BEFORE THE TENNESSEE REGULATORY AUTHORITY
NASHVILLE, TENNESSEE

In the Matter of:

Application of Renewco-Meadow Branch, LLC	)	
for a Special Permit to Install Glass Reinforced	)	Docket No. 10-00195
Epoxy (GRE) Thermoset Pipe	)	

1. Renewco Meadow Branch, LLC ("Renewco-MB") is a wholly-owned subsidiary of AGL Resources Inc. that develops existing landfills for natural gas production.[1] AGL Resources Inc., whose principal office is located at Ten Peachtree Place, Atlanta, Georgia, is also the parent company of Chattanooga Gas Company (CGC), which is engaged in the business of transporting, distributing and selling natural gas in Chattanooga and Cleveland, Tennessee in Hamilton and Bradley Counties, respectively, through a pipeline system of 1,583 miles of distribution piping and 7 miles of transmission piping.

2. AGL Resources Inc. operates and maintains more than 41,000 miles of distribution and transmission natural gas pipelines in six states. Through its natural gas operations in Tennessee, the company is subject to regulation and supervision by the Tennessee Regulatory Authority (TRA) pursuant to Chapter 4 of Title 65 of the Tennessee Code Annotated.

3. It is respectfully requested that any notices or any other communications with respect to this special permit be sent to:

   Charles B. Welch, Jr.
   618 Church Street, Suite 300
   Nashville, TN 37219

With a copy to:

   Allen Spivey
   Director, Office of Corporate Engineering
   10 Peachtree Place, 11th Floor
   Atlanta, GA 30309

4. Mains, services, and transmission pipelines operated by AGL Resources Inc. meet the requirements set forth in 49 CFR Part 192 of the Minimum Federal Safety Standards. Renewco-MB will design, construct, and operate any new pipeline in a manner consistent with Company

[1] On September 3, 2010, Renewco-MB filed an application with the TRA for a Certificate of Convenience and Necessity to Construct and Operate a Renewable Landfill Methane Gas Pipeline in McMinn County, Tennessee.

standards and in accordance with 49 CFR Part 192 of the Minimum Federal Safety Standards. In this application, Renewco-MB proposes, subject to the approval by the TRA, to allow for a Special Permit of the pipeline safety regulations to install and operate glass reinforced epoxy (GRE) thermoset (Fiberspar) line pipe to transport natural (processed landfill) gas from the Meadow Branch Landfill facility northwest of the city of Athens to a proposed interconnect at the East Tennessee Natural Gas transmission line south of the city.

5. Federal safety standards have been adopted by the TRA pursuant to § 65-28-104, *et seq.* Under the provisions of applicable law, including 49 U.S.C. § 60118 and 49 CFR Parts 192.53(c), 192.121, 192.123, and 192.619(a), the TRA may waive compliance with any part of an applicable standard or term it considers appropriate if the waiver is not inconsistent with pipeline safety. Renewco-MB requests that the TRA grant a waiver from 49 CFR Parts 192.53(c), 192.121 and 192.123, and 192.619(a) to allow for installation and operation of GRE thermoset pipe in its high pressure natural gas pipeline application.

6. References
    a) 49 CFR Part 192.53(c)
    b) 49 CFR Part 192.121
    c) 49 CFR Part 192.123
    d) 49 CFR Part 192.619(a)

7. Renewco-MB submits that GRE thermoset pipe represents both a technological and economical alternative to conventional steel pipe currently used in high pressure natural gas pipeline applications.

8. Renewco-MB seeks approval to use glass reinforced epoxy (GRE) thermoset pipe as the carrier pipe to transport landfill gas by referencing the most recent version of ASTM D2517. (See Attachment 1 – Product Data Sheet for Fiberspar FS LPJ 4 ½" 1500 (E) Line Pipe)

9. Renewco-MB seeks approval of the ability to use a Hydrostatic Design Basis (HDB) for design calculations per Section 192.121 that has been determined through ASTM D2992 testing. (See Attachment 2 – Final Report, Technical Review Board Evaluation of the LTHS Values of Fiberspar LinePipe Spoolable Composite Pipe)

10. Renewco-MB contends that the proposed high pressure pipeline represents a viable application of GRE thermoset pipe. The 9 miles of pipeline will be designed for a single-purpose, point-to-point transport of gas (no service taps or branch feeds), routed through mostly rural locations, and designed with a maximum operating pressure of 700 psig, a pressure well within the capability of the Fiberspar line pipe based on its proven HDB rating (See Attachment 3 - Pipeline Overview Map). Renewco-MB could use steel pipe for this application, but proposes to use spoolable GRE thermoset pipe because of the benefits it offers. Fiberglass reinforced pipe does not corrode, offers improved flow hydraulics, requires a reduced number of joints, offers a higher strength-to-weight ratio than steel pipe, and reduces construction time and footprint. Due to the amount of piping that can be acquired per roll, larger point-to-point applications can be installed with fewer connections, resulting in fewer potential leak points.

11. Renewco-MB's preference is to start construction, in or before January 2011, to meet an in-service date of April 2011. Renewco-MB seeks to install the Fiberspar pipe along Tennessee DOT, County, and City of Athens right-of-way and private easements, from its Processing Plant at the Meadow Branch Landfill located just northwest of the city, to an interconnect (meter and regulator) station on Spectra Energy's East Tennessee Natural Gas Pipeline located south of the city. Landfill gas will be gathered from wells distributed throughout the Meadow Branch Landfill, processed to remove impurities, and then compressed on the landfill site and sent out through the 9-mile (GRE) thermoset pipeline to a M&R station for injection into the transmission pipeline.(See Attachment 4 - Piping Schematic). East Tennessee Natural Gas will not accept odorized gas. The pipeline will be subject to more frequent leak survey per 49 CFR Part 192.706 and designed with check valves in addition to required mainline valves, to provide increased risk-reduction.

12. The use of spoolable GRE pipe has been a reliable and cost-effective solution used by many companies to address corrosion or other constructability issues associated with steel pipe installations. The advantages of GRE thermoset pipe have been successfully demonstrated for over 45 years in non-regulated, gas gathering applications, providing technical and economic advantages for many companies compared to coated steel pipe installations. Fiberspar reports that approximately 4,735 miles have been installed and operating in the ground successfully at pressures up to 1500 psig.

    Wherefore, based on manufacturer and industry experience, Renewco-MB respectfully requests the TRA to grant a Special Permit for a waiver for 49 CFR Parts 192.53(c), 192.121, 192.123, and 192.619(a). The requested special permit would allow for the installation and operation of glass reinforced epoxy thermoset (Fiberspar) line pipe as proposed by Renewco-MB to transport natural (processed landfill) gas from the Meadow Branch Landfill facility to the proposed interconnect at the East Tennessee Natural Gas transmission line.

Respectfully submitted this 6th day of October, 2010.

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cwelch@farrismathews.com

FIBERSPAR

FS LPJ 4 1/2" 1,500 (E)

4 1/2 Inch Nominal, 1,500 Series Fiberspar LinePipe-J w/HDPE Pressure Barrier & HDPE External Wear Layer

Product Data Sheet (Imperial Units)

ASTM 2996 Designation: RTRP-11HZ1-4112

Fiberspar s/n: JEEN045026

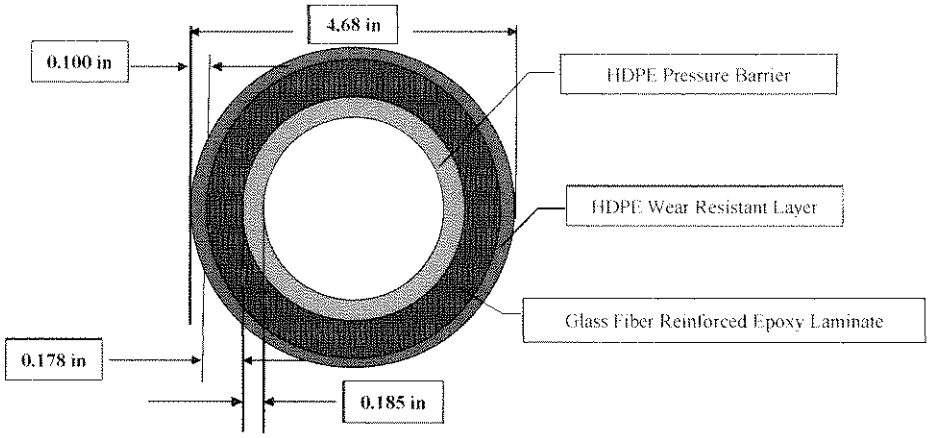
Physical Properties:*

Geometry		**Tensile Modulus**	
Outside Diameter (in)	4.68	Axial (psi)	8.68E+05
Inside Diameter (in)	3.75	Hoop (psi)	1.12E+06
Inside Flow Area (in^2)	11.04	**Poisson's Ratio**	
Total Wall Thickness (in)	0.46	Major	0.49
C/S Area (in^2)	6.13	Minor	0.63
Linear Weight		**Thermal Exp. Coeff.**	
Linear Weight - Air (lb/ft)	3.61	Axial (in/in -°F)	1.26E-05
Linear Weight - Water (lb/ft)	0.96	Hoop (in/in -°F)	7.33E-06
Net Density (lb/in^3)	0.049	**Thermal Conductivity**	
Flow Coefficients		(BTU/hour/ft^2- in/°F)	1.92
Hazen - William's	150	**Resin T_g**	
Darcy-Wiesbach	0.0004	(°C)	125°
Manning	0.009	(°F)	257°

* properties listed are valid for entire temperature range of the product unless otherwise specified

Mechanical Performance:

Maximum Operating Temperature	**140 °F**		
Minimum Operating Temperature	**-29 °F**	**78 °F**	**140 °F**
Max. Recommended Operating Pressure (psi)		1,500	1,500
Nominal Ultimate Burst Pressure (psi)		5,700	4,800
Maximum Recommended Tensile Load (lbs)		14,880	12,500
Nominal Ultimate Tensile Load (lbs)		37,200	31,200
Nominal Ultimate Compressive Load (lbs)		-41,800	-34,100
Nominal Ultimate Collapse Pressure (psi)		650	650
Minimum Operating Bend Radius (in)		112	112
Minimum Spooling Diameter (in)		128	128



FS LPJ 4 1/2" 1,500 (E)

4 1/2 Inch Nominal, 1,500 Series Fiberspar LinePipe-J w/HDPE Pressure Barrier & HDPE External Wear Layer

Product Data Sheet (Metric Units)

ASTM 2996 Designation: RTRP-11HZ1-4112

Fiberspar s/n: JEEN045026

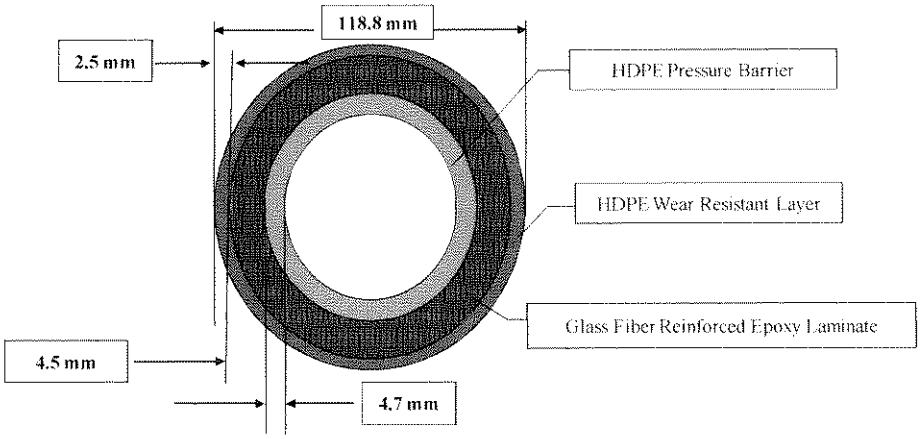
Physical Properties:*

Geometry		**Tensile Modulus**	
Outside Diameter (mm)	119	Axial (MPa)	5,983
Inside Diameter (mm)	95	Hoop (MPa)	7,725
Inside Flow Area (mm^2)	7,126	**Poisson's Ratio**	
Total Wall Thickness (mm)	11.8	Major	0.49
C/S Area (mm^2)	3,956	Minor	0.63
Linear Weight		**Thermal Exp. Coeff.**	
Linear Weight - Air (kg/m)	5.37	Axial (mm/mm -°C)	2.27E-05
Linear Weight - Water (kg/m)	1.42	Hoop (mm/mm -°C)	1.32E-05
Specific Gravity (g/cm^3)	1.36	**Thermal Conductivity**	
Flow Coefficients		(W/(m -°K))	0.273
Hazen - William's	150	**Resin T_g**	
Darcy-Wiesbach	0.0004	(°C)	125°
Manning	0.009	(°F)	257°

* properties listed are valid for entire temperature range of the product unless otherwise specified

Mechanical Performance:

Maximum Operating Temperature	**60 °C**		
Minimum Operating Temperature	**-34 °C**	**26 °C**	**60 °C**
Max. Recommended Operating Pressure (MPa)		10.34	10.34
Nominal Ultimate Burst Pressure (MPa)		39.3	33.1
Maximum Recommended Tensile Load (kg)		6,740	5,660
Nominal Ultimate Tensile Load (kg)		16,870	14,150
Nominal Ultimate Compressive Load (kg)		-18,970	-15,470
Nominal Ultimate Collapse Pressure (kPa)		4,400	4,400
Minimum Operating Bend Radius (cm)		284	284
Minimum Spooling Diameter (cm)		325	325



ATTACHMENT 2

JANA LABORATORIES INC.

Final Report

Project 06-4046

Technical Review Board Evaluation of the LTHS Values of Fiberspar LinePipe Spoolable Composite Pipe

Executive Summary

Columbia Gas Transmission Corporation requested formation of a Technical Review Board (TRB) to comply with the requirements of the DOT PHMSA Waiver [Docket No. RSPA–04–18757; Notice 2]. The TRB's goal was to review Fiberspar's stress rupture data and, using industry accepted methodologies, determine appropriate LTHS (Long-Term Hydrostatic Strength) values for Fiberspar LinePipe Spoolable Composite Pipe.

The purpose of this report is to summarize and document the process and actions of the TRB in evaluating the LTHS values for the Fiberspar pipe.

The review process consisted of the following:

- Formation of the Technical Review Board
- Agreement on the Technical Review Board's scope of work
- Review of the pertinent test and product standards
- Review of data
- Conclusions reached by the Board

The Board determined that the key objective of the Board was:

> To provide a recommendation on the LTHS values appropriate for the pipe, based on a review of the methodologies employed and the results obtained.

Based on a review of the standards and the final data provided by Fiberspar, as per ASTM D2992-06, the Technical Review Board agrees with the following:

1. The appropriate LTHS values at 11-, 20- and 50-years for the Fiberspar LinePipe Spoolable Composite Pipe are:

Time		140 °F LTHS (psi)	140 °F HDB (psi)
Hours	Years		
100,000	11	35,164	31,500
175,200	20	34,584	31,500
438,000	50	33,672	31,500

2. The corresponding Hydrostatic Design Basis (HDB) category at 140 °F is 31,500 psi for all three time periods based on ASTM D2992-06

250B Executive Parkway S., Ancaster, Ontario L4G 3T9 905-726-8550 Fax: 905-726-8609

Report No.: Project 06-4046 – Final Report

Client: Columbia Gas Transmission Corporation
40 Grosset Drive
Kirkwood, NY 13795
U.S.A.

Date of Issue: February 29, 2008

Purpose of Report:

Columbia Gas Transmission Corporation requested formation of a Technical Review Board (TRB) to comply with the requirements of the DOT PHMSA Waiver [Docket No. RSPA–04–18757; Notice 2]. The TRB's goal was to review Fiberspar's stress rupture data and, using industry accepted methodologies, determine appropriate LTHS (Long-Term Hydrostatic Strength) values for Fiberspar LinePipe Spoolable Composite Pipe (SCP, also known as glass reinforced epoxy pipe with a PE liner).

The purpose of this report is to summarize and document the process and actions of the Technical Review Board in evaluating the LTHS values for the Fiberspar pipe.

Background:

Columbia Gas Transmission Corporation was granted a waiver by DOT PHMSA [Docket No. RSPA–04–18757; Notice 2] for the installation of approximately 4,200 feet of a composite thermoset pipe manufactured by Fiberspar subject to fulfilling certain requirements. One of the requirements is to submit the data on the LTHS (Long-Term Hydrostatic Strength) to the Hydrostatic Stress Board (HSB) for approval and listing under PPI TR-4. The Hydrostatic Stress Board has declined to consider this pipe citing that it is outside their scope which is thermoplastic pipe.

After discussions with DOT PHMSA it was decided to pursue an alternative route – the formation of a Technical Review Board to review the data and issue an opinion as to the appropriateness of the methodologies used and of the LTHS value sought.

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Review Process:

The review process consisted of the following:

- Formation of the Technical Review Board
- Agreement on the Technical Review Board's scope of work
- Review of the pertinent test and product standards
- Review of data
- Conclusions reached by the Board

Details are provided below.

A Technical Review Board was formed and Board members were selected. The Board consisted of seven members. The credentials of the seven members are provided in Appendix A. Dr. Gene Palermo was selected as the TRB Chairman. All of the members signed a Confidential Disclosure Agreement with Fiberspar covering Fiberspar's proprietary information.

The Board reviewed the Waiver and determined that the key objective of the Board was:

> To provide a recommendation on the LTHS values appropriate for the pipe, based on a review of the methodologies employed and the results obtained.

The scope of work set by the Board was:

1. Review of the test methods used for the original calculations
2. Review of the structure and composition of the pipe.
3. Review of the equipment used for testing and the data collection techniques.
4. Review of the data and calculations per ASTM D2992
5. Recommendations for any additional data or analysis required to make a final determination.
6. A report detailing conclusions of the above evaluation together with a final statement as to the LTHS recommended by the Board

In total, the Board held three conference calls and one meeting to complete the scope of work:

- May 11, 2007 – Conference Call
- June 21, 2007 – Conference Call
- August 15, 2007 – Conference Call
- September 6, 2007 – Meeting at Fiberspar facility in Houston, Texas

Mr. Richard Sanders, Training and Qualifications Director, DOT, was invited to attend the conference calls and the meeting as an observer. The meeting minutes provide a list of the attendees and a summary of the items discussed.

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reviewed and agreed upon. Meeting agendas and minutes are provided in Appendix B.

The Board reviewed the relevant test methods and the long-term hydrostatic strength data. A list of the standards reviewed is provided in Appendix F. The Board compared the industry specifications for SCP Pipe. This review is provided in Appendix C. A list of all of the documents reviewed is provided in Appendix E. Due to confidential and proprietary information, only the document names have been provided for selected documents. The documents are retained on file at Jana Laboratories, Inc.

In addition to the LTHS data, an overview of the product and its application was requested. This outline is provided in Appendix D. These points were addressed by Fiberspar with documents (in Appendix E) and during the final meeting of September 6, 2007.

At the September 6, 2007 meeting, after reviewing all of the information provided by Fiberspar, the Technical Review Board unanimously approved the motion to issue 11-, 20- and 50-year LTHS values at 140 °F in accordance with ASTM D2992 for the Fiberspar pipe based on the completion of four action items. The letter detailing the Board's motion is provided in Appendix B. These action items were completed when the following documents (listed in Appendix E) were submitted to Jana Laboratories, Inc.:

- Document 11: Fiberspar letter of December 6, 2007 (in response to the TRB letter on September 26, 2007)
- Document 12: Fiberspar LinePipe Qualification Report per ASTM D2992-06 – November 26, 2007
- Document 13: Fiberspar letter of November 26, 2007 (Certification letter)
- Document 14: Short-term Burst, Survival, and Sustained Pressure Test Data of Fiberspar LinePipe – November 26, 2007

Based on the data provided in Fiberspar's report (Document 12 in Appendix E), as shown in Table 1, the appropriate LTHS values at 11-, 20- and 50-years for the Fiberspar LinePipe SCP are:

Table 1: Summary of LTHS values

Time		140 °F LTHS	140 °F HDB
Hours	Years	(psi)	(psi)
100,000	11	35,154	31,500
175,200	20	34,584	31,500
438,000	50	33,672	31,500

The corresponding Hydrostatic Design Basis (HDB) category at 140 °F is 31,500 psi for all three time periods based on ASTM D2992-06. The HDB category value is based on the LTHS falling within a specified range per ASTM D2992.

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The calculations to determine the LTHS and HDS values shown in Table 1 were independently verified by Jana Laboratories, Inc.

Conclusions:

Based on a review of the standards and the final data provided by Fiberspar, as per ASTM D2992-06, the Technical Review Board agrees with the following:

1. The appropriate LTHS values at 11-, 20- and 60-years for the Fiberspar LinePipe Spoolable Composite Pipe are:

Time		140 °F LTHS	140 °F HDB
Hours	Years	(psi)	(psi)
100,000	11	36,184	31,500
175,200	20	34,584	31,500
438,000	50	33,672	31,500

2. The corresponding HDB category at 140 °F is 31,500 psi for all three time periods based on ASTM D2992-06.

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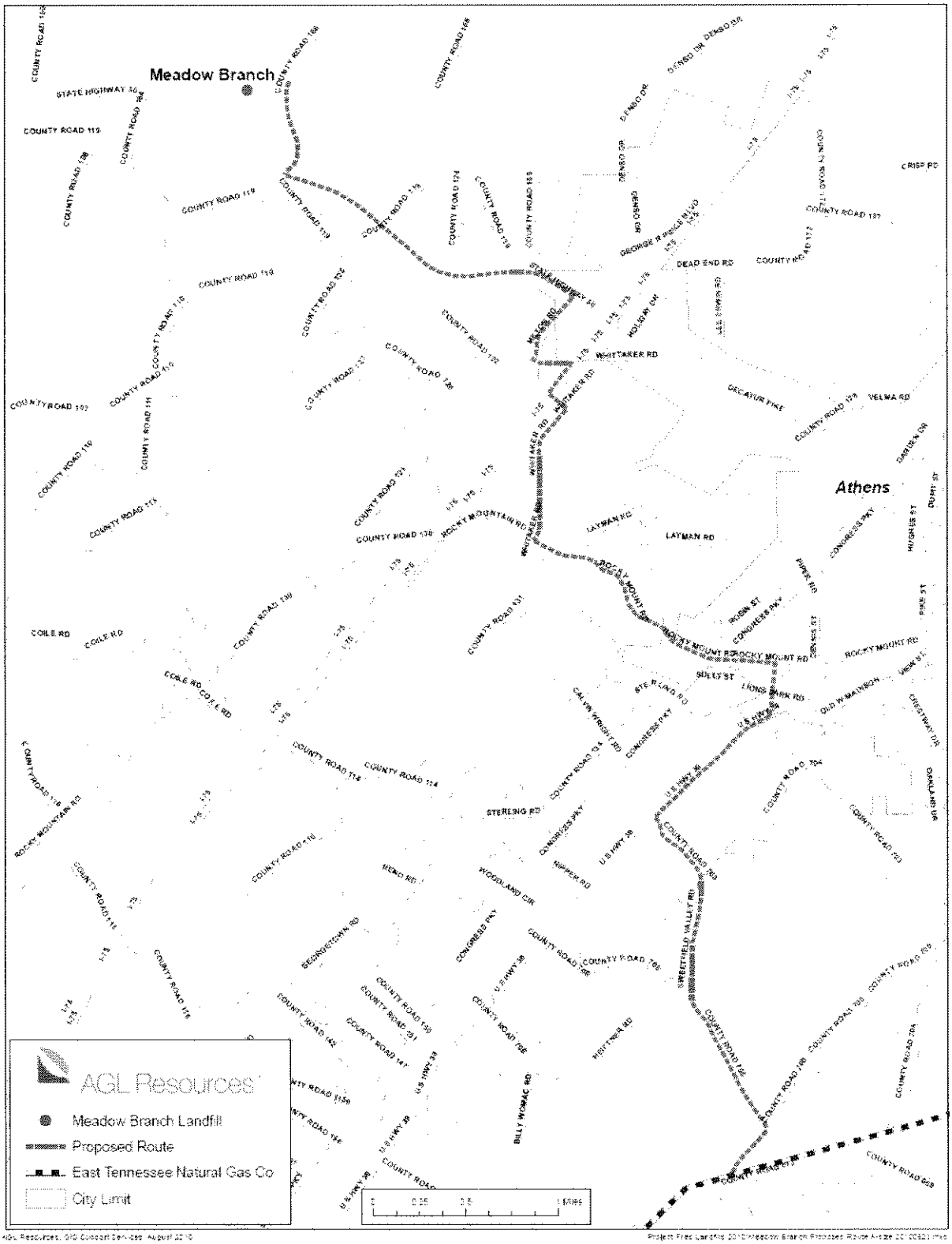
Issued by: ______________________
Sarah Chung, M.A.Sc., P.Eng.
Senior Project Leader

Reviewed by: ______________________
Patrick Vibien, M.Sc., P.Eng.
Technical Solutions Director

ATTACHMENT 3



ATTACHMENT 4

Meadow Branch Landfill Gas Project