PREPARED BY:

CONESTOGA-ROVERS & ASSOCIATES

4141 Davis Creek Court
Kalamazoo, MI 49001-0838
Telephone: (269) 344-1230 Fax: (269) 344-8558
www.CRAworld.com

SUBMITTAL

DATE: October 8, 2010

SUBMITTAL NO.: 56913-50

PROJECT NO.: 56913

PROJECT NAME: 12th Street Landfill

CONSTRUCTION MANAGER: Jodie Dembowske
Conestoga-Rovers & Associates
4141 Davis Creek Court
Kalamazoo, MI 49001

ENGINEER: Mr. Greg Carli
Conestoga-Rovers & Associates
261 Martindale Rd., Unit #3
St. Catherines, ON L2W 1A2

SUPPLIER: Mid-America Lining

SUBCONTRACTOR: TRI/ Environmental Inc.
9063 Bee Cave Road
Austin, TX 78733

MANUFACTURER: Agru America

QTY	SPEC. NO. & TITLE	DWG. NO.	DESCRIPTION / LOCATION INSTALLED
1	02072 LLDPE Geomembrane		Textured 40 mil Liner - Testing Peel and Shear – 6th and Final Batch

CONSTRUCTION MANAGER'S / ENGINEER'S REVIEW AND APPROVAL:

COPY TO: File 056913

COMPLETED BY: Jodie Dembowske
[Please Print]

SIGNED: Jodie Dembowske

US EPA RECORDS CENTER REGION 5
421884

Form1030

TRI/Environmental, Inc.
A Texas Research International Company

Date: 2010-10-07

Mail To:
Jodie Dembowske
Conestoga Rovers and Associates
4141 DAvis Creek Road
Kalamazoo , MI , 49001

e-mail:jdembowske@craworld.com

Bill To:

Conestoga Rovers and Associates
Project # : 56913

Dear Dembowske,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**12th Street Landfill**
TRI Job Reference Number:	**4263**
Material(s) Tested:	(4) Heat Fusion Weld Seam(s) (2) Single Extrusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
AD-BRK	Break in sheeting after some adhesion failure - partial peel.
SIP	Separation in the plane of the sheet (leaving the bond intact).
FTB	Film tearing bond (all non "AD" failures).
NON-FTB	100% peel.

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Melissa Hunter

Melissa Hunter
Project Manager
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

http://www geosyntheticstesting.com
9063 Bee Caves Road / Austin, Tx. 78733 / 512 263.2101 / fax: 512 263.2558

TRI/Environmental, Inc.
A Texas Research International Company

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: Conestoga Rovers and Associates
Project: 12th Street Landfill

Material: 40mil. LLDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 4263

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: DS-31 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	86	85	87	92	89	**88**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	81	85	84	85	85	**84**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	105	105	105	100	108	**105**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: DS-32 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	96	84	84	84	89	**87**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	82	86	86	87	89	**86**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	87	86	87	93	94	**89**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

The testing is based upon accepted industry practices 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 claims 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.

http://www.geosyntheticstesting.com
9063 Bee Caves Road / Austin, Tx. 78733 / 512.263.2101 / fax: 512.263.2558

TRI/Environmental, Inc.
A Texas Research International Company

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: Conestoga Rovers and Associates
Project: 12th Street Landfill

Material: 40mil. LLDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 4263

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: DS-33 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	93	89	93	87	91	**91**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	81	89	88	82	90	**86**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	111	109	115	112	115	**112**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: DS-34 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	86	85	86	91	84	**86**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	84	81	87	79	83	**83**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	106	105	108	108	109	**107**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

The testing is based upon accepted industry practices 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 claims 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.

http://www.geosyntheticstesting.com
9063 Bee Caves Road / Austin, Tx. 78733 / 512.263.2101 / fax: 512.263.2558

TRI/Environmental, Inc.
A Texas Research International Company

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS - SINGLE TRACK

TRI Client: Conestoga Rovers and Associates

Project: 12th Street Landfill

Material: 40 mil. LLDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

TRI Log#: 4263

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: DS-35 | Weld: Single Extrusion						
Side: Peel						**Peel**
Peel Strength (ppi)	107	103	91	102	92	**99**
Peel Incursion (%)	<5%	<5%	<5%	<5%	<5%	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	108	97	93	101	95	**99**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: DS-36 | Weld: Single Extrusion						
Side: Peel						**Peel**
Peel Strength (ppi)	90	102	99	116	77	**97**
Peel Incursion (%)	<5%	<5%	<5%	<5%	<5%	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	93	103	96	88	95	**95**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

The testing is based upon accepted industry practices 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 claims 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

http://www.geosyntheticstesting.com
9063 Bee Caves Road / Austin, Tx. 78733 / 512.263.2101 / fax: 512.263.2558