PETROLEUM SERVICES.
- **Grade "T" nitrile**
  Nitrile (Orange color code). Temperature range –20°F to +180°F (–29°C to +82°C). Recommended for petroleum products, air with oil vapors, vegetable and mineral oils within the specified temperature range. Not recommended for hot water services over +150°F (+66°C) or for hot dry air over +140°F (+60°C).

*Services listed are General Service Recommendations only. It should be noted that there are services for which these gaskets are not recommended. Reference should always be made to the latest Victaulic Gasket Selection Guide for specific gasket service recommendations and for a listing of services which are not recommended.

Bolts/Nuts/Washers: Heat treated carbon steel, plated, track-head conforming to physical properties of ASTM A-183 minimum tensile 110,000 psi (758340 kPa).

The 2 - 12" (50 - 300 mm) sizes are supplied with hardened steel washers meeting ASTM F-436 Type 3 (weathering steel).

The 14 - 20" (350 - 500 mm) sizes are supplied with a T-bolt (patent pending) assembly. Contact Victaulic for details.

- **Optional:** Type 304 or 316 stainless steel.

This product shall be manufactured by Victaulic Company. All products to be installed in accordance with current Victaulic installation/assembly instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligations.

Request for Information (RFI)

Project Name:	Construction of the Present Landfill Accelerated Action	Subcontractor No.:	KH020577
Contractor:	Kaiser-Hill Company, LLC	RFI No.:	RFI - 215
Subcontractor:	S.M. Stoller Corporation	Page 1	1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	None	Specifications:	None
Reference (other):	Placement of 22" Lift on PLF East Face	Attachments:	None

Request:
Is it acceptable to push the 22" lift material with dozers from the top of the East Face down the slope? This will greatly facilitate installation of the material.

Solution:
Please give written engineering guidance to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/13/05

Paul Kreitz		4/9/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☒	Clarification ☐	Rejection ☐	☐ Change

Accepted. This direction was verbally provided to Stoller on or about 04/12/05.

OK - but place at an angle w/ some mat'l. support @ base
CQAE J.H. Rabe TX

Robert W. Davis	Robert W. Davis	04/28/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 218

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: Dwg 14 | Specifications: None

Reference (other): PLF Passive Vent System | Attachments: None

Request:
Please provide a revised dwg 14 (PLF Passive Vent System) for the project record. The current drawing is not representative of what is installed, and in this case red-lining it is prohibitive.

Solution:
Provide revised dwg 14.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	N/A

Paul Kreitz		4/13/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☐	Clarification ☐	Rejection ☒	☐ Change

Rejected. These changes are considered field changes and will be reflected in the record drawings for the PLF cover construction. Revisions to this drawing have also been captured in previous RFI's. Notes and sketches must be added and attached to drawing 014 to provide the needed information for the record drawing production.

Robert W. Davis	Robert W. Davis	04/28/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☒ N ☐ Revise Spec: Y ☐ N ☒

Revise Sketch: Y ☐ N ☐ Revisions Due:

OK CQAE
J.H. Rabe TT

Request for Information (RFI)

Project Name:	Construction of the Present Landfill Accelerated Action	Subcontractor No.:	KH020577
Contractor:	Kaiser-Hill Company, LLC	RFI No.:	RFI - 221
Subcontractor:	S.M. Stoller Corporation	Page 1	1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	None	Specifications:	None
Reference (other):	Culvert Installation – Northeast Perimeter Channel	Attachments:	None

Request:
The current culvert configuration is wider than the perimeter channel. The combination of the two culverts and flanges exceeds the 10' channel width.

Please provide engineering guidance on modification of the culvert flanges, or on widening the perimeter channel at this location.

Solution:
Please provide written engineering guidance to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/20/05

Subcontractor Print/Type Name	Subcontractor Signature	Date
Paul Kreitz		4/15/05

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☐	Clarification ☒	Rejection ☐	☐ Change

The culverts can be installed without the culvert flanges; however, the culvert installation must be in accordance with the attached sketch.

Print/Type Name	Signature	Date
Robert W. Davis	Robert W. Davis	04/28/05

Kaiser Hill Action:

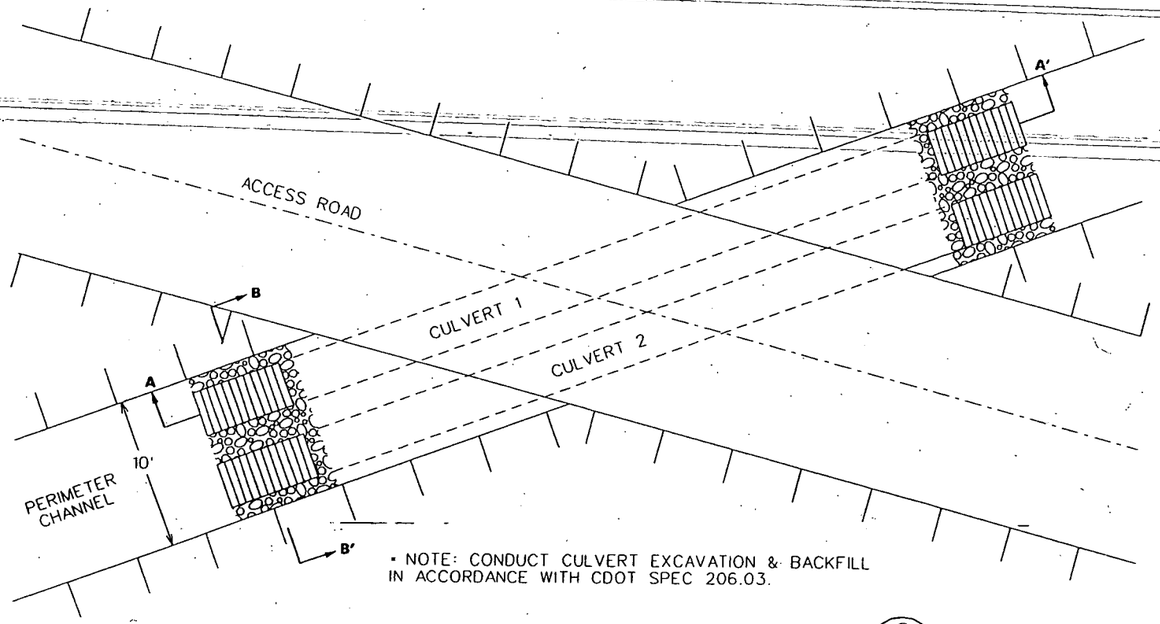
Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OK DM [signature] Earth Tech

OK CQAE (Des. Chg. Dwg.) JH, Rale TA

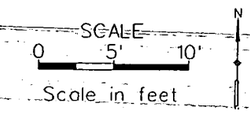
	QUAN.	DESCRIPTION	MATERIAL



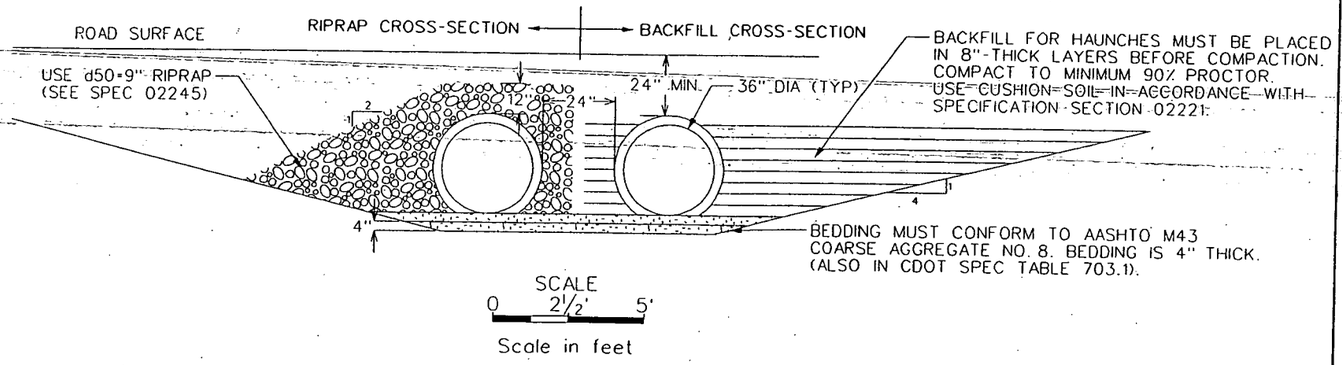
• NOTE: CONDUCT CULVERT EXCAVATION & BACKFILL IN ACCORDANCE WITH CDOT SPEC 206.03.

PERIMETER CHANNEL CULVERT DESIGN

2 | 17 | 18



B

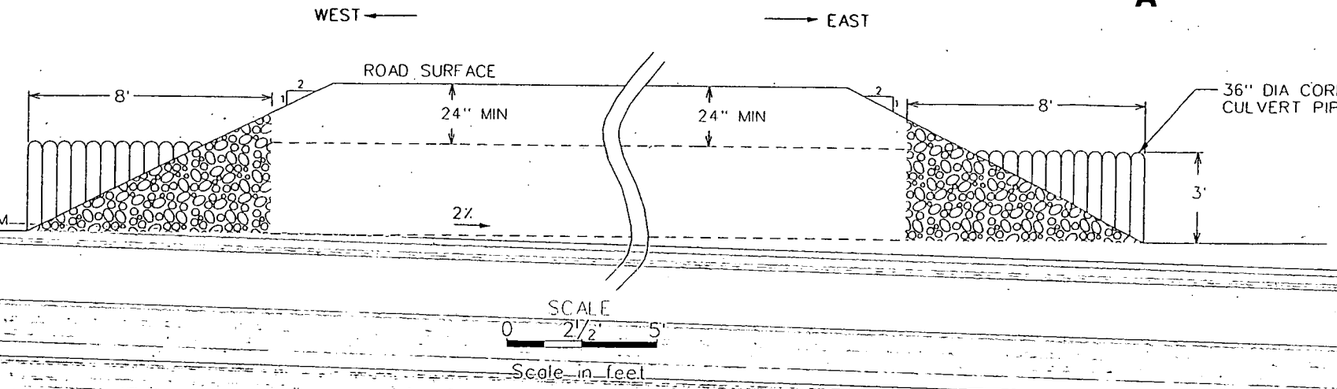


B'

BACKFILL FOR HAUNCHES MUST BE PLACED IN 8"-THICK LAYERS BEFORE COMPACTION. COMPACT TO MINIMUM 90% PROCTOR. USE CUSHION SOIL IN ACCORDANCE WITH SPECIFICATION SECTION 02221.

BEDDING MUST CONFORM TO AASHTO M43 COARSE AGGREGATE NO. 8. BEDDING IS 4" THICK. (ALSO IN CDOT SPEC TABLE 703.1).

A



A'

ISSUE	REVISION DESCRIPTION	EARTH TECH DESIGN COMPANY	DATE	SP DSGN	DB DWN	RA CHKD	SL IV	RT APVD			GLASS	57378 PROJECT/CHARGE NO.
0	ORIGINAL ISSUE											

PROJECT/WCF NO. 020525

KEYWORDS

1. 2. 3. 4. 5.

BLDG./FACILITY SITE — NA

ROOM/AREA — NA

GRID COORD./COL NO. — NA

DESCRIPTION

TOLERANCES: FRACT. ±; ANGLE ±; DEC. ±; UNLESS NOTED OTHERWISE

REMOVE BURRS AND SHARP EDGES

MAT'L ASSEMBLY — NA

DESIGN COMPANY		
DESIGNED BY	S. POWELL	4/29/05
DRAWN BY	D. BAXTER	4/29/05
CHECKED BY	R. ARCHIBALD	4/29/05
INDEPENDENT VERIFICATION	S. LAWRENCE	4/29/05
APPROVED BY	R. THOMPSON	4/29/05
CLASSIFIER		
SCALE:	AS SHOWN	
LANDLORD		

U.S. DEPARTMENT OF ENERGY
ROCKY FLATS OFFICE GOLDEN, COLORADO

Rocky Flats Environmental Technology Site
GOLDEN, COLORADO

PERIMETER CHANNEL CULVERT DESIGN
PRESENT LANDFILL CLOSURE PROJECT 100% DESIGN

SIZE B | DRAWING NUMBER 51781-019 | ISSUE 0

GROUP\CAD\ROCKY FLATS\NEW DESIGN 2005\DETAILS\PerChann.DGN

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 223

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None	Specifications: None
Reference (other): PLF Seep Treatment System	Attachments: None

Request:
After construction of the Seep Treatment System please advise as to how the eastern area sloping from the box (exit water area and downhill to the pond) should be constructed. It is not indicated on dwg 51781-017.

Solution:
Please give written engineering guidance to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/25/05

Paul Kreitz		4/18/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | ☐ Change

The north, south, and west sides of the pond, in the vicinity of the seep treatment system, must be graded to a slope of no greater the 4H: 1V down to the flat area of the western edge of the pond. Rip-rap removed from the asbestos areas can then be used to create and protect a small swale (approximately 3-feet wide) from the pipe discharge of the seep treatment system down to the flat area of the pond.

Robert W. Davis	Robert W. Davis	04/28/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OK CQAE
J.H. Rabe TX

Request for Information (RFI)

Project Name:	Construction of the Present Landfill Accelerated Action	Subcontractor No.:	KH020577
Contractor:	Kaiser-Hill Company, LLC	RFI No.:	RFI - 224
Subcontractor:	S.M. Stoller Corporation	Page 1	1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	None	Specifications:	QA/QC Manual, Table 4.2
Reference (other):	Rip Rap Bulk Gradation	Attachments:	None

Request:
Requesting that the vendor submittal and visual inspection be determined as equivalent to doing some type of "bulk gradation" on the rip-rap to be installed in the southeast perimeter channel.

Solution:
Please give written guidance relative to the above request.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/21/05

Paul Kreitz		4/18/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☐	Clarification ☐	Rejection ☒	☐ Change

Rejected. However, the bulk gradation that is required in the specifications and QA/QC plan can be performed at the stockpiled rip-rap at the Centennial Pit before it is moved from Centennial to the PLF site.

Robert W. Davis	Robert W. Davis	04/28/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OK CQAE
J. Hi Rale TA

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 225

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None | Specifications: None

Reference (other): Re-disking Cap after Hydro-mulching | Attachments: None

Request:
On disked areas ready for seeding the K-H Hydro-mulching equipment has left tire tracks. Due to regulatory concerns with this the acting K-H PM has requested that the "tracked" areas be re-disked until completion of the project.

Schedule impact – 0
Cost Impact - $1 k

Please provide written guidance directing this work to be done.

Solution:
Provide written guidance to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/18/05

Paul Kreitz		4/19/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☒ | Clarification ☐ | Rejection ☐ | ☐ Change

Light dicsing will be required in these areas where the hydromulching equipment has traveled, but only on areas where the seeding and hydromulching has not occurred. This direction was verbally provided to Stoller on or about 04/22/05.

Robert W. Davis	Robert W. Davis	04/28/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OK CQAE
JH Kale TA

Request for Information (RFI)

Project Name:	Construction of the Present Landfill Accelerated Action	Subcontractor No.:	KH020577
Contractor:	Kaiser-Hill Company, LLC	RFI No.:	RFI - 226
Subcontractor:	S.M. Stoller Corporation	Page 1	1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	Seep Treatment System – 51781-017 issue 2	Specifications:	None
Reference (other):	30 Degree HDPE elbow – Strip Drain Sump Line	Attachments:	None

Request:
The 6" HDPE Pipe leading from the Strip Drain Sump to its man-hole contains a 30 degree elbow fitting. As HDPE pipe joints are ordinarily fused, please provide engineering guidance as to the type of fitting to use here.

Solution:
Provide written engineering guidance to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	

Paul Kreitz		4/20/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐	Clarification ☒	Rejection ☐	☐ Change

A mechanical joint type fitting or coupling can be used at this location. Obtain and implement the pipe manufacturer's recommendations on the style/type of fitting or coupling.

Robert W. Davis	Robert W. Davis	04/28/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK – Provide Subm. info. CQAE Jeff Rule TA	

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 227

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: 51781-017, issue 2 | Specifications: None

Reference (other): Concrete Aeration Tank | Attachments: None

Request:
Please advise if any coating (water barrier) is required on the exterior of the tank walls prior to back-fill operations.

Solution:
Provide written engineering guidance to the above question.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/21/05

Paul Kreitz		4/20/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐	Clarification ☒	Rejection ☐	☐ Change

No coating is required as designed. This direction was verbally provided to Stoller on 04/22/05.

Robert W. Davis	Robert W. Davis	04/28/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due: OK CQAE J.H. Rale TA

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI – 228, rev 1

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: 51781-017, issue 2 | Specifications: 02245-0950-2

Reference (other): Bell and Spigot Pipe Bedding Material | Attachments: None

Request:
Is the pea gravel contained in the vacant liner lay down yards equivalent to the bedding material specified in 02245-0950-2?

We would like to recycle the pea gravel for use as bedding for the PLF culverts.

Solution:
Provide written engineering guidance to the above request.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/22/05

Paul Kreitz		4/20/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☒ | Clarification ☒ | Rejection ☐ | ☐ Change

The pea gravel is acceptable, but only for use as the bedding material for the installation of the culverts. The backfill around the culverts and above the culverts must be as required by Earth Tech engineering.

In addition, a QC gradation sample must be taken of this material for the record.

This direction was verbally provided to Stoller on 04/21/05.

Robert W. Davis	Robert W. Davis	04/28/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due:

OK CQAE
J.H. Fale TA

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC RFI No.: RFI - 229

Subcontractor: S.M. Stoller Corporation Page 1 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: 51781-017 Seep Treatment System Specifications: None

Reference (other): Concrete Form Removal, West Side Wall Attachments: None

Request:
The North, West and South walls of the seep treatment aeration box were poured on 4/16/05. The three day break strength was 1640 psi. Request engineering approval to remove the forms from the outside of the West wall on 4/21/05 to allow some backfilling and installation of the man-holes.

Solution:
Provide engineering guidance to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/21/05

Paul Kreitz		4/21/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐	Clarification ☒	Rejection ☐	☐ Change

The forms on the outside of the west wall can be removed; however, backfilling behind the wall cannot be done until the "steps" of the seep treatment structure has been placed and cured for 24 hours. This direction was verbally provided to Stoller on 04/22/05.

Robert W. Davis	Robert W. Davis	04/28/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due: OK CQAE
J.H. Rale Jr

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 230

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: 51781-017, Seep Treatment System | Specifications: None

Reference (other): Bentonite Wall | Attachments: None

Request:
The instructions for construction of the Bentonite Wall direct the use of "CETCO Pure Gold bentonite crumbles or chips (or equivalent)". Can "Volclay" bentonite pellets be considered equivalent for use in construction of the bentonite wall?

We have 6 and one half pallets of this material on site right now which we have no further use for.

Solution:
Provide written engineering guidance to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/22/05

Paul Kreitz		4/21/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☒ | Clarification ☐ | Rejection ☐ | ☐ Change

Volclay bentonite pellets are acceptable for use on the designed wall. Ensure that water is added to promote hydration and handle the material in accordance with the most current MSDS. This direction was verbally provided to Stoller on 04/22/05.

Robert W. Davis	Robert W. Davis	04/28/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due:

OK CQAE
J.H. Rule TX

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 231

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: 51781-017, Seep Treatment System | Specifications: None

Reference (other): Man-hole Construction - extensions | Attachments: None

Request:
Field construction and assembly of the Seep Treatment System man-holes has clarified their top elevations with respect to final grade.

Request that we use a the height extension on the North man-hole (strip drain and GWIS) and omit the extension on the South man-hole (existing seep tie-in).

Solution:
Please provide engineering guidance to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/22/05

Paul Kreitz		4/22/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☒ | Clarification ☐ | Rejection ☐ | ☐ Change

Not using manhole extensions on either the north or south manhole are acceptable as long as the manhole configuration will match the manhole cover to provide a tight and stable cover. This direction was verbally provided to Stoller on 04/22/05

Robert W. Davis	Robert W. Davis	04/28/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due:

OK CRAE
J.H. Kale Tx

Request for Information (RFI)

Project Name:	Construction of the Present Landfill Accelerated Action	Subcontractor No.:	KH020577
Contractor:	Kaiser-Hill Company, LLC	RFI No.:	RFI - 232
Subcontractor:	S.M. Stoller Corporation	Page 1	1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	None	Specifications:	None
Reference (other):	GWIS System Tie-ins	Attachments:	None

Request:
The construction of the PLF Seep Treatment System requires a tie-in to the existing GWIS piping. We are using SDR-35 8" bell & spigot piping to connect to the transite GWIS piping.

Please provide engineering guidance as to the type of connection to make at the GWIS tie-in.

Solution:
Provide written engineering guidance to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/23/05

Paul Kreitz		4/22/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐	Clarification ☒	Rejection ☐	☐ Change

Obtain information from the GWIS PVC pipe supplier on the best joint system between the transit pipe and the PVC pipe. Use the manufacturer's recommendations for this joint/connection. This direction was verbally provided to Stoller on 04/22/05.

Robert W. Davis	Robert W. Davis	04/28/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OK – provide subm. info.
CQAE J.H. Rale TA

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 233

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None	Specifications: None
Reference (other): Seep Treatment System	Attachments: None

Request:
Please provide guidance as to WHEN it is approved to run water through the new Seep Treatment Aeration box (i.e. how long after concrete pours? Are there any other constraints to making it functional?)

Solution:
Please provide written guidance to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/24/05

Paul Kreitz		4/22/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | ☐ Change

Water can flow into the seep treatment structure once the concrete for the "steps" has reached 75% of the specified 28-day strength. However, a splash plate of wood, metal or rock must be placed under the inlet to avoid any "holing" of the concrete surface for at least one-week. This direction was verbally provided to Stoller on 04/26/05

Robert W. Davis	Robert W. Davis	04/28/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OK CRAE
J.H. Rale TT

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 234

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	51781-017, New Seep Treatment System Piping from Existing Seep Man-hole to Aeration Box	Specifications:	None
Reference (other):		Attachments:	None

Request:
Due to the configuration and elevations of the Existing Seep Man-hole and the Aeration box it is requested to use 1" PVC pipe to connect the 6" HDPE entering the manhole with the Aeration Box. The 1" PVC would span an approximate 2.5 feet from the man-hole to the box.

Solution:
Provide written engineering guidance to the above request.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/23/05

Paul Kreitz		4/22/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☒	Clarification ☐	Rejection ☐	☐ Change

This is accepted and is consistent with the piping shown on Design Drawing No. 017. This direction was verbally provided to Stoller on 04/22/05.

Robert W. Davis	Robert W. Davis	04/28/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:		

OK CQAE
J.H. Rale TT

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 235

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None | Specifications: None

Reference (other): Bottom of East Face Slope | Attachments: None

Request:
How far is the 2" lift required to extend at the bottom of the East Face 4 to 1 Slope?

Solution:
Provide written engineering guidance to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/25/05

Paul Kreitz		4/22/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | ☐ Change

The 2-inch lift of the 24-inch soil cover must extend to where the 4H: 1V slope meets with the existing grade similar to what is shown in Design Drawing No. 012, Detail 2.

Robert W. Davis	Robert W. Davis	04/28/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OK CQAE
J.H. Kale TA

Request for Information (RFI)

Project Name:	Construction of the Present Landfill Accelerated Action	Subcontractor No.:	KH020577
Contractor:	Kaiser-Hill Company, LLC	RFI No.:	RFI - 237
Subcontractor:	S.M. Stoller Corporation	Page 1	1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	None	Specifications:	None
Reference (other):	Western Culvert at Original Road	Attachments:	None

Request:
Near the far western tip of the original PLF there is a culvert and drainage way that now "dead ends" at the haul road.

Q: Should it be left as is, or tied in either the north or south perimeter channel of the PLF?

Solution:
Provide written guidance to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	N/A

Subcontractor Print/Type Name	Subcontractor Signature	Date
Paul Kreitz		4/25/05

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☐	Clarification ☒	Rejection ☐	☐ Change

This flow in this drainage feature should not flow into the perimeter channels. The drainage feature should be left "as is." Further, any culvert under the road should be removed.

Print/Type Name	Signature	Date
Robert W. Davis	Robert W. Davis	04/28/05

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OK CQAE
J.H. Rale TA

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 238

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	None	Specifications:	None
Reference (other):	Seep Treatment System - Concrete Breaks, Steps and Walls	Attachments:	None

Request:
The Aeration Basin for the New Seep Treatment System consists of four (4) concrete pours. Concrete break information for the walls and steps are now available:

Walls – 7 day breaks: 2190 and 2100 psi
Steps – 3 day breaks: 3110 and 2960 psi

Based on the above the walls are not projected to reach the specified 4000 psi at the 28 day breaks but will reach 3000 psi, the steps should meet 4000 psi without problem.

Q: Based on the above....when can the forms for the walls be removed? Do they have to be re-poured to meet 4000 psi?

Solution:
Provide written engineering guidance to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/26/05

Paul Kreitz		4/25/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | ☐ Change

The forms can be removed as soon as the weather and site conditions allow this work to proceed. An analysis conducted by Earth Tech indicates that an ultimate wall concrete strength of 3000 psi is more than enough to meet the structural requirements of the walls. Therefore, no additional work will be required on the concrete walls.

Once the forms are removed, the work crews can proceed with backfilling around the seep treatment system concrete structure.

This direction was verbally provided to Stoller on 04/25/05.

Robert W. Davis	Robert W. Davis	04/28/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CQAE per des. chg. by Earth Tech	

OK DM J.H. Rabe TT
Earth Tech

EARTH TECH

A TYCO INTERNATIONAL LTD. COMPANY

CLIENT KAISER HILL / DOE

PROJECT ROCKY FLATS PRESENT LANDFILL

CALCULATION SHEET

SUBJECT ATTACHMENT TO RFI 238 CONCRETE BREAKS FOR SEEP SYSTEM WALLS

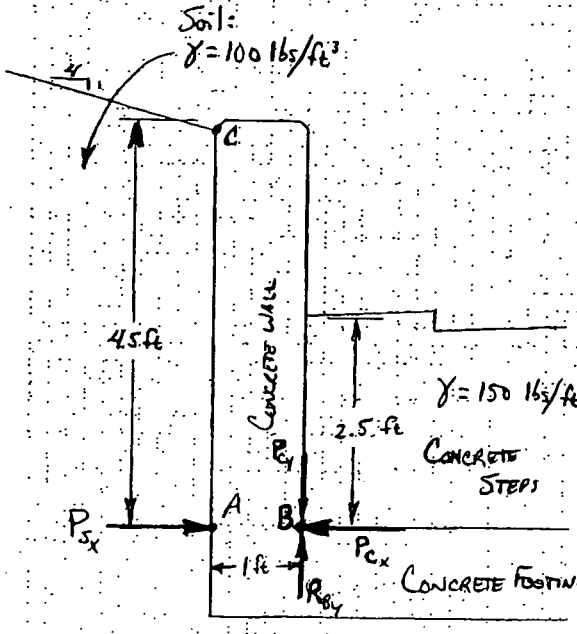
PAGE 1 OF 1

PROJECT NO. 57378.4020

Prepared by SFP Date 6/9/05

Reviewed by _____ Date _____

Approved by _____ Date _____



The 7-day breaking strength of the concrete wall was 2,100 psi. At 28 days, it will have achieved a maximum strength probably no greater than 3,000 psi.

Is this sufficient, since the wall was designed with 4,000 psi in mind?

* Compressive strength is the only concern

For the wall, the greatest amount of compressive stress will occur at the base, where the combined pressure of the soil and the concrete steps act on section AB.

$$P_{S_x} = (100\ \text{lbs/ft}^3)(4.5\ \text{ft})\left(\frac{1\ \text{ft}}{12\ \text{in}}\right)^2 = 3.13\ \text{psi}$$

$$P_{C_x} = (150\ \text{lbs/ft}^3)(2.5\ \text{ft})\left(\frac{1\ \text{ft}}{12\ \text{in}}\right)^2 = 2.60\ \text{psi}$$

$$\Sigma F_{x_{AB}} = P_S + P_C = 5.73\ \text{psi}$$

The soil pressure also induces a vertical compression component at point B by acting on the wall in a moment about point A. Let's conservatively assume that the full pressure of the soil acts at point C:

$$\Sigma \vec{M}_A = P_{S_x}(4.5\ \text{ft}) + P_{C_y}(1\ \text{ft}) - R_{B_y} = 0$$

$$R_{B_y} = 4.5(3.13\ \text{psi}) + (150\ \text{lbs/ft}^3)(4.5\ \text{ft})\left(\frac{1\ \text{ft}}{12\ \text{in}}\right)^2(1\ \text{ft}) = 18.8\ \text{psi}$$

Thus, the total compression at the critical section, point B, is less than 20 psi, which is much less than the compressive strength of the concrete ~3,000 psi.

Factor of safety against failing in compression > 100.

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 240

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	None	Specifications:	None
Reference (other):	2" Lift – Off-site Material, QC Requirements	Attachments:	None

Request:
Other than the bulk gradations required associated with the placement of the 2" material.....

Q: Is any sampling of the off-site 2" material required prior to bringing it on-site and placing it?

Solution:
Please provide written guidance to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/27/05

Paul Kreitz		4/26/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☐	Clarification ☒	Rejection ☐	☐ Change

No additional off-site testing is required. However, **at least one QC sample** and analysis will be required during the placement of the material at the east face.

Robert W. Davis	Robert W. Davis	04/28/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CQAE J.H. Rale TT	

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 241

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None | Specifications: None

Reference (other): 2" Sampling, Centennial Pit | Attachments: None

Request:
RFI 241 transmits the cost and schedule impact for taking two (2) samples of pre-vegetated RFA from the Centennial pit and providing analyses and a map.

Schedule Impact – 0 (if transport can be started at risk), 3 days delay if not.
Cost Impact - $1 k

Note: Verbal approval from the K-H PM has been received to proceed with the sampling and analyises.

Solution:
Provide written concurrence to do the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/27/05

Paul Kreitz		4/26/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☒ | Clarification ☐ | Rejection ☐ | ☐ Change

Accepted. Proceed with the sampling of the 2-inch Rocky Flats Alluvium soils from the Centennial Pit. Conduct gradation analysis by both ASTM D5519 and D422. Conduct the sampling at two separate locations within the stockpile area. This direction was verbally provided to Stoller on 04/26/05.

Robert W. Davis	Robert W. Davis	04/28/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due: OK CQAE J.H. Kale TT

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action — Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC — RFI No.: RFI - 242

Subcontractor: S.M. Stoller Corporation — Page 1 — 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: None — Specifications: None

Reference (other): East Face – Final Surface Prep — Attachments: None

Request:
Please advise as to the method of final surface preparation for the East Face 4 to 1 slope.

(Suggest blading and disking without ripping, as typical to the side slopes of the PLF cap)

Solution:
Provide written engineering guidance to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/29/05

Paul Kreitz		4/26/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ Clarification ☒ Rejection ☐ ☐ Change

Since the material on the east face slope has been placed with low ground pressure equipment, seed bed preparation shall consist of discing only.

The flatter portion of the ~~α~~ the cover (3 to 5% slope) immediately west of the east slope will require both ripping and discing since material delivery trucks have driven on portions of this area. This method is consistent with the seed bed preparation work that has already been done for the soil cover area at 3 to 5% that is now seeded and matted.

Robert W. Davis	Robert W. Davis	04/28/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due:

OK CQAF
J.H. Rale TA

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 243

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	None	Specifications:	None
Reference (other):	Grout Repairs to Seep Treatment System Steps – Cure Time	Attachments:	None

Request:
QA/QC has identified several areas on the Seep Treatment System steps requiring minor grout repairs. These will be completed on 4/27/05.

Please provide the required cure time for the grout repairs prior to allowing water to flow in the aeration box.

Solution:
Provide written guidance to the above question.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/27/05

Paul Kreitz		4/27/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☐	Clarification ☒	Rejection ☐	☐ Change

Follow the manufacturer's recommendations for curing time under the temperature and moisture conditions at the time the grout is placed.

Robert W. Davis	Robert W. Davis	04/28/05
Print/Type Name	Signature	Date

Kaiser-Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CAKE J.H. Rule TX	

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 245

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	51781-13A, Landfill Cover Details, East Face	Specifications:	None
Reference (other):	Diversion Berm	Attachments:	None

Request:
Please provide engineering guidance as to the type of material to use in constructing the Diversion Berm shown on drawing 51781-13A.

(Suggest 2" Lift RFA)

Solution:
Provide written engineering guidance to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	4/28/05

Paul Kreitz		4/27/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | ☐ Change

The berm at the crest of the east slope shall be made of Rocky Flats Alluvium soil as used for the 2-inch lift of the 24-inch soil cover.

Robert W. Davis	Robert W. Davis	04/28/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:		

OK CQAE

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 246

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: 51781-017	Specifications: None
Reference (other): Gator-grate Installation – Aeration Box	Attachments: None

Request:
The gator-grate installed on the top of the New Seep Treatment System will not support pedestrian traffic. K-H has requested that personnel be able to walk on top of the grating with no safety issues.

Please supply engineering guidance as to what type of bracing is to be installed below the existing grating. (Suggest angle iron cross beams).

Solution:
Provide written guidance to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	

Paul Kreitz		4/28/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | ☐ Change

See attached information on the required structural support of the grating at the Seep Treatment System structure.

Robert W. Davis	Robert W. Davis	05/04/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ Revisions Due: OK CQ AE

ARTH TECH

A TYCO INTERNATIONAL COMPANY

CALCULATION SHEET

PAGE 1 OF 3

PROJECT NO. 57378.4020

'ENT Kaiser Hill — SUBJECT Seep Treatment Box

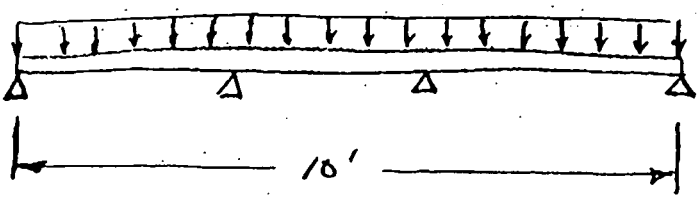
..OJECT RFETS PLF — Grate Support Design

Prepared by SFP Date 4/30/05

Reviewed by [redacted] Date 5/4/05

Approved by TLT Date 6/15/05

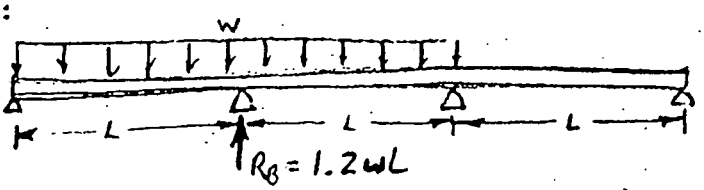
Gator Deck:



Assume maximum loading of 50 lbs/ft² (greater than the standard residential load of 30 lbs/ft²)

From the specs for Gator Deck GD-I4010 (attached), a uniform loading of 50 lbs/ft² with 40" spacing produces a maximum deflection of 0.088 in. ($\frac{3}{8}$" is the maximum allowable deflection) — OK.

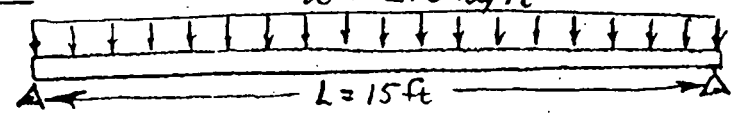
The maximum reaction on an intermediate support beam occurs in the following scenario:



Ref: AISC Manual of Steel Construction, 8th Ed, p. 2-126 #34 (attached)

$= 1.2\,(50\ lbs/ft^2)(3.33\ ft) = 200\ lbs/ft$

Support Beam



Added 10 lbs/ft for extra weight of

Maximum moment, $M_x = \frac{wL^2}{8} = \frac{1}{8}(210\ lbs/ft)(15\ ft)^2$

$= 5906\ ft\cdot lbs = 5.906\ kip\cdot ft$

For standard A-36 steel, the yield strength, $F_y = 36$ ksi

Bending strength is 60% of the yield strength: $F_{bx} = 0.6\,F_y = 21.6$ ksi

Section modulus, $S_{x_{min}} = \frac{M_x}{F_{bx}} = \frac{(5.906\ kip\cdot ft)}{(21.6\ ksi)}\left(\frac{12\ in}{ft}\right) = 3.28\ in^3$

Choose a wide-flange I-beam, 8" deep weighing 10 lbs/ft (W 8x10)
→ has $S_x = 7.81\ in^3$, so OK. (Ref AISC pp. 1-28, 29 [attached])

Lateral support will be derived from the grating which will be saddle-clipped to the beam.

ARTH TECH

A Tyco International Ltd. Company

PAGE 2 OF 3

PROJECT NO. 57378.4020

CALCULATION SHEET

CLIENT Kaiser Hill

SUBJECT Seep Treatment Box

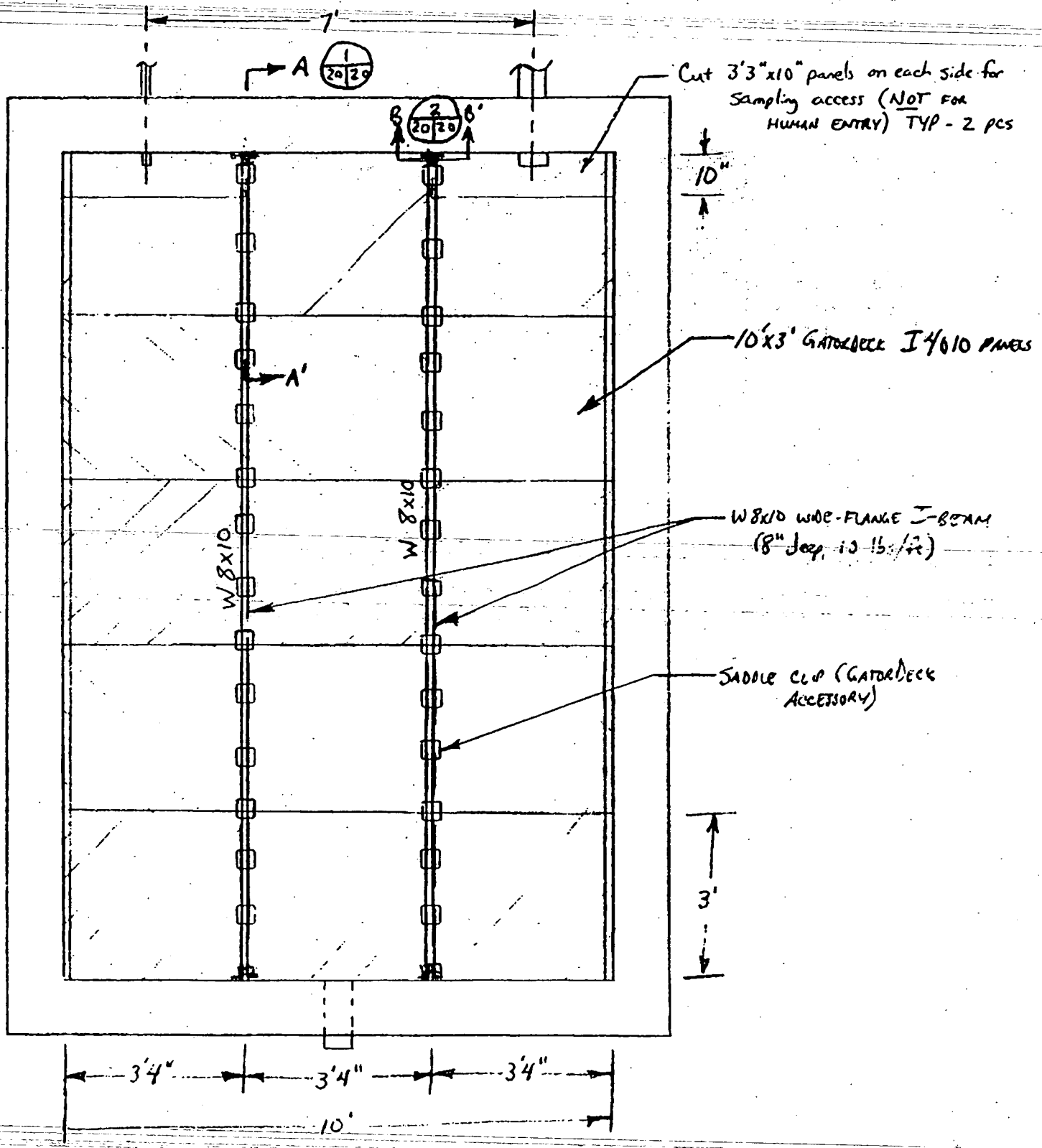
PROJECT RFETS PLF

Grate Support Design

Prepared by SEP Date 4/30/05

Reviewed by [illegible] Date 5/2/05

Approved by _____ Date _____



SCALE: 10 sq./in

ARTH TECH

CALCULATION SHEET

PROJECT NO. 57378 4020

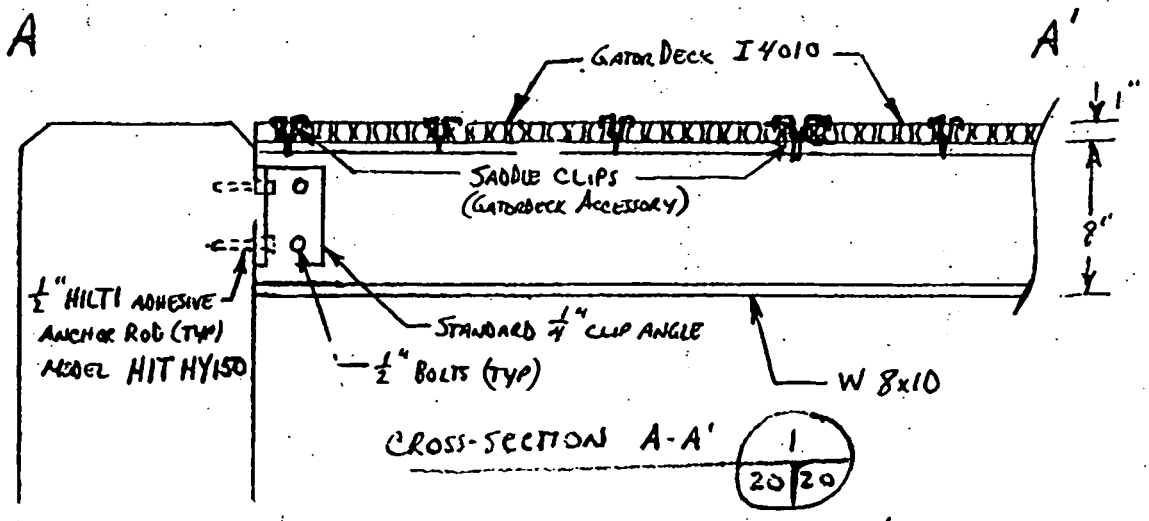
CLIENT Kaiser Hill — SUBJECT Seep Treatment Box Grate Support Design

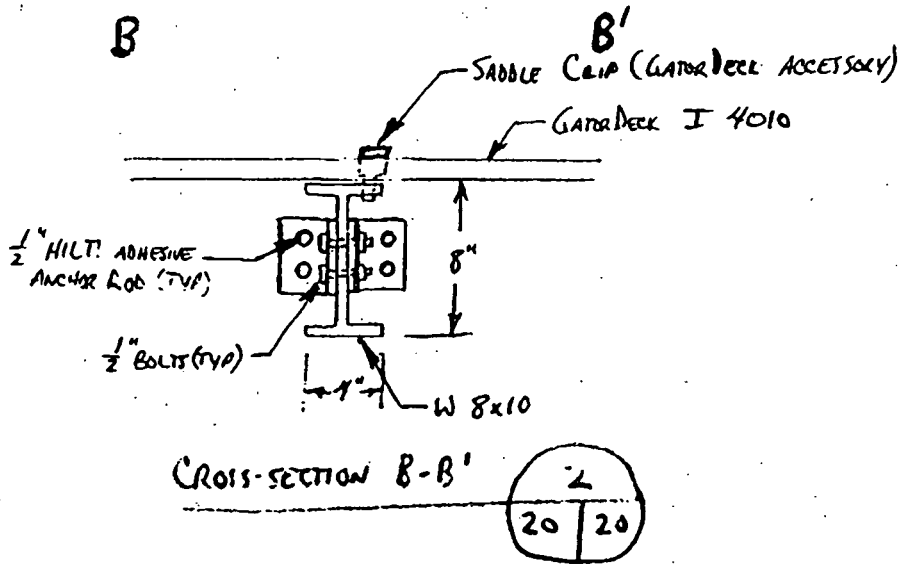
PROJECT RFETS PLF

Prepared by SFP Date 4/30/05

Reviewed by [illegible] Date 5/2/05

Approved by _____ Date _____



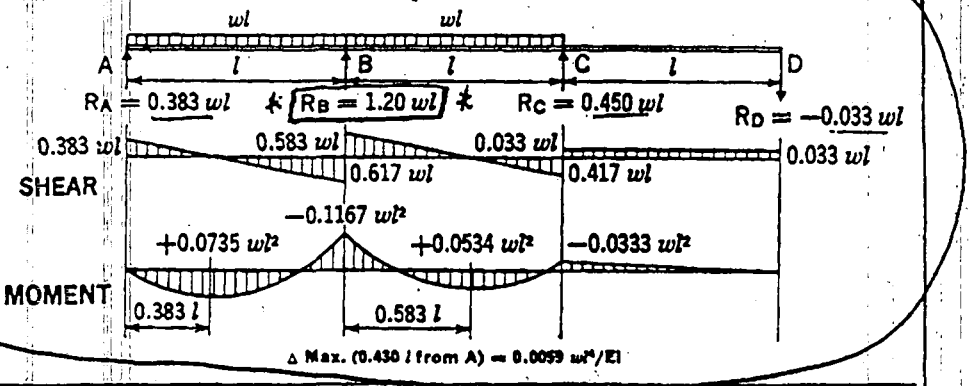


SCALE: 10 sq./in

BEAM DIAGRAMS AND DEFLECTIONS
For various static loading conditions

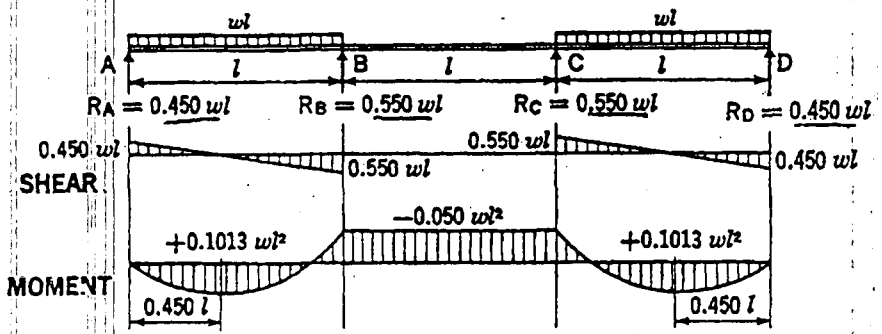
For meaning of symbols, see page 2-111.

34. CONTINUOUS BEAM—THREE EQUAL SPANS—ONE END SPAN UNLOADED



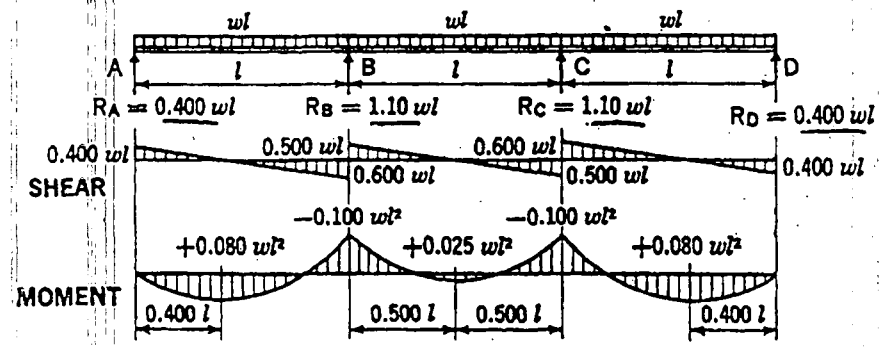
Δ Max. (0.430 *l* from A) = 0.0059 wl^4/EI

35. CONTINUOUS BEAM—THREE EQUAL SPANS—END SPANS LOADED



Δ Max. (0.479 *l* from A or D) = 0.0099 wl^4/EI

36. CONTINUOUS BEAM—THREE EQUAL SPANS—ALL SPANS LOADED

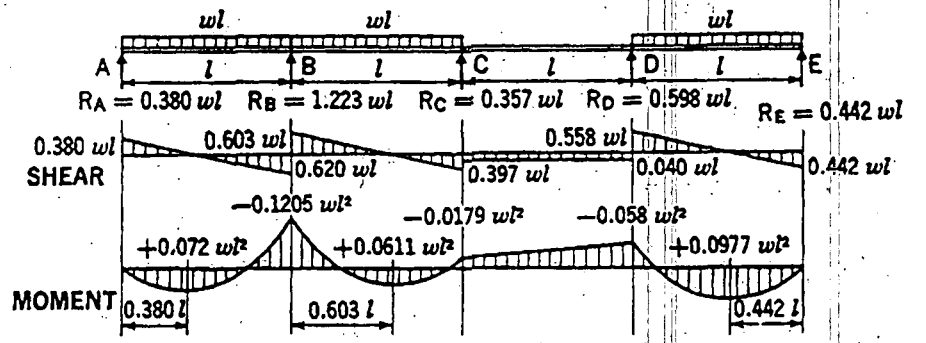


Δ Max. (0.446 *l* from A or D) = 0.0069 wl^4/EI

BEAM DIAGRAMS AND DEFLECTIONS
For various static loading conditions

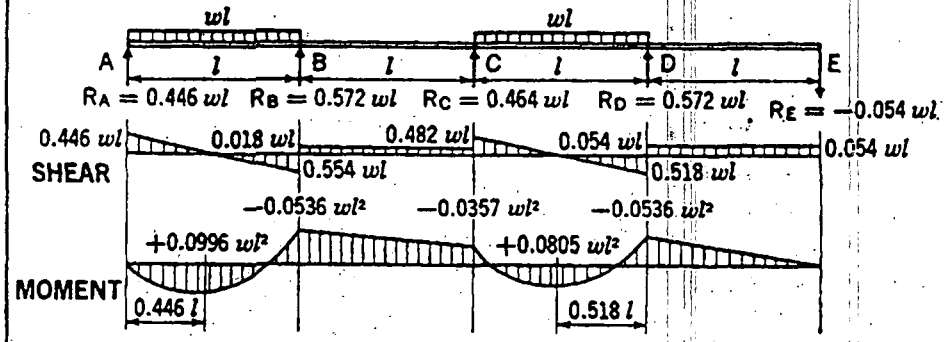
For meaning of symbols, see page 2-111.

37. CONTINUOUS BEAM—FOUR EQUAL SPANS—THIRD SPAN UNLOADED



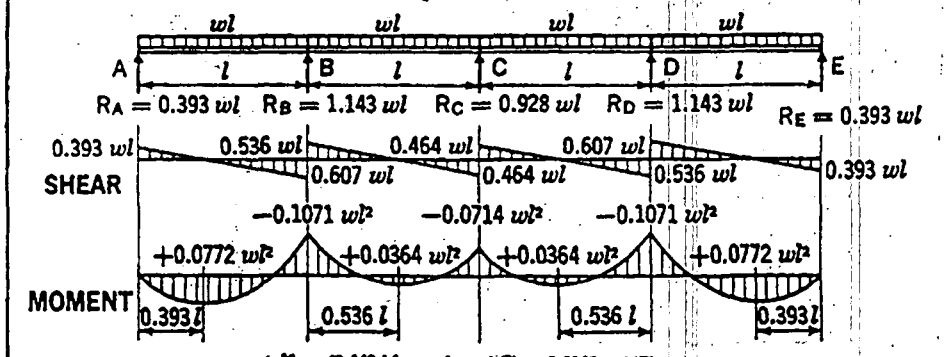
Δ Max. (0.475 *l* from E) = 0.0094 wl^4/EI

38. CONTINUOUS BEAM—FOUR EQUAL SPANS—LOAD FIRST AND THIRD SPANS

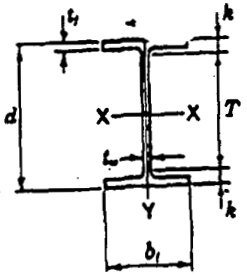


Δ Max. (0.477 *l* from A) = 0.0097 wl^4/EI

39. CONTINUOUS BEAM—FOUR EQUAL SPANS—ALL SPANS LOADED



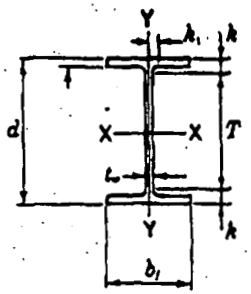
Δ Max. (0.440 *l* from A and E) = 0.0065 wl^4/EI



W SHAPES
Dimensions

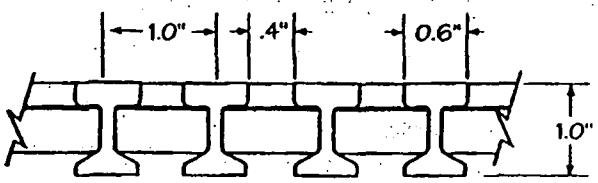
Designation	Area A	Depth d		Web			Flange				Distance		
				Thickness t_w		$\frac{t_w}{2}$	Width b_f		Thickness t_f		T	k	k_1
	in.²	in.		in.		in.	in.		in.		in.	in.	in.
W 8x67	19.7	9.00	9	0.570	9/16	5/16	8.280	8 1/4	0.935	15/16	6 1/8	1 7/16	1 1/16
x58	17.1	8.75	8 3/4	0.510	1/2	1/4	8.220	8 1/4	0.810	13/16	6 1/8	1 5/16	1 1/16
x48	14.1	8.50	8 1/2	0.400	3/8	3/16	8.110	8 1/8	0.685	11/16	6 1/8	1 3/16	5/8
x40	11.7	8.25	8 1/4	0.360	3/8	3/16	8.070	8 1/8	0.560	9/16	6 1/8	1 1/16	5/8
x35	10.3	8.12	8 1/8	0.310	5/16	3/16	8.020	8	0.495	1/2	6 1/8	1	9/16
x31	9.13	8.00	8	0.285	5/16	3/16	7.995	8	0.435	7/16	6 1/8	15/16	9/16
W 8x28	8.25	8.06	8	0.285	5/16	3/16	6.535	6 1/2	0.465	7/16	6 1/8	15/16	9/16
x24	7.08	7.93	7 7/8	0.245	1/4	1/8	6.495	6 1/2	0.400	3/8	6 1/8	7/8	9/16
W 8x21	6.16	8.28	8 1/4	0.250	1/4	1/8	5.270	5 1/4	0.400	3/8	6 5/8	13/16	1/2
x18	5.26	8.14	8 1/8	0.230	1/4	1/8	5.250	5 1/4	0.330	5/16	6 5/8	3/4	7/16
W 8x15	4.44	8.11	8 1/8	0.245	1/4	1/8	4.015	4	0.315	5/16	6 5/8	3/4	1/2
x13	3.84	7.99	8	0.230	1/4	1/8	4.000	4	0.255	1/4	6 5/8	11/16	7/16
x10	2.96	7.89	7 7/8	0.170	3/16	1/8	3.940	4	0.205	3/16	6 5/8	5/8	7/16
W 6x25	7.34	6.38	6 3/8	0.320	5/16	3/16	6.080	6 1/8	0.455	7/16	4 3/4	13/16	7/16
x20	5.87	6.20	6 1/4	0.260	1/4	1/8	6.020	6	0.365	3/8	4 3/4	3/4	7/16
x15	4.43	5.99	6	0.230	1/4	1/8	5.990	6	0.260	1/4	4 3/4	5/8	3/8
W 6x16	4.74	6.28	6 1/4	0.260	1/4	1/8	4.030	4	0.405	3/8	4 3/4	3/4	7/16
x12	3.55	6.03	6	0.230	1/4	1/8	4.000	4	0.280	1/4	4 3/4	5/8	3/8
x 9	2.68	5.90	5 7/8	0.170	3/16	1/8	3.940	4	0.215	3/16	4 3/4	9/16	3/8
W 5x19	5.54	5.15	5 1/8	0.270	1/4	1/8	5.030	5	0.430	7/16	3 1/2	13/16	7/16
x16	4.68	5.01	5	0.240	1/4	1/8	5.000	5	0.360	3/8	3 1/2	3/4	7/16
W 4x13	3.83	4.16	4 1/8	0.280	1/4	1/8	4.060	4	0.345	3/8	2 3/4	11/16	7/16

W SHAPES
Properties



Nominal Wt. per Ft.	Compact Section Criteria $\frac{b_f}{2t_f}$	Compact Section Criteria F_y'	Compact Section Criteria $\frac{d}{t_w}$	Compact Section Criteria F_y''	r_T	$\frac{d}{A_f}$	Elastic Properties Axis X-X I	Axis X-X S	Axis X-X r	Axis Y-Y I	Axis Y-Y S	Axis Y-Y r	Torsional constant J	Plastic Modulus Z_x	Plastic Modulus Z_y
Lb.		Ksi		Ksi	in.		in.⁴	in.³	in.	in.⁴	in.³	in.	in.⁴	in.³	in.³
67	4.4	—	15.8	—	2.28	1.16	272	60.4	3.72	88.6	21.4	2.12	5.06	70.2	32.7
58	5.1	—	17.2	—	2.26	1.31	228	52.0	3.65	75.1	18.3	2.10	3.34	59.8	27.9
48	5.9	—	21.3	—	2.23	1.53	184	43.3	3.61	60.9	15.0	2.08	1.96	49.0	22.9
40	7.2	—	22.9	—	2.21	1.83	146	35.5	3.53	49.1	12.2	2.04	1.12	39.8	18.5
35	8.1	64.4	26.2	—	2.20	2.05	127	31.2	3.51	42.6	10.6	2.03	0.77	34.7	16.1
31	9.2	50.0	28.1	—	2.18	2.30	110	27.5	3.47	37.1	9.27	2.02	0.54	30.4	14.1
28	7.0	—	28.3	—	1.77	2.65	98.0	24.3	3.45	21.7	6.63	1.62	0.54	27.2	10.1
24	8.1	64.1	32.4	63.0	1.76	3.05	82.8	20.9	3.42	18.3	5.63	1.61	0.35	23.2	8.57
21	6.6	—	33.1	60.2	1.41	3.93	75.3	18.2	3.49	9.77	3.71	1.26	0.28	20.4	5.69
18	8.0	—	35.4	52.7	1.39	4.70	61.9	15.2	3.43	7.97	3.04	1.23	0.17	17.0	4.66
15	6.4	—	33.1	60.3	1.03	6.41	48.0	11.8	3.29	3.41	1.70	0.876	0.14	13.6	2.67
13	7.8	—	34.7	54.7	1.01	7.83	39.6	9.91	3.21	2.73	1.37	0.843	0.09	11.4	2.15
10	9.6	45.8	46.4	30.7	0.99	9.77	30.8	7.81	3.22	2.09	1.06	0.841	0.04	8.87	1.66
25	6.7	—	19.9	—	1.66	2.31	53.4	16.7	2.70	17.1	5.61	1.52	0.46	18.9	8.56
20	8.2	62.1	23.8	—	1.64	2.82	41.4	13.4	2.66	13.3	4.41	1.50	0.24	14.9	6.72
15	11.5	31.8	26.0	—	1.61	3.85	29.1	9.72	2.56	9.32	3.11	1.46	0.10	10.8	4.75
16	5.0	—	24.2	—	1.08	2.85	32.1	10.2	2.60	4.43	2.20	0.966	0.22	11.7	3.39
12	7.1	—	26.2	—	1.05	5.38	22.1	7.31	2.49	2.99	1.50	0.918	0.09	8.30	2.32
9	9.2	50.3	34.7	54.8	1.03	6.96	16.4	5.56	2.47	2.19	1.11	0.905	0.04	6.23	1.72
19	5.8	—	19.1	—	1.38	2.38	26.2	10.2	2.17	9.13	3.63	1.28	0.31	11.6	5.53
16	6.9	—	20.9	—	1.37	2.78	21.3	8.51	2.13	7.51	3.00	1.27	0.19	9.59	4.57
13	5.9	—	14.9	—	1.10	2.97	11.3	5.46	1.72	3.86	1.90	1.00	0.15	6.28	2.92

GATORDECK™ GD-I4010



GATOR-DECK

Bearing Bar Type	I-Bar
Open Area	40%
Thickness	1.0"
Bearing Bar Centers	1.0"
Resin Systems	IFR, VFR
Colors	Yellow, Gray or White
Approx. Weight	3.41 lbs / sq ft

SPAN INCHES	LOAD TYPE									LOAD FOR .25-inch deflection	LOAD FOR .375-inch deflection
12	UL	250	500	1000	1500	2000	2500	3500	4500		
	UL deflection	.003	.006	.012	.018	.024	.030	.042	.054		
	CL	250	500	1000	1500	2000	2500	3500	4500		
	CL deflection	.005	.010	.019	.029	.039	.048	.068	.087		
18	UL	105	250	500	750	1000	1500	2250	3000	4464	6696
	UL deflection	.006	.014	.028	.042	.056	.084	.126	.168		
	CL	100	250	500	750	1500	2250	3000	4000	4198	6297
	CL deflection	.006	.015	.030	.045	.089	.134	.179	.238		
24	UL	100	200	300	400	600	800	1200	1600	1471	2206
	UL deflection	.017	.034	.051	.068	.102	.136	.204	.272		
	CL	100	200	400	600	1000	1400	1800	2200	1894	2841
	CL deflection	.013	.026	.053	.079	.132	.185	.238	.290		
30	UL	100	200	300	400	500	750	1000		649	974
	UL deflection	.039	.077	.116	.154	.193	.289	.385			
	CL	200	300	400	600	800	1200	1600		1019	1529
	CL deflection	.049	.074	.098	.147	.196	.294	.393			
36	UL	100	150	200	300	400	500			328	492
	UL deflection	.076	.114	.153	.229	.305	.381				
	CL	100	200	300	500	700	900			617	926
	CL deflection	.041	.081	.122	.203	.284	.365				
42	UL	75	100	150	200	300				212	318
	UL deflection	.088	.118	.177	.236	.353					
	CL	100	150	300	450	600				391	586
	CL deflection	.064	.096	.192	.288	.384					
48	UL	75	100	125	150					107	161
	UL deflection	.175	.234	.292	.350						
	CL	100	150	200	400					265	398
	CL deflection	.094	.141	.188	.377						

Load and deflection data was derived from lab tests conducted by Seasafe, Inc. Values tabled are for design selection and are approximate. Seasafe recommends selecting gratings based on a deflection of .25-inch or less. This deflection may be exceeded at the discretion of the designer. Deflections of .25-inch or less will give excellent pedestrian comfort. Deflections of .375-inch or less will give satisfactory pedestrian comfort. Loads for short spans in the .250 and .375 deflection columns have been omitted to allow for shear properties.

Accessories

GATOR-DECK

- *For proper fit, maximum performance*

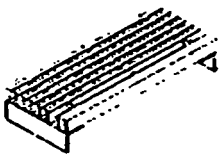
Gator-Deck® Treads

seasafe

- *Strong, safe, and corrosion resistant*

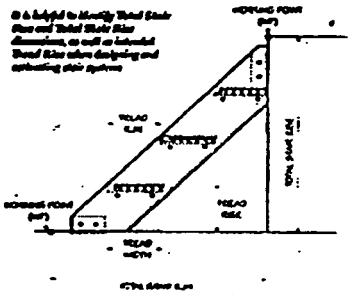
Stair Tread Series

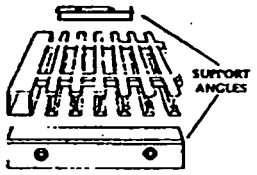
Series	Nosing Top	Resin	Color
I-6010	Yes	IFR/VFR	Y/G
I-6015	Yes	IFR/VFR	Y/G
T-5020	No	IFR/VFR	Y/G



Resins
IFR = Isophthalic polyester flame-retardant
VFR = Vinylester flame-retardant

Colors
Y = Yellow
G = Grey





Stair Tread Assembly

Stair treads are available with optional support angles

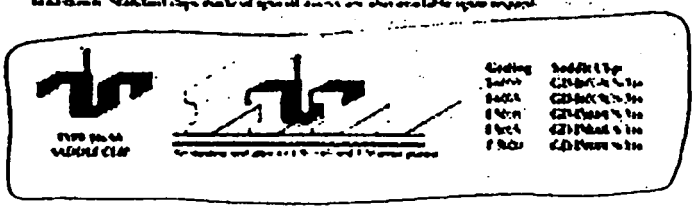
Span	T-5020		I-6015		I-6010	
	Tread Deflection for the Concentrated Load of:					
	250 lbs.	500 lbs.	250 lbs.	500 lbs.	250 lbs.	500 lbs.
18"	0.009	0.018	0.010	0.019	0.029	0.069
24"	0.018	0.036	0.019	0.038	0.078	0.147
30"	0.027	0.054	0.038	0.076	0.137	
36"	0.036	0.081	0.057	0.105	0.216	
42"	0.054	0.108	0.086	0.171		
48"	0.081	0.162	0.124	0.247		

Accessories

GATOR-DECK

- *For proper fit, maximum performance*

Clip Assemblies



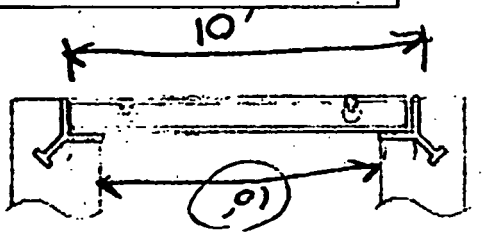
Standard Panels

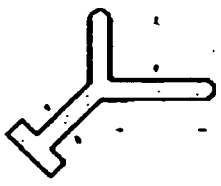
3'-0 x 24'-0	4'-0 x 24'-0	
3'-0 x 20'-0	4'-0 x 20'-0	4'-0 x 8'-0
3'-0 x 10'-0	4'-0 x 10'-0	4'-0 x 12'-0

Custom Panel sizes available; up to 5' widths and 24' lengths. Call Seasafe (337-406-2345) for details.

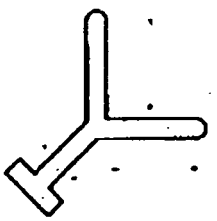
Embedment Angles

FRP pultruded embedment angles, with continuous integral anchor, provide corrosion resistant grating support in trenches and other concrete openings. Available for all thicknesses of Gator-Deck® grating.

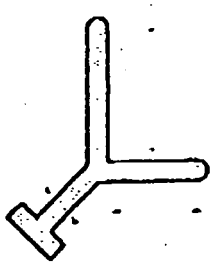




EBA-10-VFR



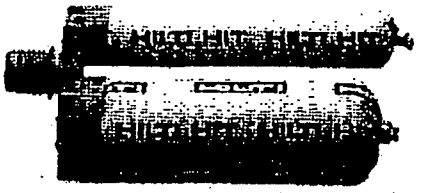
EBA-15-VFR



EBA-20-VFR

HIT HY 150 Adhesive Anchor System

Fast Curing Two Part Adhesive Used in Solid Based Concrete Applications



Features and Benefits

Fast curing
- Provides high productivity and fast threaded rod usage

ICBO AC58, ASTM E 1512 testing
- Allows for usage in damp holes

ICBO AC58, ASTM E 1512 testing
- Allows for usage in seismic regions

Combinable with HVU
- Allows for underwater installations

NSF Standard 61 approval
- Allows for use in potable water

High load values for threaded rod or rebar

Allowing for a broad range of applications

Virtually odor free
- Allows for continuous work in confined areas

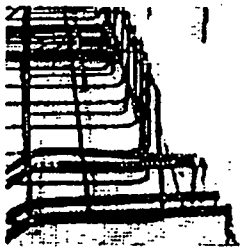
Contains no hazardous chemicals
- Insures worker safety as well as easy storage and transportation

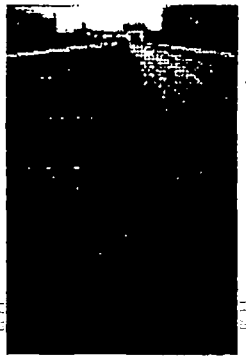
No expansion forces on concrete
- Allows usage in applications with small edge distance and/or anchor spacing

Large 37 oz. or 11.1 oz. cartridges for high volume or small to medium sized projects
- Provide customer flexibility

Applications

For fastening into solid base material such as concrete, grout and stone.





Description	Item No.	Price / Package	Package Quantity
HIT-HY 150 (11.1 oz/ 330 ml Cartridges)	00371957	upon	1

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 247

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings: 51781-012 | Specifications: Table SPEC-02245-0950-2

Reference (other): 12" Rip-Rap for Perimeter Channel | Attachments: None

Request:

The PLF design required the installation of 12" Rip-Rap on the Southeast Perimeter channel. Specification-02245-0950-2 requires 50-70 percent passing for 18". The bulk gradation results (attached) show 90.6% passing. All other sizes are within specification.

Q: Is this material acceptable for use in the PLF perimeter channel?

Solution:

Provide written engineering guidance to the above.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	5/6/05

Paul Kreitz		5/5/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | ☐ Change

Golder has calculated a quantity of larger rock (21 to 24 inches) that is needed to reach the required specification. Stoller must obtain the required rock to meet the rip-rap specification.

Submit the calculations done by Golder to show the quantity of rock required to meet the specifications.

This direction was verbally provided to Stoller on 05/06/05.

Robert W. Davis	Robert W. Davis	05/09/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing: Y ☐ N ☐ | Revise Spec: Y ☐ N ☐

Revise Sketch: Y ☐ N ☐ | Revisions Due: OK CQAE (Review of QC Sub. req'd) J.H. Rale TA

BULK GRADATION D-5519B

DATE	February 22, 2005
PROJECT NAME	Rocky Flats
PROJECT NUMBER:	043-2246
SAMPLE ID:	12" Rip Rap Depth (ft) NA
MATERIAL	

Total Weight of Sample
6,672,727 g

	Wt Retained		Cumulative Wt. Reatined		Percent Retained	Percent Passing	Spec for % Passing
21"	0.0	g	0.00	g	0.0%	100.0%	70-100
18"	625000.0	g	625,000.00	g	9.4%	90.6%	50-70
12"	2972454.5	g	3,597,454.50	g	53.9%	46.1%	35-50
4"	2913181.8	g	6,510,636.30	g	97.6%	2.4%	2-10
Total Passing 4"	162090.9	g	6,672,727.20	g	100.0%	0.0%	-

Partical Size	# of Particals Retained		Average Wt of Partical		Cum. Wt
21"	0		440.0	lb	0
18"	5		275.0	lb	1375
12"	84		77.9	lb	6539
4"	377		17.0	lb	6409

- For the 21" and 18" Earth Techs estimates of Typical Stone Weights were used from Table SPEC-2245-0950-2 of the general project specificaitons.
- For the 12" and 4" material, samples of each size rock were weighed and averaged to come up with an average partical weight.
- For the material Passing the 4" the total weight of material determined by weighing the Cat 980 that carried the sample to the testing area, when it was loaded and unloaded, and subtracting the total weight of all the material greater than 4".

12" Rock Wt	4" Rock Wt
83.4 lb	29.9 lb
80.1 lb	13.3 lb
65.8 lb	55.5 lb
82.1 lb	35 lb
	17.7 lb
	12.7 lb
	12.3 lb
	37.9 lb
	4.5 lb
	6.6 lb
	7.5 lb
	3.9 lb
	5.9 lb
	13 lb
	10.3 lb
	6.2 lb
12" Average	4" Average
77.9 lb	17.0 lb

Tech	MSP
Reviewed by	

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 249

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	Engineering Sketch – Seep Treatment Box Grate Support Design	Specifications:	None
Reference (other):	Surface Finish	Attachments:	None

Request:

The engineering sketch for the Seep Treatment Box Grate Support Design does not specify any paint or priming for the metal components (I-beam, angles).

Q: Is priming or painting required? (suggest priming)

Solution:
Provide written engineering guidance to the above..

Requested By:	Paul Kreitz
Date Field Construction will be affected:	5/9/05

Paul Kreitz		5/6/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | ☐ Change

See attached painting system requirements for the structural grating supports at the seep treatment system structure. Priming of the metal surfaces would best be done at the fabricator with final painting in the field.

Robert W. Davis	Robert W. Davis	05/09/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CQAE J.H. Rule 7x	

PRIMER

RUST-OLEUM®

RUST-OLEUM® INDUSTRIAL DTM EPOXY MASTIC

(9100 System)

DESCRIPTION AND USES

A two-component, high solids epoxy coating for use in moderate to severe environments. It is specifically designed for application directly on sound rusted steel with minimum surface preparation. It can also be used on clean steel, galvanized metal, concrete (including concrete floors), previously coated and slightly damp surfaces. It may also be used for water immersion service, using Rust-Oleum® Industrial DTM Epoxy Mastic standard premix bases only with 9102402 Immersion Activator. (Note: Do not use for immersion service in potable water tanks). Rust-Oleum® Industrial DTM Epoxy Mastic can be used indoors or out. While exposure to sunlight and certain interior lighting conditions causes fading and chalking of all epoxy type coatings, these changes are cosmetic in nature only and film integrity and performance will not be adversely affected.

Epoxy coatings will yellow with age. This is most noticeable with interior applications of white or light colors which are not subjected to bleaching from Sunlight. Note: 9102402 Immersion Activator and 9104402 Fast-Cure Activator produce a semi-gloss finish. Also, using the 910402 Fast-Cure Activator may result with a slight color shift when compared with products using the 9101402 Standard Activator.

PRODUCTS

COATINGS

1-Gallon	5-Gallon	Description
9115402	---	Aluminum
9122402	---	Marlin Blue
9125402	---	Safety Blue
9133402	---	Safety Green
9145402	---	Equipment Yellow
9165402	---	Regal Red
9168402	---	Tile Red
9171402	---	Dunes Tan
9179402	---	Black
9182402	---	Silver Gray
9186402	---	Navy Gray
9192402	---	White
9144402	---	Safety Yellow

PRODUCTS (CONTINUED)

ACTIVATOR

1-Gallon	5-Gallon	Description
9101402	---	Standard Activator
9102402*	---	Immersion Activator
9103402	---	Low Temp Activator
9104402*	---	Fast Cure Activator

*Not for use with tint bases.

TINT BASES*

1-Gallon	5-Gallon	Description
9105405	9105375	Red
9106405	9106405	Yellow
9107405	9107375	Masstone
9108421	9108381	Deep
9109408	9109388	Light

*Tint bases use the Rust-Oleum 2020 Colorants

All standard colors, tint bases and activators are USDA acceptable under FSIS Directive 11000.4 (Rev. 1), November 24, 1995. Color subject to approval of USDA Inspector. Agriculture Canada accepted - 9115, 9145, 9165, 9171, 9179, 9186, 9192 and 9101.

COMPANION PRODUCTS

RECOMMENDED PRIMERS

System is self-priming

COMPATIBLE PRIMERS

Extended Recoat Epoxy Primers (9300 System)

COMPATIBLE TOPCOATS

Industrial High Performance Acrylic Finishes (3700 & 3100 Systems)
Industrial High Gloss Urethane Finishes (9400 System) *
Industrial Low VOC Urethane Finishes (9700 System)*
Industrial DTM Urethane Mastic Finishes (9800 System)*

*Do not use over 9115402 Aluminum

Form: 2032990
Rev. 05/04
Printed in USA

RUST-OLEUM INDUSTRIAL DTM EPOXY MASTIC

PRODUCT APPLICATION)

SURFACE PREPARATION

ALL SURFACES: Remove all dirt, grease, oil, salt and chemical contaminants by washing the surface with Pure Strength® Cleaner/ Degreaser item #3599402 or other suitable cleaner. Rinse with fresh water and allow to dry.

STEEL: Hand tool (SSPC-SP-2) or power tool (SSPC-SP-3) clean to remove loose rust, scale, and deteriorated previous coatings to obtain a sound rusted surface.For optimum corrosion resistance, abrasive blast to commercial grade SSPC-SP-6, with a blast profile of 1-2 mils (25-50 µ).

STEEL (IMMERSION): Abrasive blast clean to a minimum SSPC-SP-10 Near White Grade (NACE 2) and achieve a surface profile of 1.5-3 mils. All weld spatter must be removed along wield seams, rough welds should be ground smooth, and all sharp edges should be ground to a smooth radius.

PREVIOUSLY COATED: Previously coated surfaces must be sound and in good condition. Smooth, hard, or glossy finishes should be scarified by sanding or sweep blasting to create a surface profile. The Rust-Oluem® Industrial DTM Epoxy Mastic is compatible with most coatings, but a test patch is suggested. WARNING! If you scrape, sand or remove old paint from any surface, you may release lead paint dust. LEAD IS TOXIC. EXPOSURE TO LEAD DUST CAN CAUSE SERIOUS ILLNESS, SUCH AS BRAIN DAMAGE, ESPECIALLY IN CHILDREN. PREGNANT WOMEN SHOULD ALSO AVOID EXPOSURE. Wear a NIOSH-approved respirator to control lead exposure. Carefully clean up with a wet mop or HEPA vacuum. Before you start, find out how to protect yourself and your family by contacting the U.S. EPA/Lead Information Hotline at 1-800-424-LEAD or log on to www.epa.gov/lead.

GALVANIZED METAL: Remove oil, dirt, grease and other chemical deposits with Pure Strength® Cleaner/ Degreaser item #3599402 or other suitable cleaner. Remove loose rust, white rust or deteriorated old coatings by hand or power tool cleaning or brush off blasting. Rinse throughly with fresh water and allow to fully dry.

CONCRETE OR MASONRY: Scrape and wire brush or power tool clean to remove any loose or unsound concrete, masonry, or deteriorated coating. Acid etch smooth concrete with 108402 Cleaning and Etching Solution. New concrete or masonry must cure 30 days before coating. Any concrete surface must be protected from moisture transmission from uncoated areas.

APPLICATION

Airless spray is the preferred method of application. However, brush, roller, or air-atomized spray may also be used. Refer to table for thinning recommendations. For proper performance, a dry film thickness of 5–8 mils per coat is required. Excessive brushing or rolling may reduce film thickness. Apply a second coat if necessary to achieve the recommended film thickness.

PRODUCT APPLICATION (CONTINUED)

Use Industrial DTM Epoxy Mastic with 9101402 Standard Activator or 9104402 Fast Cure Activator at air and surface temperatures between 50–100° F (10–38° C) and when the surface temperature is at least 5° F (3° C) above the dew point. Low curing temperatures and/or condensation on the film while curing can affect appearance in the form of an amine blush. This can generally be removed with soap and water, however, in a case of extreme blushing, the performance of the coating may be slightly affected.
When application temperatures are between 40–60° F (5–15° C) and when the surface temperature is at least 5° F (3° C) above the dew point, use Industrial DTM Epoxy Mastic with the 9103402 Low Temperature Activator. Do not apply the material if the temperature is expected to fall below 40° F in the first 24 hours of cure. At 40° F, full cure will be achieved in 7 days.

For water immersion service, use Industrial DTM Epoxy Mastic with the 9102402 Immersion Activator. Do not use the 9102402 Immersion Activator with tint bases. This system may be used for both salt and fresh water; do not use for the inside of potable water tanks. Apply at air and surface temperatures between 60–100° F (15–38° C), when the surface temperature is at least 5° F (3° C) above the dew point, and when relative humidity is below 85%. Apply two coats alternating color between coats to ensure complete hide. Allow 7 days cure after application of the second coat before immersion.

Pools

When used with 9102402 Immersion Activator, the Industrial DTM Epoxy Mastic premix bases can be used as a pool coating over existing epoxy pool coatings, new bare concrete, plaster, gunite, and fiberglass. The pool must be completely empty and dry before coating. After pool is emptied, this typically requires 7-10 days depending on temperature and humidity. To test the dryness of concrete, gunite or plaster pool surfaces, securely tape a 2 ft x 2 ft piece of clear plastic onto a horizontal and vertical surface at the deep end of the pool. Check after 24 hours. If water condensation is visible under the plastic, this is an indication that the surface is not completely dry, and NOT suitable for coating. Allow additional dry time and retest. Follow surface preparation, mixing and application instructions. Avoid painting in midday sun. Application is recommended early in the day or late in the afternoon when at least 2 hours of sunlight remain after completion of the job. Allow minimum of 5-7 sunny days cure before filling pool. Early contact with water can cause premature fading, chalking and blistering. Super chlorinated water can cause a bleached out look. Sunlight and UV will cause chalking and fading. Do NOT use over: 1) chlorinated rubber 2) synthetic rubber 3) vinyl 4) acrylic

Form: 2032990
Rev. 05/04
Printed in USA

RUST-OLEUM INDUSTRIAL DTM EPOXY MASTIC

PRODUCT APPLICATION (CONTINUED)

EQUIPMENT RECOMMENDATIONS

(Comparable equipment also suitable.)

BRUSH: Use a good quality natural or synthetic bristle brush.

ROLLER: Use a good quality lamb's wool or synthetic fiber (3/8–1/2" nap).

AIR-ATOMIZED SPRAY:

Method	Fluid Tip	Fluid Delivery	Atomizing Pressure
Pressure	0.055–.070	10–16 oz/min	25–60 psi
Siphon	0.055–.070	—	25–60 psi
HVLP	0.043–.070	8–10 oz/min	10 psi (at Tip)

AIRLESS SPRAY:

Fluid Pressure	Fluid Tip	Filter Mesh
1800–3000 psi	0.013–0.017	100

THINNING

Thinning is normally not required, except for air-atomized spray. For air-atomized spray application, thin only up to 10% by volume with 160402 Thinner after the components have been mixed. For material activated with 9102402 Immersion Activator, use up to 10% 165402 Thinner for air-atomized spray and up to 5% of 165402 Thinner for airless spray.

NOTE: Addition of more than 10% of 160402 or 165402 Thinner will cause VOC to exceed 340 g/l. In this case, 333402 VOC exempt thinner can be used if needed.

MIXING

Premix both components before combining at a 1:1 ratio by volume and mix together. Do not mix more material than can be used within the stated pot life.

CLEAN-UP

Use 160402 or 165402 Thinner.

PERFORMANCE CHARACTERISTICS

System Tested

Topcoat: DTM Epoxy Mastic with 9101Activator

PENCIL HARDNESS

METHOD: ASTM D3363

RESULT: B (7 days), 4H (30 days)

CONICAL FLEXIBILITY

METHOD: ASTM D522

RESULT: >32%

CYCLIC PROHESION Rating 1-10 10=best

METHOD: ASTM D5894, 2300 hours

RESULT: 10 per ASTM D714 for blistering

RESULT: 10 per ASTM D1654 for corrosion

IMPACT RESISTANCE – Direct

METHOD: ASTM D2794

RESULT: 160 in-lbs

TABER ABRASION

METHOD: ASTM D4060 CS-17 wheel, 500 g load, 1000 cycles

RESULT: 125 mg loss

For chemical and corrosion resistance, see the Rust-Oleum Industrial Brands Catalog Form # 206275.

GLOSS

METHOD: ASTM D4587

RESULT: 80%

Form: 2032990
Rev. 05/04
Printed in USA

FINAL COAT

RUST-OLEUM® HIGH PERFORMANCE

RUST-OLEUM® INDUSTRIAL LOW VOC URETHANE
(9700 System)

DESCRIPTION AND USES

Rust-Oleum® Industrial Low VOC Urethane is a two component aliphatic acrylic polyurethane finish. These finishes are ideal for interior or exterior use on properly primed surfaces in moderate to severe industrial environments.

This highly durable, high gloss enamel is designed for use in an aggressive environment. The coating has very good chemical resistance and excellent color and gloss retention making it ideal for outdoor equipment.

PRODUCTS

FINISHES

1-Gallon	5-Gallon	Description
207273	—	Crystal Clear
207274		Safety Blue
207276	—	Fire Hydrant Red
207277	—	Black
207278	—	Silver Gray
207279	—	White
207280	—	Dark Yellow
207281	—	Safety Yellow
207282	—	Dark Red
207243	—	Activator

TINT BASES

207244	—	Red Tint Base
207246	—	Yellow Tint Base
207247	—	Masstone Tint Base
207271	—	Deep Tint Base
207272	—	Light Tint Base

COMPANION PRODUCTS

RECOMMENDED PRIMERS

Rust-Oleum Industrial DTM Epoxy Mastic, using the 205015 Low VOC Standard Activator

PRODUCT APPLICATION

SURFACE PREPARATION

ALL SURFACES: If excessive time has elapsed since the primer was applied, remove all dirt, grease, oil, salt and chemical contaminants by washing the surface with Pure Strength® Cleaner/Degreaser, item #3599402, commercial detergent or other suitable cleaner. Mold and mildew must be cleaned with a chlorinated cleaner of bleach solution. Rinse thoroughly with fresh water and allow to fully dry. All surfaces must be dry at time of application.

STEEL: Intended for clean steel only. Sand or scarify the surface to optimize adhesion. For optimum corrosion resistance, use Rust-Oleum Industrial Low VOC DTM Epoxy Mastic as a prime coat. See primer labels and technical data sheet for correct surface preparation and application procedures.

PREVIOUSLY COATED: Previously coated surfaces must be sound and in good condition. Smooth, hard, or glossy finishes should be scarified by sanding to create a surface profile. The Rust-Oleum® Industrial Low VOC Urethane finish is compatible with most coatings, but a test patch is suggested. WARNING! If you scrape, sand or remove old paint from any surface, you may release lead paint dust. LEAD IS TOXIC. EXPOSURE TO LEAD DUST CAN CAUSE SERIOUS ILLNESS, SUCH AS BRAIN DAMAGE, ESPECIALLY IN CHILDREN. PREGNANT WOMEN SHOULD ALSO AVOID EXPOSURE. Wear a NIOSH-approved respirator to control lead exposure. Carefully clean up with a wet mop or HEPA vacuum. Before you start, find out how to protect yourself and your family by contacting the U.S. EPA/Lead Information Hotline at 1-800-424-LEAD or log on to www.epa.gov/lead.

GALVANIZED METAL: New galvanized steel must be free of grease, oil, or wax surface treatments prior to coating. Solvent wiping may be required.

APPLICATION

Apply only when air and surface temperatures are between 40°– 100° F (5°– 38°C) and surface temperature is at least 5° F (3° C) above the dew point.

Form: 209511
Rev. 5/03
Printed in USA

RUST-OLEUM INDUSTRIAL LOW VOC URETHANE

PRODUCT APPLICATION (CONTINUED)

EQUIPMENT RECOMMENDATIONS

BRUSH: Use a good quality natural or synthetic bristle brush.

ROLLER: Use a quality 3/8 inch nap lamb's wool or synthetic fiber roller cover.

AIR-ATOMIZED SPRAY:

Method	Fluid Tip	Fluid Delivery	Atomizing Pressure
Pressure	0.055 –.070	16 oz/min	40–60 psi
Siphon	0.055 –.070	–	40–60 psi
HVLP	0.043 –.070	10–12 oz/min	10 psi at the tip

AIRLESS SPRAY:

Fluid Pressure	Fluid Tip	Filter Mesh
2200–3100 psi	0.013–.017	100

THINNING

Not required.

MIXING

Premix base component before adding activator, then combine at a 4:1 ratio by volume and mix together.

CLEAN-UP

Xylene or MEK.

PERFORMANCE CHARACTERISTICS

System Tested

Primer: Rust-Oleum Industrial DTM Epoxy Mastic with the 205015 Low VOC Standard Activator

Topcoat: Rust-Oleum Industrial Low VOC Urethane

PENCIL HARDNESS

METHOD: ASTM D3363
RESULT: F

CONICAL FLEXIBILITY

METHOD: ASTM D522
RESULT: > 33%

PROHESION Rating 1-10 10=best

METHOD: ASTM D5894, 3300 hours
RESULT: 10 per ASTM D714 for blistering
RESULT: 10 per ASTM D1654 for corrosion
RESULT: 10 per ASTM D610 for rusting

IMPACT RESISTANCE direct / reverse

METHOD: ASTM D2794
RESULT: >160 / >160 in lbs.

TABER ABRASION

METHOD: ASTM D4060, CS-17 wheels, 1000 gram load, 1000 cycles
RESULT: 60 mg loss

GLOSS (60°)

METHOD: ASTM D523
RESULT: 95% (color - white)

ACCELERATED WEATHERING (% gloss retention)

METHOD: ASTM D4587, QUV Type A bulb, 2100 Hours
RESULT: 100% (color - white)

For chemical and corrosion resistance, see the Rust-Oleum Industrial Brands Catalog (Form #206275).

Form: 209511
Rev. 5/03
Printed in USA

RUST-OLEUM

TECHNICAL DATA

RUST-OLEUM INDUSTRIAL LOW VOC URETHANE

PHYSICAL PROPERTIES

		PREMIX COLORS	TINTBASES
Resin Type		Acrylic Isocyanate converted aliphatic polyester urethane (ASTM Type V)	Acrylic Isocyanate converted aliphatic polyester urethane (ASTM Type V)
Pigment Type		Varies with color	Varies with color
Solvents		MAK, Methyl Acetate, Butyl Acetate	MAK, Methyl Acetate, Butyl Acetate
Weight*	Per Gallon	8.5–10.8 lbs.	8.6–10.0 lbs.
	Per Liter	1.0–1.3 lbs. Kg	1.0–1.2 lbs. Kg
Solids*	By Weight	56.5–73.5%	64.1–70.6%
	By Volume	52.6–62.8%	60.3–64.0%
Volatile Organic Compounds*		< 250 g/L (2.08 lbs./gal.)	< 250 g/L (2.08 lbs./gal.)
Recommended Dry Film Thickness (DFT) Per Coat		1–2 mils (25–50 µ)	1–2 mils (25–50 µ)
Wet Film to Achieve DFT		2–4 mils (50–100 µ)	2–4 mils (50–100 µ)
Theoretical Coverage at 1 mil DFT (25 µ)		845–1010 sq. ft./gal. (20.8–24.8 m²/L)	970–1025 sq. ft./gal. (23.9–25.2 m²/L)
Practical Coverage at Recommended DFT (assumes 15% material loss)		360–860 sq. ft./gal. (8.9–21.2 m²/L)	410–870 sq. ft./gal. (10.1–21.4 m²/L)
Mixing Ratio		4:1 Base to Activator by volume	4:1 Base to Activator by volume
Induction Period		None required.	None required.
Pot Life @ 77° F & 50% RH		3–4 hours	3–4 hours
Dry Times at 77° F (25° C) and 50% Relative Humidity	Tack-free	2–4 hours	2–4 hours
	Handle	3–6 hours	3–6 hours
	Recoat	16–24 hours	16–24 hours
Force Cure		One hour at at 120° F (49° C) after 10 minute flash off	One hour at at 120° F (49° C) after 10 minute flash off
Dry Heat Resistance		300° F (149° C)	300° F (149° C)
Shelf Life		3 years for Base components, 1 year for Activator	3 years for Base components, 1 year for Activator
Safety Information	Flash Point	20° F (-6.6° C) Setaflash	20° F (-6.6° C) Setaflash
	Contains	Lead-free	Lead-free
	Warning!	**FLAMMABLE LIQUID AND VAPOR. HARMFUL IF INHALED. MAY AFFECT THE BRAIN OR NERVOUS SYSTEM CAUSING DIZZINESS, HEADACHE OR NAUSEA. CAUSES NOSE, THROAT, EYE AND SKIN IRRITATION. CONTAINS ALIPHATIC POLYISOCYANATE; METHYL AMYL KETONE AND METHYL ACETATE SOLVENTS. REFER TO MATERIAL SAFETY DATA SHEET (MSDS) AND LABEL WARNINGS FOR ADDITIONAL INFORMATION.**	

* Activated material.

Calculated values are shown and may vary slightly from the actual manufactured material.

Form: 209511
Rev. 5/03
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RUST-OLEUM

TECHNICAL DATA

RUST-OLEUM INDUSTRIAL DTM EPOXY MASTIC

PHYSICAL PROPERTIES (ACTIVATED MATERIAL)

		9101 Activator	9102 Immersion Activator	9103 Low Temperature Activator	9104 Fast Cure Activator
Resin Type		Polyamide or Polyamine Converted Epoxy	Polyamide or Polyamine Converted Epoxy	Polyamide or Polyamine Converted Epoxy	Polyamide or Polyamine Converted Epoxy
Inhibitive Pigment		Calcium Borosilicate	Calcium Borosilicate	Calcium Borosilicate	Calcium Borosilicate
Solvents		Xylene, Methyl Isobutyl Ketone, 1-Methoxy-2-propanol	Xylene, Methyl Isobutyl Ketone, 1-Methoxy-2-propanol	Xylene, Methyl Isobutyl Ketone, 1-Methoxy-2-propanol	Xylene, Methyl Isobutyl Ketone, 1-Methoxy-2-propanol
Volatile Organic Compounds*		<340 g/l or 2.84 lbs./gal.	<340 g/l or 2.84 lbs./gal.	<340 g/l or 2.84 lbs./gal.	<340 g/l or 2.84 lbs./gal.
Mixing Ratio		1:1 Activator:Base (by volume)	1:1 Activator:Base (by volume)	1:1 Activator:Base (by volume)	1:1 Activator:Base (by volume)
Weight*	Per Gallon	11.4–12.6 lbs.	11.4–12.6 lbs.	9.3–10.4 lbs.	12.0–13.0 lbs.
	Per Liter	1.4–1.5 Kg	1.4–1.5 Kg	1.1–1.2 Kg	1.4–1.6 Kg
Solids*	By Weight	86–89%	79–82%	78–81%	81–83%
	By Volume	78–81%	65–68%	72–75%	67–69%
Recommended Dry Film Thickness (DFT) Per Coat		5–8 mils (125–200 µ)	5–8 mils (125–200 µ)	5–8 mils (125–200 µ)	5–8 mils (125–200 µ)
Wet Film to Achieve DFT (unthinned material)		6.5-10.5 mils (162.5-262.5 µ)	7.5-12.0 mils (187.5-300 µ)	7-11 mils (175-275 µ)	7.5-11.5 mils (187.5-287.5 µ)
Theoretical Coverage at 1 mil DFT (25 µ)		1250–1300 sq. ft./gal. (30.8–32.0 m²/l)	1045–1090 sq. ft./gal. (25.7–26.8 m²/l)	1155–1200 sq. ft./gal. (28.4–29.5 m²/l)	1075–1100 sq. ft./gal. (26.4–27.3 m²/l)
Practical Coverage at Recommended DFT (assumes 15% material loss)		125–225 sq. ft./gal. (3.1–5.5 m²/l)	100–175 sq. ft./gal. (2.5–4.3 m²/l)	125–200 sq. ft./gal. (3.1–5.0 m²/l)	115–190 sq. ft./gal. (2.8–4.7 m²/l)
Induction Period		None required	30 minutes (60 minutes between 60-70° F)	None required	15 minutes
Pot Life**	2 gallons	70° F (21° C) 2–4 hours / 90° F (32° C) 1–2 hours	70° F (21° C) 2–4 hours / 60° F (15° C) 3–5 hours	60° F (15° C) 2–4 hours	70° F (21° C) 2–4 hours / 90° F (32° C) 1–2 hours
	10 gallons	70° F (21° C) 2 hours / 90° F (32° C) <1 hour	70° F (21° C) 2 hours / 60° F (15° C) 3 hours	60° F (15° C) 2 hours	70° F (21° C) 2 hours / 90° F (32° C) <1 hour
Dry Times @ 50% RH	Tack-free	70° F (21° C) 6–8 hours / 50° F (10° C) 12–24 hours	70° F (21° C) 6–8 hours	40° F (5° C) 16-20 hours	70° F (21° C) 4 hours / 50° F (10° C) 8 hours
	Handle	70° F (21° C) 6–12 hours / 50° F (10° C) 48–72 hours	70° F (21° C) 8-14 hours	40° F (5° C) 22-26 hours	70° F (21° C) 5 hours / 50° F (10° C) 10 hours
	Recoat	70° F (21° C) 16-72 hours / 50° F (10° C) 72-96 hours	70° F (21° C) 16-72 hours	40° F (5° C) 24-72 hours	70° F (21° C) 4 hours / 50° F (10° C) 8 hours
Dry Heat Resistance		300° F (149° C) Color may shift above 150° F (66° C)	300° F (149° C) 125°F (52°C) For immersion service Color may shift above 150° F (66° C)	300° F (149° C) Color may shift above 150° F (66° C)	300° F (149° C) Color may shift above 150° F (66° C)
Safety Information	Flash Point	110° F (43° C)	110° F (43° C)	110° F (43° C)	68° F (20° C)
	Contains	Lead-free	Lead-free	Lead-free	Lead-free
	Warning!	**FLAMMABLE LIQUID AND VAPOR.** **HARMFUL IF INHALED. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY AFFECT BRAIN OR NERVOUS SYSTEM CAUSING DIZZINESS, HEADACHE OR NAUSEA. MAY CAUSE ALLERGIC SKIN REACTION. FOR INDUSTRIAL OR COMMERCIAL USE ONLY.** **SEE THE PRODUCT MATERIAL SAFETY DATA SHEET (MSDS) AND LABEL WARNINGS FOR ADDITIONAL SAFETY INFORMATION.**			

* Activated material.

** Pot life is affected by air temperature, amount of material activated and quantity of thinner used. Avoid activating large quantities at temperatures above 80° F (27° C). At temperatures above 90° F (32° C), the pot life of unthinned material in 5-gallon pails may be very short (less than one hour). In hot weather, thin activated material with 10% 160 Thinner, or 165 Thinner for 9102 activated material.

Calculated values are shown and may vary slightly from the actual manufactured material.

The technical data and suggestions for use contained herein are correct to the best of our knowledge, and offered in good faith. The statements of this literature do not constitute a warranty, express, or implied, as to the performance of these products. As conditions and use of our materials are beyond our control, we can guarantee these products only to conform to our standards of quality, and our liability, if any, will be limited to replacement of defective materials. All technical information is subject to change without notice.

Rust-Oleum Corporation
11 Hawthorn Parkway | Vernon Hills, Illinois 60061 | Phone: (847) 367-7700 | www.rustoleum.com
An RPM Company

Form: 209511
Rev. 5/03
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Request for Information (RFI)

Project Name:	Construction of the Present Landfill Accelerated Action	Subcontractor No.:	KH020577
Contractor:	Kaiser-Hill Company, LLC	RFI No.:	RFI - 252
Subcontractor:	S.M. Stoller Corporation	Page 1	1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	None	Specifications:	None
Reference (other):	Regulator Walk-down – Pond Slumping Soil, Southwest area	Attachments:	None

Request:
The final walk-down conducted with the regulators produced concern with a small area of slumping soil near the southwest area of the east pond. K-H has requested a small buttress be placed there as a remedy. This is a new scope item.

Schedule impact – 0, will not affect our de-mob from the site.
Cost impact - $3k

The K-H Field engineer has given verbal direction that this task be completed prior to de-mob from the site.

Solution:
Provide written guidance to compete this work.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	5/10/05

Paul Kreitz		5/9/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply:	Accepted ☒	Clarification ☐	Rejection ☐	☐ Change

This work is required to stabilize a portion of the East Landfill Pond that has slumped during the periods of rain over the last several weeks. The area must be stabilized by adding fill at the toe of the slump and reducing the slope of this area as directed by the K-H field engineer. Soils to use as fill can be taken from the stockpile area north and west of the PLF.

Robert W. Davis	Robert W. Davis	05/10/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CQAE J.H. Rale TL	

Request for Information (RFI)

Project Name:	Construction of the Present Landfill Accelerated Action	Subcontractor No.:	KH020577
Contractor:	Kaiser-Hill Company, LLC	RFI No.:	RFI - 253
Subcontractor:	S.M. Stoller Corporation	Page 1	1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	None	Specifications:	None
Reference (other):	Additional Rip-Rap Installations – Regulator walk-down	Attachments:	None

Request:
As a result of the Regulator walk-down conducted on 5/9/05 the K-H PM has verbally directed that additional rip-rap be installed at two (2) locations at the PLF. The first is at the northeast perimeter channel drop-off point, the second is in the perimeter channel where the diversion berm intersects it at the north and south points.

Schedule impact – 0, will not affect de-mob date
Cost impact - $5k

Verbal direction has been given by the K-H PM to complete these tasks prior to de-mob from the site.

Solution:
Provide written guidance to perform the above tasks.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	5/10/05

Paul Kreitz		5/9/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐	Clarification ☒	Rejection ☐	☐ Change

The rip-rap where the diversion berm meets the perimeter channels (north and south) is shown in the design drawing no. 013A, detail 2 and was a part of the original scope of work.

The rip-rap requested at the "outlet" of the northeastern perimeter channel is new based in the steepness of the native grade and the erosion that can be seen on this existing slope. Therefore, this rip-rap is required as additional scope of work.

Robert W. Davis	Robert W. Davis	05/10/05
Print/Type Name	Signature	Date

Kaiser-Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CQAE (could use D_{50}=6" riprap outfall of div. berm to N&S Per. Ch.) JH Rule TA	

Request for Information (RFI)

Project Name: Construction of the Present Landfill Accelerated Action | Subcontractor No.: KH020577

Contractor: Kaiser-Hill Company, LLC | RFI No.: RFI - 254

Subcontractor: S.M. Stoller Corporation | Page 1 | 1 of 1

The subcontractor may initiate a Request for information (RFI) at any time to request a reply to a technical issue, related to the subcontract drawings, specifications, project plans, work package, or other design document.

Reference Drawings:	None	Specifications:	None
Reference (other):	Additional Ripping and Disking – Regulator Walk-down on 5/9	Attachments:	None

Request:
The regulator walk-down conducted on 5/9 resulted in a request to conduct additional ripping and disking of all traffic areas between the outside edge of the PLF perimeter channel and existing PLF roads. RFI 254 transmits the cost and schedule impact of this task.

Schedule Impact – 0, will not affect de-mob date
Cost impact - $8k

The K-H PM has directed that this task be completed prior to de-mob from the site.

Solution:
Provide written direction to complete this task.

Requested By:	Paul Kreitz
Date Field Construction will be affected:	5/10/05

Paul Kreitz		5/9/05
Subcontractor Print/Type Name	Subcontractor Signature	Date

REPLY TO SUBCONTRACTOR

Reply: Accepted ☐ | Clarification ☒ | Rejection ☐ | ☐ Change

As presented in the specifications (Spec. 2110), all disturbed areas (damaged landscape) within and outside the construction limits shall be replaced to original condition or better. For Stoller, this requires the relief of the compaction of the soil because of construction activities and the preparation of the surface for seeding (seeding will be done by RFETS). Therefore, this requires that these areas be ripped and disced as a part of the demobilization of the project and is a part of the original scope of work.

Robert W. Davis	Robert W. Davis	05/10/05
Print/Type Name	Signature	Date

Kaiser Hill Action:

Revise Drawing:	Y ☐	N ☐	Revise Spec:	Y ☐	N ☐
Revise Sketch:	Y ☐	N ☐	Revisions Due:	OK CRAE Jtt. Rule Tt	

APPENDIX F

CONSTRUCTION QUALITY CONTROL DOCUMENTATION

APPENDIX F-1: DAILY QC REPORTS

Stoller

established 1959

August 24, 2005

Robert Davis
Contract Technical Representative
Kaiser-Hill Company, LLC
10808 Highway 93
Golden, Colorado 80403-4200

RE: Present Landfill Accelerated Action
Draft closeout report quality control comments

Dear Bob:

Questions have come to Stoller's attention concerning the roles and responsibilities of the Quality Control (QC) staff assigned to the Construction of the Present Landfill Accelerated Action project at the Rocky Flats Environmental Technology Site (Present Landfill). The purpose of this letter is to define the QC organization, describe the roles and responsibilities of S.M. Stoller (Stoller) staff, Golder Associates (Golder) staff and Paragon Land Consultants (Paragon) staff, and address specific regulator comments to the Draft Closeout Report.

Stoller was subcontracted by Kaiser-Hill Company, LLC (K-H) to implement the Present Landfill Project. Included in this scope was the overall responsibility for project quality. As such, Stoller staffed the project with two people, Jim Erickson and Michael Bolton. Mr. Erickson served as the Quality Control Site Manager (QCSM), and Mr. Bolton was assigned with the task of observing the liner field quality. Golder was subcontracted to assist with the overall QC duties and perform geotechnical and geosynthetic testing. Paragon was subcontracted to perform land surveying.

I, Mr. Erickson, had extensive daily contact with Stoller's lower tier quality subcontractors, Golder and Paragon, as well as daily contact and communication with K-H and the Site Quality Assurance Manager (SQAM), Josh Valentine. My daily activities included coordination of daily QC activities for Stoller, Golder, and Paragon staff; receipt and distribution of design changes from Earth-Tech/K-H; submittal preparation; review of weekly as-built survey documents; field observation; and review and approval of project work package hold points. Finally, I was responsible for preparation of the daily QC report.

Mr. Bolton was tasked with coordinating liner QC activities including liner materials submittal preparation and daily oversight of liner installation.

Stoller

Paragon Land Consultants was subcontracted to perform land surveying and field staking in support of the construction activities as well as perform surveying and field

verification in support of QC activities. Paragon support on the project included one survey coordinator, a GPS survey technician, and one or two, two-person Geodometer field crews depending upon work load.

Golder provided up to three geotechnical and geosynthetic technicians which served as QC Monitors. Michael Place was one of the QC monitors provided by Golder and was assigned to the project from the onset of field construction to demobilization. Mr. Place and the supporting QC monitors were responsible for completing and reporting of all geotechnical and geosynthetic testing. In addition, Mr. Place assisted me in compiling the data for the daily QC report.

As shown in the comments to the Draft Closeout Report, both CDPHE and EPA share a concern over the review and approval of the daily QC reports. Preparation of the daily report was a collaborative process between Mr. Place and me and while I did not sign the QC report on a daily basis, the reports were completed daily and distributed to the SQAM (Mr. Valentine) the following morning. From the onset of the project, it was my understanding that the reports were being prepared under my title of QCSM and that the approving authority was the SQAM. When I did learn of their incorporation into the closeout report and K-H's understanding that my signature was required, I decided to date the daily reports on the date of signature, not the date of original preparation.

In addition to the daily QC reports, the hold point release forms included in the work packages document the work process and show a timely signature by me. By the conclusion of the project site work, 34 work packages were prepared to help control the work with multiple hold point releases required per package.

It is Stoller's hope that this letter clarifies the roles and responsibilities and processes used to ensure that the project was constructed in accordance with the project documents. If you have additional questions, please contact me at your convenience.

Sincerely,

James A. Erickson
S.M. Stoller Corporation

Stoller

The S.M. Stoller Corporation
Rocky Flats Environmental Technology Site
Contract No. KH020577
Golden, Colorado

SUBCONTRACTOR DAILY QUALITY CONTROL REPORT

REPORT NO:	001
PROJECT:	Present Lanfill Accelerated Action
PROJECT NO:	KH020577
SUBCONTRACTOR:	S.M. Stoller Corporation
LOWER TIER SUB:	Report for All Subs
DATE:	1-Sep-04
TASK:	Pre-grade and Roll

LOCATION: Present Landfill

WEATHER: Sunny to partly cloudy: Temperatures 50 to 85.

SUBCONTRACTOR HOURS AND AREAS OF RESPONSIBILITY: SEE SUBCONTRACTOR DAILY PRODUCTIO SUMMARY

OPERATING PLANT AND EQUIPMENT (NOT HAND TOOLS: SEE SUBCONTRACTOR DAILY PRODUCTION SUMMARY

PRODUCTION SUMMARY: SEE SUBCONTRACTOR DAILY PRODUCTION SUMMARY

SUMMARY OF CONSTRUCTION PROGRESS:

Crew assembled at 060 building at 0700 for quarterly RFETS safety briefing. Following an approximatly 1:00 briefing, crew re-assembed at the break trailer at the break trailer at approximately 0900 for the Pre-grade and Roll Pre-Evolution briefing. After briefing, erosion wattles were installed. With no other open preparatory tasks, pre-grade and roll activities began at approximatley 1200. At approximatly 1400, suspect landfill material was noticed on the cap. Work was stopped, Mike Bemski was notified and attempts were made to contact Bob Davis. RCT support was gained and all seven of the suspect locations were screened. No radiological contamination was found. Approximately 2-3 acres of the cap were stripped prior to shut-down.

QUALITY CONTROL ACTIVITIES PERFORMED:

Pre-evolution briefing for Pre-grade and Roll, continued writing future work packages, continued to water haul roads and work areas for dust control.

TESTS PERFORMED (ATTACH COPY OF TEST RESULTS):

None

MATERIALS RECEIVED (NOTE INSPECTION RESULTS AND STORAGE PROVIDED):

No permanent materials were received. Additional traffic control signs and the project sign were received.

SUBCONTRACTOR DAILY QUALITY CONTROL REPORT

REPORT NUMBER:	001	PROJECT:	Present Lanfill Accelerated Action

FIELD ACTION ITEMS NOTED:

At approximately 1400, while removing vegitation, 7 suspect landfill debris locations were observed. Work was stopped, K-H notified, areas were screened and cleared for potential radiolocical contamination, areas were staked, photographed and Paragon Land Consultants recorded the locations.

CORRECTIVE ACTIONS NOTED:

Other than the suspect landfill debris, no other corrective actions were noted.

SUMMARY OF MEETING AND DISCUSSIONS HELD:

0700, Quarterly Safety Briefing; 0900, Pre-grade & Roll Pre-evolution briefing. Numerous conversations resulting in actions immediately following identification of suspect landfill material. Bob Davis will walk site at 0630 on tomorrow (Sept 2) with Paul Kreitz to determine if we can continue stripping.

REQUESTS FOR INFORMATION (RFI) / FIELD CHANGE REQUESTS (FCR) GENERATED:

RFI - 23, requesting clarification on the seep capture system

COMMENTS:

Golder will be on site tomorrow to perform additional gradation test on rock layer material.

ADDITIONAL DOCUMENTATION SUBMITTED (E.G. TEST RESULTS, CHECKLISTS, ETC.):

Subcontractor's Verification: On behalf of the Subcontractor, I certify this report is complete and correct, and all materials used and work performed during this reporting period are in compliance with the contract plans and specifications to the best of my knowledge, except as may be noted above.

NAME: J	S. Erickson	TITLE/COMPANY:	QCSM
SIGNATURE:	[signature]	DATE:	5-16-05
REVIEWED BY:		TITLE/COMPANY:	
SIGNATURE:		DATE:	
REVIEWED BY (OPTIONAL):		TITLE/COMPANY:	
SIGNATURE:		DATE:	

Job No: 043-2246

Report No: 090704MSPDaily.doc

Golder Associates Inc.

44 Union Boulevard, Suite 300
Lakewood, CO USA 80228
Telephone (303) 980-0540
Fax (303) 985-2080
www.golder.com

GOLDER ASSOCIATES FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action GOLDER PROJECT NO: 043-2246

STOLLER CLIENT: Keiser Hill

GOLDER CLIENT: Stoller

GENERAL CONTRACTOR: Nielson Skanska

SUBCONTRACTORS:

LOCATION: Golden, CO

PROJECT: Present Landfill

DATE 9/7/04 S M (T) W T F S

TEMPERATURE (°F): LOW: 57° @ 0700 HIGH: 80° @ 1300

PRECIPITATION: AM: none PM: none TOTAL: none

CLOUD COVER: Partly Cloudy to Clear WIND: Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-0930, 3.0 hrs.)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Site shut down for safety review of incident from September 2, 2004.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

EB Meeting: Discussed Incident where a water truck and a Cat 14G motor grader collided, causing damage to the front end of the water truck and no damage to the motor grader. The discussion also included the causes of this incident along with ways it could have been prevented, and ways to prevent these type of incidents in the future.

CQA Monitor: _____ Date: 9-22-05

Approved by: _____ Date: 5-16-05

File No. _____

Job No: 043-2246

Report No: 040804MSPDaily.doc

Golder Associates Inc.

44 Union Boulevard, Suite 300
Lakewood, CO USA 80228
Telephone (303) 980-0540
Fax (303) 985-2080
www.golder.com

GOLDER ASSOCIATES FIELD MONITORING SUMMARY

Golder Associates

PROJECT TITLE: Present Landfill Accelerated Action GOLDER PROJECT NO: 043-2246

STOLLER CLIENT: Keiser Hill

GOLDER CLIENT: Stoller Associates GENERAL CONTRACTOR: Nielson Skanska

SUBCONTRACTORS:

LOCATION: Golden, CO

PROJECT: Present Landfill

DATE 9/8/04 S M T (W) T F S

TEMPERATURE (°F): LOW: 60° @ 0700 HIGH: 82° @ 1300

PRECIPITATION: AM: none PM: none TOTAL: none

CLOUD COVER: Partly Cloudy to Clear WIND: Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1730, 11.0 hrs.)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- Clearing and Grubbing: Nielson-Skanska (Nielson) used two Cat 14G blades to scrape off ground cover along with the upper two inches of topsoil on the proposed landfill site. The material piled up by the blades were picked up and carried out of the proposed construction area by two Cat 633C scrapers. To keep the dust levels caused by these activities down a Cat water truck continually sprayed the surfaces to be bladed and the piles of materials to be picked up.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

EB Meeting: Discussed potential safety hazards associated with activities to be conducted on site this day.

Other Discussions: Met with Buz Green of Colorado Lining and Jim Erickson (Stoller) to discuss schedule for geomembrane placement.

QC
~~QA~~ Monitor: _____ Date: 9-22-05
Approved by: _____ Date: 5-16-05
File No. _____

OFFICES ACROSS AFRICA, ASIA, AUSTRALIA, EUROPE, NORTH AMERICA AND SOUTH AMERICA

Job No: 043-2246

Report No: 040904MSPDaily.doc

Golder Associates Inc.

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Lakewood, CO USA 80228
Telephone (303) 980-0540
Fax (303) 985-2080
www.golder.com

GOLDER ASSOCIATES FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action GOLDER PROJECT NO: 043-2246

STOLLER CLIENT: Keiser Hill

GOLDER CLIENT: Stoller Associates

GENERAL CONTRACTOR: Nielson Skanska

SUBCONTRACTORS:

LOCATION: Golden, CO

PROJECT: Present Landfill

DATE 9/9/04 S M T W (T) F S

TEMPERATURE (°F): LOW: 58° @ 0700 HIGH: 82° @ 1300

PRECIPITATION: AM: none PM: none TOTAL: none

CLOUD COVER: Partly Cloudy to Clear WIND: Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1500, 8.5 hrs.)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- Clearing and Grubbing: Nielson-Skanska (Nielson) used two Cat 14G blades to scrape off ground cover along with the upper two inches of topsoil on the proposed landfill site. The material piled up by the blades were picked up and carried out of the proposed construction area by two Cat 633C scrapers. To keep the dust levels caused by these activities down a Cat water truck continually sprayed the surfaces to be bladed and the piles of materials to be picked up. In the event that waste from the landfill was uncovered the waste was surveyed and checked for hazardous materials. If no hazardous materials were found work then was then restarted.

SUMMARY OF QC TESTING:
none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

EB Meeting: Discussed potential safety hazards associated with activities to be conducted on site this day.

Other Discussions: Discussed with Stoller and Centenial the materials being created for the rock layer, and decided to create a new material that will have a greater amount of 6" rock by screening two materials and mixing them to create the specified rock layer material.

Discussed schedule and logistics associated with receiving and placing GCL, Geomembrane, and with Colorado Lining, and Stoller

QC
CQA Monitor: _____ Date: 8-22-05
Approved by: _____ Date: 5-16-05
File No. _____

Job No: 043-2246

Report No: 091004MSPDaily.doc

Golder Associates Inc.

44 Union Boulevard, Suite 300
Lakewood, CO USA 80228
Telephone (303) 980-0540
Fax (303) 985-2080

GOLDER ASSOCIATES FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action — GOLDER PROJECT NO: 043-2246

STOLLER CLIENT: Keiser Hill

GOLDER CLIENT: Stoller Associates

GENERAL CONTRACTOR: Nielson Skanska

SUBCONTRACTORS:

LOCATION: Golden, CO

PROJECT: Present Landfill

DATE: 9/10/04 S M T W T (F) S

TEMPERATURE (°F): LOW: 55° @ 0700 HIGH: 82° @ 1300

PRECIPITATION: AM: none PM: none TOTAL: none

CLOUD COVER: Partly Cloudy to Clear WIND: Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1730, 11.0 hrs.)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- Clearing and Grubbing: none.
- Mobilization: Neilson placed Jersey barriers along the sides of roads leading onto the Landfill.

SUMMARY OF QC TESTING:

Ran a bulk gradation on the material to be used for the rock layer screening out material down to 3 inches, and taking, at least, a 100 pound sample of 3 inch minus material back to the Golder Laboratory to completer the gradation. This was the second retest of these materials; the test # is ERF-1R2.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential safety hazards associated with activities to be conducted on site this day.

Other Discussions: Discussed with Stoller and Centenial the materials being created for the rock layer, and decided to create a new material that will have a greater amount of 6" rock by screening two materials and mixing them to create the specified rock layer material.

QC
~~CQA~~ Monitor: _____ Date: 8-22-05
Approved by: _____ Date: 5-16-05
File No. _____

Golder Associates Inc.
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Telephone (303) 980-0540
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GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action GOLDER PROJECT NO: 043-2246

STOLLER CLIENT: Keiser Hill

GOLDER CLIENT: Stoller Associates

GENERAL CONTRACTOR: Nielson Skanska

SUBCONTRACTORS:

LOCATION: Golden, CO

PROJECT: Present Landfill

DATE 9/13/04 S (M) T W T F S

TEMPERATURE (°F): LOW: NA° @ 0700 HIGH: NA° @ 1300

PRECIPITATION: AM: none PM: none TOTAL: none

CLOUD COVER: NA WIND: NA

GAI PERSONNEL HOURS CHARGED:

none

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- Clearing and Grubbing: Nielson-Skanska (Nielson) used two Cat 14G blades to scrape off ground cover along with the upper two inches of topsoil on the proposed landfill site. The material piled up by the blades were picked up and carried out of the proposed construction area by two Cat 633C scrapers. To keep the dust levels caused by these activities down a Cat water truck continually sprayed the surfaces to be bladed and the piles of materials to be picked up. In the event that waste from the landfill was uncovered the waste was surveyed and checked for hazardous materials. If no hazardous materials were found work then was then restarted.

SUMMARY OF QC TESTING:
none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: NA

Other Discussions: none

QC
~~CQA~~ Monitor: _____ Date: 8-22-05
Approved by: _____ Date: 5-16-05
File No. _____

Job No: 043-2246

Report No: 091404MSPDaily.doc

Golder Associates Inc.

44 Union Boulevard, Suite 300
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GOLDER ASSOCIATES FIELD MONITORING SUMMARY

Golder Associates

PROJECT TITLE: Present Landfill Accelerated Action GOLDER PROJECT NO: 043-2246

STOLLER CLIENT: Keiser Hill

GOLDER CLIENT: Stoller Associates

GENERAL CONTRACTOR: Nielson Skanska

SUBCONTRACTORS:

LOCATION: Golden, CO

PROJECT: Present Landfill

DATE 9/14/04 S M (T) W T F S

TEMPERATURE (°F): LOW: 52° @ 0700 HIGH: 78° @ 1300

PRECIPITATION: AM: none PM: none TOTAL: none

CLOUD COVER: Partly Cloudy to Clear WIND: Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1800, 8.5 hrs.)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- Proof Rolling: Neilson began proof rolling of the cap with a loaded Cat 466 scraper. Areas where deflection of the subgrade was observed to be 3 inches or greater were noted so they could be repaired upon completion of proof-rolling and before placement of any cut to fill or cushion materials.
- Soft Spot Repair: An Earth Tech contracted drilling company drilled core through the soft spots to aid in determining the cause of the subsidence in the subgrade. URS stayed with the drillers to make sure the materials drilled were not hazardous.

SUMMARY OF QC TESTING:

Ran a bulk gradation on the material to be used for the rock layer screening out material down to 3 inches, and taking, at least, a 100 pound sample of 3 inch minus material back to the Golder Laboratory to completer the gradation. This was the second retest of these materials; the test # is ERF-1R2. See attached bulk gradation sheet.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential safety hazards associated with activities to be conducted on site this day.

Other Discussions: Discussed with Stoller and Centenial the methodology for creating the rock layer material. Decided to the material should be made of by mixing of 2 bucket of 6" rock to 3 buckets of the modified pit run material (ERF-1R).

QC
CQA Monitor: _____ Date: 9-22-05
Approved by: _____ Date: 5-16-05
File No.

Job No: 043-2246

Report No: 091504MSPDaily.doc

Golder Associates Inc.

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GOLDER ASSOCIATES FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action GOLDER PROJECT NO: 043-2246

STOLLER CLIENT: Keiser Hill

GOLDER CLIENT: Stoller Associates

GENERAL CONTRACTOR: Nielson Skanska

SUBCONTRACTORS:

LOCATION: Golden, CO

PROJECT: Present Landfill

DATE 9/15/04 S M T (W) T F S

TEMPERATURE (°F): LOW: 49° @ 0700 HIGH: 72° @ 1300

PRECIPITATION: AM: none PM: none TOTAL: none

CLOUD COVER: Partly Cloudy to Clear WIND: moderate to high

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1800, 11.5 hrs.)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- Proof Rolling: Neilson continued proof rolling of the cap with a loaded Cat 466 scraper in the morning and added a second scrapper in the afternoon. Areas where deflection of the subgrade was observed to be 3 inches or greater were noted so they could be repaired upon completion of proof-rolling and before placement of any cut to fill or cushion materials.
- Soft Spot Repair: An Earth Tech contracted drilling company drilled core through the soft spots to aid in determining the cause of the subsidence in the subgrade. URS stayed with the drillers to make sure the materials drilled were not hazardous.

SUMMARY OF QC TESTING:
none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential safety hazards associated with activities to be conducted on site this day.

Other Discussions: none

QC ~~CQA~~ Monitor: _____ Date: 8-27-05
Approved by: _____ Date: 5-16-05
File No. _____

Job No: 043-2246

Report No: 091604MSPDaily.doc

Golder Associates Inc.

44 Union Boulevard, Suite 300
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Telephone (303) 980-0540
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www.golder.com

GOLDER ASSOCIATES FIELD MONITORING SUMMARY

Golder Associates

PROJECT TITLE: Present Landfill Accelerated Action GOLDER PROJECT NO: 043-2246

STOLLER CLIENT: Keiser Hill PROJECT DESIGNER: Earth Tech

GOLDER CLIENT: Stoller Associates GENERAL CONTRACTOR: Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill

DATE 9/16/04 S M T W (T) F S

TEMPERATURE (°F): LOW: 54° @ 0700 HIGH: 82° @ 1300

PRECIPITATION: AM: none PM: none TOTAL: none

CLOUD COVER: Partly Cloudy to Clear WIND: Low

GAI PERSONNEL HOURS CHARGED:
Michael Place (0630-1730, 11.0 hrs.)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- Proof Rolling: Neilson continued proof rolling of the cap with a loaded Cat 466. Areas where deflection of the subgrade was observed to be 3 inches or greater were noted so they could be repaired upon completion of proof-rolling and before placement of any cut to fill or cushion materials.
- Soft Spot Repair: An Earth Tech contracted drilling company drilled core through the soft spots to aid in determining the cause of the subsidence in the subgrade. URS stayed with the drillers to make sure the materials drilled were not hazardous.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential safety hazards associated with activities to be conducted on site this day.
Other Discussions: Discussed with Stoller, and Keiser hill representatives about storage of the nuke gauge brought onto brought onto site this morning. The closet inside the trailer was deemed unsuitable because of the relative proximity of other people in the trailer to the gauge. For the day the gauge was required to remain in the GAI site truck and be parked in a place away from anyplace near people not wearing dosimeters, and within view of the GAI site representative with a dosimeter. It was decided that for long term storage of the gauge a conex bock would be ordered and used to house the gauge when it was not out on the cap with a GAI representative, but since the conex box would not arrive until the September 17, 2004 the gauge could be stored in the GAI trailer for the evening after all personnel working in that trailer had left for the night. The gauge would then need to be removed from the trailer and stored in the GAI truck, the same way as it was stored the previous day, before any people entered the trailer in the morning.

QC
CQA Monitor: Date: 8-22-05
Approved by: Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 9/17/04 S M T W T (F) S

PRECIPITATION: **AM:** NA **PM:** NA

CLOUD COVER: NA **WIND:** NA

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1630, 10.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- **Clearing & Grubbing:** Nielson used a Cat 14G grader and three Cat 633 scrapers to remove roots and surface vegetation from the top of the proposed cap. Also a DR mower was used to cut down cat tails from around the pond area.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: None.

CQA Monitor: _____ Date: 7-6-05
Approved by: _____ Date: 7-6-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 9/20/04 S (M) T W T F S

PRECIPITATION: **AM:** NA **PM:** NA

CLOUD COVER: NA **WIND:** NA

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1800, 11.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- **Clearing & Grubbing:** Nielson used a Cat 14G grader and three Cat 633 scrapers to remove roots and surface vegetation from the top of the proposed cap. Also a DR mower was used to cut down cat tails from around the pond area.
- **Test Pad:** Nielson hauled in fill to be used for the test pad for the six inch and ten inch cushion layers.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: None.

CQA Monitor: _____ Date: 7-6-05
Approved by: _____ Date: 7-6-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 9/21/04 S M (T) W T F S

PRECIPITATION: **AM:** NA **PM:** NA

CLOUD COVER: rain **WIND:** rain

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1030, 4.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- No work conducted due to excessive rain

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: NA

Other Meetings: NA

CQA Monitor: _____ **Date:** 7-6-05
Approved by: _____ **Date:** 7-6-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 9/22/04 S M T (W) T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** moderate

GAI PERSONNEL HOURS ON SITE:

Michael Place (0630-1230, 6.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- No work conducted due to wet conditions on the cap.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: NA

Other Meetings: NA

CQA Monitor: _____ **Date:** 7-6-05
Approved by: _____ **Date:** 7-6-05
File No. _____

Job No: 043-2246 Report No. 092304MSPDaily

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action GOLDER PROJECT NO: 043-2246

STOLLER CLIENT: Keiser Hill PROJECT DESIGNER: Earth Tech

GOLDER CLIENT: Stoller Associates GENERAL CONTRACTOR: Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 9/23/04 S M T W (T) F S

PRECIPITATION: AM: none PM: none

CLOUD COVER: Partly cloudy to Overcast WIND: High

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1730, 11.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- Clearing and Grubbing: Nielson continued removing cattails and weeks next to the pond at the far eastern edge of the landfill site using a DR Mower.
- Test Fill: Nielson began ripping and compacting the first lift of Rocky Flats alluvium on the test fill pad for use as structural fill for regarding of the cap.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.
Other Meetings: Met with the EPA, CDPHE, QA representative and Stoller Associates to observe the placement of Rocky Flats Alluvium as fill material on the test pad located at the west end of the landfill site. Four passes made by an 825 sheep-foot compactor over the Rocky Flats Alluvium were observed to prove the practicality of using a method spec. on the test pad. The material was deemed to wet for compaction and that the test fill should be put off until 27 of September.

QC
~~CQA~~ Monitor: _____ Date: 9-22-05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action GOLDER PROJECT NO: 043-2246

STOLLER CLIENT: Keiser Hill PROJECT DESIGNER: Earth Tech

GOLDER CLIENT: Stoller Associates GENERAL CONTRACTOR: Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 9/24/04 S M T W T (F) S

PRECIPITATION: AM: none PM: none

CLOUD COVER: Partly cloudy WIND: Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1730, 11.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- Clearing and Grubbing: Nielson continued removing cattails and weeks next to the pond at the far eastern edge of the landfill site using a DR Mower.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.
Other Meetings: none

QC
~~CQA~~ Monitor: _____ Date: 9-27-04
Approved by: _____ Date: 5-16-05
File No. _____

Job No: 043-2246 Report No. 092704MSPDaily

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action GOLDER PROJECT NO: 043-2246

STOLLER CLIENT: Keiser Hill PROJECT DESIGNER: Earth Tech

GOLDER CLIENT: Stoller Associates GENERAL CONTRACTOR: Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 9/27/04 S (M) T W T F S

PRECIPITATION: AM: none PM: none

CLOUD COVER: Partly cloudy WIND: Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1700, 10.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- Clearing and Grubbing: Nielson continued removing cattails and weeks next to the pond at the far eastern edge of the landfill site using a DR Mower.
- Test Fill: Ripped the test fill material using a Cat 14G and compacted the fill using a Cat 825 sheep-foot compactor to make 4 passes, and proof rolling each lift using a fully loaded 633 scraper.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.
Other Meetings: Met with the EPA, CDPHE, QA representative and Stoller Associates to observe the placement of Rocky Flats Alluvium as fill material on the test pad located at the west end of the landfill site. Four passes were made by an 825 sheep-foot compactor over the Rocky Flats Alluvium. When the fill was compacted it was then proof-rolled by a fully loaded Cat 633 scraper. This process was then repeated to after the placement of a second lift. The Material compaction placement was observed and the governmental agencies agreed to take the test methods into consideration to decide if this method spec. would be acceptable.

QC
~~CQA~~ Monitor: _____ Date: 8-22-05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action GOLDER PROJECT NO: 043-2246

STOLLER CLIENT: Keiser Hill PROJECT DESIGNER: Earth Tech

GOLDER CLIENT: Stoller Associates GENERAL CONTRACTOR: Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 9/28/04 S M (T) W T F S

PRECIPITATION: AM: Showers PM: none

CLOUD COVER: Partly cloudy WIND: Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1230, 6.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- Test Fill: A Cat back-hoe was used to dig three test pits in the test pad to observe compaction in the pit.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day. Most of the site was shut down due to rain.
Other Meetings: Met with the EPA, CDPHE, QA representative and Stoller Associates to observe the excavation of material and the compaction achieved by the methods used on the previous day.

QC JAE
~~CQA~~ Monitor: _____ Date: 8-27-05
Approved by: _____ Date: 5-16-05
File No. _____

8Job No: 043-2246 Report No. 092904MSPDaily

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action GOLDER PROJECT NO: 043-2246

STOLLER CLIENT: Keiser Hill PROJECT DESIGNER: Earth Tech

GOLDER CLIENT: Stoller Associates GENERAL CONTRACTOR: Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 9/29/04 S M T (W) T F S

PRECIPITATION: AM: Showers PM: none

CLOUD COVER: Partly cloudy WIND: Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1530, 9.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- Test Fill: A Cat back-hoe was used to dig three test pits in the test pad to observe compaction in the pit.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day. Most of the site was shut down due to rain.
Other Meetings: Met with the EPA, CDPHE, QA representative and Stoller Associates to observe the excavation of material and the compaction achieved by the methods used on the previous day.

QC GAE
~~CQA~~ Monitor: _____ Date: 9-29-05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action GOLDER PROJECT NO: 043-2246

STOLLER CLIENT: Keiser Hill PROJECT DESIGNER: Earth Tech

GOLDER CLIENT: Stoller Associates GENERAL CONTRACTOR: Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 9/30/04 S M T W (T) F S

PRECIPITATION: AM: Showers PM: none

CLOUD COVER: Overcast WIND: Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1700, 10.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- Cut to Fill: Nielson began cutting material from the top of the landfill area and stockpiling the material to be placed as fill.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day. Most of the crew was sent home due to the weather, but a small crew remained to start the cut off the crest of the landfill

Other Meetings: Met with the EPA, CDPHE, QA representative and Stoller Associates to observe cutting of material off the cap of the landfill. Noted that relatively small amount of trash were uncovered during the cutting operations.

QC
~~CQA~~ Monitor: _____ Date: 9-30-05
Approved by: _____ Date: 5-16-05
File No. _____

Job No: 043-2246 Report No. 100104MSPDaily

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action GOLDER PROJECT NO: 043-2246

STOLLER CLIENT: Keiser Hill PROJECT DESIGNER: Earth Tech

GOLDER CLIENT: Stoller Associates GENERAL CONTRACTOR: Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 10/1/04 S M T W T (F) S

PRECIPITATION: AM: Showers PM: Showers

CLOUD COVER: Overcast WIND: Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1030, 4.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

No work conducted today.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Work was called off for the day.

Other Meetings: none

QC
~~CQA~~ Monitor: _____ Date: 8-22-05

Approved by: _____ Date: 5-16-05

File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action GOLDER PROJECT NO: 043-2246

STOLLER CLIENT: Kaiser Hill PROJECT DESIGNER: Earth Tech

GOLDER CLIENT: Stoller Associates GENERAL CONTRACTOR: Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 10/4/04 S (M) T W T F S

PRECIPITATION: AM: none PM: none

CLOUD COVER: Clear to partly cloudy WIND: Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1830, 12.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- Cut to Fill: Nielson continued cutting material from the top of the landfill and hauled away to the southwestern portion of the landfill by a Cat 633 scraper. The Cut material was then placed in the southwestern portion of the landfill by the Cat 633 scraper and compacted by making four passes with a Cat 825 sheep-foot compactor in lifts of a maximum of 1 foot thick.
- Soft Spot Repair: Nielson removed material from soft spot areas to try and determine if the spots could be removed by removing wet materials. Soft Spots that were excavated were #2, #3 and #4.
- Test Fill: Nielson placed a 6" lift of material on top of the test fill pad with a Cat 633 scraper and graded the material with Cat 14G grader. Once the material was placed it was compacted with two passes of a Cat CS-583 vibratory roller.
- Liner Placement: 24 rolls of LLDPE arrived and were unloaded today.

SUMMARY OF QC TESTING:

Test Name	Pass/Fail
TF-1	Pass
TF-2	Pass
TF-3	Pass
TF-4	Pass
TF-5	Pass
TFCS-1	Pass

Test Name	Pass/Fail

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Rock Layer: Met with Centennial and Stoller about the proposed rock layer. Discussed their materials to be used and decided to try a gradation tomorrow on the finished product they create.
Test Fill: Met with the EPA, CDPHE, Kaiser Hill, Earth Tech, Stoller and Nielson to observe the compaction of the 6" cushion soil layer and determined that the methods used would enable Nielson to meet specification by using 2 passes with a Cat CS-583 vibratory roller.

QC SAE
~~CQA~~ Monitor: _____ Date: 5-16-05
Approved by: _____ Date: 5-16-05
File No. _____

BULK GRADATION

DATE
PROJECT NAME
PROJECT NUMBE
SAMPLE ID:
MATERIAL

Total Weight of Sample
2506260

Ratio (3"-:total 3"-) 21.01

	Wt Retained	Cumulative Wt. Reatined	Percent Retained	Percent Passing	Spec for % Passing
10.0"	0.00	0.0	0.00	100.00	0
6.0"	721763.6	721763.6	28.80	71.20	50-67
3.0"	553343.04	1275106.6	50.88	49.12	30-55
Total Passing 3"	1231153.04	2506259.6			-
2"	218222.8	1493329.4	59.58	40.42	-
1.5"	130548.7	1623878.1	64.79	35.21	-
1.0"	174770.3	1798648.4	71.77	28.23	15-35
.75"	103559.3	1902207.7	75.90	24.10	-
.378"	180957.1	2083164.8	83.12	16.88	5-15
#4	108186.6	2191351.5	87.44	12.56	-
pan	14985.00	2506259.6	100.00	0.00	-

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action GOLDER PROJECT NO: 043-2246

STOLLER CLIENT: Kaiser Hill PROJECT DESIGNER: Earth Tech

GOLDER CLIENT: Stoller Associates GENERAL CONTRACTOR: Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 10/5/04 S M (T) W T F S

PRECIPITATION: AM: none PM: none

CLOUD COVER: Clear to partly cloudy WIND: Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1730, 11.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- Cut to Fill: Nielson continued cutting material from the top of the landfill and hauled away to the southwestern portion of the landfill by a Cat 633 scraper. The Cut material was then placed in the southwestern portion of the landfill by the Cat 633 scraper and compacted by making four passes with a Cat 825 sheep-foot compactor in lifts of a maximum of 1 foot thick.
- Soft Spot Repair: Nielson placed geosynthetic fabric and geogrid in the soft spots which were #2, and #3. Once the synthetic materials were placed course rock was hauled in to fill these holes and stabilize the subgrade before fill placement occurs in this area.
- Test Fill: Nielson placed a 10" lift of material on top of the test fill pad with a Cat 633 scraper and graded the material with Cat 14G grader. Once the material was placed it was compacted with three passes of a CS-583 vibratory roller.
- Liner Placement: 24 rolls of LLDPE arrived and were unloaded today.

SUMMARY OF QC TESTING:

Density Tests

Test Name	Pass/Fail
TF-6	Pass
TF-7	Pass
TF-8	Pass
TF-9	Pass
TF-10	Pass
TFCS-2	Pass

Test Name	Pass/Fail

Ran a bulk gradation on the rock layer materials Sample #RL-1. (See attached results)

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Test Fill: Met with the EPA, CDPHE, Kaiser Hill, Earth Tech, Stoller and Nielson to observe the compaction of the 10" cushion soil layer and determined that the methods used would enable Nielson to meet specification by using 3 passes with a Cat CS-583 vibratory roller.

QC ~~CQA~~ Monitor _____ Date: 5-16-05
Approved by: _____ Date: 5-16-05
File No. _____

Job No: 043-2246 Report No: 100604MSPDaily

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action GOLDER PROJECT NO: 043-2246

STOLLER CLIENT: Keiser Hill PROJECT DESIGNER: Earth Tech

GOLDER CLIENT: Stoller Associates GENERAL CONTRACTOR: Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 10/6/04 S M T (W) T F S

PRECIPITATION: AM: Showers PM: Showers

CLOUD COVER: Overcast WIND: Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1100, 4.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- Liner Placement: 24 rolls of LLDPE arrived and was unloaded today.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day. Most of the crew was sent home with the exception of a small crew to unload liner.

Other Meetings: none

CQA Monitor: _____ Date: 5-16-05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action GOLDER PROJECT NO: 043-2246

STOLLER CLIENT: Kaiser Hill PROJECT DESIGNER: Earth Tech

GOLDER CLIENT: Stoller Associates GENERAL CONTRACTOR: Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 10/7/04 S M T W (T) F S

PRECIPITATION: AM: none PM: none

CLOUD COVER: Clear to partly cloudy WIND: Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1700, 10.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- Soft Spot Repair: Nielson placed geosynthetic fabric and geogrid in soft spot number 17. Course soft spot repair fill was placed into soft spot #3, and #17. Digging on soft spots #1 and #16 were started.
- Liner Placement: 7 rolls of LLDPE arrived and were unloaded today.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Soft Spots: Met with Kaiser Hill, Stoller, Nielson, and tetra tech to discuss soft spot repair at soft spot #16. Trash was being uncovered by performing any cut at all. Decided to have Nielson place fabric and geogrid down on the surface and fill overtop of it with rocky flats alluvium to the necessary grade.
Rock Layer: Met with Stoller and Centenial and determined that centennial would not be able to produce more rock layer material until Monday, and as a result a new bulk gradation will be conducted on Monday.

CQA Monitor: Date: 5-16-05
Approved by: Date: 5-16-05
File No.

Job No: 043-2246 Report No. 100804MSPDaily

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action GOLDER PROJECT NO: 043-2246

STOLLER CLIENT: Kaiser Hill PROJECT DESIGNER: Earth Tech

GOLDER CLIENT: Stoller Associates GENERAL CONTRACTOR: Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 10/8/04 S M T W T (F) S

PRECIPITATION: AM: none PM: none

CLOUD COVER: Clear to partly cloudy WIND: Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1730, 11.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- Cut to Fill: Nielson continued cutting material from the top of the landfill and hauled away to the southwestern portion of the landfill by a Cat 633 scraper. The Cut material was then placed in the southwestern portion of the landfill by the Cat 633 scraper and compacted by making four passes with a Cat 825 sheep-foot compactor in lifts of a maximum of 1 foot thick.
- Soft Spot Repair: Nielson placed geosynthetic fabric and geogrid in soft spot #1, #4, #15, and #16. Course soft spot repair fill was placed into soft spots #1, #4, #16, and #17.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Anchor Trench: Discussed the presents of soft spots #1 and #3 which will be under the anchor trench. Decided to move the channel south 5 feet from where it was originally so soft spot #1 would no longer be in the trench. With regards to soft spot #3 the fill in the area is greater than two feet and so the anchor trench should not go deep enough to impact the remediation methods used on that soft spot.

QC
~~CQA~~ Monitor: _____ Date: 10/9/04
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action GOLDER PROJECT NO: 043-2246

STOLLER CLIENT: Kaiser Hill PROJECT DESIGNER: Earth Tech

GOLDER CLIENT: Stoller Associates GENERAL CONTRACTOR: Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 10/9/04 S M T W T F (S)

PRECIPITATION: AM: none PM: none

CLOUD COVER: Clear to partly cloudy WIND: Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1620, 6.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- Cut to Fill: Nielson cut material from the northwestern side of the landfill and hauled away to the southwestern portion of the landfill by two Cat 633 scrapers. The Cut material was then placed in the southwestern portion of the landfill by the Cat 633 scrapers and compacted by making four passes with a Cat 825 sheep-foot compactor in lifts of a maximum of 1 foot thick. Nielson also continued cutting materials out of the boundary ditch on the west end of the landfill.
- Debris Removal and Placement: Debris that was previously uncovered on the crest of the west end of the landfill was placed into A35C Volvo end-dumps by a Cat 725 excavator and hauled to the approved debris placement area east end of the landfill directly north of the lunch trailer.
- Soft Spot Repair: Nielson began cutting of soft #6, #7, and #8. They also placed Geosynthetic fabric, geogrid and course material repectively in soft spots#4, #13 and #14.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Discussed the proximity of soft spots #6, and #7 and decided to combine then since they have only a few feet between them.

QC SME
~~CQA~~ Monitor: _____ Date: 10/11/04
Approved by: _____ Date: 5-16-05
File No.

BULK GRADATION

DATE
PROJECT NAME
PROJECT NUMBER
SAMPLE ID:
MATERIAL

Total Weight of Sample

Ratio (3"-:total 3"-)	20.06

	Wt Retained	Cumulative Wt. Reatined	Percent Retained	Percent Passing	Spec for % Passing
10.0"		0.0	0.00	100.00	0
6.0"		850531.1	33.07	66.93	50-67
3.0"		1482974.9	57.66	42.34	30-55
Total Passing 3"	1088757.80	2571732.7			-
2"		1655166.2	64.36	35.64	-
1.5"		1740501.7	67.68	32.32	-
1.0"		1876696.0	72.97	27.03	15-35
.75"		1977492.9	76.89	23.11	-
.378"		2187207.5	85.05	14.95	5-15
#4		2361057.4	91.81	8.19	-
Total Passing #4	10504.20	2571732.7	100.00	0.00	-

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 10/11/04 S (M) T W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear to partly cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1730, 11.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- **Cut to Fill:** Nielson cut material from the south side perimeter trench and hauled the material to fill areas near the crest of the cap and on the north side of the cap portion of the landfill by two Cat 633 scrapers. The Cut material was then placed in the southwestern portion of the landfill by the Cat 633 scrapers and compacted by making four passes with a Cat 825 sheep-foot compactor in lifts of a maximum of 1 foot thick. Nielson also continued cutting materials out of the boundary ditch on the west end of the landfill.
- **Debris Removal and Placement:** Debris that was previously uncovered on the crest of the west end of the landfill was placed into A35C Volvo end-dumps by a Cat 725 excavator and hauled to the approved debris placement area east end of the landfill directly north of the lunch trailer.
- **Soft Spot Repair:** Nielson placed geosynthetic fabric and geogrid at soft spots #5, #6, #7, and part of #8. They also placed coarse fill overtop of soft spots #4, #5.

See Attached map for details about construction activities.

SUMMARY OF QC TESTING: Ran a bulk gradation on the Potential Rock Layer. Test #RL-1R

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.
Other Meetings: QA/QC meeting discussed communication and means of improving communication between QA and QC personnel, decided to increase QC observation of cap activities by bringing in a second Golder QC representative. Also Discussed an RFI to be put in pertaining to allowing the used of 6" rock in the pregrade fill material.

QC
~~CQA~~ Monitor: _____ Date: 5-16-05
Approved by: _____ Date: 5-16-05
File No. _____

Client: RFETS
Project: Present Landfill
Project #:
Contractor(s) S.M. Stoller
Contractor Super(s): Curt Schroeder

Date: 10-11
Contract #:
Weather: Clear
Temp. (approx) High: 45 Low: 70

Daily Notations:

Michael Place performed gradation on rock layer material. Material passed. Neilson's continued regrading the landfill cap as shown on the drawing. Lifts were limited to 12 inch maximum and rolled in 4 passes with the CAT 825 compactor.

Neilson's placed 8 oz geotextile and Tensar BX 1200 geogrid on soft spots 5, 6, 7 and part of 8. Geogrid was overlapped 2' and tied together using zip ties.

QC/QA meeting was held at 1400 at the Stoller trailer to discuss improving means of communication and stressed the importance of full documentation. There was additional discussion on the cap with Bob to discuss potential re-design and re-grading of the trash areas on the east and west crest to raise the grade. Bob directed Stoller to take four rocky flats alluvium gradation samples evenly spaced in the perimeter channel.

QC Action Items:

ACTION	COMPLETED
Bulk Gradation of Rock	10-11 Test RL-1R

5-16-05

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 10/12/04 S M (T) W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1700, 10.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- Cut to Fill: Nielson cut material from the north and south side perimeter trench and hauled the material to fill areas near the crest of the cap by two Cat 633 scrapers. The Cut material was then placed in the southwestern portion of the landfill by the Cat 633 scrapers and compacted by making four passes with a Cat 825 sheep-foot compactor in lifts of a maximum of 1 foot thick. Within the northwestern portion of the perimeter ditch some waste was found and an excavator was used to remove some of the waste by loading the material into a Volvo end-dump.

See Attached map for details about construction activities.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.
Other Meetings: Discussed production of rock layer material with Centennial decided that we have a working method enabling Centennial to start production of the material.

QC SAC
~~CQA~~ Monitor: [signature] Date: 10/13/04
Approved by: [signature] Date: 5-16-05
File No.

Client: RFETS
Project: Present Landfill
Project #:
Contractor(s) S.M. Stoller
Contractor Super(s): Curt Schroeder

Date: 10-12
Contract #:
Weather: Clear
Temp. (approx) High: 45 Low: 70

Daily Notations:

Performed gradation from four sample locations located along the perimeter ditch. Neilson's continued regrading the landfill cap and roughing in the perimeter ditches as shown on the drawing. Lifts were limited to 12 inch maximum and rolled in 4 passes with the CAT 825 compactor.

Neilson's continued to rake up cattails and load them into roll off boxes. The work area was inspected and it was found that the crews were not digging or raking into the pond sediments. There was minimal soil disturbance.

The trash area in the perimeter channel (see drawing) discovered Monday was excavated with the excavator and loaded into the Volvo A-35 trucks. Approximately 2 truckloads were dumped in the trash disposal area. The hole is approximately 8' x 8' and approximately 6' deep.

Colorado Lining continued pre-mobilization activities.

Construction photographs were taken of active work areas.

Regrade soil removed from the ditches and regarded areas was visually inspected and found acceptable.

QC Action Items:

ACTION	COMPLETED
Daily Photographs	10-12
Bulk gradation of four perimeter channel soil samples – confirm rocky flats alluvium	10-12
General oversight	10-12

5-16-05

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 10/13/04 S M T (W) T F S

PRECIPITATION: **AM:** Showers **PM:** none

CLOUD COVER: Clear **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1130, 5.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- **Liner Placement:** A load ~~15~~ 17 rolls of GCL was unloaded today.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day. Most of the crew was sent home due to wet conditions on the cap.
Other Meetings: none.

~~CQA~~ QC SME Monitor: _____ Date: 10/14/04
Approved by: _____ Date: 5-16-05
File No. _____

Client: RFETS
Project: Present Landfill
Project #:
Contractor(s) S.M. Stoller
Contractor Super(s): Curt Schroeder

Date: 10-13
Contract #:
Weather: Rain previous night (<.5")
Temp. (approx) High: 38 Low: 54
Cloudy until 0800 hr, then partly cloudy.

Daily Notations:

No work on the cap due to rain during the night.

Colorado Lining delivered one truckload of GCL. Load (17 rolls) was inspected and logged in. The original packaging was damaged on one roll but the GCL was not damaged. The packaging was repaired with all-weather duct tape.

LLDPE manufacturer test data (GSE) was reviewed and checked against specifications. No deviations or out of specification material was found. Data was submitted (6 copies) to K-H.

Ponded areas were drained and stormwater controls inspected. Stormwater inspection report was not completed as the rain was < .5"

The debris area in the perimeter channel was dewatered but not further excavated.

QC Action Items:

ACTION	COMPLETED
Daily Photographs	10-13
LLDPE QC data review	10-13

5-16-05

Job No: 043-2246 Report No. 101404MSPDaily

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 10/14/04 S M T W (T) F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1730, 11.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- **Regrade Fill:** Nielson hauled rocky flats alluvium from stockpile to fill area on the south side of the cap and on the north side of the cap portion of the landfill by two Cat 633 scrapers. The Cut material was then placed in the southwestern portion of the landfill by the Cat 633 scrapers. Compaction of fill areas was not done today because of excess moisture in the fill material.
- **Liner Placement:** Three loads of GCL (44 rolls) were unloaded today.

See attached map for locations of construction activities.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Met with the EPA, the CDPHE, and Stoller to observe the Rock Layer material which was produced at Centennial and show them what the final product will look like

QC
~~CQA Monitor~~: _____ Date: 10/15/04
Approved by: _____ Date: 5-16-05
File No. _____

Client: RFETS
Project: Present Landfill
Project #:
Contractor(s) S.M. Stoller
Contractor Super(s): Curt Schroeder

Date: 10-14
Contract #:
Weather:
Temp. (approx) High: 66 **Low: 52**
Windy, partly cloudy.

Daily Notations:

No work on the cap due to wet conditions until approximately 1030, then Neilson's scraper hauled from the 280 pile and stockpiled on the cap to the west of soft spot 8 in a one foot lift. The 280 pile soil was observed. No rocks >6" were observed. One area of the stockpile was eliminated from the haul as it appears to contain considerable topsoil.

Colorado Lining delivered GCL. Thirty one (31) rolls were unloaded, inspected and logged in. The original packaging was damaged on a few rolls but the GCL was not damaged. The packaging was repaired with all-weather duct tape. The rolls were covered/tarped after being placed on the storage pad.

Four thousand feet of 4" HDPE perforated pipe and 200 couplings were delivered to the Centennial property.

Excavated at the inert spot in the perimeter channel to determine depth & extent of the debris, see drawing. This operation was shut down due to radiological concerns.

QC Action Items:

ACTION	COMPLETED
Daily Photographs	10-14
Rocky Flats alluvium inspection	10-14
Lift thickness	10-14

5-16-05

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 10/15/04 S M T W T (F) S

PRECIPITATION: **AM:** none **PM:** Drizzle

CLOUD COVER: Partly Cloudy to Overcast **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1630, 10.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- Regrade Fill: Nielson hauled rocky flats alluvium from stockpile to fill area on site but near the Centennial pit. The material was hauled in by three Cat 633 scrapers and placed on the southern side of the landfill. The pregrade fill was compacted by a Cat 825 sheep-foot roller making four passes on the material placed today and on the material placed yesterday that was previously too wet to compact.
- Soft Spot Repair: Nielson placed coarse fill overtop of fabric and geogrid on all but the eastern edge of soft spot #8.
- Liner Placement: One load of GCL and two loads of GDN were unloaded today.

See attached map for locations of construction activities.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Discussed with Tetra, Tech (QA), Earth Tech, Stoller, and Nielson the soft spots that have appeared on the north side of the cap. Decided to have Nielson come in on Saturday and rip up the new soft spots to allow them to dry back to acceptable moisture contents over the weekend so the area will be ready for proof rolling on Monday.

QC JAE
CQA Monitor: _____ Date: 10/18/04
Approved by: _____ Date: 5-16-05
File No. _____

Client: RFETS
Project: Present Landfill
Project #:
Contractor(s) S.M. Stoller
Contractor Super(s): Curt Schroeder

Date: 10-15, 16
Contract #:
Weather:
Temp. (approx) High: 45 Low: 41
Progressively more cloudy throughout the day, light rain began in early PM.

Daily Notations

Neilson's scraper hauled rocky flats alluvium from the 280 pile with Cat 633 scrapers. Soil was placed in 1 foot lifts on the south side of the landfill. Once placed in loose lifts, the rocky flats alluvium was compacted by a Cat 825 making four passes. The compactor also compacted soil previously placed on 10-14 but was too wet to effectively compact that day. The 280 pile soil was observed. No rocks >6" were observed. One area of the stockpile was eliminated from the haul as it appears to contain considerable topsoil.

Neilson's placed Rocky Flats alluvium over all but the east edge of soft spot #8.

Colorado Lining delivered GCL. Twenty Three (23) rolls were unloaded, inspected and logged in. The original packaging was inspected and repaired with all weather duct tape if damage was detected. The rolls were covered/tarped after being placed on the storage pad.

Colorado Lining delivered GDN. Rolls were unloaded and inspected. No irregularities were found.

On October 16, a short crew worked onsite ripping soft spots on the west end near the crest. Ripping was done to allow the soil to dry during the remaining Saturday and Sunday.

QC Action Items:

ACTION	COMPLETED
Daily Photographs	10-15
Rocky Flats alluvium inspection	10-15
Lift thickness	10-15
Roll Inspections	10-15

5-16-05

bGOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 10/18/04 S (M) T W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy to Overcast **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1700, 11.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- Regrade Fill: Nielson hauled rocky flats alluvium from stockpile to fill area on site, but near the Centennial pit. The material was hauled in by three Cat 633 scrapers and placed on the southern side of the landfill. The pregrade fill was compacted by a Cat 825 sheep-foot roller making four passes on the material placed today and on the material placed yesterday that was previously too wet to compact.
- Proof Rolling: Nielson used a fully loaded scraper to proof roll an area of cap from the most western edge to 300 feet east of the most western edge. This area was selected because it is the fist location that will have cushion soils placed and prepared for liner placement.
- Soft Spot Repair: Nielson ripped up four areas where subgrade material was too wet for proof rolling. The material was removed using an Cat 325 excavator and a Volvo end dump down two a depth of one to two feet at each wet spot. Each soft spot was compacted with the Cat 825 Sheep foot roller and before and after they were filled back in. After the proof rolling was completed for the day 5 small soft spots were ripped to try and dry them out over night.
- Liner Placement: One load of GCL and one load of GDN were unloaded today.

See attached map for locations of construction activities.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Discussed with Nielson and Stoller some of the soft spots which did not bry out over the weekend. Decided to rip up four of the larger sport and replace the wet material with fresh dry material and compact them back with the sheep foot roller.

QC JAE
CQA Monitor: _____ Date: 10/19/04
Approved by: _____ Date: 5-16-05
File No. _____

Client: RFETS **Date: 10-18**
Project: Present Landfill **Contract #:**
Project #: **Weather:**
Contractor(s) S.M. Stoller **Temp. (approx) High: 57** **Low: 46**
Contractor Super(s): Curt Schroeder Windy and dry

Daily Notations

Neilson's scraper hauled rocky flats alluvium from the 280 pile with Cat 633 scrapers. Soil was placed in 1 foot lifts on the south side of the landfill. Once placed in loose lifts, the rocky flats alluvium was smoothed out with the dozer and compacted by a Cat 825 making four passes. The 280 pile soil was observed. No rocks >6" were observed. From visual observation only, the soil appears to be close to optimum moisture content.

Colorado Lining delivered GCL. Seventeen (17) rolls were unloaded, inspected and logged in. The original packaging was inspected and repaired with all weather duct tape if damage was detected. The rolls were covered/tarped after being placed on the storage pad.

Colorado Lining delivered forty six rolls of GDN (46). Rolls were unloaded and inspected. No irregularities were found.

Four soft spots were identified on the north west corner of the cap. It was believed that they were caused not by trash but due to ponded water from the previous weeks rain. No individual area was greater than 20' in diameter. The spots were excavated with the excavator and the soil hauled off to the east side. No significant deposits of trash were observed. The excavated spots were filled with rocky flats alluvium from the 280 pile, rolled in and compacted with four passes of the Cat 825. Finally, the areas were bladed smooth to the surrounding grade.

Proof rolling began at the south west corner of the landfill cap. Proof rolling was witnessed by Josh (Tetra-Tech), Jim E. (Stoller), Michael P. (Golder), Jim (Geo-Cal) and Ryan (Earth Tech). Five small soft spots, no greater than 5' diameter were identified. It was suggested by Stoller and agreed to by EarthTech and Tetra Tech representative that the spots were likely not caused by trash, but by wet soil from last week's rain. The five spots were ripped six inches deep so that they could dry overnight and will be re-compacted tomorrow morning.

Stormwater controls were inspected. No damage found to controls. No oil leaks found.

QC Action Items:

ACTION	COMPLETED
Daily Photographs	10-18
Rocky Flats alluvium inspection	10-18

Lift thickness	10-18
Roll Inspections	10-18
Stormwater Control	10-18

5-16-05

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 10/19/04 S M (T) W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1530, 9.0 hrs)
Matt Cashimer (0730-1730, 10.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- **6" Cushion Fill:** Nielson started their haul of cushion soils for the first layer of cushion material. The material was hauled onto the approved portion of the cap that had been scarified by a Cat 825 sheep foot compactor. The cushion material was spread out using a D6 dozer and left uncompacted to enable the material to dry out enough to allow for proper compaction.
- **Regrade Fill:** Nielson hauled rocky flats alluvium from the 280 stockpile to the cap. The material was hauled in by three Cat 633 scrapers and placed on the north side of the landfill.
- **Proof Rolling:** Nielson used a fully loaded scraper to proof roll an area on the northern third of the cap from the most western edge to 300 feet east of the most western edge two times. This area was selected because it is the fist location that will have cushion soils placed and prepared for liner placement.
- **Soft Spot Repair:** Nielson ripped up four small areas that showed significant displacement of subgrade during proof rolling due to over-saturation of the soil with a Cat 14G grader. The five small wet spots noted from the previous days proof rolling
- **Liner Placement:** One load of GCL was unloaded today.

See attached map for locations of construction activities.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Discussed with Nielson Tetra Tech, and Stoller the soft spots on the top of the cap outside the areas proof rolled on the previous day. These area were test rolled using a fully loaded scraper and the soft spots observed were noted and marked for future reference.

QC SAE
CQA Monitor: _____ Date: 10/20/04
Approved by: _____ Date: 5-16-05
File No. _____

Client: RFETS **Date: 10-19**

Project: Present Landfill **Contract #:**
Project #: **Weather:**
Contractor(s) S.M. Stoller **Temp. (approx) High: 57** **Low: 42**
Contractor Super(s): Curt Schroeder Windy and dry

Daily Notations

Neilson's scraper hauled rocky flats alluvium from the 280 pile with Cat 633 scrapers. Soil was placed in 1 foot lifts on the south side of the landfill. Once placed in loose lifts, the rocky flats alluvium was smoothed out with the dozer and compacted by a Cat 825 making four passes. The 280 pile soil was observed. No rocks >6" were observed. From visual observation only, the soil appears to be close to optimum moisture content. The inert area regrade and perimeter channel realignment was started – cut activities only.

Colorado Lining delivered GCL. Seventeen (17) rolls were unloaded, inspected and logged in. The original packaging was inspected and repaired with all-weather duct tape if damage was detected. The rolls were covered/tarped after being placed on the storage pad.

Colorado Lining delivered forty six rolls of GDN (46). Rolls were unloaded and inspected. No irregularities were found.

Four soft spots were identified on the north west corner of the cap. It was believed that they were caused not by trash but due to ponded water from the previous weeks rain. No individual area was greater than 20' in diameter. The spots were excavated with the excavator and the soil hauled off to the east side. No significant deposits of trash were observed. The excavated spots were filled with rocky flats alluvium from the 280 pile, rolled in and compacted with four passes of the Cat 825. Finally, the areas were bladed smooth to the surrounding grade.

Proof rolling began at the south west corner of the landfill cap. Proof rolling was witnessed by Josh (Tetra-Tech), Jim E. (Stoller), Michael P. (Golder), Jim (Geo-Cal) and Ryan (Earth Tech). Five small soft spots, no greater than 5' diameter were identified. It was suggested by Stoller and agreed to by EarthTech and Tetra Tech representative that the spots were likely not caused by trash, but by wet soil from last week's rain. The five spots were ripped six inches deep so that they could dry overnight and will be re-compacted tomorrow morning.

Continued hauling cushion material. Soil was imported from the tested stockpile at the Centennial pit with four end dump trucks and placed on the previously proof rolled SW corner. Prior to cushion soil placement, the surface was conditioned with the Cat 825

compactor. Soil was pushed over with the D-6 LGP dozer, but was not compacted.

QC Action Items:

ACTION	COMPLETED
Daily Photographs	10-19
Rocky Flats alluvium & Cushion soil inspection	10-19
Lift thickness	10-19
Roll Inspections	10-19

5-16-05

Job No: 043-2246 Report No. 102004MSPDaily

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 10/20/04 S M T (W) T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1630, 10.0 hrs)
Matt Cashimer (0730-1730, 11.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- **6" Cushion Fill:** Nielson continued their haul of cushion soils for the first layer of cushion material with four Mack end dump trucks. The material was hauled onto the approved portion of the cap that had been scarified by a Cat 825 sheep foot compactor. The cushion material was spread out using a D6 dozer and left uncompacted to enable the material to dry out enough to allow for proper compaction at a future date.
- **Regrade Cut & Fill:** Nielson hauled rocky flats alluvium cut from the adjusted perimeter channel around the graphite pile and hauled the material for placement on the cap. The material was hauled in by three Cat 633 scrapers and placed on the north side of the landfill.
- **Soft Spot Repair:** Nielson used a Cat 325 excavator to remove and replace fill in four soft spots. A fifth soft spot was repaired using a new method referred to as geocell (see below for geocell repair method). The four small wet spots noted from the previous days proof rolling were deemed acceptable after drying out overnight.
- **Liner Placement:** One load of GCL was unloaded today.

See attached map for locations of construction activities.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Discussed with Nielson Tetra Tech, Colorado Lining and Stoller the soft spots on the top of the cap outside the areas that have been proof rolled. We decided to try to repair one of the soft spot on the cap with a material called geocell. The procedure involved placing a honey comb shaped plastic into the soft spot, once it is dug out to a depth of one foot, and then rebar is placed through the plastic to help it hold its form, and then a gravel is placed between the honey comb shaped plastic pieces to enable the geocell to hold its form.

QC
~~CQA~~ Monitor: _____ Date: 10/21/04
Approved by: _____ Date: 5-16-05
File No. _____

Client: RFETS **Date: 10-20**
Project: Present Landfill **Contract #:**
Project #: **Weather:**
Contractor(s) S.M. Stoller **Temp. (approx) High:58** **Low: 46**
Contractor Super(s): Curt Schroeder Dry

Daily Notations

Neilson's scraper hauled rocky flats alluvium from the 280 pile with Cat 633 scrapers. Soil was placed in 1 foot lifts on the north side of the landfill. Once placed in loose lifts, the rocky flats alluvium was smoothed out with the dozer and compacted by a Cat 825 making four passes. The 280 pile soil was observed. No rocks >6" were observed. From visual observation only, the soil appears to be close to optimum moisture content.

Neilsons also re-graded the inert spot area in the NW corner. The perimeter channel was re-aligned and the inert area was brought up to the new grade. The area was compacted with the Cat 825, 4 passes.

Two soft spots in the proximity of SS-18 were corrected by filling the excavated soft spot with rock material. Three loads of rock material were used. One or two more loads will be needed to bring both spots up to grade.

One additional larger soft spot, again near SS-18, was excavated. Due to the close proximity to subgrade, it was determined that an alternate correction method using soil web should be attempted. If successful, this method can be used for other such close to the surface soft spots.

Continued hauling cushion material. Soil was imported from the tested stockpile at the Centennial pit with four end dump trucks and placed on the previously proof rolled NW corner. Prior to cushion soil placement, the surface was conditioned with the Cat 825 compactor. Soil was pushed over with the D-6 LGP dozer, but was not compacted.

QC Action Items:

ACTION	COMPLETED
Daily Photographs	10-20
Rocky Flats alluvium & Cushion soil inspection	10-20
Lift thickness	10-20
Roll Inspections	10-20

5-16-05

205 6" Cushion

Summarized from Production Reports

Date	Haul Unit	Loads	Tons Per Day	Cubic Yards Today	Cubic Yards to Date
19-Oct	Centennial		1560.43	1040.2867	1040.29
20-Oct	Centennial		1160.13	773.4200	1813.71
21-Oct	Centennial		918.2	612.1333	2425.84
				0	2425.84
				0	2425.84
				0	2425.84
				0	2425.84
				0	2425.84
				0	2425.84
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				0	2425.84
				0	2425.84
				0	2425.84
				0	2425.84
				0	2425.84
				0	2425.84
				0	2425.84
Total to Date			3638.76	2425.84	
2004 Total				2425.84	

Other Meetings: Met with Nielson, Tetra Tech, and Stoller about how to best address the problem with the soft spots in the northwestern addition to the cap. Since removing one foot of fill and replacing it with rock did not completely remediate the soft spots we decided to cut down to a depth of 3 feet in the very wet places and cut down an area 5 foot around the soft spots one foot. This five foot perimeter would allow for geogrid and fabric to be placed over the soft spots after the excavated pit was allowed to dry out until Monday.

QC SME
~~CQA~~ Monitor: _____ Date: 10/25/04
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 10/21/04 S M T W (T) F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy to clear **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1730, 11.0 hrs)
Matt Cashimer (0630-1800, 11.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- **6" Cushion Fill:** Nielson continued their haul of cushion soils for the first layer of cushion material with four Mack end dump trucks. The cushion material was spread out using a D6 dozer and left uncompacted to enable the material to dry out enough to allow for proper compaction at a future date in an area stretching 300 feet east from the west end of the landfill.
- **Regrade Cut & Fill:** Nielson hauled rocky flats alluvium cut from the adjusted perimeter channel around the graphite pile and hauled the material for placement on the cap. The material was hauled in by two Cat 633 scrapers and placed on the north side of the landfill.
- **Proof Rolling:** Nielson proof rolled a section adjacent to the cushion soil placement area on the south side of the cap stretching about 300 feet to the east.
- **Soft Spot Repair:** Nielson used a Cat 325 excavator to remove and replace fill in four soft spots. A fifth soft spot was repaired using a new method referred to as geocell (see below for geocell repair method). The four small wet spots noted from the previous days proof rolling were deemed acceptable after drying out overnight.
- **Liner Placement:** One load of GCL and one load of GDN were unloaded today.

See attached map for locations of construction activities.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Met with the CDPHE, EPA, Earth Tech, Kaiser Hill, Tetra Tech, and Stoller to observe a test proof rolling over the geocell remediated soft spot. It was decided that the geocell did help to prevent the deflection of the landfill surface, but was not adequate to meet specifications and therefore will be dug out to a depth of at least two feet and replaced with coarse fill materials.

dc

~~CQA~~ Monitor: _____ Date: 10/22/04

Approved by: _____ Date: 5-16-05

File No. _____

Client: RFETS
Project: Present Landfill
Project #:
Contractor(s) S.M. Stoller
Contractor Super(s): Curt Schroeder

Date: 10-21
Contract #:
Weather:
Temp. (approx) High:70 **Low: 46**
Dry

Daily Notations

Neilson's scraper hauled rocky flats alluvium from the 280 pile with Cat 633 scrapers. Soil was placed in 1 foot lifts on the north side of the landfill. Once placed in loose lifts, the rocky flats alluvium was smoothed out with the dozer and compacted by a Cat 825 making four passes. The 280 pile soil was observed. No rocks >6" were observed. From visual observation only, the soil appears to be close to optimum moisture content.

Neilsons also re-graded the inert spot area in the NW corner. The perimeter channel was re-aligned and the inert area was brought up to the new grade.

An area approximately 350' x 250' was proof rolled along the south edge of the cap. It was rolled with 2 passes of a loaded Cat 633 scraper. Approximately 6 suspect soft spots were identified for further investigation. No soft spot corrections were made.

The soft spot test area corrected with the soil cell material was rolled with a loaded Cat 633. Excessive deflection was observed. The area will be re-excavated, filled with rock layer material and re-compacted.

A Cat 325 excavator was uses to remove and replace fill at four soft areas along the crest. Spots were excavated, to approximately 18 inches deep, then filled with rock layer material.

Continued hauling cushion material. Soil was imported from the tested stockpile at the Centennial pit with four end dump trucks and placed on the previously proof rolled NW corner. Cushion soil has been spread over the west tip except the blister area. Four trucks of cushion soil were rejected because of oversized material in the cushion soil. A meeting has been scheduled with Centennial to remedy the situation.

17 Rolls of GCL and 48 Rolls of GDN were unloaded, inspected and logged in.

QC Action Items:

ACTION	COMPLETED
Daily Photographs	10-21
Rocky Flats alluvium & Cushion soil inspection	10-21
Lift thickness	10-21
Roll Inspections	10-21

5-16-05

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 10/22/04 S M T W T (F) S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** Moderate to High

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1730, 11.0 hrs)
Matt Cashimer (0630-1730, 11.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- 6" Cushion Fill: Nielson continued their haul of cushion soils for the first layer of cushion material with four Mack end dump trucks. The cushion material was spread out using a D6 dozer and left uncompacted to enable the material to dry out enough to allow for proper compaction at a future date in an area stretching 300 feet east from the west end of the landfill.
- Regrade Fill: Nielson hauled rocky flats alluvium cut from the adjusted perimeter channel around the graphite pile and hauled the material for placement on the cap. Later in the day fill material was brought in from the 280 pile for placement on the cap. The material was hauled in by two Cat 633 scrapers and placed on the south side of the landfill.
- Proof Rolling: Nielson proof rolled a section east of the crest of the cap that was within the approved western cap area, but left unrolled because of concrete and rebar that was previously at surface. They also proof rolled the small section of cap which was added in the northwestern quadrant because of the graphite waste material found there.
- Soft Spot Repair: Nielson used a Cat 325 excavator begin removing material from wet spots on the small northwestern cap addition. The radiation control technician shut down the operation due to high wind and the potential for radiation dispersion if any radioactive materials were in fact encountered.
- Liner Placement: Two loads of GCL were unloaded today.

See attached map for locations of construction activities.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: 1130 meeting: Met with Paragon and Golder project manager, pertaining to the methods to be used for attaining survey coordinates on all data determined necessary for the job. Decided that Golder would provide a map labeling any density test run that day along with a as hand drawn as built of the GCL, FML, and GDN placed that day. Paragon would provide a copy of their field notes for the day pertaining to liner and density tests and a list of coordinates for all liner points and density test locations surveyed on that day by the end of the work day. When testing densities, test locations will be marked with pin flags stating the test number and the date it was taken.

1330 Meeting: Met with Nielson, Stoller, Colorado Lining, and Paragon and discussed production schedule informed them that Golder will have a third person at site.

QC
~~QA~~ Monitor: _____ Date: 10/23/04
Approved by: _____ Date: 5-16-05
File No. _____

205 6" Cushion

Summarized from Production Reports

Date	Haul Unit	Loads	Tons Per Day	Cubic Yards Today	Cubic Yards to Date
19-Oct	Centennial		1560.43	1040.2867	1040.29
20-Oct	Centennial		1160.13	773.4200	1813.71
21-Oct	Centennial		918.2	612.1333	2425.84
22-Oct	Centennial		347.74	231.8267	2657.67
			447.49	298.3267	2955.99
				0	2955.99
				0	2955.99
				0	2955.99
				0	2955.99
				0	2955.99
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				0	2955.99
				0	2955.99
				0	2955.99
				0	2955.99
				0	2955.99
				0	2955.99
Total to Date			4433.99	2955.99	
2004 Total				2955.99	

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 10/25/04 S (M) T W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy to Clear **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1800, 11.5 hrs)
Matt Cashimer (0630-1730, 11.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- **6" Cushion Fill:** Nielson continued their haul of cushion soils for the first layer of cushion material with four Mack end dump trucks. The cushion material was spread out using a D6 dozer and left uncompacted to enable the material to dry out enough to allow for proper compaction at a future date in an area stretching 300 feet east from the west end of the landfill.
- **Regrade Fill:** Nielson hauled rocky flats alluvium from the 280 pile for placement on the cap. The material was hauled in by three Cat 633 scrapers and placed on the south side of the landfill.
- **Proof Rolling:** Nielson proof rolled the trash disposal area located near the center of the cap on using a Cat 633 scraper, a section on the north side of the, which previously could not be rolled because of rebar at the surface, with a Cat 825 sheep-foot compactor and a small repaired soft spot on the northwestern edge of the cap also with the Cat 825 sheep foot compactor..
- **Soft Spot Repair:** Nielson used a Cat 950 front end loader and a Cat D6 dozer to repair the soft spot that appeared in the newly expanded portion of the north west corner of the cap. In this spot coarse rock was placed in the areas that were excavated below one foot and then fabric and geogrid were place on the soft spot followed by a foot of alluvial fill. The soft spot on the crest of the cap, including soft spots 10 and 11, that was previously remediated using the geocell material was ripped up to a depth of two to three feet using a Cat 325 excavator and the soft spot was left open to air out over night.
- **Liner Placement:** One load of GCL and one load of GDN were unloaded today.

See attached map for locations of construction activities.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Met with Nielson, and Stoller the moisture content of the cushion soils on the cap and decided to take three density tests to obtain estimates of moisture content. The results ranged from 8.6 to 10.2 percent. Average optimum moisture on cushion soils is between 10.4 and 12.5 percent.

QC SAE
~~CQA~~ Monitor: _____ Date: 5/16/05
Approved by: _____ Date: 5-16-05
File No. _____

Client: RFETS
Project: Present Landfill
Project #:
Contractor(s) S.M. Stoller
Contractor Super(s): Curt Schroeder

Date: 10-25
Contract #:
Weather:
Temp. (approx) High:52 **Low: 32**
Dry

Daily Notations

Neilson's scraper hauled rocky flats alluvium from the 280 pile with Cat 633 scrapers. Soil was placed in 1 foot lifts on the south side of the landfill. Once placed in loose lifts, the rocky flats alluvium was smoothed out with the dozer and compacted by a Cat 825 making four passes. The 280 pile soil was observed. From visual observation only, the soil appears to be close to optimum moisture content.

Neilsons also re-graded the inert spot area in the NW corner. A soft spot within the inert spot was excavated, filled with rock material, and brought back to finish subgrade elevations. Once at grade, Paragon performed the record survey. The entire west end is now at grade and the record subgrade survey has been completed.

The south debris area was covered with minimal rocky flats alluvium cover and compacted with the Cat 825. After compaction, the debris area was rolled with 2 passes of a loaded Cat 633 scraper. One large soft area was identified as an extension of soft spot 8. The additional soft spot 8 area was identified. As the spot was an extension of the original soft spot 8, the same correction was used. The area was covered with 8 oz geotextile, Tensar BX-1200 geogrid, and covered with Rocky Flats alluvium.

The soft spot on the crest of the landfill in the vicinity of SS-18 and SS-19 was partially excavated. Minimal trash was encountered. Soil was loaded into a Volvo A-35 haul truck, transported, and dumped on the east side of the landfill.

Continued hauling cushion material. Soil was imported from the tested stockpile at the Centennial pit with four end dump trucks and placed on the previously proof rolled NW corner.

17 Rolls of GCL and 24 Rolls of GDN were unloaded, inspected and logged in.

QC Action Items:

ACTION	COMPLETED
Daily Photographs	10-25
Rocky Flats alluvium & Cushion soil inspection	10-25
Lift thickness	10-25
Roll Inspections	10-25

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Met with Nielson, and Stoller the moisture content of the cushion soils on the cap and decided to take three density tests to obtain estimates of moisture content. The results ranged from 8.6 to 10.2 percent. Average optimum moisture on cushion soils is between 10.4 and 12.5 percent.

QC SAE
~~CQA~~ Monitor: _____ Date: 5/16/05
Approved by: _____ Date: 5-16-05
File No. _____

0.05' CUSHION THICKNESS REPORT 10-28-04

PT#	N	E	EXIST. G	cut fill 10/28	dzTOC1026	regrade cert	actual thickness cush 10-28	desgn thickness cushion	delta dz vs.actual thickness
3000	39399.99	19499.96	5994.41	-0.010	5994.40	5993.76	0.650	0.64	0.01
3001	39450.00	19500.05	5992.62	-0.220	5992.40	5991.89	0.730	0.51	0.22
3003	39500.01	19550.03	5991.55	-0.120	5991.43	5990.93	0.620	0.50	0.12
3004	39550.01	19549.96	5989.77	-0.245	5989.52	5989.02	0.745	0.50	0.24
4075	39349.99	19550.00	5994.82	-0.015	5994.80	5994.01	0.805	0.79	0.01
4076	39400.01	19550.02	5995.15	-0.045	5995.10	5994.40	0.745	0.70	0.05
4077	39450.01	19550.05	5993.53	-0.190	5993.34	5992.84	0.690	0.50	0.19
10001	39500.01	19450.02	5990.72	-0.135	5990.58	5990.08	0.635	0.50	0.14
10002	39450.01	19449.98	5992.51	-0.005	5992.50	5991.94	0.565	0.56	0.01
10005	39499.99	19499.99	5990.91	-0.215	5990.69	5990.19	0.715	0.50	0.22
10006	39550.01	19500.05	5989.04	-0.130	5988.91	5988.41	0.630	0.50	0.13
12000	39353.50	19499.94	5994.69	-0.085	5994.60	5994.02	0.665	0.58	0.09
12059	39570.71	19500.22	5988.12	-0.180	5987.94	5987.44	0.680	0.50	0.18
12060	39549.80	19459.82	5988.91	-0.175	5988.73	5988.23	0.675	0.50	0.18
12061	39529.22	19429.14	5989.61	-0.050	5989.56	5989.00	0.610	0.56	0.05
12062	39499.91	19418.68	5990.79	-0.050	5990.74	5990.24	0.550	0.50	0.05
12063	39449.90	19430.19	5992.72	-0.015	5992.70	5992.03	0.685	0.67	0.02
12064	39399.97	19457.65	5994.53	-0.020	5994.51	5994.01	0.520	0.50	0.02

205 6" Cushion

Summarized from Production Reports

Date	Haul Unit	Loads	Tons Per Day	Cubic Yards Today	Cubic Yards to Date
19-Oct	Centennial	53	1560.43	1040.2867	1040.29
20-Oct	Centennial	47	1103.52	735.6800	1775.97
21-Oct	Centennial	34	875	583.3333	2359.30
22-Oct	Centennial	15	347.74	231.8267	2591.13
23-Oct	Centennial	18	447.49	298.3267	2889.45
25-Oct	Centennial	7	169.53	113.02	3002.47
26-Oct	Centennial	30	727.58	485.0533	3487.53
				0	3487.53
				0	3487.53
				0	3487.53
				0	3487.53
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				0	3487.53
				0	3487.53
				0	3487.53
				0	3487.53
				0	3487.53
				0	3487.53
Total to Date		204	5231.29	3487.53	
2004 Total				3487.53	

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 10/26/04 S M (T) W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy to Clear **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1800, 11.5 hrs)
Matt Cashimer (0630-1730, 11.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- **6" Cushion Fill:** Nielson continued their haul of cushion soils for the first layer of cushion material with four Mack end dump trucks. The cushion material was spread out using a D6 dozer and regarded using a Cat 14-100 grader. Cushion soils were graded to within a tolerance of 2 tenths of a foot and compacted using a Cat 583 C vibratory roller. The area where this worked occurred is from the western edge to 300 feet east of the western edge. The Cushion soils being placed were observed to be free of rocks larger than ½ inch and free from trash or organic debris.
- **Regrade Fill:** Nielson hauled rocky flats alluvium from the 280 pile for placement on the cap next to soft spot #8 in lifts no greater than 1 foot. A Cat 825 sheep foot compacter made at least four passes on all material place.
- **Proof Rolling:** Nielson proof rolled an area in the northern section of the cap which includes the previously remediated soft spots 13, 14 and, 15
- **Soft Spot Repair:** Nielson used a Cat 330 track-hoe to finish cleaning out the area on top of the cap that encompasses soft spots 10 and 11. After all wet material was removed the bottom of the excavated area was rolled with a CS 583 C vibratory roller. Lastly fabric and geogrid were placed in the soft spot and one to two foot of coarse rock was placed above the geogrid. Nielson place some more fabric and geogrid over a newly found section of soft spot #8 and placed some coarse rock fill over top of that soft spot. Nielson used a Cat D6 dozer to remove wet material from a wet spot observed on the north side of the cap within the area proof rolled today.
- **Liner Placement:** One load of GCL was unloaded today.

See attached map for locations of construction activities.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Met with Paragon, Stoller, Kaiser Hill, and Tetra Tech to discuss what would be necessary to have surveyed with respect to geosynthetic materials. It was decided that all deployed GCL, FML, and GDN panels will need to be surveyed on a daily basis. In addition all repairs to the liner will also be surveyed on a daily basis.

QC
~~CQA~~ Monitor: _____ Date: 10/27/04
Approved by: _____ Date: 5-16-05
File No. _____

Client: RFETS
Project: Present Landfill
Project #:
Contractor(s) S.M. Stoller
Contractor Super(s): Curt Schroeder

Date: 10-26
Contract #:
Weather:
Temp. (approx) High: 57 **Low: 33**
Dry

Daily Notations

Neilsons hauled rocky flats alluvium from the 280 pile to an area near SS-8. Soil was placed in lifts not greater than 1' and compacted with four passes of the Cat 825 sheepsfoot roller. The 280 pile was inspected. Rocks have been found greater than 6" have been found. Stoller has verbal ok to proceed, an RFI has been submitted regarding rock size. The pile appears to be close to optimum, but on the wet side.

Also hauled cushion soil to the west edge. Grade is checked by survey at Neilson's request. Laborers have been assigned to pick any non-conforming material from the grade.

Soft spots 13, 14, and 15 were proof rolled and found acceptable.

Continued to correct the SS-8 addition with additional geotextile, geogrid, and rocky flats alluvium and coarse rock.

17 rolls of GCL were unloaded, visually inspected, and found acceptable.

QC Action Items:

ACTION	COMPLETED
Visually inspect rocky flats alluvium	10-26
Inspect liner materials	10-26
Lift thickness & roll passes	10-26
Daily Photographs	10-26

Job No: 043-2246 Report No. 102704MSPDaily

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 10/27/04 S M (T) W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy to Clear **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0600-1700, 11.0 hrs)
Matt Cashimer (0630-1730, 11.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- **6" Cushion Fill:** Nielson regarded cushion on the crest of the cap. The cushion material was spread out using a D6 dozer and regarded using a Cat 14-100 grader. Cushion soils were graded to within a tolerance of 2 tenths of a foot and compacted using a Cat 583 C vibratory roller. The area where this worked occurred is from the western edge to 300 feet east of the western edge. The Cushion soils being placed were observed to be free of rocks larger than ½ inch and free from trash or organic debris.
- **Regrade Fill:** Nielson hauled rocky flats alluvium from the 280 pile for placement on the crest of the cap and east of soft spot #8. No compaction was done on these soils today.
- **Seep Remediation:** Nielson removed saturated materials form the seep on the far east end of the landfill using a Cat 325 excavator. Once the saturated materials were removed PVC liner was then placed in the bottom of the excavated area.
- **Liner Placement:** Two loads of GCL were unloaded today.

See attached map for locations of construction activities.

SUMMARY OF QC TESTING:

Test #	% off MC	% Comp.	Pass/Fail
CL-001	-0.6	101.2%	PASS
CL-002	-0.2	101.5%	PASS
CL-003	0.3	96.6%	PASS
CL-004	-0.1	98.3%	PASS
CL-005	0.4	97.7%	PASS
CL-006	-1.0	95.2%	PASS
CL-007	-0.8	99.7%	PASS
CL-008	0.3	96.8%	PASS
CL-009	-0.6	102.0%	PASS

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Met with Paragon, Colorado Lining, and Stoller to discuss the procedures to be used to ensure that all survey is picked up and testing is documented. Decided to have Paragon mark all GCL and FML panel corners that have been surveyed with blue spray paint and ignition the panel corners and defects that they log with the initials PLC on the FML. We also decided to have Paragon hand in a list of all survey taken that day and have a copy of the points taken that day listed for QC to look at to ensure that all survey is in.

QC
~~CQA~~ Monitor: _____ Date: 10/28/04
Approved by: _____ Date: 5-16-05
File No. _____

Quality Control Report

Client: RFETS
Project: Present Landfill
Project #:
Contractor(s) S.M. Stoller
Contractor Super(s): Curt Schroeder

Date: 10-27
Contract #:
Weather:
Temp. (approx) High: **Low:**
Dry

Daily Notations

See attached Golder Report.

QC Action Items:

ACTION	COMPLETED
Visually inspect rocky flats alluvium	10-27
Inspect liner materials	10-27
Lift thickness & roll passes	10-27
Daily Photographs	10-27
Compaction Nuclear Density Testing	10-27

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 10/28/04 S M T W (T) F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy to Clear **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0600-1700, 11.0 hrs)
Matt Cashimer (0630-1800, 11.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- **6" Cushion Fill:** Nielson regarded cushion on the crest of the cap. The cushion material was spread out using a D6 dozer and regarded using a Cat 14G grader. Cushion soils were graded to within a tolerance of 2 tenths of a foot and compacted using a Cat 583 C vibratory roller. The area where this work occurred is from the western edge to 300 feet east of the western edge. The Cushion soils being placed were observed to be free of rocks larger than ½ inch and free from trash or organic debris.
- **Regrade Fill:** Nielson hauled rocky flats alluvium from the 280 pile for placement on the crest of the cap and east of soft spot #8. An Cat 825 sheep foot compactor compacted fill by making four passes the material.
- **Soft Spot Repair:** Nielson used a Cat 325 excavator to remove wet fill from a section along the Eastern cap and haul it away with a Volvo end dump. Nielson also backfilled two wet spot that had previously been left open to dry with rocky flats alluvium.
- **Liner Placement:** Colorado Lining was approved to deploy GCL onto a section of cushion from the west end to 80 feet east of the west end. Four panels and 5,836 ft^2 of GCL were place with one defect marked. Survey of all GCL points were taken and 60 mil LLDPE (FML) was then ready to be deployed. One panel and 4,658 ft^2 of FML were deployed. No seaming was done, and no defects or destructs were marked on the FML. No additional survey was need on the FML layer. Remaining GCl not covered was tucked under the FML and

See attached map for locations of construction activities.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Met with Kaiser Hill and Stoller to discuss if it was necessary to record and survey defects noted in the GCL. Decided to log the defects and their repairs for the GCL layer by naming them DS-#-letter and survey would need to pick up any survey coordinates associates with the defects.

QC SAE
CQA Monitor: _____ Date: 10/29/04
Approved by: _____ Date: 8-22-05
File No. _____

Job No: 043-2246 Report No. 102904MSPDaily

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 10/29/04 S M T W T (F) S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy to Clear **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0600-1100, 5.0 hrs)
Matt Cashimer (0630-1100, 4.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

No work due to excessive wind.

SUMMARY OF QC TESTING: Grabbed two pit run samples from the Centianial pit run material for use as Rocky Flats Alluvium. APR-1 and APR-2

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: none

Other Meetings: none

QC SME
~~CQA Monitor~~: _____ Date: 10/30/04
Approved by: _____ Date: 5-16-05
File No.

6661	39555.31	19470.81	5988.68	S3/S6
6662	39547.68	19456.68	5988.8	S6/S8
6663	39519.79	19470.61	5990.23	S3/S5/S6
6664	39505.02	19470.64	5990.94	S3/S4/S5
6665	39379.26	19470.95	5994.61	S4/S5
6666	39402.8	19456.55	5994.42	S5/S7
6667	39498.78	19456.45	5991.02	S5/S7/S8
6668	39519.97	19456.37	5990.04	S5/S6/S8
6669	39538.92	19442.22	5989.34	S8/S10
6670	39514.67	19442.19	5990.23	S8/S9/S10
6671	39498.84	19442.27	5990.94	S7/S8/S9
6672	39427.38	19442.4	5993.59	S7/S9
6673	39426.98	19443.47	5993.58	DS-1B
6674	39524.83	19427.88	5989.9	S10/S11
6675	39514.83	19427.85	5990.39	S9/S10/S11
6676	39455.03	19428.27	5992.41	S9/S11
6677	39469.58	19423.09	5992.12	S11
6678	39490.29	19420.16	5991.25	S11
6679	39509.24	19420.55	5990.4	S11
6680	39518.82	19425.82	5990.29	DS-1C

Job No: 043-2246 Report No. 103004MSPDaily

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 10/30/04 S M T W T F (S)

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy to Clear **WIND:** low to moderate

GAI PERSONNEL HOURS CHARGED:

Matt Cashimer (0630-1630, 10 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- **Liner Placement:** Colorado Lining was approved to deploy GCL onto a section of cushion from the west end to 80 feet east of the west end. Seven panels and 6,175 ft^2 of GCL were place with two defects marked and repaired. Total GCL placement to date is 12,012 ft^2. Survey of all GCL points were taken and 60 mil LLDPE (FML) was then ready to be deployed. Three panels and 7,438 ft^2 of FML were deployed. Total FML deployed to date is 11,992ft^2. A trail seam was performed before seaming began. Seaming was performed, and one destruct, DFp-001, was marked on the FML. No additional survey was need on the FML layer.
- **Liner Delivery:** Two truck loads of GCL were delivered today.

See attached map for locations of construction activities.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: None

QC SAE
~~CQA~~ Monitor: Matt Cashimer Date: 10/30/04
Approved by: [signature] Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 11/1/04 S (M) T W T F S

PRECIPITATION: **AM:** snow **PM:** none

CLOUD COVER: Overcast to Partly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Patrick Harrell

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

None.

Geosynthetics

- GCL: none.
- FML: none.
- GDN: none.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: none
Other Meetings: none

QC JAE
~~CQA~~ Monitor: _____ Date: 11/3/04
Approved by: _____ Date: 5/6-05
File No. _____

Client: RFETS
Project: Present Landfill
Project #:
Contractor(s) S.M. Stoller
Contractor Super(s): Curt Schroeder

Date: 11-02
Contract #:
Weather:
Temp. (approx) High: **Low: 18**

Daily Notations

Frozen subgrade in AM.

Stripped topsoil from the SE perimeter ditch and hauled to topsoil stockpile. Also place rocky flats alluvium from the SE perimeter to the subgrade. Started to haul rocky flats alluvium from stockpile, but stopped operation due to frozen subgrade and stockpile material.

No liner work due to wet/frozen subgrade.

Replaced the soft spots just east of the in place liner that had been removed due to excess moisture.

Unloaded two loads of GDN, inspected and logged GND in.

Dozed trash from a spot located between soft spots 8 and 15. Material was placed in the northeast section of the landfill.

QC Action Items:

ACTION	COMPLETED
Inspect liner materials	11-02
Inspect subgrade	11-02
Daily Photographs	11-02

5-16-05

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 11/02/04 S M (T) W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy to Clear **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Patrick Harrell (0600-1530, 9.5 hrs)
Matt Cashimer (0600-1530, 9.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- Regrade Cut: Nielson removed material along the southeastern edge of the landfill using a Cat 633 scraper and a D6 dozer to dig the diversion ditch.
- Regrade Fill: Nielson used the material from the excavation of the diversion ditch to use as fill material. A Cat 825 sheep foot compacter made at least four passes on all material placed. This material was placed on the crest of the cap and to the north. A motor grader was used to even out the material.
- Liner Placement: Liner QC work included pressure testing of the seams, repairs, vacuum testing of extrusion welds, trial seams and destructive testing. One destruct, DFp-001, was tested and passed. Walked the liner and approved it for backfill of anchor trench and placement of GDN on top after Paragon has completed survey of the liner. One load of GCL was unloaded today. One wet spot was noted on the southern end of the liner, and along the eastern edge of the liner.

See attached map for locations of construction activities.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: 1330: Discussed using a tarp to cover prepared 6" cushion layer to prevent saturation. Will be implemented as soon as possible. Discussed who is responsible for maintenance of anchor trench until it is backfilled. CLC will be responsible for it when there is liner placed in it, otherwise Nielsons will be responsible for it.

Job No: 043-2246

Report No. 110204MSPDaily

QC
~~EQA~~ Monitor: Matt Cushner Date: 11/2/04
Approved by: [signature] Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 11/03/04 S M T (W) T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy to Clear **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0900-1130, 2.5 hrs)
Matt Cashimer (0600- 1730, 11.5 hrs)
Patrick Harrell (0600- 1730, 11.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **6" Cushion Fill:** A wet spot located at the southeastern edge of the FML was removed using a T300 bobcat and dry material was placed using a T300 bobcat and compacted using a WP 1550 vibratory hand compactor.
- **Regrade Cut:** Nielson removed material located on the southeastern edge of the landfill to cut the perimeter trench using a D6 dozer and two Cat 633 scrapers. Material was also removed using a trackhoe and Volvo truck.
- **Regrade Fill:** Nielson used the material from the perimeter trench to fill the area located on the crest of the cap and north of soft spot 8. Material removed from a soft spot located north of soft spot 8 was used to fill the northeast section of land fill. Material that was excavated from the pond was placed on the cap using two Cat 633 excavators. A 825 sheepsfoot compactor was used to compact the fill
- **Soft Spot Repair:** Nielson used a D6 dozer to remove wet fill and garbage from a section between soft spot 8 and soft spot 15. This material was placed in the northeast section of the landfill.

See attached map for locations of construction activities.

Geosynthetics

- **GCL:** approximately a 55 foot section of panel S-1 was removed due to saturation. This area was replaced with panels S-12 and S-13. One repair was made on panel S-2
- **FML:** none
- **GDN:** none

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Met with Stoller and Colorado Lining to discuss the progress of the project, and ways to increase production. Progress is approximately 220,000 ft^2 behind schedule and approximately 7 to 10 days behind schedule. The ways to increase deployment include the use of a tarp to cover the cushion layer in the event of precipitation, and bringing in more people to place geosynthetics either before everyone else arrives on site, or after everyone else leaves for the end of the day.

QC
~~CQA~~ Monitor: Matt Cushmer Date: 11/3/04
Approved by: [signature] Date: 5-16-05
File No.

SUBGRADE ACCEPTANCE FORM

The subgrade from S-13 → 80' East of edge to ~180' East of West End, has been moisture conditioned and compacted according to specifications. This area has been tested for both moisture and density using a nuclear density gauge and/or sand cone tests at specified testing intervals. The area specified above has met all specifications for the 6-inch cushion soil including specification given on its gradation, layer thickness, moisture content and dry density. A visual inspection of this area has been conducted to ensure that the cushion soil is above 32 degrees Fahrenheit, and free of standing water debris and any sharp corners or protrusions that could put excessive stress on the GCL or FML. This area has met all specifications and is approved for liner placement on November 14 12004.

QC Representative	Company	Date 11/4/04
QA Representative	Company	Date 11-4-04

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 11/04/04 S M T W (T) F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy to Mostly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0800- 1400, 6 hrs)
Matt Cashimer (0600- 1830, 12.5 hrs)
Patrick Harrell (0600- 1830, 12.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **6" Cushion Fill:** Cushion fill was brought in and placed with a D6 dozer on the south side of the landfill. It was compacted with a CS 583C smooth drum vibratory roller.
- **Regrade Cut:** Nielson removed material located on the southeastern edge of the landfill perimeter trench with a D6 dozer and spread it out north of the perimeter trench.
- **Regrade Fill:** Nielson brought in fill material east of soft spot 8 using two Cat 633 scrapers. The fill material was spread with a D6 dozer and compacted with a 825 sheepsfoot. Fill material was also placed north of the crest to the northeast edge of the landfill and compacted.
- **Soft Spot Repair:** Nielson placed tensar in two soft spots located north of soft spot 8 and backfilled then with rocky flats alluvium.
- **Gas Vent System:** A gas vent trench was dug 1 foot deep into the cushion soil approximately 180 feet east of the west end of the landfill using a 426B wheel loader and a 950B front end loader. The trench was filled with 4" of gravel and a 4" pipe was placed in. The pipe was checked to insure that there was 4" of clearance above the highest point of the pipe. The remaining area was backfilled, and the pipe was observed not to move off center.

See attached map for locations of construction activities.

Geosynthetics

- **GCL:** Deployment and repairs were performed today. Daily total: 30,867 ft^2. Project total: 42,855 ft^2.
- **FML:** Trial seams, deployment, and pressure testing were performed today. Daily total: 29,546 ft^2. Project total: 41,538 ft^2.
- **GDN:** none

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings:

QC
CQA Monitor: Matt Cashmer Date: 11/4/04
Approved by: [signature] Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 11/05/04 S M T W T (F) S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy to Mostly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0800- 1400, 11.0 hrs)
Matt Cashimer (0600- 1830, 11.5 hrs)
Patrick Harrell (0600- 1830, 11.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- 6" Cushion Fill: Cushion fill was brought in with Mach end dumps and placed with a D6 dozer on the south side of the landfill approximately 300 to 500 feet off the west end of the cap. It was compacted with a CS 583C smooth drum vibratory roller.
- Regrade Cut: Nielson removed material located on the southeastern edge of the landfill perimeter trench using Cat 633 scrapers and placed the material on the cap.
- Regrade Fill: Nielson brought in fill material east of soft spot 8 using two Cat 633 scrapers. The fill material was spread with a D6 dozer and compacted with a Cat 825 sheep-foot. Fill material was also placed north of the crest to the eastern side of the cap.
- Gas Vent System: Nielson placed 4" HDPE pipe into the gas vent trench on the north side of the cap approximately 200 feet from the edge of the cap to 380 feet from the edge of cap. The trench was filled with gravel to a height of 4" above the HDPE pipe.

See attached map for locations of construction activities.

Geosynthetics

- GCL: Deployment and repairs were performed today. Daily total: 30,867 ft^2. Project total: 42,855 ft^2.
- FML: Trial seams, deployment, and pressure testing were performed today. Daily total: 29,546 ft^2. Project total: 41,538 ft^2.
- GDN: none

SUMMARY OF QC TESTING:

Test #	% off MC	% Comp.	Pass/Fail
CL-015	-1.0	105%	PASS
CL-016	0.0	98%	PASS
CL-017	-0.3	98%	PASS
CL-018	-1.6	95%	PASS
CL-019	-1.5	96%	PASS
CL-020	1.1	97%	PASS

Took a bucket Sample of drainage rock for sieve analysis at Golder's laboratory.
Took a moisture content into be weighted for CI-20 and for CLS-1 which is the first land cone test results to be submitted when moisture content has been returned.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: none

DC
~~CQA~~ Monitor: _____ Date: _____
Approved by: _____ Date: 5-16-05
File No. _____

SUBGRADE ACCEPTANCE FORM

The subgrade from S-43/44/45 to S-60/61/62/63, STATION 19750 has been moisture conditioned and compacted according to specifications. This area has been tested for both moisture and density using a nuclear density gauge and/or sand cone tests at specified testing intervals. The area specified above has met all specifications for the 6-inch cushion soil including specification given on its gradation, layer thickness, moisture content and dry density. A visual inspection of this area has been conducted to ensure that the cushion soil is above 32 degrees Fahrenheit, and free of standing water debris and any sharp corners or protrusions that could put excessive stress on the GCL or FML. This area has met all specifications and is approved for liner placement on 11/18/04.

QC Representative	Company	Date 11/8/04
QA Representative	TETRA TECH NUS Company	Date 11/8/04

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 11/06/04 S M T W T F (S)

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy to Mostly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0800- 1400, 8.0 hrs)
Matt Cashimer (0600-1400, 8.0 hrs)
Patrick Harrell (0600- 1330, 7.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **6" Cushion Fill:** Cushion fill was brought in with Mach end dumps and placed with a D6 dozer on the south side of the landfill approximately 300 to 600 feet off the west end of the cap. It was compacted with a CS 583C smooth drum vibratory roller. A 14G grader was used to grade the cushion to the proper thickness.
- **Regrade Fill:** Nielson brought in fill material from the 280 pile for placement on the north side of the cap by three Cat 633 scrapers. The fill material was spread with a D6 dozer and compacted with a Cat 825 sheep-foot compactor.

See attached map for locations of construction activities.

Geosynthetics

- **GCL:** one repair done today
- **FML:** Trial seams, destructive tests, repairs, pressure testing, and vacuum testing were conducted today.
- **GDN:** none

SUMMARY OF QC TESTING:

Pulled destructive tests pulled and all passed. The test names area DFp-002, DFp-003, and DFp-004.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: none

~~CQA~~ DC SAE Monitor: _____ Date: 11/8/04

Approved by: _____ Date: 5-16-05

File No. _____

SAND CONE DENSITY TEST

Golder Associates

Test #	CLS-1

Date	11/5/04

Weight of Wet Material	1633.1	g

Density of Sand	96.1	lb/ft3
Soil ID	TF-09	
Optimum Dry Density	125.1	lb/ft3
Optimum Moisture	10.4	%

Cone and Plate #	2	
Bottle ID	Q	
Start Wt of Bottle and Sand	6622.2	g
Finish Wt of Bottle and Sand	3786.3	g

Moisture Content

Tare Wt	97.0	g
Plate + Wet Soil	1730.1	g
Plate + Dry Soil	1589.9	g
Dry Soil	1492.9	g
Moisture	140.2	g
% Moisture	9.4	%

Volume Calculaiton

Wt of Sand Used	2835.0	g
Wt of Sand Used	6.3	lb
Volume of Sand	0.0651	ft3
Volume of Cone & Plate	0.0379	ft3
Sand Volume Minus Cone & Plate	0.0272	ft3

Wet Density	132.4	lb/ft3
Dry Density	121.1	lb/ft3

Specificaitons

		Pass/Fail
95% of Standard Proctor	97%	Pass
+2% Moisture Content	10	Pass

Tech	MSP

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 11/08/04 S (M) T W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy to Mostly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0800- 1400, 11.0 hrs)
Matt Cashimer (0600-1400, 11.5 hrs)
Patrick Harrell (0600- 1330, 11.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- 6" Cushion Fill: Cushion fill was graded using a Cat 14G grader on an area 300 to 600 feet east of the west end of the cap. It was compacted with a CS 583C smooth drum vibratory roller.
- Regrade Fill: Nielson used a 14G grader to grade the area 300' east of the eastern edge of the cushion soil.
- Gas Vent System: Nielson dug out 80 feet of gas vent trench along the crest of the cap and 20 feet along the north side of the cap to a depth of at least 12 inches. The trench was then filled with 6 to 8 inches of drainage rock. 4 inch HDPE pipe was then placed into the gas vent trench and then the trench was filled with drainage rock around and above the 4 inch pipe.

See attached map for locations of construction activities.

Geosynthetics

- GCL: Deployment and repairs were conducted on the GCL today. A total of 18 panels, or 27,032 ft^2, were deployed today. Total for project to date 85,972 ft^2
- FML: Trial seams, a detructive, fusion seaming and deployment occurred on FML today. A total of 5 panels, or 25,344 ft^2, were deployed today. Total for project to date 81,545 ft^2
- GDN: none

b

SUMMARY OF QC TESTING:

Test #	% off MC	% Comp.	Pass/Fail
CL-021	-1.9	98%	PASS
CL-022	-1.5	99%	PASS
CL-023	-0.3	98%	PASS
CL-024	-0.5	98%	PASS
CL-025	-1.7	96%	PASS
CL-026	-0.3	97%	PASS

Pulled one destructive test with passing results. (Test DFp-005) Received final data on Sand Cone test CLS-1. Took two bucket samples of cushion soils from the centennial pit for verification of material type.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Spoke with Stoller and decided to obtain two cushion soil samples from Centenial from their freshly produced piles of material to confirm that the material being produced is the same as the material that was tested before the start of the project.

QC JAE
~~CQA~~ Monitor: _____ Date: 11/9/09
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 11/09/04 S M (T) W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy to Clear **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0800- 1700, 11.0 hrs)
Matt Cashimer (0600-1800, 12.0 hrs)
Patrick Harrell (0600- 1800, 12.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **6" Cushion Fill:** Cushion fill was graded using a Cat 14G grader on an area 300 to 600 feet east of the west end of the cap. It was compacted with a CS 583C smooth drum vibratory roller.
- **Regrade Cut:** Nielson used a Cat 633 scraper to cut material from the south eastern portion of the cap for a few hours in the morning.
- **Regrade Fill:** Nielson used the material cut from the southeastern section of the cap to fill an area on the north side of the cap near the two soft spots #21 and #22. In the afternoon Nielson switched over to using regrade fill (Rocky Flats Alluvium) as fill in the area stated previously. Material was dumped by a Cat 633 scraper in the morning and end dump trucks in the afternoon. A Cat D6 dozer was used to place fill and a Cat 825 sheep-foot compactor was used to compact the material by making four passes over the one foot lifts of fill.
- **Test Fill:** Nielson used a end dump trucks to place regrade fill on a test pad area at the east end of the cap in two one foot lifts. Each lift was compacted by a Cat 825 sheep-foot compactor that made four passes on the fill material per lift. Once both lifts were finished a fully loaded Cat 633 scraper was used to proof roll the fill area. Two test pits were dug in the test pad to confirm the compaction of the regrade fill.

See attached map for locations of construction activities.

Geosynthetics

- **GCL:** Deployment and repairs were conducted on the GCL today. A total of 26 panels, or 40,849 ft^2, were deployed today. Total to date 126,818 ft^2.

- FML: Trial seams, a detructive, fusion seaming and deployment occurred on FML today. A total of 6 panels, or 41,107 ft^2, were deployed today. Total to date 122,652 ft^2.
- GDN: none

SUMMARY OF QC TESTING:

Ran two extrusion trial welds (TX-007, and TX-008) and two fusion trial welds (TF-012 and TF-013).

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Met with Paragon to go over survey for the previous day. All covered GCL accounted for through S-89, and on FML through P-15.

QC ~~CQA Monitor~~: _____ Date: 11/10/04
Approved by: _____ Date: 5-16-05
File No. _____

Job No: 043-2246 Report No. 111004MSPDaily

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 11/10/04 S M T (W) T F S

PRECIPITATION: **AM:** showers **PM:** showers

CLOUD COVER: Overcast **WIND:** low with some high gusts

GAI PERSONNEL HOURS CHARGED:

Michael Place (0600- 1200, 6.0 hrs)
Matt Cashimer (0600-1200, 6.0 hrs)
Patrick Harrell (0600- 1200, 6.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Regrade Cut:** Nielson used a Cat 633 scraper to cut material from the north-eastern portion of the cap.
- **Regrade Fill:** Nielson placed fill from the regrade cut area and from Centenial on the north-eastern portion of the cap.

See attached map for locations of construction activities.

Geosynthetics

- **GCL:** none
- **FML:** none
- **GDN:** none

Unloaded 2 loads of GDN

SUMMARY OF QC TESTING:

Ran three destructs today with passing results. (DFp-006, DFp-007, & DPp-008)

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Met with Paragon to go over survey for the previous day. All covered GCL accounted for through S-89, and on FML through P-15.

QC JAC
~~CQA~~ Monitor: _____ Date: 11/11/04
Approved by: _____ Date: 5-16-05
File No.

Job No: 043-2246 Report No. 111104MSPDaily

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 11/11/04 S M T W (T) F S

PRECIPITATION: **AM:** showers **PM:** showers

CLOUD COVER: Overcast **WIND:** low with some high gusts

GAI PERSONNEL HOURS CHARGED:

Michael Place (0600- 0800, 2.0 hrs)
Matt Cashimer (0600-0800, 2.0 hrs)
Patrick Harrell (0600- 0800, 3.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

none

Geosynthetics

- GCL: none
- FML: none
- GDN: none

SUMMARY OF QC TESTING:

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: none

QC JAE
~~QA~~ Monitor: _____ Date: 11/12/04
Approved by: _____ Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 11/12/04 S M T W T (F) S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Mostly Cloudy to Overcast **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0600- 1700, 11.0 hrs)
Matt Cashimer (0600-1730, 11.5 hrs)
Patrick Harrell (0600- 1730, 11.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Regrade Cut:** Nielson used two Cat 633 scrapers to cut material from the northeastern portion of the cap.
- **Regrade Fill:** Nielson placed fill on the eastern edge of the cap. Regrade fill was brought in by two Cat 633 scraper, Volvo end dumps and Centennial's end-dump trucks. Fill was compacted by making at least four passes over the one foot lifts of fill with a Cat 825 sheep-foot compactor.

Geosynthetics

- **GCL:** none
- **FML:** none
- **GDN:** Colorado Lining placed 31 panels, or 39,251ft^2 of GDN today.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.
Other Meetings: none

QC JAE
CQA Monitor: _____ **Date:** 11/15/04
Approved by: _____ **Date:** 5-16-05
File No.

Job No: 043-2246 Report No. 111204MSPDaily

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 11/12/04 S M T W T (F) S

PRECIPITATION: AM: none PM: none

CLOUD COVER: Mostly Cloudy to Overcast **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0600- 1700, 11.0 hrs)
Matt Cashimer (0600-1730, 11.5 hrs)
Patrick Harrell (0600- 1730, 11.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Regrade Cut:** Nielson used two Cat 633 scrapers to cut material from the northeastern portion of the cap.
- **Regrade Fill:** Nielson placed fill on the eastern edge of the cap. Regrade fill was brought in by two Cat 633 scraper, Volvo end dumps and Centennial's end-dump trucks. Fill was compacted by making at least four passes over the one foot lifts of fill with a Cat 825 sheep-foot compactor.

Geosynthetics

- **GCL:** none
- **FML:** none
- **GDN:** Colorado Lining placed 31 panels, or 39,251ft^2 of GDN today.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.
Other Meetings: none

QC SME
~~CQA~~ Monitor: _____ Date: 11/15/04
Approved by: _____ Date: 5-16-05
File No. _____

Job No: 043-2246 Report No. 111504MSPDaily

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 11/15/04 S (M) T W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0600- 1600, 10.0 hrs)
Matt Cashimer (0600-1730, 11.5 hrs)
Patrick Harrell (0600- 1730, 11.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Regrade Cut:** Nielson used two Cat 633 scrapers to cut material from the perimeter chanel on the northeastern portion of the cap.
- **Regrade Fill:** Nielson placed fill on the eastern edge of the cap. Regrade fill was brought in by two Cat 633 scrapers, Volvo end dumps and Centennial's end-dump trucks. Fill was compacted by making at least four passes over the one foot lifts of fill with a Cat 825 sheep-foot compactor.
- **6" Cushion:** Nielson used a bobcat to remove wet material from the edge of liner to and replace it with dry material. A vibrator plate tamper was used to compact the 2 to 3 inches of fresh material that was replaced.
- **Proof Rolling:** Nielson used a fully loaded Cat 633 scraper to finish up proof rolling on a section of subgrade in the north eastern section of the cap.

Geosynthetics

- **GCL:** none
- **FML:** Colorado Lining cut out a wrinkle at the northern edge of liner from panels P19 to P25.
- **GDN:** Colorado Lining placed 11 panels, or 17,453 ft^2 of GDN today.

SUMMARY OF QC TESTING:

Test #	% off MC	% Comp.	Pass/Fail
AT-001	1.4	98%	PASS

Pulled one destructive test today on sample DFp-009.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Discussed the presence of wrinkle at the north end of panels P19 to P25 and decided to cut out the wrinkle in the afternoon when it becomes larger. Once cut portions of the cut out wrinkle did not allow for an overlap of 6 inches for the leistering of the material, so in areas where an overlap of 6 inches was not possible patches were placed over the cut in the liner.

QC SIC

CQA Monitor: _____ Date: 11/16/04

Approved by: _____ Date: 5-16-05

File No. _____

SUBGRADE ACCEPTANCE FORM

The subgrade from S85/86/87/88/89 to S98/99/100/101/102, has been moisture conditioned and compacted according to specifications. This area has been tested for both moisture and density using a nuclear density gauge and/or sand cone tests at specified testing intervals. The area specified above has met all specifications for the 6-inch cushion soil including specification given on its gradation, layer thickness, moisture content and dry density. A visual inspection of this area has been conducted to ensure that the cushion soil is above 32 degrees Fahrenheit, and free of standing water debris and any sharp corners or protrusions that could put excessive stress on the GCL or FML. This area has met all specifications and is approved for liner placement on Nov 16 2004.

QC Representative	Company	Date 11/16/04
QA Representative	Company	Date 11-16-04

SUBGRADE ACCEPTANCE FORM

The subgrade from S98/99/100/101/102 to S118 – S122, has been moisture conditioned and compacted according to specifications. This area has been tested for both moisture and density using a nuclear density gauge and/or sand cone tests at specified testing intervals. The area specified above has met all specifications for the 6-inch cushion soil including specification given on its gradation, layer thickness, moisture content and dry density. A visual inspection of this area has been conducted to ensure that the cushion soil is above 32 degrees Fahrenheit, and free of standing water debris and any sharp corners or protrusions that could put excessive stress on the GCL or FML. This area has met all specifications and is approved for liner placement on NOV 17 2004.

QC Representative	Company	Date 11/17/04
QA Representative	Company	Date 11-17-04

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 11/16/04 S M (T) W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0600- 1730, 11.5 hrs)
Matt Cashimer (0600-1700, 11.0 hrs)
Patrick Harrell (0600- 1800, 12.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Regrade Cut:** Nielson used two Cat 633 scrapers to cut material from the perimeter channel on the northeastern portion of the cap.
- **Regrade Fill:** Nielson placed fill on the eastern edge of the cap. Regrade fill was brought in by two Cat 633 scrapers, Volvo end dumps and Centennial's end-dump trucks. Fill was compacted by making at least four passes over the one foot lifts of fill with a Cat 825 sheep-foot compactor.
- **Gas Vent Trench:** Nielson used a backhoe to dig out cushion and regrade fill to a depth of at least one foot and a width of 2 feet. The trench was then backfilled with at least four inches of gravel, a four inch HDPE pipe was laid in the trench and then at least four inches of gravel was placed overtop of the pipe. Approximately 80 ft, 80 ft and 30 ft of trench was cut for the north, central, and south gas vent trenches respectively. Totals for length of trench dug are 290 ft, 165 ft, and 30 ft for the north central and south trenches respectively.
- **6" Cushion:** Nielson used a Cat D6 dozer and end dump trucks from centennial to haul in and place cushion soil on the southern side of the cap. A bobcat was used to remove wet material 50 feet off the edge of liner and replace it with dry material. A vibrator plate tamper was used to compact the 2 to 3 inches of fresh material that was replaced.
- **10" Cushion:** Nielson used a Cat 950 front end loader to place cushion soils on a small section of GDN on the far west end of the cap. Cushion soils were placed with a thickness of about two feet to produce a road onto the liner for haul trucks to eventually run on.

Geosynthetics

- GCL: Colorado Lining placed 13 panels, or 22,881 ft^2 of GCL today. Total GCl placed for job is 149,699 ft^2.
- FML: Colorado Lining deployed FML conducted fusion seaming and vacuum testing today. A total of 4 panels or 22,243 ft^2 of FML were deployed today. Total FML placed for job is 145,895 ft^2
- GDN: Colorado Lining placed 18 panels, or 31,597 ft^2 of GDN today. Total GDN placed for job is 86,300 ft^2.

See attached drawings of site activities.

SUMMARY OF QC TESTING:

Test #	% off MC	% Comp.	Pass/Fail
CL-027	-1.9	102%	PASS
CL-028	1.4	101%	PASS
CL-029	1.5	100%	PASS
CL-030	1.7	98%	PASS
CL-031	1.0	98%	PASS
CL-032	0.6	100%	PASS
CL-033	1.5	100%	PASS
AT-002	-1.6	96%	PASS

Pulled three destructive test today on samples DFp-010, DFp-011, and DFp-012. All three destructives passed.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.
Other Meetings: Met with Stoller, Kaiser Hill, Earth Tech and Tetra Tech about nuke gauge tests in the anchor trench. Decided that the testing frequency for the anchor trench material would be increased from 1/1000 liner ft to one per 500 liner ft per lift.

QC
~~CQA~~ Monitor: _____ Date: 11/17/04
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 11/17/04 S M T (W) T F S

PRECIPITATION: AM: none PM: none

CLOUD COVER: Clear to Partly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0600- 1730, 11.5 hrs)
Matt Cashimer (0600-1700, 12.0 hrs)
Patrick Harrell (0600- 1800, 12.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- Gas Vent Trench: Nielson used a backhoe to dig out cushion and regrade fill to a depth of at least one foot and a width of 2 feet. The trench was then backfilled with at least four inches of gravel, a four inch HDPE pipe was laid in the trench and then at least four inches of gravel was placed overtop of the pipe. Approximately 100 ft, 115 ft and 110 ft of trench was cut for the north, central, and south gas vent trenches respectively. Totals for length of trench dug are 390 ft, 280 ft, and 140 ft for the north central and south trenches respectively.
- 6" Cushion: Nielson used a Cat D6 dozer and end dump trucks from centennial to haul in and place cushion soil on the northern side of the cap. A Cat 14G grader was used to grade cushion soil to their proper thickness and a Cat CS 583 vibratory roller was used to smooth out the surface in front of the section of cushion adjacent to the liner.
- 10" Cushion: Nielson used a Cat D6 dozer to push cushion soil stockpiles into place in the morning.
- Soft Spot Repair: Nielson placed geotextile and geogrid down over the recently discovered and currently unnumbered soft spot in the northeastern section of the landfill cap.

Geosynthetics

- GCL: Colorado Lining placed 20 panels, or 32,805 ft^2 of GCL today. Total GCl placed for job is 182,504 ft^2.
- FML: Colorado Lining deployed FML conducted fusion seaming and vacuum testing today. A total of 7 panels or 37,631 ft^2 of FML were deployed today. Total FML placed for job is 183,526 ft^2

- GDN: none

See attached drawings of site activities.

SUMMARY OF QC TESTING:

Test #	% off MC	% Comp.	Pass/Fail
CL-034	1.2	99%	PASS
CL-035	1.1	96%	PASS
CL-036	0.9	100%	PASS
CL-037	0.1	100%	PASS
CL-038	0.8	97%	PASS
CL-039	1.6	99%	PASS

Obtained Cushion Sample on previous day for proctor, sieve, and atterberg testing, Sample name is CLP-1 and was taken from the 6" cushion nuke test location CL-032.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.
Other Meetings: Met with Paragon and gave then a list of two points that needed to be shot in. Golder verified that the points were shot in.
1:30 Meeting: Met with Stoller, Kaiser Hill, Colorado lining, Nielson to discuss testing of pond sediment using the ASTM standard D2166.

QC
~~GQA~~ Monitor: _____ Date: 11/18/04
Approved by: _____ Date: 5-16-05
File No. _____

Job No: 043-2246 Report No. 111804MSPDaily

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 11/18/04 S M T W (T) F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0600- 1730, 11.5 hrs)
Matt Cashimer (0600-1700, 11.0 hrs)
Patrick Harrell (0630- 1700, 11.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Gas Vent Trench:** Nielson used a backhoe to dig out cushion and regrade fill to a depth of at least one foot and a width of 2 feet. The trench was then backfilled with at least four inches of gravel, a four inch HDPE pipe was laid in the trench and then at least four inches of gravel was placed overtop of the pipe. Approximately 45 ft, 60 ft and 30 ft of trench was cut for the north, central, and south gas vent trenches respectively. Totals for length of trench dug are 435 ft, 340 ft, and 170 ft for the north central and south trenches respectively.
- **6" Cushion:** Nielson used a Cat 14G grader was used to grade cushion soil to their proper thickness and a Cat CS 583 vibratory roller was used to smooth out the surface in front of the section of cushion adjacent to the liner.
- **10" Cushion:** Nielson used a Cat 966 front end loader to place fill on 10" cushion on top of GDN. Cushion soils were hauled in with Centennial's end dumps and Nielson's Volvo end dumps.
- **Soft Spot Repair:** Nielson placed coarse rock, hauled in by belly bumps from Centenial, overtop of the geogrid on the recently discovered soft spot in the north eastern portion of the cap and compacted the fill with a Cat 825 sheep foot compactor.

Geosynthetics

- **GCL:** Colorado Lining placed 26 panels, or 44,385 ft^2 of GCL today. Total GCI placed for job is 226,889 ft^2.
- **FML:** Colorado Lining deployed FML conducted fusion seaming and vacuum testing today. A total of 6 panels or 40,986 ft^2 of FML were deployed today. Total FML placed for job is 224,512 ft^2.

- GDN: none

See attached drawings of site activities.

SUMMARY OF QC TESTING:

Test #	% off MC	% Comp.	Pass/Fail
AT-3	-0.3	97%	PASS
AT-4	0.6	102%	PASS
AT-5	1.5	98%	PASS
CL-040	0.3	102%	PASS
CLS-002	NA	NA	NA
CL-041	-0.8	99%	PASS
CL-042	-1.2	103%	PASS
CL-043	-1.3	97%	PASS
CL-044	0	99%	PASS
CL-045	-0.9	95%	PASS
CL-046	-1.5	99%	PASS

CLS-002 data still awaiting moisture content form Golder Soils Lab.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.
Other Meetings: Met with Bob Davis of Kaiser Hill and he stated that "survey does not need to certify grade breaks", but Paragon will be mapping out grade breaks for informational purposed.

QC ~~CQA~~ Monitor: _____ Date: 11/19/04
Approved by: _____ Date: 5-16-05
File No. _____

SUBGRADE ACCEPTANCE FORM

The subgrade from Eastedge S144-148 to Eastedge S160 through 164, has been moisture conditioned and compacted according to specifications. This area has been tested for both moisture and density using a nuclear density gauge and/or sand cone tests at specified testing intervals. The area specified above has met all specifications for the 6-inch cushion soil including specification given on its gradation, layer thickness, moisture content and dry density. A visual inspection of this area has been conducted to ensure that the cushion soil is above 32 degrees Fahrenheit, and free of standing water debris and any sharp corners or protrusions that could put excessive stress on the GCL or FML. This area has met all specifications and is approved for liner placement on NOV 19 2004.

QC Representative	Company	Date 11/19/04
QA Representative	Company	Date 11-19-04

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 11/19/04 S M T W T (F) S

PRECIPITATION: AM: none PM: none

CLOUD COVER: Clear to Partly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0600- 1730, 8.5 hrs)
Matt Cashimer (0600-1700, 11.0 hrs)
Patrick Harrell (0630- 1700, 11.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Regrade Fill:** Nielson used a Cat D6 dozer to place regrade fill on the east end of the cap. Material was hauled in from Centenial and placed using belly dump haul trucks.
- **6" Cushion:** Nielson used a Cat 14G grader was used to grade cushion soil to their proper thickness and a Cat CS 583 vibratory roller was used to smooth out the surface in front of the section of cushion adjacent to the liner.
- **10" Cushion:** Nielson used a Cat 966 front end loader to place fill on 10" cushion on top of GDN. Cushion soils were hauled in with Centennial's end dumps and Nielson's Volvo end dumps.

Geosynthetics

- **GCL:** Colorado Lining placed 26 panels, or 28,410 ft^2 of GCL today. Total GCl placed for job is 255,298 ft^2.
- **FML:** Colorado Lining deployed FML a conducted fusion seaming and pressure testin today. A total of 6 panels or 28,963 ft^2 of FML were deployed today. Total FML placed for job is 253,475 ft^2
- **GDN:** Colorado Lining performed repairs on GDN.

See attached drawings of site activities.

SUMMARY OF QC TESTING:

Test #	% off MC	% Comp.	Pass/Fail
AT-006	0.9	100%	PASS
AT-007	1.0	95%	PASS
AT-008	1.6	96%	PASS
AT-009	-1.2	99%	PASS
AT-010	0.6	100%	PASS

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Met with Stoller to discuss soft spots and determined that all soft spots and wet spots have been repaired or have dried out enough to satisfy the specifications of job.

QC SME
~~CQA~~ Monitor: _____ Date: 11/22/04
Approved by: _____ Date: 5-16-05
File No. _____

Job No: 043-2246 Report No. 112004MSPDaily

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 11/20/04 S M T W T F (S)

PRECIPITATION: **AM:** snow **PM:** snow

CLOUD COVER: Overcast **WIND:** low with some high gusts

GAI PERSONNEL HOURS CHARGED:

Patrick Harrell (0600- 0800, 2.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

none

Geosynthetics

- **GCL:** none
- **FML:** none
- **GDN:** none

SUMMARY OF QC TESTING:

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: none

Other Meetings: none

QC JAE
~~CQA~~ Monitor: _____ Date: 11/22/04
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 11/22/04 S (M) T W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0900- 1530, 6.5 hrs)
Matt Cashimer (0600-1700, 11.0 hrs)
Patrick Harrell (0630- 1300, 6.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- Regrade Fill: Nielson used a Cat D6 dozer to place regrade fill on the east end of the cap. Material was hauled in from Centenial and placed using belly dump haul trucks. A Cat 825 sheep foot compactor was on hand to make four passes on the one foot or less lifts of fill.

Geosynthetics

- GCL: none. Total GCl placed for job is 255,298 ft^2.
- FML: Colorado lining performed pressure testing, vacuum testing, and Repairs. Total FML placed for job is 253,475 ft^2.
- GDN: none. Total GDN placed for job is 88,300 ft^2.

See attached drawings of site activities.

SUMMARY OF QC TESTING:

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Discussed with Colorado Lining, and Stoller vacuum testing of defects in the anchor trench. Bob Davis (Kaiser Hill) previously stated that he would like them vacuum tested even though it is not typically done on most liner projects. Stoller wishes to get something in writing from Bob Davis stating that we need to vacuum test defects in the anchor trench.

QC SAE
~~CQA~~ Monitor: _____ Date: 11/23/04
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 11/23/04 S M (T) W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0730- 1700, 9.5hrs)
Matt Cashimer (0600-1230, 6.5 hrs)
Patrick Harrell (0600- 1800, 12.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Regrade Fill:** Nielson used a Cat 966 front end loader, and a 14G grader to place and grade the regrade fill on the east end of the cap. Material was hauled in from Centenial and placed using belly dump haul trucks. A Cat 825 sheep foot compactor was on hand to make four passes on the one foot or less lifts of fill.
- **Proof Rolling:** Nielson used a Cat 633 scraper to proof roll a section of subgrade from the edge of where 6" cushion has been placed to 100' east of the cushion soils. Two passes were made by the scraper over the proof rolling area.

Geosynthetics

- **GCL:** none. Total GCl placed for job is 255,298 ft^2.
- **FML:** Colorado lining performed vacuum testing, and Repairs. Total FML placed for job is 253,475 ft^2.
- **GDN:** Colorado lining zip tied seams, fused or sewed flaps and placed 43 panels or 82,466 ft^2 of GDN today. Total GDN placed for job is 170,766 ft^2.

See attached drawings of site activities.

SUMMARY OF QC TESTING:

Ran destructive tests on DFp-016, DFp-017, DFp-018, DFp-019, DFp-020, DFp-0121, DFp-022, DFp-023, and DFp-024. All destructives passed and there are currently no outstanding destructive tests.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: none

QC ~~CQA~~ Monitor: _____ Date: 11/24/04
Approved by: _____ Date: 5-16-05
File No. _____

Job No: 043-2246 Report No. 112404MSPDaily

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 11/24/04 S M T (W) T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630- 1230, 6.0 hrs)
Matt Cashimer (0600-1200, 6.0 hrs)
Patrick Harrell (0600- 0930, 3.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Regrade Fill:** Nielson used a Cat D6 dozer, a Cat 966 front end loader, and a 14G grader to place and grade the regrade fill on the east end of the cap. Material was hauled in from Centenial and placed using belly dump haul trucks. A Cat 825 sheep foot compactor was on hand to make four passes on the one foot or less lifts of fill.

Geosynthetics

- **GCL:** none. Total GCl placed for job is 255,298 ft^2.
- **FML:** none. Total FML placed for job is 253,475 ft^2.
- **GDN:** none. Total GDN placed for job is 170,766 ft^2.

See attached drawings of site activities.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.
Other Meetings: none

QC
~~QA~~ Monitor: _____ Date: 11/29/04
Approved by: _____ Date: 5-16-05
File No. _____

Job No: 043-2246 Report No. 112904MSPDaily

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 11/29/04 S (M) T W T F S

PRECIPITATION: **AM:** snow **PM:** none

CLOUD COVER: Overcast to Partly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630- 1230, 4.0 hrs)
Matt Cashimer (0600-1200, 2.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

None.

Geosynthetics

- **GCL:** none. Total GCl placed for job is 255,298 ft^2.
- **FML:** none. Total FML placed for job is 253,475 ft^2.
- **GDN:** none. Total GDN placed for job is 170,766 ft^2.

See attached drawings of site activities.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: none
Other Meetings: none

QC SME
~~QA~~ Monitor: _____ Date: 11/30/04
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 11/30/04 S M (T) W T F S

PRECIPITATION: **AM:** snow **PM:** none

CLOUD COVER: Overcast to Partly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630- 1230, 4.0 hrs)
Matt Cashimer (0600-1200, 2.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Snow Removal:** Nielson used a Cat D6 dozer, a Cat 325 excavator, a Cat 14G grader and two Volvo end dumps to remove snow from the 6" cushion soils on the cap.

Geosynthetics

- **GCL:** none. Total GCl placed for job is 255,298 ft^2.
- **FML:** none. Total FML placed for job is 253,475 ft^2.
- **GDN:** none. Total GDN placed for job is 170,766 ft^2.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed hazards associated with cost and snow removal activities.

Other Meetings: none

QC SME
~~GQA Monitor~~: _____ Date: 12/1/04
Approved by: _____ Date: 5-16-05
File No. _____

Job No: 043-2246 Report No. 120104MSPDaily

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 12/1/04 S M T (W) T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Overcast to Partly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0600- 1500, 9.0 hrs)
Matt Cashimer (0600-1330, 7.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Snow Removal:** Nielson used a Cat D6 dozer, a Cat 325 excavator, a Cat 14G grader and two Volvo end dumps to remove snow from the 6" cushion soils on the cap and the regrade fill east of the 6" cushion soils.

Geosynthetics

- **GCL:** none. Total GCl placed for job is 255,298 ft^2.
- **FML:** none. Total FML placed for job is 253,475 ft^2. Colorado Lining performed snow removal using a angled brush attachment on a bobcat to remove snow from the FML.
- **GDN:** none. Total GDN placed for job is 170,766 ft^2.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed hazards associated with cost and snow removal activities.

Other Meetings: none

JAC CQC
~~CQA~~ Monitor: [signature] Date: 5/16/05
Approved by: [signature] Date: 5-16-05
File No.

Job No: 043-2246 Report No. 120204MSPDaily

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 12/2/04 S M T W (T) F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Overcast to Partly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530- 1330, 8.0 hrs)
Matt Cashimer (0600-1330, 7.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Snow Removal:** Nielson used a Cat D6 dozer, a Cat 325 excavator, and two Volvo end dumps to remove snow from the 10" cushion soils on the cap.

Geosynthetics

- **GCL:** none. Total GCl placed for job is 255,298 ft^2.
- **FML:** none. Total FML placed for job is 253,475 ft^2. Colorado Lining performed snow removal using a angled brush attachment on a bobcat to remove snow from the FML.
- **GDN:** none. Total GDN placed for job is 170,766 ft^2.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed hazards associated with cost and snow removal activities.

Other Meetings: Discussed work for the weekend and decided to work Saturday and Sunday.

CQA Monitor: _____ Date: 12/3/04
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 12/3/04 S M T W T (F) S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530- 1800, 12.5 hrs)
Matt Cashimer (0600-1730, 11.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Snow Removal:** Nielson used a Cat 325 excavator to remove snow from the side slopes around the cap from the eastern edge of the 10' cushion to 100' east of the eastern edge of the leading edge of the FML.
- **Fill Replacement:** Nielson used a Cat D6 dozer, a Cat 966 front end loader, and two Volvo end dumps to remove snow from the 10' cushion soils on the cap.
- **Proof Rolling:** Nielson used a fully loaded Cat 633 scraper to proof roll two times the regrade fill that was replaced near the eastern edge of the approved portion of the cap.

Geosynthetics

- **GCL:** none. Total GCl placed for job is 255,298 ft^2.
- **FML:** Performed repairs and vacuum testing on FML. Colorado Lining performed snow removal using an angled brush attachment on a bobcat to remove snow from the FML. Total FML placed for job is 253,475 ft^2.
- **GDN:** Colorado Lining performed snow removal using an angled brush attachment on a bobcat to remove snow from the GDN. Colorado Lining placed 18 panels or 46,254 ft^2 of GDN today. Total GDN placed for job is 217,849 ft^2.

SUMMARY OF QC TESTING: none

Job No: 043-2246

Report No. 120304MSPDaily

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Met with Stoller, Kaiser Hill, Tetra Tech, and Nielson to discuss the condition of the 6" cushion layer. Decided to remove and replace cushion in areas on the south side of the cap that have standing water, and scrape off and replace the few inches of wet material on the crest and on the northern side of the cap.

CQA Monitor: _____ Date: 12/4/04

Approved by: _____ Date: 12-16-05

File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 12/4/04 S M T W T F (S)

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0600- 1530, 11.5 hrs)
Matt Cashimer (0600-1730, 7.5 hrs)
Patrick Harrell (0600-1500, 9.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- Snow Removal: Nielson used a Cat 966 front end loader and a Cat 325 excavator to remove snow on the cap from on top of the 10" cushion soil and around the side slopes leading into the perimeter channel.
- 10" Cushion: Nielson used a Cat 966 font end loader and some of Centennial's end dumps to place 10" cushion on the western end of the cap.
- Fill Replacement: Nielson used a Cat D6 dozer, a Cat 966 front end loader, and two Volvo end dumps to remove and replace fill on the easten edge of the approved portion of the cap. A Cat 835 sheep foot compactor was on hand to make at least four passes on the replaced fill to compact it according to the method spec.
- Proof Rolling: Nielson used a fully loaded Cat 633 scraper to proof roll two times the regrade fill that was replaced near the eastern edge of the approved portion of the cap.

Geosynthetics

- GCL: none. Total GCl placed for job is 255,298 ft^2.
- FML: Performed repairs and vacuum testing on FML. Colorado Lining performed snow removal using an angled brush attachment on a bobcat to remove snow from the FML. Total FML placed for job is 253,475 ft^2.
- GDN: Colorado Lining performed snow removal using an angled brush attachment on a bobcat to remove snow from the GDN. Total GDN placed for job is 217,849 ft^2.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Discussed with Stoller, Nielson, and Kaiser Hill the placement of materials on frozen cushion soils. Decided it would be acceptable it the materials maintain a moisture and compaction within the parameters given in the specifications.

CQA Monitor: _____ Date: 12/5/04
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 12/5/04 (S) M T W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0730- 1530, 8.0 hrs)
Matt Cashimer (0600-1230, 6.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- Snow Removal: Nielson used a Cat 966 front end loader and a Cat 325 excavator to remove snow on the cap from on top of the 10" cushion soil and around the side slopes leading into the perimeter channel.
- 10" Cushion: Nielson used a Cat 966 font end loader and some of Centennial's end dumps to place 10" cushion on the western end of the cap.
- 6" Cushion: Nielson used a Cat 14G grader, a Cat 966 front end loader, and two Volvo end dumps to removed wet cushion soils from the cap to allow for placement of drier material placement at a later date.
- Fill Replacement: Nielson used a Cat D6 dozer, a Cat 966 front end loader, and two Volvo end dumps to remove and replace fill on the eastern edge of the approved portion of the cap. A Cat 835 sheep foot compactor was on hand to make at least four passes on the replaced fill to compact it according to the method spec.
- Proof Rolling: Nielson used a fully loaded Cat 633 scraper to proof roll two times the regrade fill that was replaced near the eastern edge of the approved portion of the cap.

Geosynthetics

- GCL: none. Total GCl placed for job is 255,298 ft^2.
- FML: Performed repairs and vacuum testing on FML. Colorado Lining performed snow removal using an angled brush attachment on a bobcat to remove snow from the FML. Total FML placed for job is 253,475 ft^2.
- GDN: Colorado Lining did repairs, and place 9 panels, or 23,233 ft^2. Total GDN placed for job is 241,171 ft^2.

SUMMARY OF QC TESTING: none

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Discussed with Stoller, Nielson, and Kaiser Hill the placement of materials on frozen cushion soils. Decided it would be acceptable it the materials maintain a moisture and compaction within the parameters given in the specifications.

CQA Monitor: _____ Date: 5/16/05
Approved by: _____ Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 12/6/04 S (M) T W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** moderate to high

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530- 1730, 12.0 hrs)
Matt Cashimer (0600-0930, 3.5 hrs)
Patrick Harrell (0600-1700, 11.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **10" Cushion:** Nielson used Cat 966 and 950 font end loaders and some of Centennial's end dumps to place 10" cushion on the western end of the cap.
- **6" Cushion:** Nielson used a Cat 14G grader to remove and regrade cushion soils. A Cat D6 dozer place 6" cushion in areas where wet cushion was removed and a Cat 583 vibratory roller was used to compact the cushion that was placed.
- **Fill Replacement:** Nielson used a Cat 14G grader to rip up the pregrade fill in advance of the 6" cushion to allow wet material to dry out to an acceptable level.
- **Gas Vent Trench:** Nielson dug out approximately 30 feet of trench for each of the north, central, and south gas vent trenches. Gravel was placed to at least 4 inches above and below the four inch pipe and about 10 inches on either side.

Geosynthetics

- **GCL:** none. Total GCl placed for job is 255,298 ft^2.
- **FML:** none. Total FML placed for job is 253,475 ft^2.
- **GDN:** Colorado Lining did repairs, and place 19 panels, or 24,921 ft^2 of GDN. Total GDN placed for job is 266,092 ft^2.

SUMMARY OF QC TESTING:

Test #	% off MC	% Comp.	Pass/Fail
CL-047	-0.6	101%	PASS
CL-048	0.5	96%	PASS
CL-049	0.5	101%	PASS
CL-050	-1	99%	PASS
CL-051	0.4	99%	PASS
CL-052	-1.3	96%	PASS
CL-053	-0.9	99%	PASS
CL-054	0.3	98%	PASS
CL-055	0.7	99%	PASS
CL-056	1.5	100%	PASS
CL-057	0.7	97%	PASS
CL-058	1.2	101%	PASS

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Discussed with Stoller, Nielson, and Centennial the amount of cushion soil needed to finish the job. Decided that since the some of the material from centennial is too wet that we should look into another borrow source for cushion soil. Four or five test will be run on the new material to verify that it has the same properties as the cushion soils present at the Centennial pit.

CQA Monitor: _____ Date: 12/7/04
Approved by: _____ Date: 5-16-05
File No. _____

SUBGRADE ACCEPTANCE FORM

The subgrade from S-160 through S-164 to S-188 through S-192, has been moisture conditioned and compacted according to specifications. This area has been tested for both moisture and density using a nuclear density gauge and/or sand cone tests at specified testing intervals. The area specified above has met all specifications for the 6-inch cushion soil including specification given on its gradation, layer thickness, moisture content and dry density. A visual inspection of this area has been conducted to ensure that the cushion soil is above 32 degrees Fahrenheit, and free of standing water debris and any sharp corners or protrusions that could put excessive stress on the GCL or FML. This area has met all specifications and is approved for liner placement on December 07, 2004.

QC Representative	Company	Date 12/07/04
QA Representative	TETRA TECH RMC Company	Date 12/7/04

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 12/7/04 S M (T) W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** moderate to high

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530- 1730, 12.0 hrs)
Matt Cashimer (0600-1700, 11.0 hrs)
Patrick Harrell (0600-1730, 11.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **10" Cushion:** Nielson used Cat 966 and 950 font end loaders and some of Centennial's end dumps to place 10" cushion on the western end of the cap.
- **6" Cushion:** Nielson used a Cat 14G grader to grade cushion soils. A Cat 583 vibratory roller was used to compact the cushion that was placed.
- **Gas Vent Trench:** Nielson dug out approximately 130 feet of trench for each of the north, central, and south gas vent trenches. The total lengths for these trenches is 600 ft, 470 ft, and 340 ft, for the north central and south gas vent trenches respectively. Gravel was placed to at least 4 inches above and below the four inch pipe and about 10 inches on either side.
- **Proof Rolling:** Nielson used a fully loaded scraper to proof roll with two passes a section of pregrade material on the eastern side of the approved portion of the cap.

Geosynthetics

- **GCL:** Colorado Lining conducted repairs and deployed 28 panels or 49,938 ft^2 of GCL today. Total GCl placed for job is 305,238 ft^2.
- **FML:** Colorado Lining conducted fusion seaming and deployed 6 panels or 44,418 ft^2 of FML today. Total FML placed for job is 297,893 ft^2.
- **GDN:** none. Total GDN placed for job is 266,092 ft^2.

SUMMARY OF QC TESTING:

Density Tests

Test #	% off MC	% Comp.	Pass/Fail
CL-059	-0.8	97%	PASS
CL-060	0.5	98%	PASS
CL-061	1.2	95%	PASS
CL-062	0.4	96%	PASS
CL-063	0.5	98%	PASS
CL-064	0.8	95%	PASS
CL-065	-0.3	98%	PASS
CL-066	-0.3	98%	PASS
CL-067	-0.1	98%	PASS
CL-068	-0.8	98%	PASS
CL-069	-0.2	96%	PASS
CL-070	-0.3	96%	PASS
CL-071	0.3	100%	PASS
CL-072	-1	98%	PASS
CL-073	0.6	98%	PASS
CL-074	-1.1	98%	PASS

All tasks and test were observed and done with accordance with specifications.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Discussed with Stoller, and Nielson the Pioneer pits crusher fines suitability for use as cushion material. Decided that the fines were too different from the cushion soil hauled in from centennial, and thus another source of cushion soil will need to be found.

CQA Monitor: _____ Date: 12/8/04
Approved by: _____ Date: 5-16-05
File No. _____

SUBGRADE ACCEPTANCE FORM

The subgrade from S188-S192 to S217-222, has been moisture conditioned and compacted according to specifications. This area has been tested for both moisture and density using a nuclear density gauge and/or sand cone tests at specified testing intervals. The area specified above has met all specifications for the 6-inch cushion soil including specification given on its gradation, layer thickness, moisture content and dry density. A visual inspection of this area has been conducted to ensure that the cushion soil is above 32 degrees Fahrenheit, and free of standing water debris and any sharp corners or protrusions that could put excessive stress on the GCL or FML. This area has met all specifications and is approved for liner placement on December 18 12004.

QC Representative	Company	Date 12/8/04
QA Representative	Company	Date 12-8-04

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 12/8/04 S M T (W) T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** moderate to high

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530- 1830, 13.0 hrs)
Matt Cashimer (0600-1800, 12.0 hrs)
Patrick Harrell (0600-1530, 9.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **10" Cushion:** Nielson used Cat 966 and 950 font end loaders and some of Centennial's end dumps to place 10" cushion on the western end of the cap.
- **6" Cushion:** Nielson used a Cat 14G grader to grade cushion soils. A Cat 583 vibratory roller was used to compact the cushion that was placed.
- **Gas Vent Trench:** Nielson dug out approximately 70 feet of trench for each of the north, central, and south gas vent trenches. The total lengths for these trenches is 670 ft, 540 ft, and 410 ft, for the north central and south gas vent trenches respectively. Gravel was placed to at least 4 inches above and below the four inch pipe and about 10 inches on either side.
- **Proof Rolling:** Nielson used a fully loaded scraper to proof roll with two passes a section of pregrade material on the eastern side of the approved portion of the cap.

Geosynthetics

- **GCL:** Colorado Lining conducted repairs and deployed 30 panels or 52,954 ft^2 of GCL today. Total GCL placed for job is 358,190 ft^2.
- **FML:** Colorado Lining conducted fusion seaming and deployed 7 panels or 48,202 ft^2 of FML today. Total FML placed for job is 346,095 ft^2.
- **GDN:** none. Total GDN placed for job is 266,092 ft^2.

SUMMARY OF QC TESTING:

Density Tests

Test #	% off MC	% Comp.	Pass/Fail
CL-075	-0.6	97%	PASS
CL-076	-0.7	97%	PASS
CL-077	-0.1	97%	PASS
CL-078	-1	100%	PASS
CL-079	1	96%	PASS
CL-080	0	95%	PASS
CL-081	0	99%	PASS
CL-082	0.4	99%	PASS

Two Sand cone test and a moisture content were taken today. The sand cone tests were CLS-3 and CLS-4, and the moisture content was taken on test CL-079. CLS-3 was taken at the loaciton of test CL-060 and CLS-4 was taken at the location of test CL-080.

All tasks and test were observed and done with accordance with specifications.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Discussed with Stoller, and Nielson the Pioneer pits crusher fines suitability for use as cushion material. Decided that the fines were too different from the cushion soil hauled in from centennial, and thus another source of cushion soil will need to be found.

CQA Monitor: _____ Date: 12/9/09

Approved by: _____ Date: 5-16-05

File No. _____

SUBGRADE ACCEPTANCE FORM

The subgrade from S-217 - S-282 to S241 -S246, has been moisture conditioned and compacted according to specifications. This area has been tested for both moisture and density using a nuclear density gauge and/or sand cone tests at specified testing intervals. The area specified above has met all specifications for the 6-inch cushion soil including specification given on its gradation, layer thickness, moisture content and dry density. A visual inspection of this area has been conducted to ensure that the cushion soil is above 32 degrees Fahrenheit, and free of standing water debris and any sharp corners or protrusions that could put excessive stress on the GCL or FML. This area has met all specifications and is approved for liner placement on December 19 12004.

QC Representative	Company	Date 12/9/04
QA Representative	Company	Date 12-9-04

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 12/9/04 S M T W T (F) S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** moderate to high

GAI PERSONNEL HOURS CHARGED:

Michael Place (1130- 1730, 6.0 hrs)
Matt Cashimer (0600-1730, 11.5 hrs)
Patrick Harrell (0600-1700, 11.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **6" Cushion:** Nielson used a Cat 14G grader a D6 dozer to grade cushion soils. A Cat 583 vibratory roller was used to compact the cushion that was placed.
- **Gas Vent Trench:** Nielson dug out approximately 20 feet of the south trench. The total length for this trench and 430 ft, for the north central and south gas vent trenches respectively. Gravel was placed to at least 4 inches above and below the four inch pipe.

Geosynthetics

- **GCL:** Colorado Lining conducted repairs and deployed 30 panels or 44,189 ft^2 of GCL today. Total GCL placed for job is 402,378 ft^2.
- **FML:** Colorado Lining conducted fusion seaming and deployed 7 panels or 50,567 ft^2 of FML today. Total FML placed for job is 396,662 ft^2.
- **GDN:** none. Total GDN placed for job is 266,092 ft^2.

SUMMARY OF QC TESTING:

The Design team is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Discussed with Stoller, Nielson and Centennial to discuss the production of cushion materials. Decided to limit the haul of cushion materials due to the contamination of the material by oversize rock.

CQA Monitor: _____ Date: 12/10/04
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 12/10/04 S M T W T (F) S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** moderate to high

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530- 1400, 8.5 hrs)
Matt Cashimer (0600-0930, 3.5 hrs)
Patrick Harrell (0600-0930, 3.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

Work called off due to excessive wind

Geosynthetics

- **GCL:** none. Total GCL placed for job is 402,378 ft^2.
- **FML:** none. Total FML placed for job is 396,662 ft^2.
- **GDN:** none. Total GDN placed for job is 266,092 ft^2.

SUMMARY OF QC TESTING:

Density Tests

Test #	% off MC	% Comp.	Pass/Fail
CL-083	-0.8	100%	PASS
CL-084	-1	97%	PASS
CL-085	-0.4	100%	PASS
CL-086	-0.7	99%	PASS
CL-087	-0.3	99%	PASS
CL-088	-1.1	97%	PASS
CL-089	0.2	98%	PASS
CL-090	-0.2	100%	PASS

All tasks and test were observed and done with accordance with specifications.

Job No: 043-2246

Report No. 121004MSPDaily

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: work called off due to excessive wind.

Other Meetings:

CQC Monitor: _____ Date: 12/10/04

Approved by: _____ Date: 5-16-05

File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 12/11/04 S M T W T F (S)

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly to Mostly Cloudy **WIND:** moderate to high

GAI PERSONNEL HOURS CHARGED:

Greg Henrikson (830- 1400, 5.5 hrs)
Matt Cashimer (0600- 1430, 8.5 hrs)
Patrick Harrell (0600- 1400, 8.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **6" Cushion:** Nielson hauled cushion soil using Volvo end dumps. A Cat 14G grader and a D8 dozer graded cushion soils. A Cat 583 vibratory roller was used to compact the cushion that was placed.
- **Gas Vent Trench:** Nielson dug out approximately 80 ft, 70 ft, and 30 ft of trench for the north, central, and south gas vent trenches respectively. The total lengths for these trenches is 730 ft, 610 ft, and 440 ft, for the north central and south gas vent trenches respectively. Gravel was placed to at least 4 inches above and below the four inch pipe and about 10 inches on either side.
- **Anchor Trench:** Nielson used a Cat 325 excavator to backfill 60 ft of anchor trench on the north and south sides of the cap.

Geosynthetics

- **GCL:** Colorado Lining deployed 12 panels or 22,649 ft^2 of GCL today. Total GCL placed for job is 425,027 ft^2.
- **FML:** Colorado Lining conducted pressure testing, trial seaming, repairs, fusion seaming and deployed 2 panels or 17,237 ft^2 of FML today. Total FML placed for job is 413,899 ft^2.
- **GDN:** Colorado Lining conducted repairs. Total GDN placed for job is 266,092 ft^2.

SUMMARY OF QC TESTING:

The Design team is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Discussed with Stoller and Colorado Lining the feasibility of bringing in Neilsons laborers to help out with deployment of GDN.

CQC Monitor: _____ Date: 12/13/04
Approved by: _____ Date: 5-16-05
File No.

SUBGRADE ACCEPTANCE FORM

The subgrade from S-253 through S-258 to S-272 through S-278, has been moisture conditioned and compacted according to specifications. This area has been tested for both moisture and density using a nuclear density gauge and/or sand cone tests at specified testing intervals. The area specified above has met all specifications for the 6-inch cushion soil including specification given on its gradation, layer thickness, moisture content and dry density. A visual inspection of this area has been conducted to ensure that the cushion soil is above 32 degrees Fahrenheit, and free of standing water debris and any sharp corners or protrusions that could put excessive stress on the GCL or FML. This area has met all specifications and is approved for liner placement on December 12 2004.

QC Representative	Stolle Company	12/12/04 Date
QA Representative	Tetra Tech Company	12/12/04 Date

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 12/12/04 (S) M T W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly to Mostly Cloudy **WIND:** moderate

GAI PERSONNEL HOURS CHARGED:

Patrick Harrell (0600- 1730, 11.5 hrs)
Greg Henrikson (0600-1730, 11.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

No work done by Nielson Today

Geosynthetics

- **GCL:** Colorado Lining deployed 20 panels or 34,706 ft^2 of GCL today. Total GCL placed for job is 459,733 ft^2.
- **FML:** Colorado Lining conducted pressure testing, trial seaming, repairs, fusion seaming and deployed 6 panels or 35,233 ft^2 of FML today. Total FML placed for job is 444,732 ft^2.
- **GDN:** Colorado Lining conducted repairs and deployed 24 panels or 61,893 ft^2 of FML. Total GDN placed for job is 327,985 ft^2.

SUMMARY OF QC TESTING:

The Design team is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

CQC Monitor: _____ Date: 12/13/04
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 12/13/04 S (M) T W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly to Mostly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1730, 12.0 hrs)
Patrick Harrell (0730- 1100, 3.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **6" Cushion:** Nielson hauled cushion soil using Volvo end dumps. A Cat 14G grader and a D8 dozer graded cushion soils. A Cat 583 vibratory roller was used to compact the cushion that was placed.
- **Gas Vent Trench:** Nielson dug out approximately 60 ft for the north, central, and south gas vent trenches. The total lengths for these trenches is 790 ft, 670 ft, and 500 ft, for the north central and south gas vent trenches respectively. Gravel was placed to at least 4 inches above and below the four inch pipe and about 10 inches on either side.
- **Pond Sediment Removal:** Nielson used a D6 to push a haul road down to the pond on the east end of the site. A Cat 325 excavator was on hand to remove sediment from the side slopes of the pond.

Geosynthetics

- **GCL:** none. Total GCL placed for job is 459,733 ft^2.
- **FML:** none. Total FML placed for job is 444,732 ft^2.
- **GDN:** none. Total GDN placed for job is 327,985 ft^2.

SUMMARY OF QC TESTING:

Density Tests

Test #	% off MC	% Comp.	Pass/Fail
CL-091	-1.8	97%	PASS
CL-092	-1.9	95%	PASS
CL-093	-0.8	101%	PASS
CL-094	-0.4	99%	PASS
CL-095	-0.8	100%	PASS
CL-096	0	99%	PASS
CL-097	-0.2	100%	PASS
CL-098	-0.6	99%	PASS
CL-099	-1.7	98%	PASS

The Design team is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: none.

CQC Monitor: _____ Date: 12/14/04

Approved by: _____ Date: 5-16-05

File No. _____

SUBGRADE ACCEPTANCE FORM

The subgrade from T-272 thru T-278 to _____, has been moisture conditioned and compacted according to specifications. This area has been tested for both moisture and density using a nuclear density gauge and/or sand cone tests at specified testing intervals. The area specified above has met all specifications for the 6-inch cushion soil including specification given on its gradation, layer thickness, moisture content and dry density. A visual inspection of this area has been conducted to ensure that the cushion soil is above 32 degrees Fahrenheit, and free of standing water debris and any sharp corners or protrusions that could put excessive stress on the GCL or FML. This area has met all specifications and is approved for liner placement on December 14 2004.

QC Representative	Company	Date 12/14/04
QA Representative	Company	Date 12-14-04

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 12/14/04 S M (T) W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly to Mostly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0600-1730, 11.5 hrs)
Patrick Harrell (0600- 1730, 11.5 hrs)
Greg Henrikson (0600-1730, 11.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Pregrade Fill:** Nielson placed alluvial material as fill in the area past the 5980 line. Material was hauled in by Volvo end dumps and stockpiled for future use.
- **6" Cushion:** Nielson hauled cushion soil using Volvo end dumps. A Cat 14G grader and a D8 dozer graded cushion soils. A Cat 583 vibratory roller was used to compact the cushion that was placed.
- **Gas Vent Trench:** Nielson dug out approximately 60 ft for the north, central, and south gas vent trenches. The total lengths for these trenches is 790 ft, 670 ft, and 500 ft, for the north central and south gas vent trenches respectively. Gravel was placed to at least 4 inches above and below the four inch pipe and about 10 inches on either side.
- **Pond Sediment Removal:** Nielson used a D6 to push a haul road down to the pond on the east end of the site. A Cat 325 excavator was on hand to remove sediment from the pond and load it into Volvo end dumps to be hauled to an area just east of the 5980 line.

Geosynthetics

- **GCL:** Colorado Lining deployed and repaired GCL. The total deployment for the day was 20 panels or 35,482 ft^2. Total GCL placed for job is 495,215 ft^2.
- **FML:** Colorado Lining deployed, pressure tested, vacuum tested, and repaired FML today. The total deployment for the day was 5 panels or 36,102 ft^2. Total FML placed for job is 485,234 ft^2.
- **GDN:** Colorado Lining deployed 13 panels or 15,951 ft^2 of GDN today. Total GDN placed for job is 343,936 ft^2.

SUMMARY OF QC TESTING:

Density Tests

Test #	% off MC	% Comp.	Pass/Fail
CL-100	0.3	95%	PASS
CL-101	-1.8	97%	PASS
CL-102	-1.2	99%	PASS
CL-103	-1.4	95%	PASS
CL-104	-2.1	100%	PASS
CL-105	1	99%	PASS
CL-106	-1.4	98%	PASS
CL-107	-0.9	100%	PASS
CL-108	-0.3	101%	PASS

Ran one sand cone test, CLS-005, at the test site for CL-100.

Ran 16 destructive tests that all passed. The test numbers for the destructive test are: DFp-025, DFp-026, DFp-027, DFp-028, DFp-029, DFp-030, DFp-031, DFp-032, DFp-033, DFp-034, DFp-035, DFp-036, DFp-037, DFp-038, DFp-039, and DFp-040.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: none.

CQC Monitor: _____ Date: 12/15/04
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 12/15/04 S M T (W) T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** low to moderate

GAI PERSONNEL HOURS CHARGED:

Michael Place (0600-1700, 11.0 hrs)
Patrick Harrell (0600- 1800, 11.5 hrs)
Greg Henrikson (0600-1730, 11.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Pregrade Fill:** Nielson placed alluvial material as fill in the area past the 5980 line. Material was hauled in by Volvo end dumps and stockpiled for future use.
- **6" Cushion:** Nielson hauled cushion soil using Volvo end dumps. A Cat 14G grader and a D8 dozer graded cushion soils. A Cat 583 vibratory roller was used to compact the cushion that was placed.
- **10" Cushion:** Nielson regarded 10" cushion using a Cat 14G grader.
- **Gas Vent Trench:** Nielson dug out approximately 60 ft for the north, central, and south gas vent trenches. The total lengths for these trenches is 850 ft, 730 ft, and 560 ft, for the north central and south gas vent trenches respectively. Gravel was placed to at least 4 inches above and below the four inch pipe and about 10 inches on either side.
- **Pond Sediment Removal:** Nielson used a D6 to push a haul road down to the pond on the east end of the site. A Cat 325 excavator was on hand to remove sediment from the pond and load it into Volvo end dumps to be hauled to an area just east of the 5980 line.

Geosynthetics

- **GCL:** Colorado Lining deployed and repaired GCL. The total deployment for the day was 20 panels or 48,227 ft^2. Total GCL placed for job is 543,442 ft^2.
- **FML:** Colorado Lining deployed, pressure tested, vacuum tested, and repaired FML today. The total deployment for the day was 5 panels or 54,967 ft^2. Total FML placed for job is 540,201 ft^2.
- **GDN:** none. Total GDN placed for job is 343,936 ft^2.

SUMMARY OF QC TESTING:

Density Tests

Test #	% off MC	% Comp.	Pass/Fail
CL-109	-0.8	95%	PASS
CL-110	0	96%	PASS
CL-111	-0.9	95%	PASS
CL-112	-0.8	97%	PASS
CL-113	0.1	95%	PASS
CL-114	0.7	98%	PASS
CL-115	-0.9	96%	PASS
CL-116	1.2	98%	PASS
CL-117	0.6	100%	PASS

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: none.

CQC Monitor: _____ Date: 12/16/04

Approved by: _____ Date: 5-16-05

File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 12/16/04 S M T W (T) F S

PRECIPITATION: **AM:** snow **PM:** none

CLOUD COVER: Clear **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1630, 11.0 hrs)
Patrick Harrell (0600- 1800, 11.5 hrs)
Greg Henrikson (0600-1730, 11.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **6" Cushion:** Nielson hauled cushion soil to the 5980 line using belly dumps from La Farge. A Cat 14G grader and a D6 dozer graded cushion soils. A Cat 583 vibratory roller was used to compact the cushion that was placed.
- **Pond Sediment Removal:** Nielson used a Cat 325 excavator to remove sediment from the pond and load it into Volvo end dumps to be hauled to an area just east of the 5980 line. A Cat D8 dozer was used to spread out pond sediment in a one foot lift to aid in drying the material out.

Geosynthetics

- **GCL:** none. Total GCL placed for job is 543,442 ft^2.
- **FML:** Colorado Lining repaired and vacuum tested FML today. Total FML placed for job is 540,201 ft^2.
- **GDN:** Colorado Lining deployed 19 panels or 45,877 ft^2 of GDN today. Total GDN placed for job is 389,813 ft^2.

SUMMARY OF QC TESTING:

Density Tests

Test #	% off MC	% Comp.	Pass/Fail
CL-118	0.7	95%	PASS
CL-119	0.9	97%	PASS

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: *Schedule:* Discussed Work Schedule for this weekend and for the approaching holidays. Decided that the liner crew will work Sunday but not Saturday this weekend and Nielson will work Saturday bur not Sunday. Also we decided that we might work on the Monday and Tuesday of the week between Christmas and New Years, but only if there are tasks that we absolutely need to have done before the start of the new year.
Pond Sediment: Discussed with the EPA, CDPHE, Kaiser Hill, Stoller and Nielson the removal of pond sediment. The CDPHE and the EPA had concerns about the method of extracting the sediments and stabilizing of them. They want Nielson to stabilize the sediments first before they haul the pond sediments onto the cap.

CQC Monitor: _____ Date: 5/16/05
Approved by: _____ Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 12/17/04 S M T W T (F) S

PRECIPITATION: **AM:** snow **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0600-1700, 11.0 hrs)
Patrick Harrell (0600- 1600, 10.0 hrs)
Greg Henrikson (0600-1600, 10.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **10" Cushion:** Nielson used Cat 966, and 950 front end loaders to place ten inch cushion onto GDN. The area was regarded using a Cat 14G grader.
- **6" Cushion:** Nielson used a Cat 14G grader to grade cushion soils. A Cat 583 vibratory roller was used to compact the cushion that was placed.
- **Gas Vent Trench:** Nielson dug out approximately 100 ft for the north, central, and south gas vent trenches. The total lengths for these trenches is 950 ft, 830 ft, and 660 ft, for the north central and south gas vent trenches respectively. Gravel was placed to at least 4 inches above and below the four inch pipe and about 10 inches on either side.
- **Pond Sediment Removal:** Nielson used a Cat 325 excavator to remove dry sediment from the pond and load it into Volvo end dumps to be hauled to an area just east of the 5980 line. A Cat D8 dozer was used to spread out pond sediment in a one foot lift to aid in drying the material out.

Geosynthetics

- **GCL:** Colorado Lining deployed 21 panels or 36,402 ft^2 of GCL today. Total GCL placed for job is 579,844 ft^2.
- **FML:** Colorado Lining repaired, conducted fusion seaming and deployed 5 panels or 37,081 ft^2 FML today. Total FML placed for job is 579,844 ft^2.
- **GDN:** Colorado Lining deployed 10 panels or 17,505 ft^2 of GDN today. Total GDN placed for job is 407,318 ft^2.

SUMMARY OF QC TESTING:
Ran destructive tests on the following samples: DFp-041, DFp-042, DFp-043, DFp-044, DFp-045 and DFp-050. All six tests gave passing results

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: none

CQC Monitor: _____ Date: 12/18/04
Approved by: _____ Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 12/18/04 S M T W T F (S)

PRECIPITATION: **AM:** snow **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1330, 8.0 hrs) Gr 10.5 Pat 10.0

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **10" Cushion:** Nielson used Cat 966, and 950 front end loaders to place ten inch cushion onto GDN. The area was regarded using a Cat 14G grader.
- **Gas Vent Trench:** Nielson installed approximately 60 ft, 50 ft, and 60 ft for the north, central, and south gas vent trenches respectively. The total lengths for these trenches is 1100 ft, 880 ft, and 720 ft, for the north central and south gas vent trenches respectively. Gravel was placed to at least 4 inches above and below the four inch pipe and about 10 inches on either side.
- **Pond Sediment Removal:** Nielson used a Cat 325 excavator to remove dry sediment from the pond and load it into Volvo end dumps to be hauled to an area just east of the 5980 line. A Cat D8 dozer was used to spread out pond sediment in a one foot lift to aid in drying the material out.

Geosynthetics

- **GCL:** none. Total GCL placed for job is 579,844 ft^2.
- **FML:** none. Total FML placed for job is 579,844 ft^2.
- **GDN:** none. Total GDN placed for job is 407,318 ft^2.

SUMMARY OF QC TESTING:

Test #	% off MC	% Comp.	Pass/Fail
CL-120	0.8	98%	PASS
CL-121	0.6	100%	PASS
CL-122	-1.5	99%	PASS
CL-123	0.1	100%	PASS
CL-124	-1.3	103%	PASS
CL-125	-0.5	98%	PASS
CL-126	-1	103%	PASS
CL-127	-1.9	103%	PASS
CL-128	1.4	97%	PASS
CL-129	-1.4	99%	PASS
CL-130	0.3	99%	PASS
CL-131	-1	103%	PASS
CL-132	-1.1	102%	PASS
CL-133	-0.7	102%	PASS
CL-134	0.2	97%	PASS
CL-135	-1.4	99%	PASS
CL-136	-0.9	100%	PASS
CL-137	1.1	98%	PASS

Ran one Sand cone test at the same location as test CL-120, test name was CLS-006

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: none

CQC Monitor: _____ Date: 12-20-04
Approved by: _____ Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 12/19/04 (S) M T W T F S

PRECIPITATION: AM: none PM: none

CLOUD COVER: Partly Cloudy **WIND:** Moderate to High

GAI PERSONNEL HOURS CHARGED:

Patrick Harrell (0600- 1600, 10.0 hrs)
Greg Henrikson (0600-1630, 10.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

none

Geosynthetics

- **GCL:** Colorado Lining deployed 27 panel or 57,981ft^2 of GCL. Total GCL placed for job is 579,844 ft^2.
- **FML:** Colorado Lining deployed fusion seamed and deployed 7 panels or 54,945 ft^2 of FML today. Total FML placed for job is 579,844 ft^2.
- **GDN:** none. Total GDN placed for job is 407,318 ft^2.

SUMMARY OF QC TESTING:

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: none

CQC Monitor: _____ Date: 12/20/04
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 12/20/04 S (M) T W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** Very High

GAI PERSONNEL HOURS CHARGED:

Patrick Harrell (0600- 1230, 10.0 hrs)
Matt Cashimer (0600-1630, 10.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

No work due to excessive wind

Geosynthetics

- **GCL:** none. Total GCL placed for job is 579,844 ft^2.
- **FML:** none. Total FML placed for job is 579,844 ft^2.
- **GDN:** none. Total GDN placed for job is 407,318 ft^2.

SUMMARY OF QC TESTING:

Pulled 3 destructive test on samples DFp-046, DFp-047, and DFp-048. All results were passing.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Work called off due to excessive wind

Other Meetings: none

CQC Monitor: _____ Date: 12/20/04
Approved by: _____ Date: 5-16-05
File No. _____

SUBGRADE ACCEPTANCE FORM

The subgrade from S-338 /S-344 to _____, has been moisture conditioned and compacted according to specifications. This area has been tested for both moisture and density using a nuclear density gauge and/or sand cone tests at specified testing intervals. The area specified above has met all specifications for the 6-inch cushion soil including specification given on its gradation, layer thickness, moisture content and dry density. A visual inspection of this area has been conducted to ensure that the cushion soil is above 32 degrees Fahrenheit, and free of standing water debris and any sharp corners or protrusions that could put excessive stress on the GCL or FML. This area has met all specifications and is approved for liner placement on December 19 2004.

Michael Patton	Stellar	12/19/04
QC Representative	Company	Date
[signature]	Tetra Tech.	12-19-04
QA Representative	Company	Date

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 12/21/04 S M (T) W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0600-1800, 12.0 hrs)
Patrick Harrell (0600- 1600, 11.0 hrs)
Matt Cashimer (0600-1700, 11.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **10" Cushion:** Nielson used Cat 966, and 950 front end loaders to place ten inch cushion onto GDN. The area was regarded using a Cat 14G grader.
- **Pond Sediment Removal:** Nielson brought in kiln dust to firm up the pond sediments located at the east end of the site. The kiln dust was hauled with belly dumps and pushed into place and mixed by a Cat d6 dozer and a Cat 325 excavator
- **Test Fill:** Nielson built a test pad of 10" cushion and rock layer material north of the northwestern Colorado lining liner storage area. A Cat CS-583 vibratory smooth drum roller was on hand to compact the 10" cushion, and a Cat D6 dozer was used to place will for both layers of material.

Geosynthetics

- **GCL:** Colorado Lining deployed 19 panels or 35,358 ft^2 of GCL today. Total GCL placed for job is 673,217 ft^2.
- **FML:** Colorado Lining repaired, conducted fusion seaming and deployed 5 panels or 35,838 ft^2 FML today. Total FML placed for job is 669,165 ft^2.
- **GDN:** Colorado Lining repaired GDN today. Total GDN placed for job is 407,318 ft^2.

SUMMARY OF QC TESTING: none

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: *Test Pad:* A test pad was created to determine the feasibly of using a D6 dozer to place the 1 foot of rock layer material on the cap. The method used was to place the rock layer on a 10" cushion layer using the D6 LGP dozer and then remove some of the rock layer to see how the 10" cushion was affected by the dozer driving on top of the rock layer. The 10" cushion was virtually unaffected by the dozer being on the rock layer and the EPA, CDPHE, Stoller, and Kaiser Hill agreed that this method of placement was acceptable.
GDN Repair: After the wind storm where gust were recorded to have speeds in excess of 100 miles per hour the GDN was discovered to have been pulled apart removing the 6" overlap and leaving gaps of up to 4" between the plastic netting. Stoller contacted Earth Tech and Kaiser Hill to decide if the GDN needed to be repaired and if so how. The response was that the GDN needed to meet the specification of having 6" of overlap on all the panels, so the GDN would need to be pulled back into place and or patching over the seams where the splits occurred.

CQC Monitor: _____ Date: 12/22/04
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 12/22/04 S M T (W) T F S

PRECIPITATION: **AM:** snow **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1300, 7.5 hrs)
Patrick Harrell (0600- 1700, 11.0 hrs)
Matt Cashimer (0600-1400, 8.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **10" Cushion:** Nielson used a Cat 14G grader, a Cat 966 front end loader and Volvo end dumps to remove snow from the 10 inch cushion layer.
- **Pond Sediment Removal:** Nielson brought in kiln dust to firm up the pond sediments located at the east end of the site. The kiln dust was hauled with belly dumps and then placed and mixed a Cat 325 excavator.

Geosynthetics

- **GCL:** none. Total GCL placed for job is 673,217 ft^2.
- **FML:** none. Total FML placed for job is 669,165 ft^2.
- **GDN:** Colorado Lining repaired GDN today by splitting open the seams and pulling the GDN back in place recreating the 6" specified overlap and rip tying the mesh back up. Total GDN placed for job is 407,318 ft^2.

SUMMARY OF QC TESTING: none

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: none

CQC Monitor: _____ Date: 12/23/04
Approved by: _____ Date: 5-16-05
File No. _____

Job No: 043-2246 Report No. 122304MSPDaily

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 12/23/04 S M T W (T) F S

PRECIPITATION: **AM:** snow **PM:** none

CLOUD COVER: Overcast to Partly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1630, 11.0 hrs)
Patrick Harrell (0600- 1700, 3.0 hrs)
Matt Cashimer (0600-1400, 8.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **10" Cushion:** Nielson used a Cat 14G grader, a Cat 966 front end loader and Volvo end dumps to remove snow from the 10 inch cushion layer.
- **Pond Sediment Removal:** Nielson brought used a Cat 325 excavator with an extended boom to remove sediment for the pond on the east end of the site. The material which had previously been mixed with kiln dust was hauled by Volvo end dumps to the eastern side of the cap just east of the 5980 line.

Geosynthetics

- **GCL:** none. Total GCL placed for job is 673,217 ft^2.
- **FML:** none. Total FML placed for job is 669,165 ft^2.
- **GDN:** none. Total GDN placed for job is 407,318 ft^2.

SUMMARY OF QC TESTING: none

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: none

CQC Monitor: _____ Date: 12/23/04
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 1/3/05 S (M) T W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Overcast to Partly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1730, 12.0 hrs)
Matt Cashimer (0600-1830, 12.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- 10" Cushion: Nielson used a Cat 14G grader, two Cat front end loaders (966 and 950) to place 10" cushion soils onto GDN. End dumps from Centennial and La Farge were used to haul in the cushion material for placement by the front end loaders.
- Pond Sediment Removal: Nielson used a Cat 325 excavator with an extended boom to remove sediment for the pond on the east end of the site. The material which had previously been mixed with kiln dust was hauled by Volvo end dumps to the eastern side of the cap just east of the 5980 line. In addition several loads of kiln dust were brought in to mix with the pond sediments in order to firm up the material enough to be used as fill on the cap.

Geosynthetics

- GCL: none. Total GCL placed for job is 673,217 ft^2.
- FML: Colorado lining preformed pressure testing and repairs on FML today. Total FML placed for job is 669,165 ft^2.
- GDN: Colorado lining preformed repairs and deployed GDN and removed one panel that was damaged beyond repair (T-208). Total deployment for the day was 5 panels, or 3,029 ft^2. Total GDN placed for job is 407,747 ft^2.

SUMMARY OF QC TESTING:

Density Test Summary

Test #	% off MC	% Comp.	Pass/Fail
CU-001	-1.8	98%	PASS
CU-002	-1.1	101%	PASS
CU-003	-1.7	101%	PASS
CU-004	-0.2	99%	PASS
CU-005	-0.9	98%	PASS
CU-006	-1.7	101%	PASS
CU-007	-0.6	99%	PASS
CU-008	-1.1	102%	PASS
CU-009	-1.3	103%	PASS
CU-010	-1.5	95%	PASS

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: none

CQC Monitor: _____ Date: 1/4/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 01/04/05 S M (T) W T F S

PRECIPITATION: **AM:** snow **PM:** snow

CLOUD COVER: Fog off and on and Overcast **WIND:** low to moderate

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1600, 10.5 hrs)
Matt Cashimer (0600-1330, 7.5 hrs)
Patrick Harrell (0600-1530, 9.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **10" Cushion:** Nielson used a Cat 14G grader, two Cat front end loaders (966 and 950) to place 10" cushion soils onto GDN. End dumps from Centennial and La Farge were used to haul in the cushion material for placement by the front end loaders.
- **Pond Sediment Removal:** Nielson used a Cat D8 to mix pond sediments and place them into 8 inch lifts. The material which had previously been mixed with kiln dust was hauled by Volvo end dumps to the eastern side of the cap just east of the 5980 line. In addition several loads of kiln dust were brought in to mix with the pond sediments in order to firm up the material enough to be used as fill on the cap.
- **Rock Layer:** Nielson began hauling in and placing of Rock Layer material on the cap. End dumps from centennial were used to haul in the Rock Layer material and a D6 was used to place the material in a 1 foot lift.

Geosynthetics

- **GCL:** none. Total GCL placed for job is 673,217 ft^2.
- **FML:** Colorado lining preformed pressure testing and repairs on FML today. Total FML placed for job is 669,165 ft^2.
- **GDN:** Colorado lining preformed repairs and deployed 10 panels or 22,048 ft^2 GDN. Total GDN placed for job is 429,795 ft^2.

SUMMARY OF QC TESTING: none

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Met with Colorado Lining, Stoller, and Earth Tech and they decided that since the conditions were too cold and damp to allow for leistering of patches to the GDN that an oversized patch with at least 4 feet of overlap placed overtop of any damage would be acceptable. This was done to enable the advancement of the 10" cushion as long as the spotters made sure that the patches lay flat on the ground and do not shift with the placement of the 10" cushion.

CQC Monitor: _____ Date: 1/6/05
Approved by: _____ Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 01/05/05 S M T (W) T F S

PRECIPITATION: **AM:** snow **PM:** none

CLOUD COVER: Overcast to partly cloudy **WIND:** moderate

GAI PERSONNEL HOURS CHARGED:

None

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Snow Removal:** Nielson performed snow removal on the 10" cushion.

Geosynthetics

- **GCL:** none. Total GCL placed for job is 673,217 ft^2.
- **FML:** Colorado Lining performed snow removal. Total FML placed for job is 669,165 ft^2.
- **GDN:** Colorado Lining performed snow removal. Total GDN placed for job is 429,795 ft^2.

SUMMARY OF QC TESTING: none

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: none

CQC Monitor: _____ Date: 1/6/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 01/06/05 S M T W (T) F S

PRECIPITATION: **AM:** snow **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** low to high

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1730, 12.0 hrs)
Matt Cashimer (0600-1730, 11.5 hrs)
Patrick Harrell (0600-1730, 11.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **10" Cushion:** Nielson used a Cat 14G grader, two Cat front end loaders (966 and 950) to place 10" cushion soils onto GDN. End dumps from Centennial and La Farge were used to haul in the cushion material for placement by the front end loaders.
- **Pond Sediment Removal:** Nielson used a Cat D8 to mix pond sediments and place them into 8 inch lifts. The material which had previously been mixed with kiln dust was hauled by Volvo end dumps to the eastern side of the cap just east of the 5980 line. In addition several loads of kiln dust were brought in to mix with the pond sediments in order to firm up the material enough to be used as fill on the cap.
- **Rock Layer:** Nielson continued hauling in and placing of Rock Layer material on the cap. End dumps from centennial were used to haul in the Rock Layer material and a D6 was used to place the material in a 1 foot lift.

Geosynthetics

- **GCL:** none. Total GCL placed for job is 673,217 ft^2.
- **FML:** Colorado Lining performed snow removal and preformed vacuum testing and repairs on the FML. Total FML placed for job is 669,165 ft^2.
- **GDN:** Colorado Lining performed snow removal repaired and deployed 33 panels, or 67,990 ft^2 of GDN. Total GDN placed for job is 497,785 ft^2.

SUMMARY OF QC TESTING:

Ran extrusion trial seams, and 7 destructive tests today. DFp-048, DFp-051, DFp-052, DFp-053, DFp-056, DFp-057, were all passing tests and DFp-058 failed due to an adhesion beak in the

inside seaming track. Bones will be taken along the seam until an end of the improperly fused seam can be located and then a destructive test will be pulled on either both north and south of the failed destructive to verify that the seam is passing on either side of the failed destructive test location.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: none

CQC Monitor: _____ Date: 1/7/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 01/07/05 S M T W T (F) S

PRECIPITATION: **AM:** snow **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** low to high

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1730, 12.0 hrs)
Matt Cashimer (0600-1330, 7.5 hrs)
Patrick Harrell (0600-1730, 11.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **10" Cushion:** Nielson used a Cat 14G grader, two Cat front end loaders (966 and 950) to place 10" cushion soils onto GDN. End dumps from Centennial and La Farge were used to haul in the cushion material for placement by the front end loaders.
- **Pond Sediment Removal:** Nielson used a Cat D8 to mix pond sediments and place them into 8 inch lifts. The material which had previously been mixed with kiln dust was hauled by Volvo end dumps to the eastern side of the cap just east of the 5980 line. In addition several loads of kiln dust were brought in to mix with the pond sediments in order to firm up the material enough to be used as fill on the cap.
- **Rock Layer:** Nielson continued hauling in and placing of Rock Layer material on the cap. End dumps from centennial were used to haul in the Rock Layer material and a D6 was used to place the material in a 1 foot lift.

Geosynthetics

- **GCL:** none. Total GCL placed for job is 673,217 ft^2.
- **FML:** Colorado Lining performed snow removal and preformed vacuum testing, pressure testing and repairs on the FML. Total FML placed for job is 669,165 ft^2.
- **GDN:** Colorado Lining performed snow removal repaired and deployed 39 panels, or 84,084 ft^2 of GDN. Total GDN placed for job is 581,869 ft^2.

SUMMARY OF QC TESTING:

Density Tests

Test #	% off MC	% Comp.	Pass/Fail
CU-011	-1	104%	PASS
CU-012	-1.5	96%	PASS
CU-013	-1.4	101%	PASS
CU-014	-1.5	97%	PASS
CU-015	-1.7	96%	PASS
CU-016	-1.7	99%	PASS
CU-017	-1.3	99%	PASS
CU-018	-0.9	100%	PASS

Ran 4 destructive test and 4 informational tests on areas of liner immediately surrounding the failed destructive found yesterday. The 4 informational test were to help determine the limits of the failing portion of seams, 2 to the north and 2 to the south. Only 1 of the information test passed testing. Since no passing test to the north of the destruct could be located the northern portion of seam was deemed failing and a destructive was pulled from the end of the previous seam that was seamed by machine #0019 (the seaming machine used on the failed seam). The destructive taken on the previous seam passed destructive testing. The one informational test that passed was located to the south of the failing destructive and once it passed a destructive test was taken just south of the area where the informational test was taken. This southern destructive failed. The next destructive originally marked on this seam was then tested. This destructive gave passing results (DFp-060) and Colorado lining decided to repair all the seaming done by machine #0019 from DFp-060 to the anchor trench. Total length of seam to be repaired is approximately 600 feet.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Met with Stoller, Colorado Lining, and Earth Tech and discussed weather a destructive test would be necessary on the extrusion weld to be placed on the failed seam. It was decided that a destructive would not be necessary or practical on this seam. The test is not practical because the way the extrusion weld will be done a destructive test would not test the extrusion welds strength on the shear test but the old fusion welds strength. Also the strength on the destructives that were run were all above the minimum specified levels. As a result this seam will be considered a repaired seam not a extruded seam.

CQC Monitor: _____ Date: 1/8/05

Approved by: _____ Date: 5-16-05

File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 01/08/05 S M T W T F (S)

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** Very High

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1430, 9.0 hrs)
Matt Cashimer (0600-1630, 10.5 hrs)
Patrick Harrell (0600-1530, 9.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **10" Cushion:** Nielson used a Cat 14G grader, two Cat front end loaders (966 and 950) to place 10" cushion soils onto GDN. Belly dumps from Centennial and end dumps from La Farge were used to haul in the cushion material for placement by the front end loaders. La Farge's end dumps were shut down due to excessive wind in the early morning.
- **Pond Sediment Removal:** Nielson used a Cat D8 to mix pond sediments and place them into 8 inch lifts.
- **Rock Layer:** Nielson continued hauling in and placing of Rock Layer material on the cap. End dumps from centennial were used until wind speeds became too high then Volvos continued the haul of Rock Layer material. A D6 was used to place the material in a 1 foot lift.

Geosynthetics

- **GCL:** none. Total GCL placed for job is 673,217 ft^2.
- **FML:** Colorado Lining performed preformed pressure testing, vacuum testing and repairs on the FML. Total FML placed for job is 669,165 ft^2.
- **GDN:** Colorado Lining performed repaired and deployed 8 panels, or 17,615 ft^2 of GDN. Total GDN placed for job is 599,484 ft^2.

SUMMARY OF QC TESTING:

Extrusion Trial Seams tested.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Met with Tetra Tech, Stoller and Nielson and discussed the loose, oversized cross seam patches. Apparently some of the patches had not been properly weighted down before 10" cushion placement had occurred in the area where these loose cross seam patches exist. Also some sewn seams had split due to the winds and the snow removal. These items were repaired, some had to be dug out by shovels. The loose cross seam patches were weighted down by laborers shoveling cushion overtop of the patches and most were sewn into place along the patches north south trending edges.

CQC Monitor: _____ Date: 5-16-05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 01/09/05 (S) M T W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** Very High

GAI PERSONNEL HOURS CHARGED:

Michael Place (0600-1600, 10.0 hrs)
Patrick Harrell (0600-1630, 10.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **10" Cushion:** Nielson used a Cat 14G grader, two Cat front end loaders (966 and 950) to place 10" cushion soils onto GDN. Belly dumps from Centennial and end dumps from La Farge were used to haul in the cushion material for placement by the front end loaders. La Farge's end dumps were shut down due to excessive wind in the early morning.
- **Pond Sediment Removal:** Nielson used a Cat D8 to mix pond sediments and place them into 8 inch lifts.
- **Rock Layer:** Nielson continued hauling in and placing of Rock Layer material on the cap. End dumps from centennial were used until wind speeds became too high then Volvos continued the haul of Rock Layer material. A D6 was used to place the material in a 1 foot lift.
- **Poof Rolling:** Nielson used an empty scraper to make a first pass on the northern asbestos area, and then a fully loaded scraper to make two passes over the entire northern and southern asbestos areas completing the first round of proof rolling for all areas not on steep slopes for the job.

Geosynthetics

- **GCL:** none. Total GCL placed for job is 673,217 ft^2.
- **FML:** Colorado Lining performed preformed pressure testing, vacuum testing and repairs on the FML. Total FML placed for job is 669,165 ft^2.
- **GDN:** none. Total GDN placed for job is 599,484 ft^2.

SUMMARY OF QC TESTING:

Extrusion Trial Seams tested. Also Ran destructive test DFp-059 which failed along the inside track of the fusion welder. Bones were taken every 30 feet on either side of the failed destruct until a section that could not be pulled apart by hand was located to the north and south destruct DFp-059. Once a suitable area was located two more destructives were taken, one to the north and one to the south. These destructives, DFp-059U and DFp-059D, passed. The seam then had to be reconstructed by extruding seaming the seam down and patching any area where bones or additional destructives were pulled.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: none

CQC Monitor: _____ Date: 1/10/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 01/10/05 S (M) T W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** Moderate

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1730, 12.0 hrs)
Matt Cashimer (0600-1630, 10.5 hrs)
Patrick Harrell (0600-1400, 8.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **10" Cushion:** Nielson used a Cat 14G grader, two Cat front end loaders (966 and 950) to place 10" cushion soils onto GDN. Belly dumps from Centennial and end dumps from La Farge were used to haul in the cushion material for placement by the front end loaders. La Farge's end dumps were shut down due to excessive wind in the early morning.
- **Pond Sediment Removal:** Nielson used a Cat D8 to mix pond sediments and place them into 8 inch lifts. A Cat 583 vibratory roller was used to compact the pond sediment in preparation for proof rolling.
- **Rock Layer:** Nielson continued hauling in and placing of Rock Layer material on the cap. End dumps from centennial were used until wind speeds became too high then Volvos continued the haul of Rock Layer material. A D6 was used to place the material in a 1 foot lift.
- **Poof Rolling:** Nielson used a fully loaded scraper to make two passes over pond sediment with kiln dust added at the southeastern corner of the cap.

Geosynthetics

- **GCL:** none. Total GCL placed for job is 673,217 ft^2.
- **FML:** Colorado Lining performed preformed pressure testing, vacuum testing and repairs on the FML. Total FML placed for job is 669,165 ft^2.
- **GDN:** Colorado Lining deployed 20 panels or 41,171 ft^2. Total GDN placed for job is 640,655 ft^2.

SUMMARY OF QC TESTING:

Density Tests

Test #	% off MC	% Comp.	Pass/Fail
CU-019	-1.2	99%	PASS
CU-020	-1.5	100%	PASS
CU-021	-0.5	97%	PASS
CU-022	-1.6	100%	PASS
CU-023	-1.9	103%	PASS
CU-024	-0.9	98%	PASS
CU-025	-0.8	99%	PASS
CU-026	-0.8	99%	PASS
CU-027	-1.5	101%	PASS
CU-028	-1.9	99%	PASS
CU-029	0.2	95%	PASS
CU-030	-0.5	101%	PASS
CU-031	0	100%	PASS
CU-032	-0.8	101%	PASS

Pulled 5 destructive tests, all with passing results, the test numbers were DFp-61, DFp-062, DFp-063, DFp-064, and DFp-065.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: none

CQC Monitor: _____ Date: 1/11/05

Approved by: _____ Date: 5-16-05

File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 01/11/05 S M (T) W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: AM Fog, PM Partly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1730, 12.0 hrs)
Matt Cashimer (0600-1600, 10.0 hrs)
Patrick Harrell (0600-1200, 6.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **10" Cushion:** Nielson used a Cat 14G grader, two Cat front end loaders (966 and 950) to place 10" cushion soils onto GDN. Belly dumps from Centennial and La Farge were used to haul in the cushion material for placement by the front end loaders. La Farge's end dumps were shut down due to excessive wind in the early morning.
- **Pond Sediment:** Nielson used a Cat D8 to mix pond sediments and place them into 8 inch lifts.
- **Rock Layer:** Nielson continued hauling in and placing of Rock Layer material on the cap. End dumps from centennial were used until wind speeds became too high then Volvos continued the haul of Rock Layer material. A D6 was used to place the material in a 1 foot lift.

Geosynthetics

- **GCL:** none. Total GCL placed for job is 673,217 ft^2.
- **FML:** Colorado Lining performed preformed pressure testing, vacuum testing and repairs on the FML. Total FML placed for job is 669,165 ft^2.
- **GDN:** Colorado Lining performed repairs and deployed 40 panels or 71,909 ft^2. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING:

Density Tests

Test #	% off MC	% Comp.	Pass/Fail
CU-032	-0.8	101%	PASS
CU-033	0.4	95%	PASS
CU-034	-0.7	97%	PASS
CU-035	-1.8	96%	PASS
CU-036	0.3	99%	PASS
CU-037	-1.4	97%	PASS
CU-038	1.2	96%	PASS

Ran one Sand cone test at the same test location as test number CU-020.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: none

CQC Monitor: _____ Date: 1/12/05
Approved by: _____ Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 01/12/05 S M T (W) T F S

PRECIPITATION: **AM:** snow **PM:** none

CLOUD COVER: Overcast to Partly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1630, 11.0 hrs)
Matt Cashimer (0600-1500, 9.0 hrs)
Patrick Harrell (0600-1100, 5.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Snow Removal:** Nielson performed snow removal from the 10" cushion using a Cat 966 front end loader, Volvos and a Cat 14 G grader.
- **Rock Layer:** Nielson continued hauling in and placing of Rock Layer material on the cap. End dumps from centennial were used until wind speeds became too high then Volvos continued the haul of Rock Layer material. A D6 was used to place the material in a 1 foot lift.

Geosynthetics

- **GCL:** none. Total GCL placed for job is 673,217 ft^2.
- **FML:** none. Total FML placed for job is 669,165 ft^2.
- **GDN:** Colorado Lining performed snow removal. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING:

Two Samples of Alluvial material were taken from the berms that used to surround the shooting range. One sample was taken from the east berm and one from the west berm.

Ran one bulk gradation on the rock layer material (RL-03). This material was a mixed sample of the course rock (mostly 6" to 10" rock) and -4" material. The ratio need to achieve a passing gradation was 3:2 or 2:2, 6"rock to -4" material.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: none

CQC Monitor: _____ Date: 1/13/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 01/13/05 S M T W (T) F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** High

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1630, 11.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **10" Cushion:** Nielson used a Cat 14G grader, two Cat front end loaders (966 and 950) to place 10" cushion soils onto GDN. Belly dumps from Centennial and La Farge were used to haul in the cushion material for placement by the front end loaders.
- **Pond Sediment:** Nielson used a Cat D8 to mix and dry pond sediments and place them into 8 inch lifts.
- **Rock Layer:** Nielson continued hauling in and placing of Rock Layer material on the cap. End dumps from centennial were used until wind speeds became too high then Volvos continued the haul of Rock Layer material. A D6 was used to place the material in a 1 foot lift.

Geosynthetics

- **GCL:** none. Total GCL placed for job is 673,217 ft^2.
- **FML:** none. Total FML placed for job is 669,165 ft^2.
- **GDN:** none. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING: none

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: none

CQC Monitor: _____ Date: 1/14/05
Approved by: _____ Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 01/14/05 S M T W T (F) S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** High

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1630, 11.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Pond Sediment:** Nielson used a Cat D8 to mix and dry pond sediments and place them into 8 inch lifts. Kiln dust was hauled to the area east of the 5980 line and the trailer of the truck tipped over. The site was shut down the rest of the day.
- **Rock Layer:** Nielson continued hauling in and placing of Rock Layer material on the cap. End dumps from centennial were used until wind speeds became too high then Volvos continued the haul of Rock Layer material. A D6 was used to place the material in a 1 foot lift. Site shut down after kiln dust truck tipped.

Geosynthetics

- **GCL:** none. Total GCL placed for job is 673,217 ft^2.
- **FML:** none. Total FML placed for job is 669,165 ft^2.
- **GDN:** none. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING: none

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: *Rock Layer*. Met with Stoller and Centennial to discus the rock layer production. Centennial desired to alter the mix of materials to make the material more economical and faster to produce, so they hauled in some new rock materials. The new rock materials better met the spec on the 6" rock, however the amount of rock used could not be adjusted because the fines in the materials would fall out of spec. if any less than 3 rock to 2, 4" minus material was used. This discussion will continue on Monday.

Kiln Dust Truck Incident: A kiln dust truck tipped over at 0900 this morning and the site was shut down. It was decided that truck operators who enter the Present Landfill will now have to have a Pre-EV every morning to inform them of the hazards on the job site.

CQC Monitor: _____ Date: 1/17/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 01/17/05 S (M) T W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** Moderate to Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1630, 11.0 hrs)
Patrick Harrell (0600- 1330, 7.5. hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Pond Sediment:** Nielson used a Cat D8 dozer and a Cat 825 sheep foot compactor to mix, dry, and compact pond sediments
- **Rock Layer:** Nielson continued hauling in and placing of Rock Layer material on the cap. End dumps from centennial were used until wind speeds became too high then Volvos continued the haul of Rock Layer material. A D6 was used to place the material in a 1 foot lift. Site shut down after kiln dust truck tipped.

Geosynthetics

- **GCL:** Colorado Lining repaired GCL after installing a boot around vent pipe. Total GCL placed for job is 673,217 ft^2.
- **FML:** Colorado Lining repaired FML after installing a boot around vent pipe. Total FML placed for job is 669,165 ft^2.
- **GDN:** Colorado Lining repaired GDN after installing a boot around vent pipe. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING: none

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: none.

CQC Monitor: _____ Date: 1/18/05
Approved by: _____ Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 01/18/05 S M (T) W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** High

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1830, 13.0 hrs)
Patrick Harrell (0600-1330, 7.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Pond Sediment:** Nielson used a Cat D8 dozer and a Cat 825 sheep foot compactor to mix, dry, and compact pond sediments
- **Rock Layer:** Nielson continued hauling in and placing of Rock Layer material on the cap. End dumps from centennial were used until wind speeds became too high then Volvos continued the haul of Rock Layer material. A D6 was used to place the material in a 1 foot lift. Site shut down after kiln dust truck tipped.
- **10" Cushion:** Nielson used a cat 966 front end loader to place cushion onto GDN, cushion was hauled in by belly bumps from La Farge. A Cat 14G grader was used to grade the cushoin for survey. Jumping jacks were used to compact the cushion soils, placed with a bobcat, around the gas vent pipes.
- **Proof Rolling:** Nielson used a fully loaded Cat 633 scraper to proof roll the pond sediment area east of the 5980 line. Two passes were made on the with the fully loaded scraper.

Geosynthetics

- **GCL:** Colorado Lining repaired GCL after installing a boot around vent pipe. Total GCL placed for job is 673,217 ft^2.
- **FML:** Colorado Lining repaired FML after installing a boot around vent pipe. Total FML placed for job is 669,165 ft^2.
- **GDN:** Colorado Lining repaired GDN after installing a boot around vent pipe. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING:

Ran a bulk gradation on the Rock Layer material using pit-run and imported 6" rock from Idaho

Springs. Results to be given at a later date.

Density Tests

Test #	% off MC	% Comp.	Pass/Fail
CU-039	-1.3	96%	PASS
CU-040	-0.8	98%	PASS
CU-041	-1.7	98%	PASS
CU-042	-1.8	99%	PASS
CU-043	-1.2	98%	PASS
CU-044	-1.9	98%	PASS
CU-045	-1.8	96%	PASS
CU-046	-1.8	98%	PASS
CU-047	-0.3	97%	PASS
CU-048	-1.7	98%	PASS
CU-049	-0.9	97%	PASS
CU-050	-1.8	99%	PASS
CU-051	-1	100%	PASS
CU-052	-0.7	98%	PASS
CU-053	-0.6	99%	PASS

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: none.

CQC Monitor: _____ Date: 1/18/05

Approved by: _____ Date: 5-16-05

File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 01/19/05 S M T (W) T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** Low to Moderate

GAI PERSONNEL HOURS CHARGED:

Patrick Harrell (0530-1630, 11.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Pond Sediment:** Nielson used a Cat D8 dozer, a Cat 633 scraper, and a Cat 825 sheep foot compactor to mix, dry, and compact pond sediments
- **Rock Layer:** Nielson continued hauling and placing Rock Layer material on the cap, using end dumps from centennial. A D6 was used to place the material in a 1 foot lift.
- **10" Cushion:** Nielson used two Cat 966 front end loaders to place cushion onto GDN. The 10" cushion was hauled in by belly dumps from La Farge, as well as the Volvo haul trucks. A Cat 14G grader was used to grade the cushion for survey. Jumping jacks were used to compact the cushion soils, placed with a bobcat, around the gas vent pipes.
- **Proof Rolling:** none

Geosynthetics

- **GCL:** Colorado Lining repaired GCL after installing a boot around a vent pipe. Total GCL placed for job is 673,217 ft^2.
- **FML:** Colorado Lining repaired FML after installing a boot around a vent pipe. Total FML placed for job is 669,165 ft^2.
- **GDN:** Colorado Lining repaired GDN after installing a boot around a vent pipe. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING: Vacuum testing was performed, monitored and recorded for the boot installed today around the center vent riser of the south vent pipe.

No official nuclear moisture/density testing was performed today however; Golder performed informative testing to give the contractor an idea of what needs to be done to achieve passing results.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: none.

CQC Monitor: _____ **Date:** 1-20-05
Approved by: _____ **Date:** 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 01/20/05 S M T W (T) F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Mostly Sunny **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Patrick Harrell (0530-1630, 11.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Pond Sediment:** Nielson used a Cat D8 dozer, a Cat 633 scraper, and a Cat 825 sheep foot compactor to mix, dry, and compact pond sediments. Alluvium was transported in to be mixed with the pond sediment.
- **Rock Layer:** Nielson continued hauling and placing Rock Layer material on the cap, using end dumps from centennial. A D6 was used to place the material in a 1 foot lift.
- **10" Cushion:** Nielson used two Cat 966 front end loaders to place cushion onto GDN. The 10" cushion was hauled in by belly dumps from La Farge, as well as the Volvo haul trucks. A Cat 14G grader was used to grade the cushion for survey. Jumping jacks were used to compact the cushion soils, placed with a bobcat, around the gas vent pipes.
- **Proof Rolling:** none.
- **Clear and Grub:** A Cat 325 track-hoe was used to remove vegetation on the east face.

Geosynthetics

- **GCL:** Colorado Lining repaired GCL after installing a boot around a vent pipe. Total GCL placed for job is 673,217 ft^2.
- **FML:** Colorado Lining repaired FML after installing a boot around a vent pipe. Total FML placed for job is 669,165 ft^2.
- **GDN:** Colorado Lining repaired GDN after installing a boot around a vent pipe. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING: Vacuum testing was performed, monitored and recorded for the boot installed today around the east vent riser of the north vent pipe.

Test #	% off MC	% Comp.	Pass/Fail
CU-054	-1.6	100%	PASS
CU-055	-1.4	104%	PASS
CU-056	-0.7	100%	PASS
CU-057	-2	98%	PASS
CU-058	-1.6	102%	PASS
CU-059	-1.1	100%	PASS
CU-060	-0.9	100%	PASS
CU-061	-1.6	102%	PASS
CU-062	-1.3	104%	PASS
CU-063	-1.8	100%	PASS

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: none.

CQC Monitor: _____ Date: 1-21-05
Approved by: _____ Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 01/21/05 S M T W T (F) S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Mostly Sunny **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Patrick Harrell (0530-1600, 10.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Pond Sediment:** Nielson used a Cat D8 dozer, a Cat 633 scraper, and a Cat 825 sheep foot compactor to mix, dry, and compact pond sediments. Alluvium was transported in to be mixed with the pond sediment.
- **Rock Layer:** Nielson continued hauling and placing Rock Layer material on the cap, using end dumps from centennial. A D6 was used to place the material in a 1 foot lift.
- **10" Cushion:** Nielson used two Cat 966 front end loaders to place cushion onto GDN. The 10" cushion was hauled in by belly dumps from La Farge, as well as the Volvo haul trucks. A Cat 14G grader was used to grade the cushion for survey. Jumping jacks were used to compact the cushion soils, placed with a bobcat, around the gas vent pipes.
- **Proof Rolling:** none.
- **Clear and Grub:** A Cat 325 track-hoe was used to move some rip-rap around on the east face.

Geosynthetics

- **GCL:** Colorado Lining repaired GCL after installing two boots around vent pipes. Total GCL placed for job is 673,217 ft^2.
- **FML:** Colorado Lining repaired FML after installing two boots around vent pipes. Total FML placed for job is 669,165 ft^2.
- **GDN:** Colorado Lining repaired GDN after installing two boots around vent pipes. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING: Vacuum testing was performed, monitored and recorded for the boots installed today.

Test #	% off MC	% Comp.	Pass/Fail
CU-064	-0.1	100%	PASS
CU-065	-1.5	102%	PASS
CU-066	-1.9	101%	PASS
CU-067	-1.8	97%	PASS
CU-068	0.1	97%	PASS
CU-069	-1.7	96%	PASS
CU-070	-1	101%	PASS
CU-071	-0.2	99%	PASS
CU-072	-1.9	97%	PASS
CU-073	0	100%	PASS
CU-074	-0.4	104%	PASS
CU-075	-0.1	99%	PASS
CU-076	-1	103%	PASS

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: A meeting was held this morning with representatives from Golder, Stoller, Nielson, Colorado Lining, and Paragon to discuss issues related to the draft copy of the design for the remainder of the landfill.

CQC Monitor: _____ **Date:** 1-22-05
Approved by: _____ **Date:** 5-16-05
File No. _____

Job No: 043-2246 Report No. 012205MSPDaily

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 01/22/05 S M T W T F (S)

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Mostly Sunny **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Patrick Harrell (0530-1200, 6.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Pond Sediment:** Nielson used a Cat D8 dozer, a Cat 633 scraper, and a Cat 825 sheep foot compactor to mix, dry, and compact pond sediments. Alluvium was transported in to be mixed with the pond sediment.
- **Rock Layer:** Nielson continued hauling and placing Rock Layer material on the cap, using end dumps from centennial. A D6 was used to place the material in a 1 foot lift.
- **10" Cushion:** Nielson used two Cat 966 front end loaders to place cushion onto GDN. The 10" cushion was hauled by the Volvo haul trucks. A Cat 14G grader was used to grade the cushion for survey. A Cat steel-drum roller was used to compact and condition the 10" cushion.
- **Proof Rolling:** none.
- **2' rock layer:** The Volvo haul trucks were used along with a Cat D6 to place the 2' rock layer.
- **Other:** A Cat 325 track-hoe was used to excavate a ditch along the south edge of the east end of the pad. A Volvo haul truck and a Cat 633 scraper were used to transport material from the ditch to a stockpile north of the pad.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 673,217 ft^2.
- **FML:** None. Total FML placed for job is 669,165 ft^2.
- **GDN:** None. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING: None

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: None

CQC Monitor: _____ **Date:** 1-24-05
Approved by: _____ **Date:** 3-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 01/24/05 S (M) T W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Mostly Sunny **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Patrick Harrell (0630-1630, 10.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Pond Sediment:** Nielson used a Cat D8 dozer and a Cat 825 sheep foot compactor to mix, dry, and compact pond sediments. Alluvium was transported in to be mixed with the pond sediment.
- **Rock Layer:** Nielson continued hauling and placing Rock Layer material on the cap, using end dumps from centennial. A D6 was used to place the material in a 1 foot lift.
- **10" Cushion:** Nielson used a Cat 966 front end loader to place cushion onto GDN. The 10" cushion was hauled by a Volvo haul truck. A Cat 14G grader was used to grade the cushion for survey. A Cat steel-drum roller was used to compact and condition the 10" cushion.
- **Proof Rolling:** none.
- **2' rock layer:** The Volvo haul trucks were used along with a Cat D6 to place the 2' rock layer.
- **Other:** A Cat 325 track-hoe was used to excavate a ditch along the south edge of the east end of the pad and was later used to remove an access road and regrade the surface. A Volvo haul truck was used to transport material from the ditch to a stockpile north of the pad.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 673,217 ft^2.
- **FML:** None. Total FML placed for job is 669,165 ft^2.
- **GDN:** None. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING: The following testing occurred today:

CU-077	-1.5	100%	PASS
CU-078	-1.7	103%	PASS
CU-079	-1.5	105%	PASS
CU-080	-1.3	102%	PASS
CU-081	-1.9	100%	PASS
CU-082	-1.2	103%	PASS
CU-083	0.2	95%	PASS
CU-084	-1.5	101%	PASS

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: None

CQC Monitor: _____ **Date:** 1-26-04
Approved by: _____ **Date:** 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 01/25/05 S M (T) W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Mostly Sunny **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Patrick Harrell (0530-1630, 11.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Pond Sediment:** Alluvium was transported in by belly dumps and mixed with pond sediments using a Cat D8 dozer and a Cat sheep-foot compactor.
- **Rock Layer:** Nielson continued hauling and placing Rock Layer material on the cap, using end dumps from centennial. A D6 was used to place the material in a 1 foot lift.
- **10" Cushion:** Nielson used a Cat 966 front end loader to place cushion onto GDN. The 10" cushion was hauled by a Volvo haul truck. A Cat 14G grader was used to grade the cushion for survey. A Cat steel-drum roller was used to compact and condition the 10" cushion.
- **Proof Rolling:** none.
- **2' rock layer:** The Volvo haul trucks were used along with a Cat D6 to place the 2' rock layer.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 673,217 ft^2.
- **FML:** None. Total FML placed for job is 669,165 ft^2.
- **GDN:** None. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING: The following testing occurred today:

Test #	% off MC	% Comp.	Pass/Fail
CU-085	-1.4	97%	PASS
CU-086	-0.3	98%	PASS
CU-087	-1.7	98%	PASS
CU-088	-1.1	103%	PASS
CU-089	-1	102%	PASS
CU-090	-0.8	102%	PASS
CU-091	-0.3	100%	PASS
CU-092	-1.4	96%	PASS
CU-093	-1.6	102%	PASS

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: None

CQC Monitor: _____ Date: 1-26-05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 01/26/05 S M T (W) T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Mostly Sunny **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1730, 12.0 hrs)
Patrick Harrell (0800-1000, 2.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Cut to Fill:** Nielson used a Cat D8 Dozer to place alluvium as fill east of the 5980 line in 1 foot or less lifts. A Cat 825 was used to compact fill by rolling over all placed fill with four passes. Material was hauled in from Centennial with belly dumps.
- **Rock Layer:** Nielson continued hauling and placing Rock Layer material on the cap, using end dumps from centennial. A D6 was used to place the material in a 1 foot lift.
- **10" Cushion:** Nielson used a Cat 14G grader to grade the 10" cushion to within the 2 tenths tolerance. A water truck was also used to maintain moisture content in the cushion material. A Cat 583 vibratory roller was used to compact the cushion material.
- **Proof Rolling:** Nielson proof rolled a 50x800 foot section east of the 5980 line, by making two passes over the area with a fully loaded Cat 633 scraper
- **22' Alluvial Cover:** The Volvo haul trucks and Centennial end dumps were used along with a Cat D6 to place the 22' rock layer.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 673,217 ft^2.
- **FML:** None. Total FML placed for job is 669,165 ft^2.
- **GDN:** None. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING: The following testing occurred today:

Density Tests

Test #	% off MC	% Comp.	Pass/Fail
CU-094	-0.2	102%	PASS
CU-095	-0.4	94%	PASS
CU-096	-1.6	102%	PASS
CU-097	-0.4	98%	PASS
CU-098	-1.2	103%	PASS
CU-099	-0.5	100%	PASS
CU-100	0.2	98%	PASS
CU-101	-1.2	101%	PASS
CU-102	-1.1	100%	PASS
CU-103	-1.3	98%	PASS

One sand cone test was run today at the CU-100 test location, the test name is CUS-05

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: None

CQC Monitor: _____ Date: 1/27/05

Approved by: _____ Date: 5-16-05

File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 01/27/05 S M T W (T) F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Mostly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1730, 12.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Cut to Fill:** Nielson used a Cat D8 Dozer to place alluvium as fill east of the 5980 line in 1 foot or less lifts. A Cat 825 was used to compact fill by rolling over all placed fill with four passes. Material was hauled in from Centennial with belly dumps.
- **Rock Layer:** Nielson continued hauling and placing Rock Layer material on the cap, using end dumps from centennial. A D6 was used to place the material in a 1 foot lift.
- **10" Cushion:** Nielson used a Cat 14G grader to grade the 10" cushion to within the 2 tenths tolerance. A water truck was also used to maintain moisture content in the cushion material. A Cat 583 vibratory roller was used to compact the cushion material.
- **Proof Rolling:** Nielson proof rolled a 50x800 foot section east of the 5980 line, by making two passes over the area with a fully loaded Cat 633 scraper
- **22' Alluvial Cover:** The Volvo haul trucks and Centennial end dumps were used along with a Cat D6 to place the 22' rock layer.
- **Clearing and Grubbing:** Nielson used a Cat 325 excavator to perform grubbing of material on the south side of the eastern slope area.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 673,217 ft^2.
- **FML:** None. Total FML placed for job is 669,165 ft^2.
- **GDN:** None. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING: The following testing occurred today:

Density Tests

Test #	% off MC	% Comp.	Pass/Fail
CU-104	-2	100%	PASS
CU-105	-1.4	97%	PASS
CU-106	-1.3	102%	PASS
CU-107	-2.1	98%	PASS
CU-108	-2.1	99%	PASS
CU-109	1.8	95%	PASS
CU-110	-1.4	103%	PASS
CU-111	-1.4	100%	PASS
CU-112	1.5	98%	PASS
CU-113	-0.8	101%	PASS
CU-114	-0.6	104%	PASS
CU-115	-1.4	101%	PASS
CU-116	-1.3	95%	PASS
CU-117	-1.6	99%	PASS
CU-118	-1.1	102%	PASS
CU-119	-0.6	97%	PASS
CU-120	1.4	101%	PASS

One sand cone test was run today at the CU-120 test location, the test name is CUS-06, also a moisture verification on nuke test ___, and pulled a cushion QC sample from the 10" cushion material from test CU-120.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Discussed weekend work with Stoller and Nielson and decided that work was definitely on for Saturday, and that their will could be some work on Sunday on the east face, but only with a volunteer crew. Potential work on Sunday was not previously scheduled, but was added at the request of Kaiser Hill.

CQC Monitor: _____ Date: 1/28/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 01/28/05 S M T W T (F) S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Mostly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1730, 12.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Cut to Fill:** Nielson used a Cat D8 Dozer to place alluvium as fill east of the 5980 line in 1 foot or less lifts. A Cat 825 was used to compact fill by rolling over all placed fill with four passes. Material was hauled in from Centennial with belly dumps.
- **Rock Layer:** Nielson continued hauling and placing Rock Layer material on the cap, using end dumps from centennial. A D6 was used to place the material in a 1 foot lift.
- **10" Cushion:** Nielson used a Cat 14G grader to grade the 10" cushion to within the 2 tenths tolerance. A water truck was also used to maintain moisture content in the cushion material. A Cat 583 vibratory roller was used to compact the cushion material.
- **Clearing and Grubbing:** Nielson used a Cat 325 excavator to perform grubbing of material on the south side of the eastern slope area.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 673,217 ft^2.
- **FML:** None. Total FML placed for job is 669,165 ft^2.
- **GDN:** None. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Discussed with Stoller and Kaiser Hill a failing moisture content on a sand cone. Will submit results to Bob Davis for Acceptance of that one test though it is out of tolerances.

CQC Monitor: _____ Date: 1/29/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 01/29/05 S M T W T F (S)

PRECIPITATION: **AM:** none **PM:** Light Snow and Frozen Rain

CLOUD COVER: Overcast **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1730, 12.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Cut to Fill:** Nielson used a Cat D8 Dozer to place alluvium as fill east of the 5980 line in 1 foot or less lifts. A Cat 825 was used to compact fill by rolling over all placed fill with four passes. Material was hauled in from Centennial with belly dumps.
- **Rock Layer:** Nielson continued hauling and placing Rock Layer material on the cap, using end dumps from centennial. A D6 was used to place the material in a 1 foot lift.
- **10" Cushion:** Nielson used a water truck to maintain moisture content in the cushion material and a Cat 583 vibratory roller to compact and preparing the surface of the Cushion soil for rock layer placement.
- **Clearing and Grubbing:** Nielson used a Cat 325 excavator to perform grubbing of material on the south side of the eastern slope area.
- **22" Cover:** Nielson used a Cat D6 LGP to place alluvium on the rock layer. Material was hauled in by Volvos.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 673,217 ft^2.
- **FML:** None. Total FML placed for job is 669,165 ft^2.
- **GDN:** None. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: none.

CQC Monitor: _____ Date: 1/31/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 01/31/05 S (M) T W T F S

PRECIPITATION: **AM:** Snow **PM:** None

CLOUD COVER: Overcast to Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1430, 9.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Snow Removal:** Nielson performed snow removal from the 10" cushion the 22"-cover, and the fill area east of the 5980 line.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 673,217 ft^2.
- **FML:** None. Total FML placed for job is 669,165 ft^2.
- **GDN:** Colorado Lining unloaded 2 loads (48 rolls) of Liner today. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: none.

CQC Monitor: _____ Date: 1/31/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 02/01/05 S M (T) W T F S

PRECIPITATION: **AM:** None **PM:** None

CLOUD COVER: Clear to Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1730, 12.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- Cut to Fill: Nielson used a Cat 825 and a Cat 14G grader to dry back alluvial materials and remove wet fill from the area.
- Snow Removal: Nielson used a Cat 966 front end loader and Volvos to remove snow form the 10" cushion soil.
- 22" Cover: Nielson used a Cat D6 LGP to place alluvium on the rock layer. Material was hauled in by Belly dumps from Centennial.

Geosynthetics

- GCL: Colorado Lining unloaded 2 truck loads (35 rolls) of GCL today. Total GCL placed for job is 673,217 ft^2.
- FML: None. Total FML placed for job is 669,165 ft^2.
- GDN: None. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: none.

CQC Monitor: _____ Date: 2/2/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 02/02/05 S M T (W) T F S

PRECIPITATION: **AM:** None **PM:** None

CLOUD COVER: Clear **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Patrick Harrell (0530-1700, 11.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Cut to Fill:** Nielson used a Cat 966 loader and a Cat 14G grader to dry back alluvial materials and remove wet fill from the area. Volvo haul trucks were used to transport material away from the area.
- **10" Cushion:** In the afternoon, Nielson used two 966 loaders, a 14G grader, and Volvo haul trucks to remove the upper few (2-4) inches of oversaturated material from the 10" cushion layer. Material with lower moisture content will be hauled in to replace the removed material.
- **22" Cover:** Nielson used two Cat D6 LGP dozers to place alluvium on the rock layer. Material was hauled in by belly dumps and side dumps from Centennial.
- **Sub-excavation:** A Cat 325 track-hoe was used to remove material from the seepage area located on the East face per the direction of Jack Woo, CH2MHill. A Volvo haul truck was used to transport the material away from the east face to a stockpile north of the pad.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 673,217 ft^2.
- **FML:** None. Total FML placed for job is 669,165 ft^2.
- **GDN:** Colorado Lining unloaded 1 truck load (13 rolls) of GDN today. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: A belly dump hauling the 22" rock layer overturned today on the pad. All work stopped at that time, approximately 15:30.

CQC Monitor: _____ Date: 2-3-05
Approved by: _____ Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 02/03/05 S M T W (T) F S

PRECIPITATION: **AM:** None **PM:** None

CLOUD COVER: Clear **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Patrick Harrell (0530-1730, 12.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Cut to Fill:** Nielson used a Cat 966 loader and a Cat 14G grader to mix and dry back alluvial materials and bring the alluvium to grade. The 825 sheep-foot compactor was used to condition the alluvium.
- **10" Cushion:** Nielson used two 966 loaders, a 14G grader, and Volvo haul trucks to remove the upper few (2-4) inches of oversaturated material from the 10" cushion layer. The loaders were later used to scarify the surface to prepare for replacement of the upper portion of the cushion. Material with lower moisture content will be hauled in to replace the removed material.
- **22" Cover:** None
- **Sub-excavation:** Two Cat 325 track-hoes were used to remove material from the seepage area located on the East face per the direction of Jack Woo, CH2MHill. Volvo haul trucks were used to transport the material away from the east face to a stockpile north of the pad.

Geosynthetics

- **GCL:** Colorado Lining unloaded 2 trucks (34 rolls) of GCL today. Total GCL placed for job is 673,217 ft^2.
- **FML:** None. Total FML placed for job is 669,165 ft^2.
- **GDN:** None. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: _____ **Date:** 2-4-05
Approved by: _____ **Date:** 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 02/04/05 S M T W T (F) S

PRECIPITATION: **AM:** None **PM:** None

CLOUD COVER: Clear **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Patrick Harrell (0530-1700, 11.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Cut to Fill:** Nielson used a Cat 14G grader to bring the alluvium to grade.
- **10" Cushion:** Nielson used two 966 loaders, a 14G grader, a Cat steel-drum roller, and Volvo haul trucks to transport, compact and bring to grade the10" cushion layer.
- **22" Cover:** None
- **Sub-excavation:** One Cat 325 track-hoe was used to remove material from the seepage area located on the East face. Volvo haul trucks were used to transport the material away from the east face to a stockpile north of the pad.
- **Note:** No construction activity occurred prior to 13:00.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 673,217 ft^2.
- **FML:** None. Total FML placed for job is 669,165 ft^2.
- **GDN:** None. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING:

Test #	% off MC	% Comp.	Pass/Fail
CU-121	-0.5	100%	PASS
CU-122	0.7	97%	PASS
CU-123	1	98%	PASS
CU-124	-0.3	100%	PASS
CU-125	-1.5	97%	PASS
CU-126	-1.6	99%	PASS

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: _____ **Date:** 7-5-05
Approved by: _____ **Date:** 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 02/05/05 S M T W T F (S)

PRECIPITATION: **AM:** None **PM:** None

CLOUD COVER: Mostly clear **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Patrick Harrell (0530-1700, 11.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Cut to Fill:** Nielson used a Cat 14G grader to bring the alluvium to grade.
- **10" Cushion:** Nielson used two 966 loaders, a 14G grader, a Cat steel-drum roller, and Volvo haul trucks to transport, compact and bring to grade the10" cushion layer. Some oversaturated cushion material was removed from the leading edge of the biota layer and replaced with dryer material.
- **22" Cover:** Some haul trucks were used to transport material for the 22" layer while as many as three dozers were used to grade the material.
- **Sub-excavation:** One Cat 325 track-hoe was used to excavate a trench under one of the haul roads located on the East face. Volvo haul trucks were used to transport the material away from the east face to a stockpile north of the pad and a Cat 966 loader was used to transport in gravel.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 673,217 ft^2.
- **FML:** None. Total FML placed for job is 669,165 ft^2.
- **GDN:** None. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING:

Test #	% off MC	% Comp.	Pass/Fail
CU-127	-0.5	100%	PASS
CU-128	-0.5	100%	PASS
CU-129	0.5	99%	PASS
CU-130	-0.1	100%	PASS
CU-131	-1	100%	PASS

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: _____ **Date:** 2-6-05
Approved by: _____ **Date:** 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 02/06/05 (S) M T W T F S

PRECIPITATION: **AM:** Lt. snow **PM:** Lt. snow

CLOUD COVER: Mostly cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Patrick Harrell (0530-1230, 7.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Cut to Fill:** Nielson used a Cat 14G grader to bring the alluvium to grade.
- **10" Cushion:** Nielson used a Cat steel-drum roller to compact the10" cushion layer.
- **Biota:** 5 Volvos, an end dump, and a side dump were used to transport biota to the cap. One Cat dozer was used to place and grade the biota layer.
- **Note:** Work was halted shortly after 11:30 A.M. due to poor weather and icy conditions.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 673,217 ft^2.
- **FML:** None. Total FML placed for job is 669,165 ft^2.
- **GDN:** None. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: [signature] **Date:** 2-7-05
Approved by: [signature] **Date:** 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 02/07/05 S (M) T W T F S

PRECIPITATION: **AM:** None **PM:** Lt. snow

CLOUD COVER: Mostly cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Patrick Harrell (0530-1700, 11.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Cut to Fill:** Nielson used a Cat 14G grader to bring the alluvium to grade.
- **10" Cushion:** A Cat steel-drum roller was on hand to compact the10" cushion layer when needed.
- **Biota:** Volvos, an end dump, and a side dump were used to transport biota to the cap. One Cat dozer was used to place and grade the biota layer.
- **22" rock layer:** Belly dumps and two dozers were used to transport, place, and grade the 22" rock layer
- **Sub-Excavation:** The Cat 325 track-hoe and a Volvo haul truck were used to remove some material from the seep area on the east face.
- **6" Cushion:** A Cat 966 loader, Volvos, and belly dumps were used to haul, place, and grade the 6" cushion.

Geosynthetics

- **GCL:** One truck (17 rolls) of GCL was unloaded today. Total GCL placed for job is 673,217 ft^2.
- **FML:** None. Total FML placed for job is 669,165 ft^2.
- **GDN:** None. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: [signature] **Date:** 2-8-05
Approved by: [signature] **Date:** 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 02/08/05 S M (T) W T F S

PRECIPITATION: **AM:** Lt. snow **PM:** none

CLOUD COVER: Mostly cloudy to cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Matt Cashimer (0600-1700, 11 hrs)
Patrick Harrell (0800-1000, 2 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Fill:** Volvo haul trucks and a Cat 825 sheepsfoot were used to haul and place alluvium.
- **22" rock layer:** Belly dumps and two dozers were used to transport, place, and grade the 22" rock layer.
- **Sub-Excavation:** The Cat 325 track-hoe and a Volvo haul truck were used to remove some material from the seep area on the east face.
- **6" Cushion:** A Cat D8 dozer, a Cat14G grader, and belly dumps were used to haul, place, and grade the 6" cushion.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 673,217 ft^2.
- **FML:** None. Total FML placed for job is 669,165 ft^2.
- **GDN:** None. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: _____ Date: 2/8/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 02/09/05 S M T (W) T F S

PRECIPITATION: **AM:** Lt. snow **PM:** none

CLOUD COVER: Mostly cloudy to cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530- 1700, 11.5 hrs)
Matt Cashimer (0700-0900, 2.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Clear and Grub:** Nielson used 2 Cat 325 excavators to clear and grub the eastern face of the landfill, and placed fill brought in from Centennial by Volvos. A Cat 825 sheep-foot compactor was used to compact fill near the west side of the pond.
- **22" rock layer:** Belly dumps and 2 Cat D6 LGP dozers were used to transport, place, and grade the 22" rock layer.
- **6" Cushion:** A Cat14G grader to grade the cushion and a Cat 583 vibratory Roller to compact the fill and prepare the surface for Liner placement.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 673,217 ft^2.
- **FML:** Began unloading a load of 60 mil liner, but before unloading could be complete Colorado Linings had some equipment problems and was unable to remove all the rolls of liner from the bed of the truck. Total FML placed for job is 669,165 ft^2.
- **GDN:** None. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

Job No: 043-2246

Report No. 020905MSPDaily

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: _____ Date: 2/10/05

Approved by: _____ Date: 3-16-05

File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 02/10/05 S M T W (T) F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530- 1730, 12.0 hrs)
Matt Cashimer (0600-0800, 3.0 hrs)
Patrick Harrell (0600-0800, 3.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Clear and Grub:** Nielson used 2 Cat 325 excavators to clear and grub the eastern face of the landfill, and placed fill brought in from Centennial by Volvos. A Cat 825 sheep-foot compactor was used to compact fill near the west side of the pond.
- **22" rock layer:** Belly dumps and 2 Cat D6 LGP dozers were used to transport, place, and grade the 22" rock layer.
- **Gas Vent Trench:** Nielson installed approximately 50 ft, 100 ft, and 100 ft for the north, central, and south gas vent trenches respectively. The total lengths for these trenches is 1150 ft, 980 ft, and 820 ft, for the north central and south gas vent trenches respectively. Gravel was placed to at least 4 inches above and below the four inch pipe and about 10 inches on either side. The north gas vent trench was completed today.
- **6" Cushion:** A Cat14G grader to grade the cushion and a Cat 583 vibratory Roller to compact the fill and prepare the surface for Liner placement.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 673,217 ft^2.
- **FML:** None. Total FML placed for job is 669,165 ft^2.
- **GDN:** None. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING:

Density Tests

Test #	% off MC	% Comp.	Pass/Fail
CL-138	-0.1	96%	PASS
CL-139	-1.6	100%	PASS
CL-140	-1.2	101%	PASS
CL-141	-0.9	96%	PASS
CL-142	-1.2	98%	PASS
CL-143	0.7	99%	PASS
CL-144	-0.4	97%	PASS
CL-145	0.8	95%	PASS
CL-146	-1	97%	PASS

One sand cone test was run at the same location as nuke test CL-140, the test number was CLS-07

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: _____ Date: 5-16-05
Approved by: _____ Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 02/11/05 S M T W T (F) S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530- 1730, 12.0 hrs)
Matt Cashimer (0600-0730, 11.5 hrs)
Patrick Harrell (0600-0800, 11.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Clear and Grub:** Nielson used 2 Cat 325 excavators to clear and grub the eastern face of the landfill, and placed fill brought in from Centennial by Volvos. A Cat 825 sheep-foot compactor was used to compact fill near the west side of the pond.
- **22" rock layer:** Belly dumps and 2 Cat D6 LGP dozers were used to transport, place, and grade the 22" rock layer.
- **Gas Vent Trench:** Nielson installed approximately 10 ft, and 50 ft for the central, and south gas vent trenches respectively. The total length for these trenches is 990 ft, and 870 ft, for the north central and south gas vent trenches respectively. Gravel was placed to at least 4 inches above and below the four inch pipe and about 10 inches on either side. The Center trench was completed today.
- **6" Cushion:** A Cat14G grader to grade the cushion and a Cat 583 vibratory Roller to compact the fill and prepare the surface for Liner placement.

Geosynthetics

- **GCL:** Colorado Lining repaired and deployed GCL. Total GCL placed today is 32,303 ft^2. Total GCL placed for job is 705,520 ft^2.
- **FML:** Colorado Lining unloaded 2 rolls of liner and fusion seamed and deployed FML today. Total FML placed today was 35,090 ft^2 FML today. Total FML placed for job is 703,439 ft^2.
- **GDN:** None. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING:

Density Tests

Test #	% off MC	% Comp.	Pass/Fail
CL-147	0.8	96%	PASS
CL-148	-1.5	100%	PASS
CL-149	-0.4	95%	PASS
CL-150	0	98%	PASS
CL-151	-0.7	99%	PASS
CL-152	-0.7	98%	PASS
CL-153	0.5	97%	PASS
CL-154	-0.3	97%	PASS
CL-155	0.3	96%	PASS
CL-156	-0.5	99%	PASS
CL-157	1.4	97%	PASS
CL-158	0.1	98%	PASS
CL-159	-1.1	99%	PASS
CL-160	1.1	98%	PASS
CL-161	0.8	99%	PASS
CL-162	0.6	96%	PASS
CL-163	-1.7	98%	PASS
CL-164	-1.9	96%	PASS

One sand cone test was run at the same location as nuke test CL-160, the test number was CLS-08

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: _____ **Date:** 2/14/05
Approved by: _____ **Date:** 5-16-05
File No. _____

SUBGRADE ACCEPTANCE FORM

The subgrade from S391 - S396 to S-409 - S-414 has been moisture conditioned and compacted according to specifications. This area has been tested for both moisture and density using a nuclear density gauge and/or sand cone tests at specified testing intervals. The area specified above has met all specifications for the 6-inch cushion soil including specification given on its gradation, layer thickness, moisture content and dry density. A visual inspection of this area has been conducted to ensure that the cushion soil is above 32 degrees Fahrenheit, and free of standing water debris and any sharp corners or protrusions that could put excessive stress on the GCL or FML. This area has met all specifications and is approved for liner placement on February 11 12005.

QC Representative	Company	Date 2/11/05
QA Representative	Company	Date 2-11-05

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 02/12/05 S M T W T F (S)

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Matt Cashimer (0600-1730, 11.5 hrs)
Patrick Harrell (0600-1800, 12.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **6" Cushion:** A Cat 583 vibratory Roller was used to compact the fill and prepare the surface for Liner placement.

Geosynthetics

- **GCL:** Colorado Lining deployed GCL. Daily deployment total is 67,410 ft^2. Total GCL placed for job is 773,001 ft^2.
- **FML:** Colorado Lining performed deployment, seaming, trail seams, and pressure testing. Daily deployment total is 68,035 ft^2. Total FML placed for job is 772,290 ft^2.
- **GDN:** None. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING:

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: Matt Cashman Date: 2/12/05
Approved by: Date: 5-16-05
File No.

SUBGRADE ACCEPTANCE FORM

The subgrade from S409 - S414 to S445 - S450, has been moisture conditioned and compacted according to specifications. This area has been tested for both moisture and density using a nuclear density gauge and/or sand cone tests at specified testing intervals. The area specified above has met all specifications for the 6-inch cushion soil including specification given on its gradation, layer thickness, moisture content and dry density. A visual inspection of this area has been conducted to ensure that the cushion soil is above 32 degrees Fahrenheit, and free of standing water debris and any sharp corners or protrusions that could put excessive stress on the GCL or FML. This area has met all specifications and is approved for liner placement on Feb 12 2005.

QC Representative	Company	Date
QA Representative	Company	Date

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 02/13/05 (S) M T W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear **WIND:** High

GAI PERSONNEL HOURS CHARGED:

Matt Cashimer (0600- 1100, 5.0 hrs)
Patrick Harrell (0630- 1030, 4.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

None

Geosynthetics

- **GCL:** None. Total GCL placed for job is 773,001 ft^2.
- **FML:** Colorado Lining performed repairs and trial seams. Total FML placed for job is 772,290 ft^2.
- **GDN:** None. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING:

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: Matt Cushmer Date: 2/13/05
Approved by: [signature] Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 02/14/05 S (M) T W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear **WIND:** Moderate to High

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1730, 12.0 hrs)
Matt Cashimer (0600- 1800, 12.0 hrs)
Patrick Harrell (0600- 1800, 12.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Clear and Grub:** Nielson used 2 Cat 325 excavators to clear and grub the eastern face of the landfill, and placed fill brought in from Centennial by Volvos. A Cat 825 sheep-foot compactor was used to compact fill near the west side of the pond.
- **22" rock layer:** Belly dumps and 2 Cat D6 LGP dozers were used to transport, place, and grade the 22" rock layer.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 773,001 ft^2.
- **FML:** Colorado Lining performed repairs and trial seams. Total FML placed for job is 772,290 ft^2.
- **GDN:** None. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING:

Density Tests

Test #	% off MC	% Comp.	Pass/Fail
AT-11	-1.9	97%	PASS
AT-12	-1.8	99%	PASS
AT-13	-0.9	95%	PASS
AT-14	-1.6	97%	PASS

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: _____ **Date:** 2/15/05
Approved by: _____ **Date:** 8-22-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 02/15/05 S M (T) W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Overcast **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1330, 8.0 hrs)
Matt Cashimer (0600- 1300, 7.0 hrs)
Patrick Harrell (0600- 1200, 6.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **22" rock layer:** Belly dumps and 2 Cat D6 LGP dozers were used to transport, place, and grade the 22" rock layer.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 794,912 ft^2.
- **FML:** None. Total FML placed for job is 788,128 ft^2.
- **GDN:** None. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: _____ **Date:** 2/16/05
Approved by: _____ **Date:** 3-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 02/16/05 S M T (W) T F S

PRECIPITATION: **AM:** Snow Flurries **PM:** none

CLOUD COVER: Overcast **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1330, 8.0 hrs)
Matt Cashimer (0600- 1000, 4.0 hrs)
Patrick Harrell (0600- 0900, 3.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **22" rock layer:** Belly dumps and 2 Cat D6 LGP dozers were used to transport, place, and grade the 22" rock layer.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 794,912 ft^2.
- **FML:** Colorado Lining unloaded 3 rolls of FML. Total FML placed for job is 788,128 ft^2.
- **GDN:** None. Total GDN placed for job is 713,863 ft^2.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None. as

CQC Monitor: _____ **Date:** 2/17/05
Approved by: _____ **Date:** 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 02/17/05 S M T W (T) F S

PRECIPITATION: AM: none PM: none

CLOUD COVER: Clear to Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1630, 11.0 hrs)
Matt Cashimer (0600- 1730, 11.5 hrs)
Patrick Harrell (0600- 1730, 11.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **22" rock layer:** Belly dumps and 2 Cat D6 LGP dozers were used to transport, place, and grade the 22" rock layer.
- **East End:** Nielson used a Cat 14G grader to grade the southern top of slope above the pond. Volvos hauled in alluvial fill just west of the pond which was spread and compacted by a Cat 825 sheep foot compactor.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 794,912 ft^2.
- **FML:** Colorado Lining repaired and Vacuum tested FML today. Three rolls of FML were unloaded today. Total FML placed for job is 788,128 ft^2.
- **GDN:** Colorado Lining deployed zip-tied and sewed GDN today. Total deployment for the day was 36,374 ft^2. Total GDN placed for job is 750,237 ft^2.

SUMMARY OF QC TESTING:

On the 15th of February 10 destructive tests were run one of which failed, DF-066 this seam was reconstructed by cutting off the excess flap and extrusion welding the seam. Destrucive tests were taken at locations on either side of the failing destructive and both of those, DF-066D and DF-066U both passed. The other 7 destructives that were run are DF-067 to DF-075.

Took 3 samples of 22" material, consisting of 2 five-gallon buckets a piece, to have gradation and atterberg tests ran on them. The samples that were taken are AC22-01, AC22-02, and AC22-03. These three samples were not taken to ASTM minimum weight standards, which require a

minimum sample size of 500,000 grams (1100 lbs) for a sample with particles up to 6" in two dimensions, in order to remain consistent with the sampling method used at the barrow area locations. Kaiser Hill, Earth Tech, Stoller, the EPA and CDPHE have been notified of this sampling procedure.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: _____ Date: 2/18/05
Approved by: _____ Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 02/18/05 S M T W T (F) S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1630, 12.0 hrs)
Matt Cashimer (0600- 1730, 11.0 hrs)
Patrick Harrell (0600- 1130, 4.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **22" Rock Layer:** Nielson used Belly dumps and 2 Cat D6 LGP dozers were used to transport, place, and grade the 22" rock layer.
- **10" Cushion:** Nielson used a Cat 966 front end loader to place cushion onto GDN. Material was hauled in by belly dumps from Centennial.
- **East End:** Nielson used a Cat 14G grader to grade the southern top of slope above the pond. Volvos hauled in alluvial fill just west of the pond which was spread and compacted by a Cat 825 sheep foot compactor.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 794,912 ft^2.
- **FML:** Colorado Lining repaired and Vacuum tested FML today. Total FML placed for job is 788,128 ft^2.
- **GDN:** Colorado Lining repaired, deployed zip-tied and sewed GDN today. Total deployment for the day was 80,203.5 ft^2. Total GDN placed for job is 830,441ft^2.

SUMMARY OF QC TESTING:

Took 2 samples from 3 barrow areas for a total of 6 samples back to Golder Soils Lab for Sieve and atterberg tests to be run. Each sample consisted of 2 five-gallon buckets. The samples that were taken are ANWF-1, ANWF-2, EBF-1, EBF-2, WBF-1, and WBF-2. These six samples were not taken to ASTM minimum weight standards, which require a minimum sample size of 500,000 grams (1100 lbs) for a sample with particles retained on a 6" screen, in order to remain consistent with the sampling method used at the barrow area locations.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: _____ Date: 2/19/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 02/19/05 S M T W T F (S)

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0600-1400, 8.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **22" Rock Layer:** Nielson used Belly dumps and 2 Cat D6 LGP dozers were used to transport, place, and grade the 22" rock layer.
- **10" Cushion:** Nielson used a Cat 966 front end loader to place cushion onto GDN. Material was hauled in by belly dumps from Centennial.
- **East End:** Nielson used a Cat backhoe to excavate out a trench to create an extension for the seep capture system

Geosynthetics

- **GCL:** None. Total GCL placed for job is 794,912 ft^2.
- **FML:** None. Total FML placed for job is 788,128 ft^2.
- **GDN:** None. Total GDN placed for job is 830,441ft^2.

SUMMARY OF QC TESTING: none.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: _____ Date: 2/21/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 02/20/05 (S) M T W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0800-1000, 2.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- East End: Nielson used a Cat backhoe to excavate out a trench to create an extension for the seep capture system

Geosynthetics

- GCL: None. Total GCL placed for job is 794,912 ft^2.
- FML: None. Total FML placed for job is 788,128 ft^2.
- GDN: None. Total GDN placed for job is 830,441ft^2.

SUMMARY OF QC TESTING: none.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: _____ Date: 2/21/05
Approved by: _____ Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 02/21/05 S (M) T W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1730, 12.0 hrs)
Patrick Harrell (0600-1100, 5.0 hrs)
Matt Cashimer (0600-1400, 8.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **22" Rock Layer:** Nielson used Belly dumps and a Cat D6 LGP dozers were used to transport, place, and grade the 22" rock layer.
- **10" Cushion:** Nielson used a Cat 966 front end loader to place cushion onto GDN. Material was hauled in by belly dumps from Centennial.
- **East End:** Nielson used a Cat backhoe to fill the seep capture piping with greavel around the pipe and fill above the gravel.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 794,912 ft^2.
- **FML:** None. Total FML placed for job is 788,128 ft^2.
- **GDN:** Colorado lining deployed sewed and leistered GDN today. Total GDN deployed today 11,349 ft^2. Total GDN placed for job is 841,790ft^2.

SUMMARY OF QC TESTING: none.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: _____ **Date:** 2/22/05
Approved by: _____ **Date:** 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 02/22/05 S M (T) W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1400, 8.5 hrs)
Matt Cashimer (0600-1400, 11.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **22" Cover:** Nielson used Belly dumps and two Cat D6 LGP dozers to transport, place, and grade the 22" rock layer.
- **10" Cushion:** Nielson used a Cat 966 front end loader to place cushion onto GDN. Material was hauled in by belly dumps from Centennial.
- **East End:** Nielson preformed strip drain installation. A bobcat was used to place sand over the strip drains.

Geosynthetics

- **GCL:** Cut hole for three gas vent Pipe, no repairs needed. Total GCL placed for job is 794,912 ft^2.
- **FML:** Place boots around gas vent riser pipes, performed repairs, and vacuum tested bases and installed a 60 mil LLDPE Box as part of the seep capture system. Total FML placed for job is 788,128 ft^2.
- **GDN:** None. Total GDN placed for job is 841,790ft^2.

SUMMARY OF QC TESTING:

Ran a bulk gradation on the Rock Layer Material using a 1:1 ratio of rock to pit run. Test number was RL-5 a sample rock was taken to Advanced Terra testing to perform UCS on the rock.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: _____ Date: 2/23/05
Approved by: _____ Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 02/23/05 S M T (W) T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1730, 12.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **22" Cover:** Nielson used graded 22" cover with a D6 dozer and a 14G grader.
- **10" Cushion:** Nielson used a Cat 14G grader to grade cushion soils in preparation for rock layer placement
- **East End:** Nielson preformed strip drain installation. A bobcat was used to place sand over the strip drains.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 794,912 ft^2.
- **FML:** None. Total FML placed for job is 788,128 ft^2.
- **GDN:** None. Total GDN placed for job is 841,790ft^2.

SUMMARY OF QC TESTING:

Took 3 samples of 22" Cover back to the Golder Soils Laboratory for QC testing. Samples taken are AC22-4, AC22-5, and AC22-6.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: *Roll #:* Met with Colorado Lining to discuss missing panel number and compared notes to figure out what the discrepancies are and what the correct roll numbers are.

Testing summary: Met with Bob Davis of Kaiser Hill and Josh Valentine of Tetra Tech to discuss QA and QC tests and worked on how we are doing on our testing frequencies. Decided to create a packet of all geotechnical testing run on alluvial and rock layer materials for the job.

CQC Monitor: _____ Date: 2/24/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 02/24/05 S M T W (T) F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1730, 12.0 hrs)
Matt Cashimer (0600-1600, 10.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **22" Cover:** Nielson used graded 22" cover with a D6 dozer and a 14G grader.
- **10" Cushion:** Nielson used a Cat 14G grader to grade cushion soils in preparation for rock layer placement
- **East End:** Nielson preformed strip drain installation and placed fill using Cat 633 scrapers.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 794,912 ft^2.
- **FML:** Two rolls of FML arrived on Site today. Total FML placed for job is 788,128 ft^2.
- **GDN:** None. Total GDN placed for job is 841,790ft^2.

SUMMARY OF QC TESTING:

Test #	% off MC	% Comp.	Pass/Fail
CU-132	-1.2	103%	PASS
CU-133	-1.4	104%	PASS
CU-134	-1.5	104%	PASS
CU-135	-1.2	102%	PASS
CU-136	-1.5	104%	PASS
CU-137	-0.7	101%	PASS
CU-138	-0.6	99%	PASS
CU-139	-0.5	100%	PASS
CU-140	-0.9	98%	PASS
CU-141	-1	101%	PASS
CU-142	-1.2	97%	PASS
CU-143	-1.9	98%	PASS
CU-144	-1.4	94%	PASS
CU-145	-1.9	98%	PASS
CU-146	-1.4	97%	PASS
CU-147	-1.1	96%	PASS
CU-148	-1.4	98%	PASS

Ran one sand cone test (CUS-07) at the same location as density test CU-140.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: *Roll #:* Met with Colorado Lining to discuss missing panel number and compared notes to figure out what the discrepancies are and what the correct roll numbers are. All GDN Roll numbers have now been determined and accounted for, and 6 rolls of GCL are still outstanding.

CQC Monitor: _____ Date: 2/25/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 02/25/05 S M T W T (F) S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1630, 11.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **22" Cover:** Nielson graded and ripped the 22" cover with a D6 dozer and a 14G grader.
- **East End:** Nielson began placing alluvial fill on the northern slope of the east end using Cat 633 scrapers, Volvo Trucks and an 825 sheep foot compactor.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 794,912 ft^2.
- **FML:** None. Total FML placed for job is 788,128 ft^2.
- **GDN:** None. Total GDN placed for job is 841,790ft^2.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: _____ Date: 2/26/05
Approved by: _____ Date: 3-6-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 02/26/05 S M T W T F (S)

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1430, 9.0hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **22" Cover:** Nielson graded and ripped the 22" cover with a D6 dozer and a 14G grader.
- **East End:** Nielson began placing alluvial fill on the northern slope of the east end using Cat 633 scrapers, Volvo Trucks and an 825 sheep foot compactor.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 794,912 ft^2.
- **FML:** None. Total FML placed for job is 788,128 ft^2.
- **GDN:** None. Total GDN placed for job is 841,790ft^2.

SUMMARY OF QC TESTING:

Test #	% off MC	% Comp.	Pass/Fail
CU-149	-1.1	97%	PASS
CU-150	-0.7	98%	PASS
CU-151	-1.9	108%	PASS
CU-152	-0.5	99%	PASS
CU-153	0	98%	PASS
CU-154	0.8	96%	PASS
CU-155	-1.9	96%	PASS
CU-156	-1.8	102%	PASS
CU-157	-1.5	101%	PASS

Took one Moisture content form Test CU-153.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: _____ Date: 2/26/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 02/28/05 S (M) T W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Matt Cashimer (0600-1730, 11.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- 2" layer: Nielson used a Cat 633 scraper to place a 2" layer of topsoil cover material above the 22" cover layer.
- Rock Layer: Nielson used bellies and end dumps from Centennial to haul in rock layer material and a Cat D6 Dozer was used to place the fill in a 1 foot lift.
- East End: Nielson filled and compacted the southern portion of the east end. A D8 dozer and a Cat 825 sheepsfoot compactor was used to push the fill and Volvos were used to haul in the fill from the 371 BLD pile.

Geosynthetics

- GCL: None. Total GCL placed for job is 794,912 ft^2.
- FML: None. Total FML placed for job is 788,128 ft^2.
- GDN: None. Total GDN placed for job is 841,790ft^2.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: Matt Lashmet Date: 2/28/05
Approved by: Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 03/01/05 S M (T) W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partially cloudy to cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Matt Cashimer (0600-1730, 11.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **2" layer:** Nielson used a Cat 633 scraper to place a 2" layer of topsoil cover material above the 22" cover layer.
- **Rock Layer:** Nielson used end dumps from Centennial to haul in rock layer material and a Cat D6 Dozer and a Cat 966 front end loader were used to place the fill in a 1 foot lift.
- **East End:** Nielson filled and compacted the southern portion of the east end. A D6 dozer and a Cat 825 sheepsfoot compactor were used to push the fill and Volvos and belly dumps were used to haul in the fill from Centennial.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 794,912 ft^2.
- **FML:** None. Total FML placed for job is 788,128 ft^2.
- **GDN:** None. Total GDN placed for job is 841,790ft^2.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: Matt Cashmere Date: 3/1/05
Approved by: Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 3/2/05 S M T (W) T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** Moderate to Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0630-1730, 11.0hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **22" Cover:** Nielson graded and ripped the 22" cover with a D6 dozer and a 14G grader.
- **2' Cover:** Nielson used a Cat aD6 dozer to place the final 2" of cover on top of the cap. Material was hauled in by scrapers from the stockpile of cover soils that were removed at the start of the project.
- **Rock Layer:** Nielson placed rock layer material on top of the 10" cushion layer. A Cat D6 dozer placed the fill in a 1' lift and the material was hauled in by end dumps form Centennial.
- **East End:** Nielson began placing alluvial fill on the northern slope of the east end using Cat 633 scrapers, Volvo Trucks and an 825 sheep foot compactor.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 794,912 ft^2.
- **FML:** None. Total FML placed for job is 788,128 ft^2.
- **GDN:** None. Total GDN placed for job is 841,790ft^2.

SUMMARY OF QC TESTING:

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: _____ Date: 3/3/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 3/3/05 S M T W (T) F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** Moderate to Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1730, 12.0hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **22" Cover:** Nielson placed the 22" cover with a D6 dozer and hauled it in with belly dumps and Volvos.
- **2' Cover:** Nielson used a Cat aD6 dozer to place the final 2" of cover on top of the cap. Material was hauled in by scrapers from the stockpile of cover soils that were removed at the start of the project.
- **Rock Layer:** Nielson placed rock layer material on top of the 10" cushion layer. A Cat D6 dozer placed the fill in a 1' lift and the material was hauled in by end dumps form Centennial.
- **East End:** Nielson began placing alluvial fill on the central and northern slope of the east end using belly dumps and Volvo trucks. An 825 sheep foot compactor was used to place and compact the fill which was hauled in.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 794,912 ft^2.
- **FML:** None. Total FML placed for job is 788,128 ft^2.
- **GDN:** None. Total GDN placed for job is 841,790ft^2.

SUMMARY OF QC TESTING:

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: _____ Date: 3/4/05
Approved by: _____ Date: 5-16-05
File No. _____

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: Matt Cashmore Date: 3/4/05
Approved by: [signature] Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 3/5/05 S M T W T F (S)

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Matt Cashimer (0600-1430, 8.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- 22" Cover: Nielson placed the 22" cover with a D6 dozer and hauled it in with Volvos.
- East End: Nielson began placing alluvial fill on the central slope of the east end using belly dumps and Volvo trucks. A D8 and a D6 dozer, and an 825 sheep foot compactor were used to place and compact the fill which was hauled in.

Geosynthetics

- GCL: None. Total GCL placed for job is 794,912 ft^2.
- FML: None. Total FML placed for job is 788,128 ft^2.
- GDN: None. Total GDN placed for job is 841,790ft^2.

SUMMARY OF QC TESTING:

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: Matt Cashmer Date: 3/5/05
Approved by: Date: 3-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 3/7/05 S (M) T W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Matt Cashimer (0530-1530, 10.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- 22" Cover: Nielson placed the 22" cover with a D6 dozer and hauled it in with Volvos.
- East End: Nielson graded the east end 4:1 slope using a Cat 14G grader.

Geosynthetics

- GCL: None. Total GCL placed for job is 794,912 ft^2.
- FML: None. Total FML placed for job is 788,128 ft^2.
- GDN: None. Total GDN placed for job is 841,790ft^2.

SUMMARY OF QC TESTING:

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: _____ Date: 3/7/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 3/8/05 S M (T) W T F S

PRECIPITATION: AM: snow/sleet PM: none

CLOUD COVER: Mostly cloudy to cloudy **WIND:** Moderate to high

GAI PERSONNEL HOURS CHARGED:

Matt Cashimer (0600-1730, 11.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- 22" Cover: Nielson placed the 22" cover with two D6 dozers and hauled it in with Volvos and belly dumps.
- East End: Nielson graded the east end 4:1 slope using a Cat 14G grader. Kaiser Hill removed asbestos on the south arm.
- Proof rolling: Nielson proof rolled the north and south arms of the east end.

Geosynthetics

- GCL: None. Total GCL placed for job is 794,912 ft^2.
- FML: None. Total FML placed for job is 788,128 ft^2.
- GDN: None. Total GDN placed for job is 841,790ft^2.

SUMMARY OF QC TESTING:

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: Matt Cashmere Date: 3/8/05
Approved by: [signature] Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 3/9/05 S M T (W) T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Mostly cloudy **WIND:** Low to Moderate

GAI PERSONNEL HOURS CHARGED:

Matt Cashimer (0530-1800, 12.5 hrs)
Patrick Harrell (0630-1800, 11.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- 22" Cover: Nielson placed the 22" cover with two D6 dozers and hauled it in with Volvos and belly dumps.
- 2" Cover: Nielson hauled 2" cover with Volvos.
- East End: Nielson graded the east end 4:1 slope using a Cat 14G grader.

Geosynthetics

- GCL: None. Total GCL placed for job is 794,912 ft^2.
- FML: None. Total FML placed for job is 788,128 ft^2.
- GDN: None. Total GDN placed for job is 841,790ft^2.

SUMMARY OF QC TESTING:

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

Gradation: AM22-01

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: Matt Lashmet Date: 3/9/05
Approved by: [signature] Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 3/10/05 S M T W (T) F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Mostly cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Matt Cashimer (0530-1730, 12.0 hrs)
Patrick Harrell (0600-1630, 10.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **22" Cover:** Nielson placed the 22" cover with two D6 dozers and hauled it in with Volvos and belly dumps.
- **2" Cover:** Nielson hauled 2" cover with Cat 633 scraper.
- **East End:** Nielson excavated the seep system using a Cat 325 track hoe. Kaiser Hill removed asbestos from the south arm of the east end.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 794,912 ft^2.
- **FML:** None. Total FML placed for job is 788,128 ft^2.
- **GDN:** None. Total GDN placed for job is 841,790ft^2.

SUMMARY OF QC TESTING:

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

Gradations: AM22-02 location #10009, AM22-03 location #10055, AM2-01 location #10040

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: Matt Cushman Date: 3/10/05

Approved by: _____ Date: 5-16-05

File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 3/11/05 S M T W T (F) S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partially cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Matt Cashimer (0600-1730, 11.5 hrs)
Patrick Harrell (0600-1730, 11.5 hrs)
Michael Place (0700-1200, 5.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **6" Cusion:** Nielson hauled 6" cushion with side dumps, belly dumps, and Volvo trucks, placed the material with a D6 dozer and a Cat 950 front end loader, and graded with a Cat 14G motor grader on the east end.
- **2" Cover**: Nielson hauled 2" cover with Volvos and placed with a D6 dozer on the west end of the landfill.
- **East End:** Kaiser Hill removed asbestos from the north arm of the east end.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 794,912 ft^2.
- **FML:** None. Total FML placed for job is 788,128 ft^2.
- **GDN:** None. Total GDN placed for job is 841,790ft^2.

SUMMARY OF QC TESTING:

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

Gradations: AM22-04 location #10084, AM22-05 location #10137, AM22-06 location #10165

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: Matt Cashmore Date: 3/11/05
Approved by: [signature] Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 3/12/05 S M T W T F (S)

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partially Cloudy to Clear **WIND:** High

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1630, 11.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **2" Cover**: Nielson hauled 2" cover with Volvos and placed with a D6 dozer on the west end of the landfill.
- **East End:** Nielson graded fill on the east end and continued exploration to determine the problem with the seep capture system.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 794,912 ft^2.
- **FML:** None. Total FML placed for job is 788,128 ft^2.
- **GDN:** None. Total GDN placed for job is 841,790ft^2.

SUMMARY OF QC TESTING:

Gradations: AM22-07 location #10225, AM22-08 location #10130, AM22-09 location #10208

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: _____ Date: 3/14/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 3/14/05 S (M) T W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partially Cloudy to Clear **WIND:** High

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1230, 7.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **2" Cover:** Nielson hauled 2" cover with Volvos and placed with a D6 dozer on the west end of the landfill.
- **East End:** Nielson removed asbestos from an area where not all the cut was finished.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 794,912 ft^2.
- **FML:** None. Total FML placed for job is 788,128 ft^2.
- **GDN:** None. Total GDN placed for job is 841,790ft^2.

SUMMARY OF QC TESTING:

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Events: None.

CQC Monitor: _____ Date: 3/15/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 3/15/05 S M (T) W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partially Cloudy to Clear **WIND:** High

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1500, 9.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **2" Cover**: Nielson hauled 2" cover with Volvos and placed with a D6 dozer on the west end of the landfill.
- **22" Cover:** Nielson used a Cat D6 dozer to grade 22" fill.
- **East End:** Nielson removed asbestos from an area where not all the cut was finished.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 794,912 ft^2.
- **FML:** None. Total FML placed for job is 788,128 ft^2.
- **GDN:** None. Total GDN placed for job is 841,790ft^2.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: Met with Stoller and Kaiser Hill and was informed that the EPA and CDPHE desired to have two more bulk gradations ran on the 22" cover material, but this time from the stockpiles at Centennial. Two Samples are to be taken tomorrow from two areas of the stockpile to verify that the material on the cap is consistent with the material brought in from Centennial.

CQC Monitor: _____ Date: 3/16/05
Approved by: _____ Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 3/16/05 S M T (W) T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partially Cloudy to Clear **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1700, 11.5 hrs)
Matt Cashimer (0700-1330, 6.5 hrs)
Patrick Harrell (0730-1330, 6.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **22" Cover:** Nielson used a Cat D6 dozer to fill and grade 22" cover in area where additional fill was needed. The additional fill material was hauled in by bellies and Volvos.
- **East End:** Nielson used a Cat 325 excavator to removed asbestos from an area where not all the cut was finished. Another Cat 325 excavator, this one with a sheep-foot roller attachment on the bucket, was used to compact fill around the seep capture system repaired on the previous day.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 794,912 ft^2.
- **FML:** None. Total FML placed for job is 788,128 ft^2.
- **GDN:** None. Total GDN placed for job is 841,790ft^2.

SUMMARY OF QC TESTING:

Ran two bulk gradations (ASTM D5519 & D422 were used on both samples) on alluvial materials at Centennial that are currently being hauled onto the cap as 22" Cover. 2, 2 bucket samples were taken to the Golder Soils Lab for testing; the sample numbers are AMV-01 and AMV-02.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: A test Pad was created to test the use of the sheep-foot roller attachment to the Cat 325 excavator. Alluvial material for this area was laid out in a 10' by 10' and compacted by 6 passes with the excavator sheep foot attachment. The Material was then potholed to verify compaction.

CQC Monitor: _____ Date: 3/17/05
Approved by: _____ Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 3/17/05 S M T W (T) F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partially Cloudy to Clear **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1730, 12.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **22" Cover:** Nielson used a Cat D6 dozer to fill and grade 22" cover in area where additional fill was needed. The additional fill material was hauled in by bellies and Volvos.
- **East End:** Nielson used an 825 sheep foot compactor to compact fill placed on the east face slope.
- **6" Cushion:** Nielson used a D6 to place cushion soils into 6" lifts along the flats on the south side of the landfill near the east face. The cushion material was hauled in by belly dumps and the material was graded by a Cat 14 G grader.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 794,912 ft^2.
- **FML:** None. Total FML placed for job is 788,128 ft^2.
- **GDN:** None. Total GDN placed for job is 841,790ft^2.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: Discussed contracted work with Stoller and asked them when Golders services would no longer be necessary on site. Learned that Stoller only wishes to have Golder on site until the 2" layer has been completed, which is supposed to be complete on the 22 of April.

CQC Monitor: _____ Date: 3/18/05
Approved by: _____ Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 3/18/05 S M T W T (F) S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partially Cloudy to Clear **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1630, 11.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **22" Cover:** Nielson used a Cat D6 dozer to fill and grade 22" cover in area where additional fill was needed. The additional fill material was hauled in by bellies and Volvos.
- **East End:** Nielson used a Cat 966 front end loader and a Cat 14G grader to finish grade the east face slope.
- **6" Cushion:** Nielson used a D6 to place cushion soils into 6" lifts along the flats on the south side of the landfill near the east face. The cushion material was hauled in by belly dumps and the material was graded by a Cat 14 G grader.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 794,912 ft^2.
- **FML:** None. Total FML placed for job is 788,128 ft^2.
- **GDN:** None. Total GDN placed for job is 841,790ft^2.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: None.

CQC Monitor: _____ Date: 3/19/05
Approved by: _____ Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 3/19/05 S M T W T F (S)

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partially Cloudy to Clear **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1630, 11.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- East End: Nielson used a Cat 966 front end loader and a Cat 14G grader to finish grade the east face slope.
- 6" Cushion: Nielson used a D6 to place cushion soils into 6" lifts along the flats on the south side of the landfill near the east face. The cushion material was hauled in by belly dumps and the material was graded by a Cat 14 G grader.

Geosynthetics

- GCL: None. Total GCL placed for job is 794,912 ft^2.
- FML: None. Total FML placed for job is 788,128 ft^2.
- GDN: None. Total GDN placed for job is 841,790ft^2.

SUMMARY OF QC TESTING:

Nuclear Density Tests

Test #	% off MC	% Comp.	Pass/Fail
CL-165	1.2	98%	PASS
CL-166	-0.9	96%	PASS
CL-167	-0.1	97%	PASS
CL-168	-0.9	96%	PASS
CL-169	-0.1	101%	PASS
CL-170	-0.9	97%	PASS
CL-171	-1.2	97%	PASS
CL-172	-0.6	100%	PASS
CL-173	0.8	100%	PASS

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: None.

CQC Monitor: _____ Date: 3/21/05
Approved by: _____ Date: 8-22-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 3/21/05 S (M) T W T F S

PRECIPITATION: **AM:** rain/snow **PM:** none

CLOUD COVER: Partially cloudy to cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Matt Cashimer (0600-1730, 11.5 hrs)
Michael Place (0530-0930, 4.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- East End: Nielson used a Cat 14G grader to finish grade the east face slope.
- 6" Cushion: Nielson used a D6 to place cushion soils into 6" lifts along the north side of the landfill near the east face. The cushion material was hauled in by belly dumps and Volvo trucks, and the material was graded by a Cat 14 G grader.
- 2" Cover: Nielson hauled 2" cover using a Cat 633 scraper and placed the material with a 14G motor grader and a Cat 950 front end loader.

Geosynthetics

- GCL: Colorado Lining performed deployment. Daily total placed is 2175 ft^2. Total GCL placed for job is 797,087 ft^2.
- FML: Colorado performed deployment and trial seams. Daily total is 3267 ft^2. Total FML placed for job is 791,395 ft^2.
- GDN: None. Total GDN placed for job is 841,790ft^2.

SUMMARY OF QC TESTING:

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: None.

CQC Monitor: Matt Lashmet **Date:** 3/21/05
Approved by: **Date:** 5-16-05
File No.

SUBGRADE ACCEPTANCE FORM

The subgrade from S463 to S463, has been moisture conditioned and compacted according to specifications. This area has been tested for both moisture and density using a nuclear density gauge and/or sand cone tests at specified testing intervals. The area specified above has met all specifications for the 6-inch cushion soil including specification given on its gradation, layer thickness, moisture content and dry density. A visual inspection of this area has been conducted to ensure that the cushion soil is above 32 degrees Fahrenheit, and free of standing water debris and any sharp corners or protrusions that could put excessive stress on the GCL or FML. This area has met all specifications and is approved for liner placement on March 21 2005.

Michael Stoller	Stoller	3/24/05
QC Representative	Company	Date
Marshall Massey	TETRA TECH RMC	3/21/05
QA Representative	Company	Date

SUBGRADE ACCEPTANCE FORM

The subgrade from S463 to S463, has been moisture conditioned and compacted according to specifications. This area has been tested for both moisture and density using a nuclear density gauge and/or sand cone tests at specified testing intervals. The area specified above has met all specifications for the 6-inch cushion soil including specification given on its gradation, layer thickness, moisture content and dry density. A visual inspection of this area has been conducted to ensure that the cushion soil is above 32 degrees Fahrenheit, and free of standing water debris and any sharp corners or protrusions that could put excessive stress on the GCL or FML. This area has met all specifications and is approved for liner placement on March 21 2005.

[signature]	Stoller	3/24/05
QC Representative	Company	Date
Marshall Mason	TETRA TECH RMC	3/21/05
QA Representative	Company	Date

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 3/22/05 S M (T) W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partially cloudy to cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Matt Cashimer (0600-1930, 13.5 hrs)
Michael Place (0530-1730, 12.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Anchor Trench:** Nielson used a Cat 325 excavator to dig anchor trench along southern perimeter of the east face and for the gravel drain anchor trench along the western edge of the east face area.
- **6" Cushion:** Nielson used a Cat 14G grader graded cushion soil on the slopes on the northern side of the east face.
- **2" Cover:** Nielson hauled 2" cover using a Cat 633 scraper and placed the material with a 14G motor grader and a Cat 950 front end loader. A D6 was used to rip up the 2" and a disk attachment to the D6 was used to disk the 2" material in preparation for seeding.

Geosynthetics

- **GCL:** Colorado Lining performed deployment. Daily total placed is 39,896 ft^2. Total GCL placed for job is 838,462 ft^2.
- **FML:** Colorado performed deployment fusion seaming and trial seams. Daily total is 36,460 ft^2. Total FML placed for job is 827,855 ft^2.
- **GDN:** None. Total GDN placed for job is 841,790 ft^2.

SUMMARY OF QC TESTING:

Density Tests

Test #	% off MC	% Comp.	Pass/Fail
CL-174	-0.9	104%	PASS
CL-175	-1.2	100%	PASS
CL-176	-1.4	100%	PASS
CL-177	-1.6	101%	PASS
CL-178	-0.3	102%	PASS
CL-179	-0.9	103%	PASS
CL-180	-0.5	102%	PASS
CL-181	-1.2	101%	PASS
CL-182	-1.5	101%	PASS
CL-183	-1.4	96%	PASS
CL-184	1	100%	PASS
CL-185	-0.7	100%	PASS
CL-186	0.6	101%	PASS
CL-187	-1.2	103%	PASS
CL-188	-0.7	101%	PASS

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: None.

CQC Monitor: _____ Date: 3/23/05

Approved by: _____ Date: 3-16-05

File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 3/22/05 S M (T) W T F S

PRECIPITATION: AM: none PM: none

CLOUD COVER: Partially cloudy to cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Matt Cashimer (0600-1930, 13.5 hrs)
Michael Place (0530-1730, 12.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Anchor Trench:** Nielson used a Cat 325 excavator to dig anchor trench along southern perimeter of the east face and for the gravel drain anchor trench along the western edge of the east face area.
- **6" Cushion:** Nielson used a Cat 14G grader graded cushion soil on the slopes on the northern side of the east face.
- **2" Cover:** Nielson hauled 2" cover using a Cat 633 scraper and placed the material with a 14G motor grader and a Cat 950 front end loader. A D6 was used to rip up the 2" and a disk attachment to the D6 was used to disk the 2" material in preparation for seeding.

Geosynthetics

- **GCL:** Colorado Lining performed deployment. Daily total placed is 39,896 ft^2. Total GCL placed for job is 838,462 ft^2.
- **FML:** Colorado performed deployment fusion seaming and trial seams. Daily total is 36,460 ft^2. Total FML placed for job is 827,855 ft^2.
- **GDN:** None. Total GDN placed for job is 841,790 ft^2.

SUMMARY OF QC TESTING:

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: None.

CQC Monitor: _____ Date: 3/23/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 3/23/05 S M T (W) T F S

PRECIPITATION: AM: none PM: none

CLOUD COVER: Partially cloudy to cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1800, 12.5 hrs)
Matt Cashimer (0600-1730, 11.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- Anchor Trench: Nielson used a Cat 325 excavator to dig anchor trench along southern perimeter of the east face and for the gravel drain anchor trench along the northern edge of the east face area. Some of the perimeter anchor trench was along the south side of the east face was backfilled and compacted using a bobcat and jumping jacks.
- 6" Cushion: Nielson used a Cat 14G grader graded cushion soil on the slopes on the northern side of the east face.
- 2" Cover: Nielson hauled 2" cover using a Cat 633 scraper and placed the material with a 14G motor grader and a Cat 950 front end loader. A D6 was used to rip up the 2" and a disk attachment to the D6 was used to disk the 2" material in preparation for seeding.

Geosynthetics

- GCL: Colorado Lining performed deployment. Daily total placed is 17,540 ft^2. Total GCL placed for job is 856,002 ft^2.
- FML: Colorado performed deployment fusion seaming and trial seams. Daily total is 19,191 ft^2. Total FML placed for job is 847,046 ft^2.
- GDN: None. Total GDN placed for job is 841,790 ft^2.

SUMMARY OF QC TESTING:

Density Tests

Test #	% off MC	% Comp.	Pass/Fail
CL-189	-0.7	101%	PASS
CL-190	-0.7	100%	PASS
CL-191	-1	97%	PASS
CL-192	-1.1	96%	PASS
CL-193	-1	98%	PASS

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: None.

CQC Monitor: _____ Date: 3/24/05

Approved by: _____ Date: 5-16-05

File No. _____

SUBGRADE ACCEPTANCE FORM

The subgrade from S463 to S503-S504, has been moisture conditioned and compacted according to specifications. This area has been tested for both moisture and density using a nuclear density gauge and/or sand cone tests at specified testing intervals. The area specified above has met all specifications for the 6-inch cushion soil including specification given on its gradation, layer thickness, moisture content and dry density. A visual inspection of this area has been conducted to ensure that the cushion soil is above 32 degrees Fahrenheit, and free of standing water debris and any sharp corners or protrusions that could put excessive stress on the GCL or FML. This area has met all specifications and is approved for liner placement on March 22, 2005.

QC Representative	Company	Date 3/22/05
QA Representative	Company Tetra Tech	Date 3/23/05

SUBGRADE ACCEPTANCE FORM

The subgrade from S503-S504 to S520-S521, has been moisture conditioned and compacted according to specifications. This area has been tested for both moisture and density using a nuclear density gauge and/or sand cone tests at specified testing intervals. The area specified above has met all specifications for the 6-inch cushion soil including specification given on its gradation, layer thickness, moisture content and dry density. A visual inspection of this area has been conducted to ensure that the cushion soil is above 32 degrees Fahrenheit, and free of standing water debris and any sharp corners or protrusions that could put excessive stress on the GCL or FML. This area has met all specifications and is approved for liner placement on march /23 /2005.

[signature]	[signature]	3/23/05
QC Representative	Company	Date
[signature]	Tetra Tech	3/23/05
QA Representative	Company	Date

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 3/24/05 S M T W (T) F S

PRECIPITATION: **AM:** Light Drizzle **PM:** Rain and Snow

CLOUD COVER: Fog **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1530, 10.0 hrs)
Matt Cashimer (0600-1730, 8.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Anchor Trench:** Nielson a bobcat and a Cat backhoe to backfill anchor trench in the perimeter anchor trench on the southeastern side of the East Face. Fill was placed in the trench in two, one foot lifts and was compacted using jumping jacks.
- **2" Cover**: Nielson hauled 2" cover using a Cat 633 scraper and placed the material with a 14G motor grader and a Cat 950 front end loader. A D6 was used to rip up the 2" and a disk attachment to the D6 was used to disk the 2" material in preparation for seeding.

Geosynthetics

- **GCL:** Colorado Lining performed deployment. Daily total placed is 14,355 ft^2. Total GCL placed for job is 870,357 ft^2.
- **FML:** Colorado performed deployment fusion seaming and trial seams. Daily total is 13,145 ft^2. Total FML placed for job is 860,191 ft^2.
- **GDN:** None. Total GDN placed for job is 841,790 ft^2.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: None.

CQC Moniter: _____ Date: 3/25/05

Approved by: _____ Date: 5-16-05

File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 3/25/05 S M T W T (F) S

PRECIPITATION: **AM:** Light Snow **PM:** Light Snow

CLOUD COVER: Fog to Overcast **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1100, 5.5 hrs)
Matt Cashimer (0600-1030, 4.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

None.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 870,357 ft^2.
- **FML:** None. Total FML placed for job is 860,191 ft^2.
- **GDN:** None. Total GDN placed for job is 841,790 ft^2.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: None.

CQC Monitor: _____ **Date:** 3/25/05
Approved by: _____ **Date:** 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 3/28/05 S (M) T W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0600-1700, 11.0 hrs)
Matt Cashimer (01000-1800, 8.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks None.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 870,357 ft^2.
- **FML:** Colorado performed pressure testing, repairs, and vacuum testing today. Daily total is 13,145 ft^2. Total FML placed for job is 860,191 ft^2.
- **GDN:** None. Total GDN placed for job is 841,790 ft^2.

SUMMARY OF QC TESTING:

6 destructive tests were run today on destructs DFp-078 to DFp-083. All gave passing results Also ran trial seams for the extrusion welder, all results were within specification.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: None.

CQC Monitor: _____ Date: 3/29/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 3/29/05 S M (T) W T F S

PRECIPITATION: AM: none PM: none

CLOUD COVER: Partly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1700, 11.5 hrs)
Matt Cashimer (0600-1800, 12.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Anchor Trench:** Nielson used a Cat backhoe to place cushion fill into the anchor trench along the base of the slope on the east face. The fill was compacted by two jumping jack compactors in two, one foot lifts.
- **2" Cover:** Nielson graded 2" Cover on the cap using a Cat 14G and a D6 dozer.
- **Perimeter Channel:** Nielson used a Cat 633 scraper to finish grading the perimeter Channel on the north side of the cap

Geosynthetics

- **GCL:** Colorado Lining performed deployment and repairs on GCL today. Total GCL deployed today 6,616 ft^2. Total GCL placed for job is 876,872 ft^2.
- **FML:** Colorado Lining performed deployment and fusion seaming today. Total FML deployed today 6,445 ft^2. Total FML placed for job is 866,636 ft^2.
- **GDN:** Colorado Lining performed deployment zip-tying seams, and sewing of seams today. Total FML deployed today 48,505 ft^2. Total GDN placed for job is 890,295 ft^2.

SUMMARY OF QC TESTING:

Density Tests

Test #	% off MC	% Comp.	Pass/Fail
AT-15	-0.6	97%	PASS
AT-16	-0.4	100%	PASS

3 destructive tests were run today on destructs DFp-084 to DFp-086. Also ran trial seams for the extrusion welder. All QC tests gave passing results.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: Kaiser Hill came by enquiring about Golder's desire to participating in the next landfill project on site. Gave Kaiser Hill Mark McClain's info to work out the logistics of Golder performing QC work for the next landfill.

CQC Monitor: _____ Date: 3/30/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 3/30/05 S M T (W) T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0600-1200, 6.0 hrs)
Matt Cashimer (0600-1800, 12.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Anchor Trench:** Nielson used a Cat 325 excavator to dig gravel drain anchor trench along the crest of the east face. Fill was carried away by a Volvo haul truck.
- **2" Cover:** Nielson ripped and disked 2" cover with a Cat D6 dozer with a disk attachment.

Geosynthetics

- **GCL:** Colorado Lining performed deployment and repairs on GCL today. Total GCL deployed today 39.165 ft^2. Total GCL placed for job is 916,037 ft^2.
- **FML:** Colorado Lining performed deployment and fusion seaming today. Total FML deployed today 37,928 ft^2. Total FML placed for job is 904,564 ft^2.
- **GDN:** Colorado Lining performed deployment zip-tying seams, and sewing of seams today. Total FML deployed today 24,895 ft^2. Total GDN placed for job is 915,190 ft^2.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: None.

CQC Monitor: _____ Date: 3/31/05
Approved by: _____ Date: 3-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 3/31/05 S M T W (T) F S

PRECIPITATION: **AM:** Light Snow **PM:** none

CLOUD COVER: Mostly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1730, 12.0 hrs)
Matt Cashimer (0600-1800, 12.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **10" Cushion:** Nielson used a Cat track loader and a D6 dozer to place 10" cushion onto GDN along the south side of the East Face. Volvos hauled the cushion to the placement area from Centennial.
- **Anchor Trench:** Nielson used bobcat to place cushion materials back into the anchor trench on the south side of the Landfill. Two jumping jacks were used to compact the fill in two, one foot lifts.
- **2" Cover:** Nielson disked 2" cover with a John Deer farm tracktor with a disk attachment dragging behind it.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 916,037 ft^2.
- **FML:** Colorado Lining performed snow removal, pressure testing, repairs and vacuum testing today. Total FML placed for job is 904,564 ft^2.
- **GDN:** None. Total GDN placed for job is 915,190 ft^2.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: None.

CQC Monitor: _____ Date: 4/1/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 4/1/05 S M T W T (F) S

PRECIPITATION: **AM:** Light Snow **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1630, 11.0 hrs)
Matt Cashimer (0600-1800, 12.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **10" Cushion:** Nielson used a Cat track loader and a D6 dozer to place 10" cushion onto GDN along the south side of the East Face. Volvos hauled the cushion to the placement area from Centennial.
- **Anchor Trench:** Nielson used a bobcat to place cushion materials back into the anchor trench on the south side of the Landfill. Two jumping jacks were used to compact the fill in two, one foot lifts. A Cat 325 excavator was used to dig anchor trench along the crest of the slope.

Geosynthetics

- **GCL:** Colorado Lining performed deployment of GCL today. Total GCL deployed today 13,628 ft^2. Total GCL placed for job is 929,665 ft^2.
- **FML:** Colorado Lining performed deployment, pressure testing, repairs and vacuum testing today. Total FML deployed today 13,342 ft^2. Total FML placed for job is 917,906 ft^2.
- **GDN:** Colorado Lining performed deployment of GDN today. Total FML deployed today 45,000 ft^2. Total GDN placed for job is 960,189 ft^2.

SUMMARY OF QC TESTING:

Density Tests

Test #	% off MC	% Comp.	Pass/Fail
CL-194	-0.1	99%	PASS
CL-195	-0.4	103%	PASS
CL-196	-1.1	96%	PASS
CL-197	-1.2	97%	PASS
CL-198	-0.8	96%	PASS
CL-199	-1.7	99%	PASS
CL-200	-1.1	97%	PASS
CL-201	-1.8	96%	PASS
CL-202	-0.8	96%	PASS
CL-203	-0.6	97%	PASS
CL-204	0.1	99%	PASS
CL-205	-0.6	99%	PASS
CL-206	0	97%	PASS
CL-207	0.1	96%	PASS
CL-208	-0.1	100%	PASS
CL-209	-0.5	102%	PASS

Took two sand cone tests at CL-200 (CLS-10) and CL-209 (CLS-11) and a soil sample of 6" cushion was taken for gradation and proctor as well.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: None.

CQC Monitor: _____ Date: 4/7/05
Approved by: _____ Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill

PROJECT DESIGNER: Earth Tech

GOLDER CLIENT: Stoller Associates

GENERAL CONTRACTOR: Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 4/2/05 S M T W T F (S)

PRECIPITATION: AM: none PM: none

CLOUD COVER: Clear to Partly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0830-1230, 4.0 hrs)
Matt Cashimer (0600-1800, 12.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **10" Cushion:** Nielson used a Cat track loader and a D6 dozer to place 10" cushion onto GDN along the south side of the East Face. Volvos hauled the cushion to the placement area from Centennial.

Geosynthetics

- **GCL:** Colorado Lining performed deployment of GCL today. Total GCL deployed today 20,373 ft^2. Total GCL placed for job is 950,038 ft^2.
- **FML:** Colorado Lining performed deployment, pressure testing, repairs and vacuum testing today. Total FML deployed today 19,301 ft^2. Total FML placed for job is 937,207 ft^2.
- **GDN:** Colorado Lining performed deployment of GDN today. Total FML deployed today 28,053 ft^2. Total GDN placed for job is 988,242 ft^2.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: None.

CQC Monitor: _____ Date: 4/3/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 4/3/05 (S) M T W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0830-1230, 3.0 hrs)
Matt Cashimer (0600-1800, 12.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks None.

Geosynthetics

- **GCL:** Colorado Lining performed deployment and repairs of GCL today. Total GCL deployed today 39,739 ft^2. Total GCL placed for job is 989,776 ft^2.
- **FML:** Colorado Lining performed deployment, and fusion seaming today. Total FML deployed today 38,752 ft^2. Total FML placed for job is 975,754 ft^2.
- **GDN:** None. Total GDN placed for job is 988,242 ft^2.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: None.

CQC Monitor: _____ Date: 4/4/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 4/4/05 S (M) T W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear to Partly Cloudy **WIND:** low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1530, 10.0 hrs)
Matt Cashimer (0600-1700, 11.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **10" Cushion:** Nielson used a Cat track loader to place 10 cushion onto GDN. Material was hauled in by Volvos.
- **Anchor Trench:** Nielson used a bobcat to backfill anchor trench along the northern perimeter of the east face. Jumping Jacks were used to compact fill in two one foot lifts. Crest anchor trench backfill began on the southern portion of the east face. A 4 inch pipe was placed on top of four inches of gravel in the trench and then the pipe was buried up to the top of the trench. A bobcat was used to haul in the gravel for the crest anchor trench.

Geosynthetics

- **GCL:** Colorado Lining performed deployment and repairs of GCL today. Total GCL deployed today 8,379 ft^2. Total GCL placed for job is 998,115 ft^2.
- **FML:** Colorado Lining performed deployment, pressure testing, repairs, vacuum testing and fusion seaming today. Total FML deployed today 8,470 ft^2. Total FML placed for job is 984,224 ft^2.
- **GDN:** None. Total GDN placed for job is 988,242 ft^2.

SUMMARY OF QC TESTING:

Density Tests

Test #	% off MC	% Comp.	Pass/Fail
AT-17	0.6	96%	PASS
AT-18	1.5	96%	PASS
AT-19	-0.4	101%	PASS
AT-20	-0.7	100%	PASS
AT-21	-0.3	99%	PASS
AT-22	-0.1	100%	PASS

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: None.

CQC Monitor: _____ Date: 4/5/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 4/5/05 S M (T) W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Mostly to Partly Cloudy **WIND:** High

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1600, 10.5 hrs)
Matt Cashimer (0600-1430, 8.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Anchor Trench:** Nielson used a bobcat to backfill anchor trench along the northern perimeter of the east face. Jumping Jacks were used to compact fill in two one foot lifts. Crest anchor trench backfill began on the southern portion of the east face. A 4 inch pipe was placed on top of four inches of gravel in the trench and then the pipe was buried up to the top of the trench. A bobcat was used to haul in the gravel for the crest anchor trench.
- **Rock Layer:** Nielson used a track loader and a D6 to place Rock Layer Material on the southern portion of the east face slope. Material was hauled in by Volvo's which were loaded from Centennial.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 998,115 ft^2.
- **FML:** None. Total FML placed for job is 984,224 ft^2.
- **GDN:** None. Total GDN placed for job is 988,242 ft^2.

SUMMARY OF QC TESTING:

Density Tests

Test #	% off MC	% Comp.	Pass/Fail
CU-158	-1.9	103%	PASS
CU-159	-1.2	98%	PASS
CU-160	-1.6	103%	PASS
CU-161	-2	101%	PASS
CU-162	-1.8	101%	PASS
CU-163	0.1	99%	PASS
CU-164	-1.1	98%	PASS
CU-165	-0.6	96%	PASS
CU-166	-0.6	97%	PASS

Ran one sand cone test (CLS-08) at same location as CL-160.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: Discussed testing frequencies with Stoller to ensure that the correct number of QC testing has and will be done on the materials to be placed on the cap.

CQC Monitor: _____ Date: 4/6/05

Approved by: _____ Date: 5-16-05

File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 4/6/05 S M T (W) T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Clear **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1600, 10.5 hrs)
Matt Cashimer (0600-1830, 12.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **10" Cover:** Nielson used a Cat track loader to place 10" cushion on the GDN on the east face. Cushion materials were hauled in by bellies from Centennial.
- **Rock Layer:** Nielson used a Cat track loader and a D6 to place Rock Layer Material on the southern portion of the east face slope. Material was hauled in by Volvo's which were loaded from Centennial.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 998,115 ft^2.
- **FML:** None. Total FML placed for job is 984,224 ft^2.
- **GDN:** Colorado Lining deployed and repaired GDN today. Total GDN deployed today 72,760 ft^2. Total GDN placed for job is 1,061,001 ft^2.

SUMMARY OF QC TESTING:

Density Tests

Test #	% off MC	% Comp.	Pass/Fail
CU-167	2.3	98%	PASS
CU-168	-1.1	102%	PASS
CU-169	-1	96%	PASS
CU-170	-1.4	96%	PASS
CU-171	-1.2	98%	PASS
CU-172	-0.9	98%	PASS
CU-173	-2	98%	PASS
CU-174	0.7	97%	PASS
CU-175	-1.5	96%	PASS
CU-176	-1.5	105%	PASS
CU-177	-1.7	104%	PASS
CU-178	1.1	97%	PASS
CU-179	0.1	100%	PASS
CU-180	0.5	101%	PASS

Took one Sampe of 10" Cushion back to lab for grain size, proctor and atterberg testing.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: none.

CQC Monitor: _____ Date: 4/7/05

Approved by: _____ Date: 5-16-05

File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielsons Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 4/8/05 S M T W T (F) S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Mostly Cloudy **WIND:** Low in AM, High in PM

GAI PERSONNEL HOURS CHARGED:

Doug Eagleton (1000-1500, 5.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **10" Cover:** Nielsons used a Cat track loader to place 10" cushion on the GDN on the east face. Cushion materials were hauled in by belly dumps from Centennial.
- **Rock Layer:** Nielsons used a Cat track loader and a D6 to place Rock Layer Material on the southern portion of the east face slope. Material was hauled in by Volvos, which were loaded from Centennial. According to Jim Erickson, due to high winds in PM, Stoller shut down placement operations at 1330.
- **Concrete:** Nielsons placed concrete for base of Seep Treatment System. Nielsons scheduled to place 8 cubic yards. Initial slump 2.5 inches (see concrete QC testing summary below). The concrete truck load batched at 0856. At approximately 1215 Josh Valentine (TetraTech QA) telephoned Bob Davis (Engineer) regarding the length of elapsed time since the load had batched. Valentine stated that Davis had stated that Davis preferred to use the concrete in the truck and not have a cold joint. Nielsons added water to the concrete in this truck and continued to place concrete from this truck. At approximately 1235, concrete placement operations were still ongoing.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 998,115 ft^2.
- **FML:** None. Total FML placed for job is 984,224 ft^2.
- **GDN:** None. Total GDN placed for job is 1,061,001 ft^2.

SUMMARY OF QC TESTING:

Earthworks

- None conducted today.

Concrete

- Concrete QC sampling and field testing occurred for placement of concrete for Seep Treatment System base. Sampling and field test results are as follows:

Test/Sample	Result	Comments
Air Content	5.5%	None
Slump	2.5"	None
Temperature	72° F	None
SWS-C-01	TBD	Cylinder
SWS-C-02	TBD	Cylinder
SWS-C-03	TBD	Cylinder
SWS-C-04	TBD	Cylinder
SWS-C-05	TBD	Cylinder

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: none.

CQC Monitor: Douglas Caplette **Date:** 08 APR 05
Approved by: [signature] **Date:** 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 4/9/05 S M T W T (F) S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: PM clouds **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Patrick Harrell: 8.0 hours (0700-1500)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **10" Cover:** Nielson used a Cat track loader to place 10" cushion on the GDN on the east face. Belly dump haul trucks were used to transport material from Centennial.
- **Rock Layer:** Nielson used a Cat track loader and two D6 dozers to place Rock Layer Material on the southern portion of the east face slope. Material was hauled in by Volvos and end-dump haul trucks, which were loaded from Centennial.
- **Other:** A Volvo haul truck was used to transport drainage gravel to the south drainage ditch where a Cat 325 track-hoe placed the material.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 998,115 ft^2.
- **FML:** None. Total FML placed for job is 984,224 ft^2.
- **GDN:** None. Total GDN placed for job is 1,061,001 ft^2.

SUMMARY OF QC TESTING:

Density Tests

Test #	% off MC	% Comp.	Pass/Fail
CU-188	-2	99%	PASS
CU-189	-1.3	98%	PASS
CU-190	-1.5	96%	PASS

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: none.

CQC Monitor: _____ Date: 4-9-05
Approved by: _____ Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 4/11/05 S (M) T W T F S

PRECIPITATION: **AM:** Light Snow **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1200, 6.5 hrs)
Matt Cashimer (0600-1000, 4.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- 10" Cushion: Removed snow from the 10" cushion with a Cat D5 dozer.

Geosynthetics

- GCL: None. Total GCL placed for job is 998,115 ft^2.
- FML: None. Total FML placed for job is 984,224 ft^2.
- GDN: None. Total GDN placed for job is 1,061,001 ft^2.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: none.

CQC Monitor: _____ Date: 4/12/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 4/12/05 S M (T) W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1200, 6.5 hrs)
Matt Cashimer (0600-1000, 9.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks None.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 998,115 ft^2.
- **FML:** None. Total FML placed for job is 984,224 ft^2.
- **GDN:** None. Total GDN placed for job is 1,061,001 ft^2.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: none.

CQC Monitor: _____ **Date:** 4/13/05
Approved by: _____ **Date:** 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 4/13/05 S M T (W) T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1200, 6.5 hrs)
Matt Cashimer (0600-1300, 7.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks None.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 998,115 ft^2.
- **FML:** None. Total FML placed for job is 984,224 ft^2.
- **GDN:** None. Total GDN placed for job is 1,061,001 ft^2.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: none.

CQC Monitor: Matt Cashimer **Date:** 4/15/05
Approved by: _____ **Date:** 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 4/14/05 S M T W (T) F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Matt Cashimer (0600-1230, 6.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks None.

Geosynthetics

- **GCL:** None. Total GCL placed for job is 998,115 ft^2.
- **FML:** None. Total FML placed for job is 984,224 ft^2.
- **GDN:** None. Total GDN placed for job is 1,061,001 ft^2.

SUMMARY OF QC TESTING: None.

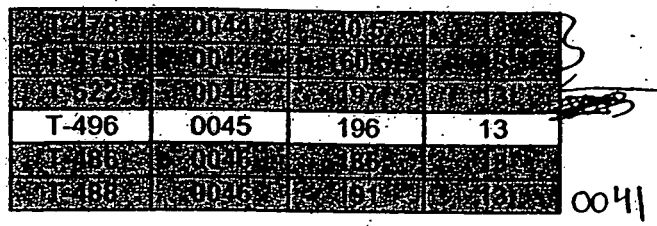
Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: none.

CQC Monitor: Matt Cashimer **Date:** 4/14/05
Approved by: **Date:** 5-16-05
File No.



maybe 0065

0041

For ED Parker

Change
T528
529 to 0063

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 4/15/05 S M T W T (F) S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1700, 11.5 hrs)
Matt Cashimer (0600-1100, 5.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **10" Cushion:** Nielson used a Cat 966 front end loader, a Cat 325 excavator, a Cat D6 dozer, and a Cat 14G grader to repair cushion that had received more than a foot of snow earlier in the week. Volvos were used to haul off wet cushion and haul in dry cushion from Centennial.

SUMMARY OF QC TESTING:

Density Tests

Test #	% off MC	% Comp.	Pass/Fail
CU-191	0.3	102%	PASS
CU-192	0.3	100%	PASS
CU-193	-1.1	102%	PASS
CU-194	-0.1	100%	PASS
CU-195	-1	102%	PASS
CU-196	0.4	98%	PASS

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: *Soft spots in 10" cushion:* Some of the soft spots on the 10" cushion required removal of cushion materials. In places where cushion needed to be removed a QC representative and a Nielson forman were on hand to ensure that the D6 that made the deep cuts in the cushion did not cut so deep that the DGN would be damaged.

CQC Monitor: _____ Date: 4/16/05
Approved by: _____ Date: 10-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 4/16/05 S M T W T F (S)

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1600, 10.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- 10" Cushion: Nielson used a Cat D6 dozer, a Cat 14G grader and a bobcat to repair cushion that had received more than a foot of snow earlier in the week.
- Concrete: Nielsons placed concrete for base of Seep Treatment System. Nielsons scheduled to place 9.75 cubic yards. Initial slump 5.0 inches (see concrete QC testing summary below). The concrete truck load batched at 0704.

SUMMARY OF QC TESTING:

Density Tests

Test #	% off MC	% Comp.	Pass/Fail
CU-197	-1.9	105%	PASS
CU-198	-0.4	100%	PASS
CU-199	-1.7	98%	PASS
CU-200	0.1	98%	PASS
CU-201	0.1	98%	PASS
CU-202	-0.4	102%	PASS
CU-203	-0.2	99%	PASS
CU-204	-0.5	98%	PASS
CU-205	-1.2	100%	PASS
CU-206	-1.3	101%	PASS

Ran one sand Cone named CUS-10 at the CU-200 test location. Also pulled a proctor sample from CU-202

Concrete

- Concrete QC sampling and field testing occurred for placement of concrete for Seep Treatment System base. Sampling and field test results are as follows:

Test/Sample	Result	Comments
Air Content	10%	None
Slump	5.0"	None
Temperature	72° F	None
RF4/16 A	TBD	Cylinder
RF4/16 B	TBD	Cylinder
RF4/16 C	TBD	Cylinder
RF4/16 D	TBD	Cylinder
RF4/16 E	TBD	Cylinder

Conducted concrete testing on the concrete placed today for the east end aeration structure. The Sidewalls were placed today and the slump came in at 5" and the air 10%. Temperature of the concrete was recorded to be 58 degrees F.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: *Soft spots in 10" cushion:* Some of the soft spots on the 10" cushion required removal of cushion materials. In places where cushion needed to be removed a QC representative and a Nielson forman were on hand to ensure that the D6 that made the deep cuts in the cushion did not cut so deep that the DGN would be damaged.
Concrete: Discussed the results of the concrete air and slump tests. The slump of the concrete was one inch greater than the specifications would allow and the air was much higher than expected. The slump was accepted by Jack Woo of Kaiser Hill because he felt if would not lead to weakness in the concrete. The air test was run a total of 4 times on the concrete and each time gave the same result. The air top was tested by filling the pot with water and filling running a test on the pot and the results came back 0.4%, theoretically the pot should have read 0% but this value is close for being conducted outside a laboratory setting, which shows the pot seams to be reading accurately. Jack Woo of Kaiser Hill decided that the air would probably be ok just as long as the cylinders that were cast have suitable break strength.

CQC Monitor: _____ Date: 4/17/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 4/17/05 (S) M T W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1200, 6.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Rock Layer:** Nielson used a Cat track loader and a Cat D6 dozer to place rock layer on the slopes of the east face. Material was hauled in by Volvos and an end dump from Centennial .

SUMMARY OF QC TESTING: None

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: None.

CQC Monitor: _____ Date: 4/18/05
Approved by: _____ Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 4/18/05 S (M) T W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1200, 6.5 hrs)
Matt Cashimer (0600-1700, 11.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- Rock Layer: Nielson used two Cat track loaders, and two Cat D6 dozers to place rock layer on the east face. Material was hauled in by Volvos and end dumps from Centennial.
- 22" Cover: Nielson used a Cat D6 dozer to place 22" Cover on top of rock layer. Material was hauled in by Volvos and end dumps from Centennial.

SUMMARY OF QC TESTING:

Density Tests

Test #	% off MC	% Comp.	Pass/Fail
CU-207	-1.5	102%	PASS
CU-208	-1.6	102%	PASS
CU-209	-0.9	99%	PASS
CU-210	-0.7	99%	PASS
CU-211	-1.8	102%	PASS
CU-212	-2	101%	PASS
CU-213	-1.2	100%	PASS
CU-214	-1.5	96%	PASS
CU-215	-2	99%	PASS
CU-216	-1.1	102%	PASS
CU-217	-1.7	100%	PASS
CU-218	-2	99%	PASS
CU-219	1.7	97%	PASS
CU-220	-1	100%	PASS

Ran one sand cone (CUS-11) at the same location as CU-220.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: Centennial ran out of rock layer so Nielson was forced to switch over to 22" Cover at about 10:00.

CQC Monitor: _____ Date: 4/19/05
Approved by: _____ Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 4/19/05 S M (T) W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1700, 11.5 hrs)
Matt Cashimer (0600-1300, 7.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Rock Layer:** Nielson used two Cat track loaders, and two Cat D6 dozers to place rock layer on the east face. Material was hauled in by Volvos and end dumps from Centennial.
- **22" Cover:** Nielson used a Cat D6 dozer to place 22" Cover on top of rock layer. Material was hauled in by Volvos and end dumps from Centennial.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: Met with Stoller, Kaiser Hill, and Paragon to discuss what items Kaiser Hill will be requesting of us and who will provide this information. Golder will be responsible for Liner Data, QC Soils tests data, the QC Concrete Data, and Daily Field Reports, Paragon will provide maps of each layer of the landfill along with survey data, and Stoller will compile the final report that is to be submitted

CQC Monitor: _____ Date: 4/20/05
Approved by: _____ Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 4/20/05 S M T (W) T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1700, 12.0 hrs)
Matt Cashimer (0600-1300, 7.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Rock Layer:** Nielson used two Cat track loaders, and two Cat D6 dozers to place rock layer on the east face. Material was hauled in by Volvos and end dumps from Centennial.
- **22" Cover:** Nielson used a Cat D6 dozer to place 22" Cover on top of rock layer. Material was hauled in by Volvos and end dumps from Centennial.
- **Concrete:** Gash used a concrete pump truck to pump 9.25 cubic yards of concrete inside of the north south and western walls placed on 4/16/05. The steps were fished by Gash's two man crew. Concrete was placed at 1230 and batched at 1039. Slump of the material was 4" and the air was 6.2%.

SUMMARY OF QC TESTING:

Concrete

- Concrete QC sampling and field testing occurred for placement of concrete for Seep Treatment System steps. Sampling and field test results are as follows:

Test/Sample	Result	Comments
Air Content	6.20%	Air added
Slump	4"	4 gal added
Conc. Temp.	72° F	None
RF4/20A	TBD	Cylinder
RF4/20B	TBD	Cylinder
RF4/20C	TBD	Cylinder
RF4/20D	TBD	Cylinder
RF4/20E	TBD	Cylinder
RF4/20F	TBD	Cylinder

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: None.

CQC Monitor: _____ Date: 4/21/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 4/21/05 S M T W (T) F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1700, 12.0 hrs)
Matt Cashimer (0600-1300, 9.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **Rock Layer:** Nielson used two Cat track loaders, and two Cat D6 dozers to place rock layer southern half of the flat area above the east face. Material was hauled in by Volvos and end dumps from Centennial.
- **22" Cover:** Nielson used a Cat D6 dozer to place 22" Cover on top of rock layer. Material was hauled in by Volvos and end dumps from Centennial.
- **Seep Capture System:** Nielson used a jumping jack to compact fill around the aeration structure and the man holes for the seep capture system.

SUMMARY OF QC TESTING:

Density Tests

Test #	% off MC	% Comp.	Pass/Fail
AEB-1	1.3	98%	PASS
AEB-2	0.9	97%	PASS

Two Density tests were taken from around the manholes next to the seep capture aeration structure.

Four Bulk Gradations were run today, three on 22" Cover and one on 2" Cover. The test names are AM22-10, AM22-11, AM22-12, and AM2-2. A sample of pea gravel from the liner lay down yard was taken to see if it would be suitable for use as drainage rock.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: None.

CQC Monitor: _____ Date: 4/22/05
Approved by: _____ Date: 5/6-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 4/22/05 S M T W T (F) S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1530, 10.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **22" Cover:** Nielson used a Cat D6 dozer to place 22" Cover on top of rock layer. Material was hauled in by Volvos and end dumps from Centennial.
- **Concrete:** Gash performed the fourth and final concrete pout on the seep aeration structure. The pour occurred at 0720 with concrete batched at 0537. Four gallons of water had to be added to the 2.5 yards of concrete along with a quarter of a packet of air entrainment powder to get the concrete to meet conformance testing. The slump of the concrete placed was 4" and the air was 5.2%.

SUMMARY OF QC TESTING:

Concrete

- Concrete QC sampling and field testing occurred for placement of concrete for Seep Treatment System east wall. Sampling and field test results are as follows:

Test/Sample	Result	Comments
Air Content	5.20%	Air added
Slump	4"	4 gal added
Conc. Temp.	57° F	None
RF4/20A	TBD	Cylinder
RF4/20B	TBD	Cylinder
RF4/20C	TBD	Cylinder
RF4/20D	TBD	Cylinder
RF4/20E	TBD	Cylinder
RF4/20F	TBD	Cylinder

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: Spoke with Kathy Haggland of Stoller about removing the troxler 3440 from the site. Kathy said that all that was needed was a signature and a date and time when the gauge is finally removed from the site.

CQC Monitor: _____ **Date:** 4/23/05
Approved by: _____ **Date:** 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 4/23/05 S M T W T F (S)

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1230, 7.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- 22" Cover: Nielson used a Cat D6 dozer to place 22" Cover on top of rock layer starting west and going east on the south side of the cap and on the northeastern corner of the cap. Material was hauled in by Volvos and belly dumps from Centennial.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings & Events: None

CQC Monitor: _____ Date: 4/25/05
Approved by: _____ Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 4/24/05 (S) M T W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Matt Cashimer (0730-1430, 7.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **22" Cover:** Nielson used a two Cat D6 dozers to place 22" Cover on top of rock layer. Material was hauled in by Volvos, belly dumps and side dumps from Centennial. The layer was graded with a Cat 14G motor grader.

SUMMARY OF QC TESTING:

None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

CQC Monitor: Matt Cashimer Date: 4/24/05
Approved by: Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 4/26/05 S M (T) W T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1630, 11.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **22" Cover:** Nielson used two Cat D6 dozers to place 22" on the slopes of the east face. Volvos and belly bumps hauled in the material from Centennial.

SUMMARY OF QC TESTING:

Test #	% off MC	% Comp.	Pass/Fail
GWN-1	1.8	90%	PASS
GWN-2	1.2	90%	PASS

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Discussed with Stoller and Kaiser Hill what aspects of the project remaining require nuclear density testing. Bob Davis of Kaiser Hill told us that the GIWS lines, the backfill around the manholes and the concrete aeration system, and the culverts will all need density test done to verify compaction of greater than 90% on the cushion soil used as backfill.

CQC Monitor: _____ Date: 5-16-05
Approved by: _____ Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 4/27/05 S M T (W) T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1630, 11.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **22" Cover:** Nielson used two Cat D6 dozers to place 22" on the slopes of the east face. Volvos and belly bumps hauled in the material from Centennial.

SUMMARY OF QC TESTING:

Density Tests

Test #	% off MC	% Comp.	Pass/Fail
AEB-3	0.4	92%	PASS
AEB-4	1.8	90%	PASS
AEB-5	0	96%	PASS

Ran two bulk gradations of 2" cover at Centennial. Samples were sieved were over 500 Kg as specified by ASTM for a material with maximum partial size of 6". The Material was sieved in the field down to 3" and a sample of two five gallon buckets for each sample was taken to the lab to finish out the sieve on the finer materials.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: None.

CQC Monitor: _____ Date: 4/28/05
Approved by: _____ Date: 5-16-05
File No. _____

Job No: 043-2246 Report No. 042805MSPDaily

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 4/28/05 S M T W (T) F S

PRECIPITATION: **AM:** Snow **PM:** Snow

CLOUD COVER: Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1230, 7.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks None.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: *QA/QC Meeting:* Met with Stoller, Tetra Tech, Kaiser Hill and Paragon to discuss QA and QC deliverables to Kaiser Hill for a final product. Bob Davis of Kaiser Hill requested Paragon give map of each layer constructed on the cap, Golder Provide data on all liner work and soil testing conducted for the present landfill plus all the daily field reports, and Tetra Tech provide final report data

QC Meeting: Met with Jim Erickson of Stoller, and Mark McClain of Golder to discuss what Stoller needs us to deliver to them for this projects final report. Decided that they would need copies of all soil and liner data collected along with PDF files of everything. PDF's will be submitted after hard copies of the data a approved by Kaiser Hill.

CQC Monitor: _____ Date: 4/28/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 5/3/05 S M (T) W T F S

PRECIPITATION: **AM:** Snow **PM:** Snow

CLOUD COVER: Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1730, 12.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

Earthworks

- **22" Cover:** Nielson used two Cat D6 dozers to place 22" material on the cap. Fill was brought in by Volvos.
- **Seep Capture System:** Nielson used a track loader to place cushion soil around the aeration system and man holes just west of the pond. The fill was compacted with a jumping jack.
-

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: none.

CQC Monitor: _____ **Date:** 5/4/05
Approved by: _____ **Date:** 5-16-05
File No.

Job No: 043-2246 Report No. 050405MSPDaily

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 5/4/05 S M T (W) T F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1800, 12.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- 22" Cover: Nielson used two Cat D6 dozers to place 22" material on the cap. Fill was brought in by Volvos.
- GIWS Line: Nielson used a Cat 325 excavator to construct a trench for placement of pipe in the southern GIWS line. After pipe was laid a Cat track loader was used to place fill overtop of the pipe and a jumping jack compacted the fill.

SUMMARY OF QC TESTING:

Density Tests

Test #	% off MC	% Comp.	Pass/Fail
GWS-1	1.9	90%	PASS
GWS-2	1.8	95%	PASS

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: none.

CQC Monitor: _____ Date: 5/5/05
Approved by: _____ Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 5/5/05 S M T W (T) F S

PRECIPITATION: **AM:** none **PM:** none

CLOUD COVER: Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1630, 11.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- **22" Cover:** Nielson used two Cat D6 dozers to place 22" material on the cap. Fill was brought in by Volvos.
- **2" Cover:** Nielson used two Cat 633 scrapers to place 2" material on the cap.

SUMMARY OF QC TESTING:

Ran a D5519 Method B test on 12" Rip Rap. The test was called "12" Rip Rap".

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Discussed the result of the 12" Rip Rap gradation with Kaiser Hill, Stoller, and Earth Tech. Stoller decided, with approval from Kaiser Hill and Earth Tech to add in 18" rock to the rip rap to make up for the materials deficiency at that rock particle size.

CQC Monitor: _____ Date: 5/6/05
Approved by: _____ Date: 5-16-05
File No.

Job No: 043-2246 Report No. 050605MSPDaily

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 5/6/05 S M T W T (F) S

PRECIPITATION: **AM:** none **PM:** few showers.

CLOUD COVER: Partly Cloudy **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1600, 10.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- 2" Cover: Nielson used two D6 dozers to place 2" material on and around the east face. The 2" Material was hauled in by bellies, side dumps and Volvos with material from Centennial.

SUMMARY OF QC TESTING:

Ran one bulk gradation on 2" material today. The test number was AM2-3.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: None.

CQC Monitor: _____ Date: 5/7/05
Approved by: _____ Date: 5-16-05
File No.

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action GOLDER PROJECT NO: 043-2246

STOLLER CLIENT: Kaiser Hill PROJECT DESIGNER: Earth Tech

GOLDER CLIENT: Stoller Associates GENERAL CONTRACTOR: Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 5/7/05 S M T W T F (S)

PRECIPITATION: AM: none PM: none.

CLOUD COVER: Partly Cloudy WIND: Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1130, 6.0 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- 2" Cover: Nielson used two D6 dozers to place 2" material on and around the east face. The 2" Material was hauled in by bellies, side dumps and Volvos with material from Centennial.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: None.

CQC Monitor: _____ Date: 5/9/05
Approved by: _____ Date: 5-16-05
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action GOLDER PROJECT NO: 043-2246

STOLLER CLIENT: Kaiser Hill PROJECT DESIGNER: Earth Tech

GOLDER CLIENT: Stoller Associates GENERAL CONTRACTOR: Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 5/8/05 (S) M T W T F S

PRECIPITATION: AM: none PM: none.

CLOUD COVER: Partly Cloudy WIND: Low

GAI PERSONNEL HOURS CHARGED: None.

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- 2" Cover: Nielson used a farm tracker and a 14G motor grader to rip and disk the cap in preparation for completion of the project. In addition a diversion berm was built out of 2" cover material at the top of the east face.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Diversion berm realignment approved by Bob Davis of Kaiser Hill.

QC
~~CQC~~ Monitor: _____ Date: 5-10-05 (8-22-05)
Approved by: _____ Date: _____
File No. _____

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 5/9/05 S (M) T W T F S

PRECIPITATION: **AM:** none **PM:** none.

CLOUD COVER: Partly Cloudy to Clear **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (1100-1630, 5.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- **2" Cover:** Nielson used a farm tracker and a 14G motor grader to rip and disk the cap in preparation for completion of the project.
- **Rip Rap:** Nielson used a Cat 325 excavator to place Rip Rap in the perimeter channel leading down around the dam on the south side of the Landfill.

SUMMARY OF QC TESTING: None.

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: Spoke with Jim Erickson of Stoller about start and finish dates of the various aspects of the project. Jim requested dates of Stoller's estimated start and finish dates of each layer of the landfill be compared to the Golder daily field reports. Results were given to Jim at 1500.

CQC Monitor: _____ Date: 5/10/05
Approved by: _____ Date: 5-16-05
File No.

Job No: 043-2246 Report No. 051005MSPDaily

GOLDER ASSOCIATES
FIELD MONITORING SUMMARY

PROJECT TITLE: Present Landfill Accelerated Action **GOLDER PROJECT NO:** 043-2246

STOLLER CLIENT: Kaiser Hill **PROJECT DESIGNER:** Earth Tech

GOLDER CLIENT: Stoller Associates **GENERAL CONTRACTOR:** Nielson Skanska

LOCATION: Golden, CO

PROJECT: Present Landfill (Rocky Flats)

DATE 5/10/05 S M (T) W T F S

PRECIPITATION: **AM:** none **PM:** none.

CLOUD COVER: Partly Cloudy to Clear **WIND:** Low

GAI PERSONNEL HOURS CHARGED:

Michael Place (0530-1600, 10.5 hrs)

GUESTS ON SITE: none

SUMMARY OF CONSTRUCTION:

- **Culverts:** Nielson used a Cat 325 excavator to remove fill from the culvert locations and replace pipes in those culverts. On the southern culvert a Cat 966 front end loader was on hand to place pea gravel as a drain below the pipe and cushion material around the pipes. Cushion materials were compacted by a jumping jack.

SUMMARY OF QC TESTING:

Density Tests

Test #	% off MC	% Comp.	Pass/Fail
CPS-1	0.7	98%	PASS
CPS-2	0.5	93%	PASS

Quality Control for the Present Landfill is confident that the above items are being conducted during installation. All requirements of the QC Tables have been observed and met.

SUMMARY OF MEETINGS AND DISCUSSIONS HELD:

Pre-EV Meeting: Discussed potential hazards associated with activities to be conducted on site this day.

Other Meetings: None.

QC
~~CQC~~ Monitor: _____ Date: 5/11/05
Approved by: _____ Date: 5-16-05
File No. _____

DAILY INSPECTION REPORT

CH2MHILL

PROJECT NO. 186886.01.CS

(1) DAY: Tuesday DATE: 06/21/04 WORK PERIOD: 8:30 [x] a.m. [ ] p.m. TO 5:00 [ ] a.m. [x] p.m. REPORT 1

WEATHER Clear, Hot TEMP. MAX 90 °F MIN NA °F PRECIPITATION None

(2) **NUMBER AND CLASS OF PERSONNEL EMPLOYED:**

Paul Bushkovski

Bob Erickson

Ellen Warp

(3)

MAJOR EQUIPMENT ON PROJECT AND AMOUNT OF USE			
No.	Description	Size/Capacity	Hrs. Oper.
1	CME 750 Drill Rig (ATV)		
1	Support Truck		

(4) **WORK ACCOMPLISHED TODAY:**

8:30 Arrived at Building 061 to attend pre-evolution briefing. Present: Bob Davis, Doug Herrick, John Boylan, Scott Maxi/URS, Ellen Warp/URS, Paul Bushkovski/Layne, Bob Erickson/Layne.

9:30 Bob D. and I went out to the site to check location of borings and to move the one near the seep aeration system further west. Doug inspected the drill rig before it was allowed onsite. Layne then went to URS trailer to pick up PPE.

11:00 Drill rig was taken to the east face dam road and unloaded. Set up over the monitoring well on the south side of the pond (Well 73205).

12:00 Began drilling using an 8-inch diameter hollow stem auger and sampled continuously in 2-ft. intervals using a 2-inch diameter split-spoon sampler.

Weathered bedrock was encountered at 4.2-ft. bgs. Samples changed from a light gray to a dark gray at 23-ft. bgs. Unweathered bedrock was encountered at 30-ft. bgs. Drilled down to 32-ft. bgs. to ensure that it was unweathered bedrock. **See URS' logs for detailed description of stratigraphic layers.** Decided to backfill the bottom 2-ft. of the hole with bentonite chips up to 30-ft. bgs and then set the bottom of the well at 30-ft. bgs. Placed the bentonite chips and left auger in hole.

17:00 Quit for the day. Will resume construction of the monitoring well tomorrow.

A crew from Gash Electric was at the seep treatment box off and on throughout the day to install the grating supports. They positioned the I-beam supports in the correct alignment inside the seep box and supported them on stands.

(5) *Jack Woo* 06-21-05

ENGINEER'S SIGNATURE DATE

DAILY INSPECTION REPORT

CH2MHILL PROJECT NO. 186886.01.CS

(1) DAY: Wednesday DATE: 06/22/04 WORK PERIOD: 6:30 [x] a.m. [ ] p.m. TO 5:00 [ ] a.m. [x] p.m. REPORT 2

WEATHER Clear, Hot TEMP. MAX 90 °F MIN NA °F PRECIPITATION None

(2) **NUMBER AND CLASS OF PERSONNEL EMPLOYED:**

Paul Bushkovski	Visitors: Bob Birk/DOE	Dave Shelton/K-H
Bob Erickson	Carl Spreng/CDPHE	
Ellen Warp	Norm Ng-A-Qui/EPA Consultant	
	Larry Bruskin/CDPHE	

(3)

MAJOR EQUIPMENT ON PROJECT AND AMOUNT OF USE

No.	Description	Size/Capacity	Hrs. Oper.
1	CME 75 Drill Rig (ATV)		
1	Support Truck		

(4) **WORK ACCOMPLISHED TODAY:**

6:30 Arrived at Building 061 to attend pre-evolution briefing. Present: Ellen Warp/URS, Paul Bushkovski/Layne, Bob Erickson/Layne. Discussed H&S issues and plan for the day: Complete monitoring well and drill and install the second one (Well 73005).

8:30 Constructed monitoring well 73205. Set 2-inch diameter PVC pipe down the hole with a 25-ft. screen; backfilled with silica sand up to 4-ft. bgs (18 bags), and placed bentonite pellets up to surface. Installed protective casing around the stickup. Decided to construct the concrete pad later and go drill the next hole. Went and setup a decon area and washed augers and inner rods before going to the next hole.

11:00 Drill rig set up over the monitoring well on the north side of the pond (Well 73005).

12:00 Began drilling using an 8-inch diameter hollow stem auger and sampled continuously in 2-ft. intervals using a 2-inch diameter split-spoon sampler.

Weathered bedrock was encountered immediately at the surface. Unweathered bedrock was encountered at 25-ft. bgs. Continued drilling to ensure that it was unweathered bedrock and hit refusal with the split-spoon at 28-ft. bgs. **See URS' logs for detailed description of stratigraphic layers.** Backfilled the bottom 3-ft. of the hole with bentonite chips up to 25-ft. bgs and then set the bottom of the well at this depth. Set 2-inch diameter PVC pipe down the hole with a 20-ft. screen; backfilled with silica sand up to 4-ft. bgs (13 bags), and placed bentonite pellets up to 2-ft. bgs.

17:05 Hydrated the bentonite with distilled water and decided to quit for the day.

Gash was at the seep treatment box and bolted the I-beam supports into the walls of the seep treatment box.

(5) *Jack Woo* 06-22-05

ENGINEER'S SIGNATURE DATE

DAILY INSPECTION REPORT

CH2MHILL

PROJECT NO. 186886.01.CS

(1) DAY: Thursday DATE: 06/23/04 WORK PERIOD: 6:30 [x] a.m. [ ] p.m. TO 4:00 [ ] a.m [x] p.m REPORT 3

WEATHER Clear, Hot TEMP. MAX 90 °F MIN NA °F PRECIPITATION None

(2) **NUMBER AND CLASS OF PERSONNEL EMPLOYED:**

Paul Bushkovski	Visitors: John Rahe/Tetra Tech	
Bob Erickson	Bob Davis/K-H	
Ellen Warp		

(3)

MAJOR EQUIPMENT ON PROJECT AND AMOUNT OF USE			
No.	Description	Size/Capacity	Hrs. Oper.
1	CME 750 Drill Rig (ATV)		
1	Support Truck		

(4) **WORK ACCOMPLISHED TODAY:**

6:30 Arrived at Building 061 to attend pre-evolution briefing. Present: Ellen Warp/URS, Paul Bushkovski/Layne, Bob Erickson/Layne. Discussed H&S issues and plan for the day: Complete north monitoring well and drill and install the third one near the seep aeration system (73105).

8:30 Completed north monitoring well 73005. Backfilled remainder of hole with bentonite up to ground surface. Installed protective casing around the stickup. Decided to construct the concrete pad later and go drill the next hole. Deconned augers and inner rods before going to the next hole.

11:15 Opened up north manhole and decided to move the location of the monitoring well a little south of the planned location. There was concern that the original location may be too close to the strip drain pipe going into the manhole. The drill rig crove in from the lower access road on the north side of the pond and set up over the monitoring well. The area was wet and a little soft, particularly over the bentonite wall, but the rig was able to slowly drive up the slope and position over the hole without any significant sinking. Wide timbers were placed under the outriggers to spread out the load on the ground. Driller estimated the weight of the rig to be 23,000 lbs.

11:40 Began drilling monitoring well 73105 using an 8-inch diameter hollow stem auger and sampled continuously in 2-ft. intervals using a 2-inch diameter split-spoon sampler.

Rocky Flats alluvial fill was encountered, as expected, from 0 to 12.5-ft. bgs. Drilling was difficult at times as the drill had to pass through numerous cobbles. Weathered bedrock was encountered at 12.5-ft. bgs. Unweathered bedrock was encountered at 25-ft. bgs. Drilled down to 32-ft. bgs. to ensure that it was unweathered bedrock and hit refusal with the split-spoon. **See URS' logs for detailed description of stratigraphic layers.** The plan was to backfill the bottom 2-ft. of the hole with bentonite chips up to 30-ft. bgs and then set the bottom of the well at this depth with a 25-ft. screen.

16:00 I had a prior appointment so I left the site and let Ellen watch the well installation. Bob Davis was also onsite. The concrete pads for each well will be the last thing constructed.

Gash placed the grating onto the I-beam supports and installed the clips to hold the grating onto the I-beams. They cut access openings in the grating so the flows from the two inlet pipes could be measured and sampled.

(5) *Jack Woo* 06-23-05

ENGINEER'S SIGNATURE DATE

EarthTech
A Tyco International Ltd. Company

DESIGN ENGINEER'S REPORT

Client: RFETS

Date: 8/1/05 – 8/9/05

Project: PLF

Project #: 57378.4020

Construction Summary:

- Remove existing riprap channels.
- Excavate trapezoidal channels to design depths.
- Lay 8-oz geotextile in channels.
- Place and grade bedding material and D_{50} = 6" riprap.
- Regrade area around manholes to drain into channels.
- Hand-broadcast seed and install NAG C350 erosion matting in between channels.
- Expose, cut, and grout existing transite GWIS piping on north side of pond at 3 feet deep. Dispose of excavated transite pipe less than 3 feet deep in rolloff container.
- Abandon access roads north of the pond and regrade to less than 4:1 slope.

Design Items:

- Exposed the north GWIS PVC pipe from the northern manhole underneath the trapezoidal channel footprint. Verified that the pipe was intact and supervised the careful process of backfilling over the top of the pipe.
- Noticed tension cracking north of the pond and just south of the upper access road north of the pond. The slope of the ground surface in these areas exceeded 4H:1V. Suggested that the entire area be regraded to approximately 4H:1V (or shallower) to be consistent with the east face slope.

Representative's Signature