

**Notice:** This form and any information attached to it are "Public Records" as defined in NC General Statute 132-1. As such, these documents are available for inspection and examination by any person upon request (NC General Statute 132-6).

**Instructions:**

- Prepare one form for each individually monitored unit.
- Please type or print legibly.
- Attach a notification table with values that attain or exceed NC 2L groundwater standards or NC 2B surface water standards. The notification must include a preliminary analysis of the cause and significance of each value. (e.g. naturally occurring, off-site source, pre-existing condition, etc.).
- Attach a notification table of any groundwater or surface water values that equal or exceed the reporting limits.
- Attach a notification table of any methane gas values that attain or exceed explosive gas levels. This includes any structures on or nearby the facility (NCAC 13B .1629 (4)(a)(i)).
- Send the original signed and sealed form, any tables, and Electronic Data Deliverable to: Compliance Unit, NCDENR-DWM, Solid Waste Section, 1646 Mail Service Center, Raleigh, NC 27699-1646.

**Solid Waste Monitoring Data Submittal Information**

Name of entity submitting data (laboratory, consultant, facility owner):  
 Altamont Environmental, Inc. (Consultant)

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:

Name: Brian Gant Phone: 828.281.3350  
 E-mail: bgant@altamontenvironmental.com

Facility name:	Facility Address:	Facility Permit #	NC Landfill Rule: (.0500 or .1600)	Actual sampling dates (e.g., October 20-24, 2006)
International Paper Closed Landfill 5	Beaverdam Road, Canton, North Carolina	44-01	.0500	November 20, 2013; February 5, 2014; May 21, 2014; August 13, 2014

**Environmental Status: (Check all that apply)**

- Initial/Background Monitoring
  Detection Monitoring
  Assessment Monitoring
  Corrective Action

**Type of data submitted: (Check all that apply)**

- Groundwater monitoring data from monitoring wells
  Methane gas monitoring data  
 Groundwater monitoring data from private water supply wells
  Corrective action data (specify) \_\_\_\_\_  
 Leachate monitoring data
  Other(specify) \_\_\_\_\_  
 Surface water monitoring data

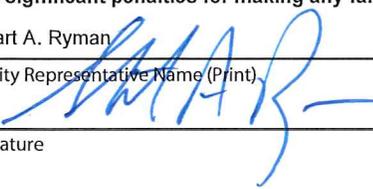
**Notification attached?**

- No. No groundwater or surface water standards were exceeded.  
 Yes, a notification of values exceeding a groundwater or surface water standard is attached. It includes a list of groundwater and surface water monitoring points, dates, analytical values, NC 2L groundwater standard, NC 2B surface water standard or NC Solid Waste GWPS and preliminary analysis of the cause and significance of any concentration.  
 Yes, a notification of values exceeding an explosive methane gas limit is attached. It includes the methane monitoring points, dates, sample values and explosive methane gas limits.

**Certification**

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards. I am aware that there are significant penalties for making any false statement, representation, or certification including the possibility of a fine and imprisonment.

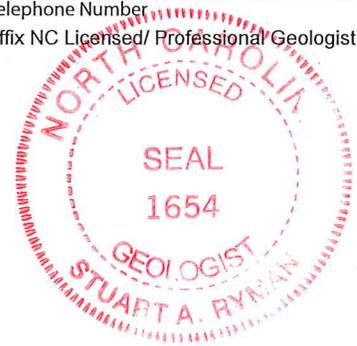
Stuart A. Ryman Professional Geologist 828.281.3350  
 Facility Representative Name (Print) Title (Area Code) Telephone Number

  
 Signature Date 9.23.14

Affix NC Licensed/ Professional Geologist Seal

231 Haywood Street, Asheville, North Carolina 28801  
 Facility Representative Address

#C-2185  
 NC PE Firm License Number (if applicable effective May 1, 2009)



# ALTAMONT ENVIRONMENTAL, INC.

ENGINEERING & HYDROGEOLOGY

231 HAYWOOD STREET, ASHEVILLE, NC 28801

TEL. 828.281.3350 FAC. 828.281.3351

WWW.ALTAMONTENVIRONMENTAL.COM

September 23, 2014

Mr. Ervin Lane  
North Carolina Department of Environment and Natural Resources  
Division of Waste Management  
Solid Waste Section  
1646 Mail Service Center  
Raleigh, North Carolina 27699-1646

Subject: Quarterly Landfill Gas Monitoring Results  
November 2013 through August 2014  
International Paper Company, Landfill 5, Permit 44-01  
Canton, North Carolina

Dear Mr. Lane,

On behalf of the International Paper Company (IP), Altamont Environmental, Inc. (Altamont) collects landfill gas monitoring data from compliance boundary probes and structures located on the closed IP Landfill 5 (Permit 44-01) in Canton, North Carolina. Landfill gas data is collected on a quarterly basis as described in the *Landfill Gas Monitoring Plan* (Altamont 2009). The *Landfill Gas Monitoring Plan* states that Altamont will provide the results of quarterly landfill gas monitoring to the North Carolina Department of Environment and Natural Resources (DENR) Solid Waste Section (SWS) on an annual basis.

This letter and its attachments summarize landfill gas monitoring results for the four most recent quarterly sampling events, which took place on November 20, 2013, February 5, 2014, May 21, 2014, and August 13, 2014. More historical data are available upon request and are described in submittals provided previously to your office.

The referenced site is located in Canton, North Carolina as indicated on the attached Figure 1. The landfill gas compliance boundary probe locations and the ambient gas monitoring locations are depicted on Figure 2.

## Methods

Landfill gas measurements were obtained from landfill compliance probes using a Landtec GEM™ 2000 Landfill Gas Monitor (GEM). Prior to use, the GEM was calibrated with 50 percent methane, 35 percent carbon dioxide, and 4 percent oxygen standards. The instrument was ventilated prior to landfill gas measurement collection and between data collection from each sampling location.

When collecting measurements from landfill gas probes, a polyethylene hose was connected from the GEM to a hose barb on the landfill gas probe. A valve upstream of the barb was opened, a vacuum pump pulled landfill gas into the GEM, and data was recorded and stored in the GEM. Methane, carbon dioxide, oxygen, lower explosive limit (LEL), and barometric pressure measurements were downloaded to an Altamont computer, entered into the attached Table 1, and reviewed for quality control.

Ambient landfill gas measurements were collected with a Foxboro Thermo TVA 1000 Combination Organic Vapor Analyzer (OVA) Flame Ionization/Photoionization Detector (TVA). The TVA comes pre-calibrated from

the certified environmental equipment rental company. Once landfill gas monitoring was initiated at an ambient landfill gas monitoring location, continuous organic vapor measurements were displayed on the TVA in parts per million. Ambient readings were collected within enclosed structures located on and near the landfill cap on IP property. The concentration of detected organic vapors was allowed to stabilize at each sampling location and stabilized readings were recorded on Altamont field data sheets. These data were transferred to Table 2 and were reviewed for quality control.

## Findings

The results of the landfill gas monitoring at landfill gas compliance boundary probes can be found in Table 1. No methane gas levels were measured in the compliance boundary probes in excess of the North Carolina Solid Waste Management Rule 15A North Carolina Administrative Code (NCAC) 13B (100 percent of the LEL for methane).

The results of the landfill gas ambient monitoring can be found in Table 2. No methane gas levels were measured in ambient monitoring locations in excess of the North Carolina Solid Waste Management Rule 15A NCAC 13B (25 percent of the LEL for methane in structures within the landfill parcel).

Please note that ambient monitoring at location LF5C-A7, which is the sample location for the proposed Western North Carolina Regional Livestock Center storage shed, was not collected because the storage shed has not been built yet. Altamont will begin collecting landfill gas measurements from this location once this structure is built.

## Conclusions

Since landfill gas monitoring began at the closed IP Landfill 5 (Permit 44-01) there have not been any exceedances recorded while monitoring either the compliance boundary probes or ambient landfill gas monitoring locations within on-site buildings. Altamont will continue to monitor the landfill gas at compliance boundary probes and ambient landfill gas monitoring locations within on-site buildings on a quarterly basis. The next landfill gas monitoring report will be submitted in September 2015.

Please feel free to call or respond with any questions or comments related to this project.

Sincerely,

ALTAMONT ENVIRONMENTAL, INC.

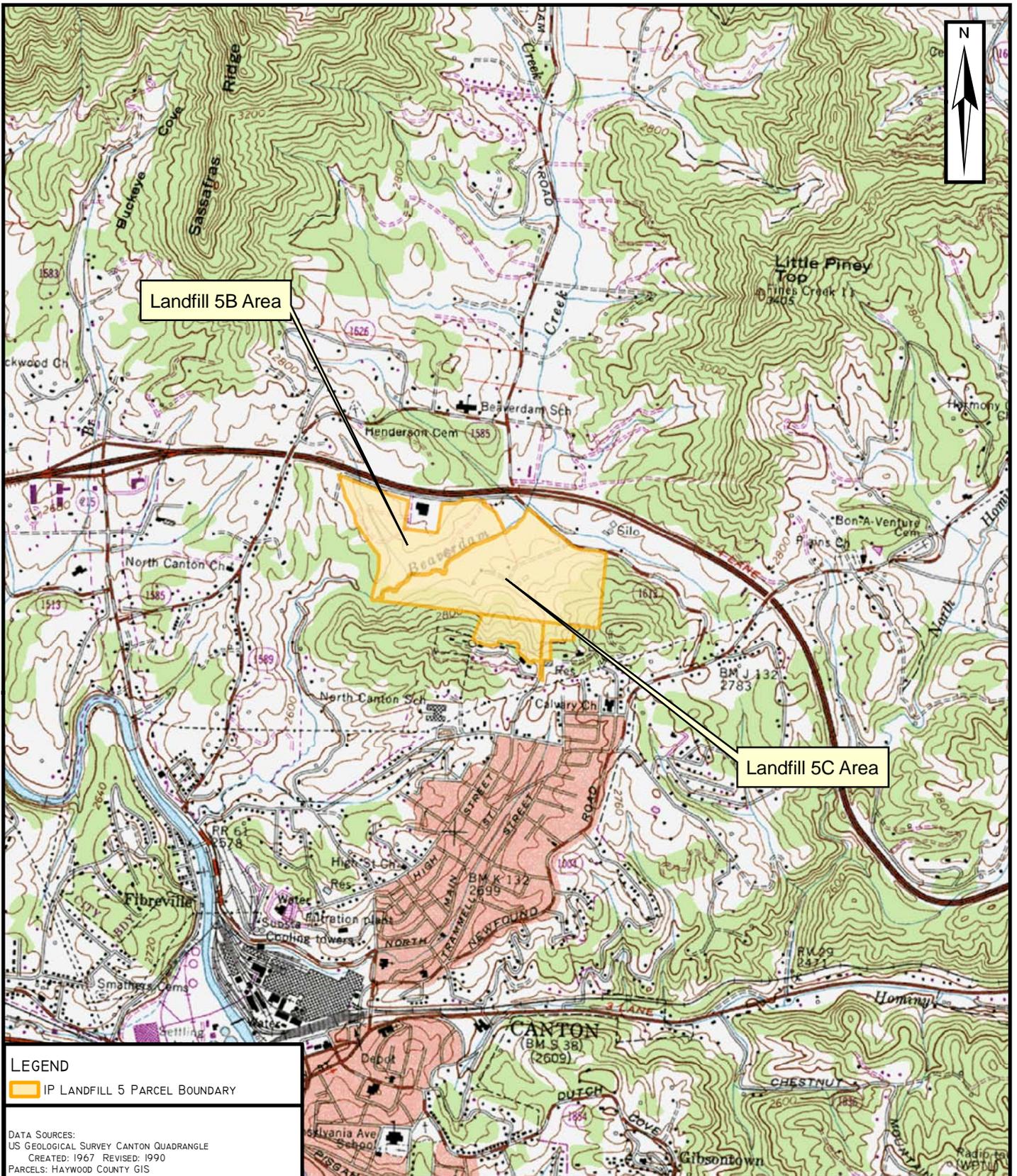


Stuart A. Ryman, P.G.

Enclosures: Figure 1—Site Location Map  
Figure 2—Compliance Boundary Probe and Ambient Landfill Gas Monitoring Locations  
Table 1—Landfill Gas Sampling Results for Compliance Boundary Probes  
Table 2—Landfill Gas Sampling Results for Ambient Locations Within Structures

cc: Tom Richardson, International Paper Company  
Ms. Andrea Keller, DENR Division of Waste Management-Solid Waste Section

## FIGURES



Landfill 5B Area

Landfill 5C Area

**LEGEND**

IP LANDFILL 5 PARCEL BOUNDARY

DATA SOURCES:  
 US GEOLOGICAL SURVEY CANTON QUADRANGLE  
 CREATED: 1967 REVISED: 1990  
 PARCELS: HAYWOOD COUNTY GIS

**ALTAMONT ENVIRONMENTAL, INC.**  
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DRAWN BY: BRIAN GANT  
 PROJECT MANAGER: STU RYMAN  
 CLIENT: INTERNATIONAL PAPER COMPANY  
 DATE: 09/27/2013

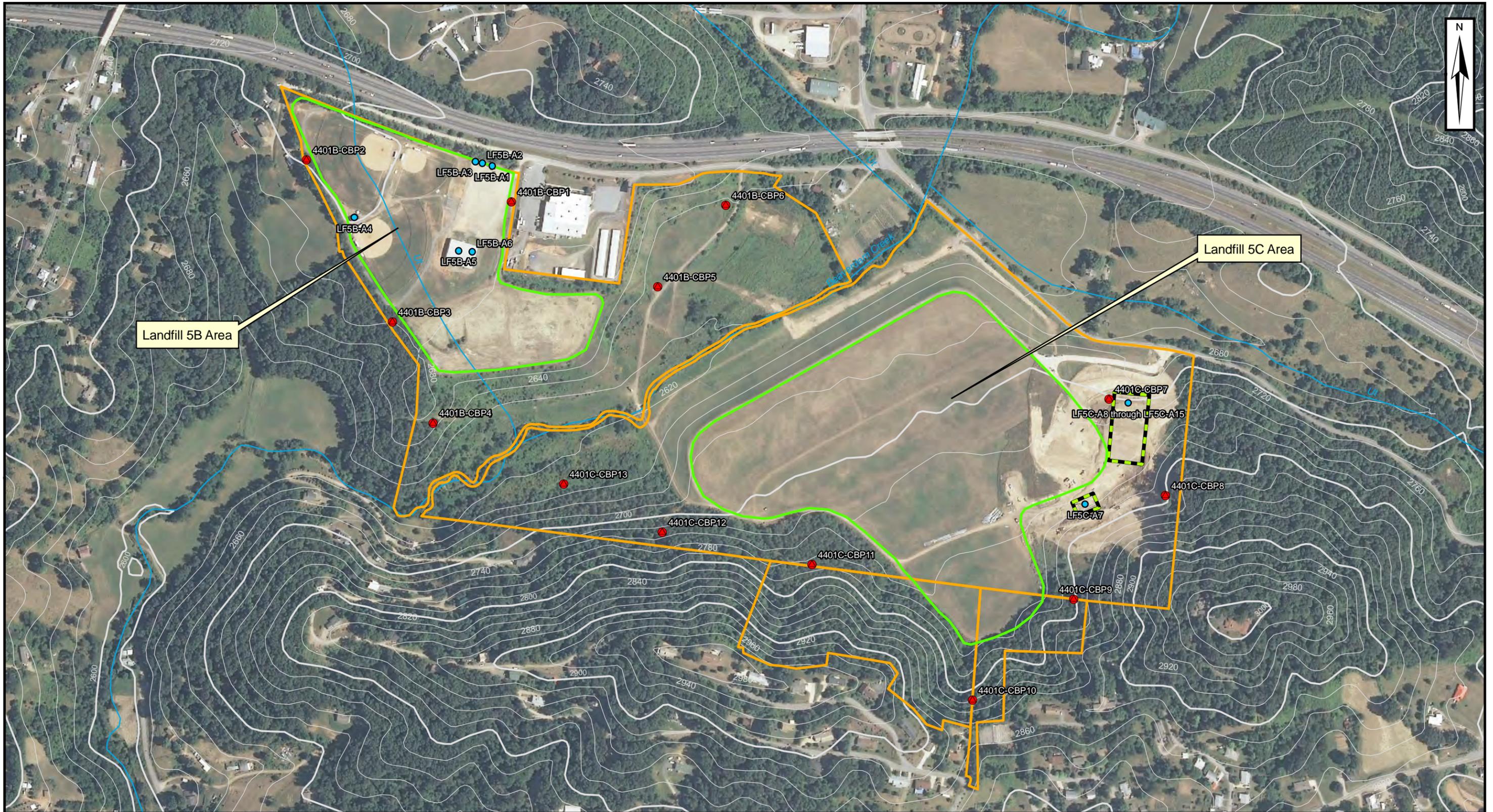


**SITE LOCATION MAP**

CLOSED INTERNATIONAL PAPER LANDFILL 5  
 SOLID WASTE PERMIT # 44-01  
 500 BEAVERDAM ROAD  
 CANTON, HAYWOOD COUNTY, NORTH CAROLINA

FIGURE

/



- LEGEND**
- Ambient Landfill Gas Monitoring Locations
  - Landfill Gas Compliance Boundary Probes
  - Approximate Waste Boundary
  - Property Boundary
  - Approximate Locations of WNCRLC Buildings
  - Haywood County Hydrology
  - 20-Foot Interval Contours

**SOURCES:**  
 AERIAL - NCDA COLOR ORTHOPHOTOGRAPHY HAYWOOD COUNTY 2010  
 PROPERTY BOUNDARY - HAYWOOD COUNTY GIS  
 HYDROLOGY - HAYWOOD COUNTY GIS  
 CONTOUR LINES - NCDOT, 2007 LIDAR

REV	DATE	DESCRIPTION	BY	CHK	APV

**ALTAMONT ENVIRONMENTAL, INC.**  
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DRAWN BY: BRIAN GANT  
 PROJECT MANAGER: STU RYMAN  
 CLIENT: INTERNATIONAL PAPER CO.  
 DATE: 9/27/2013



**COMPLIANCE BOUNDARY PROBE  
 AND AMBIENT LANDFILL GAS  
 MONITORING LOCATIONS**

CLOSED INTERNATIONAL PAPER LANDFILL 5  
 PERMIT #44-01  
 CANTON, NORTH CAROLINA

FIGURE  
2

# TABLES

**Table 1**  
**Landfill Gas Sampling Results for Compliance Boundary Probes**  
**Closed International Paper Landfill 5, Permit #44-01**  
**Canton, North Carolina**

Location	Date and Time	Lower Explosive Limit (%)	Methane (%)	Carbon Dioxide (%)	Oxygen (%)	Barometric Pressure (inches of mercury)
<b>Exceedence Limit</b>		<b>100</b>	<b>5.0</b>	<b>NL</b>	<b>NL</b>	<b>NA</b>
4401B-CBP1	11/20/2013 10:50	44	2.2	20.0	0.1	27.45
	2/5/2014 11:20	58	2.9	17.4	0.4	27.05
	5/21/2014 10:37	62	3.1	16.8	0.0	27.39
	8/13/2014 10:22	56	2.8	17.7	1.1	27.31
4401B-CBP2	11/20/2013 10:16	0	0.0	2.4	18.8	27.44
	2/5/2014 10:55	0	0.0	6.8	13.3	27.05
	5/21/2014 10:13	0	0.0	2.1	17.1	27.41
	8/13/2014 9:56	0	0.0	3.1	16.6	27.28
4401B-CBP3	11/20/2013 10:31	0	0.0	1.6	19.5	27.47
	2/5/2014 11:03	0	0.0	6.0	14.6	27.05
	5/21/2014 10:18	0	0.0	4.9	14.1	27.42
	8/13/2014 10:07	0	0.0	4.2	17.0	27.29
4401B-CBP4	11/20/2013 13:30	0	0.0	3.0	19.3	27.50
	2/5/2014 14:09	0	0.0	1.6	20.0	26.90
	5/21/2014 12:14	0	0.0	0.3	17.1	27.39
	8/13/2014 11:30	0	0.0	0.0	21.4	27.33
4401B-CBP5	11/20/2013 13:39	0	0.0	0.5	19.6	27.46
	2/5/2014 14:16	0	0.0	0.4	19.5	26.90
	5/21/2014 12:21	0	0.0	0.3	18.8	27.43
	8/13/2014 11:37	0	0.0	0.8	19.9	27.37
4401B-CBP6	11/20/2013 13:43	0	0.0	0.6	20.8	27.45
	2/5/2014 14:21	0	0.0	3.7	19.4	26.90
	5/21/2014 12:24	0	0.0	0.5	18.4	27.39
	8/13/2014 11:42	0	0.0	0.9	19.7	27.37
4401B-CBP7	11/20/2013 11:54	0	0.0	2.7	17.9	27.40
	2/5/2014 12:21	0	0.0	4.1	13.7	26.98
	5/21/2014 11:17	0	0.0	3.3	15.3	27.34
	8/13/2014 10:29	0	0.0	3.6	17.2	27.27
4401B-CBP8	11/20/2013 12:02	0	0.0	0.7	21.1	27.32
	2/5/2014 13:18	0	0.0	0.8	20.7	26.90
	5/21/2014 11:24	0	0.0	1.2	18.1	27.33
	8/13/2014 10:48	0	0.0	1.3	20.3	27.23
4401B-CBP9	11/20/2013 12:11	0	0.0	2.9	19.3	27.32
	2/5/2014 13:25	0	0.0	1.6	20.3	26.90
	5/21/2014 11:30	0	0.0	2.0	17.7	27.31
	8/13/2014 10:55	0	0.0	2.8	18.3	27.26
4401B-CBP10	11/20/2013 12:21	0	0.0	2.3	19.6	27.37
	2/5/2014 13:33	0	0.0	2.1	20.3	26.90
	5/21/2014 11:35	0	0.0	1.7	18.5	27.28
	8/13/2014 11:00	0	0.0	1.5	20.0	27.23
4401B-CBP11	11/20/2013 12:36	0	0.0	0.5	19.7	27.34
	2/5/2014 13:41	0	0.0	0.3	21.3	26.90
	5/21/2014 11:48	0	0.0	0.3	18.9	27.34
	8/13/2014 11:07	0	0.0	0.9	20.5	27.31
4401B-CBP12	11/20/2013 12:43	0	0.0	3.6	19.6	27.37
	2/5/2014 13:49	0	0.0	1.0	20.3	26.90
	5/21/2014 11:54	0	0.0	1.8	17.5	27.36
	8/13/2014 11:13	0	0.0	2.0	19.2	27.33

**Table 1**  
**Landfill Gas Sampling Results for Compliance Boundary Probes**  
**Closed International Paper Landfill 5, Permit #44-01**  
**Canton, North Carolina**

Location	Date and Time	Lower Explosive Limit (%)	Methane (%)	Carbon Dioxide (%)	Oxygen (%)	Barometric Pressure (inches of mercury)
<b>Exceedence Limit</b>		<b>100</b>	<b>5.0</b>	<b>NL</b>	<b>NL</b>	<b>NA</b>
4401B-CBP13	11/20/2013 13:06	0	0.0	1.4	19.7	27.49
	2/5/2014 13:56	0	0.0	0.5	21.3	26.90
	5/21/2014 12:02	0	0.0	0.3	18.9	27.41
	8/13/2014 11:21	0	0.0	0.7	20.7	27.39

Notes:

1. Exceedence limits taken from North Carolina Solid Waste Management Rules found in 15A NCAC 13B.
2. NL indicates no established Solid Waste Management exceedence limit.
3. NA indicates not applicable.

**Table 2**  
**Landfill Gas Sampling Results for Ambient Locations Within Structures**  
**Closed International Paper Landfill 5, Permit #44-01**  
**Canton, North Carolina**

Location	Date	Time	FID (ppm)		Notes
			without carbon filter	with carbon filter	
<b>Exceedence Limit</b>			<b>12,500</b>	<b>12,500</b>	
LF5B-A1	11/20/2013	11:30	1.30	0.45	Maintenance Office
	2/5/2014	11:50	-3.18	-4.71	
	5/21/2014	9:36	0.43	-2.40	
	8/13/2014	9:24	-1.06	-1.64	
LF5B-A2	11/20/2013	11:25	1.39	0.32	Baseball Storage Shed
	2/5/2014	11:53	-3.93	-4.62	
	5/21/2014	9:40	0.57	-1.07	
	8/13/2014	9:22	-0.68	-0.76	
LF5B-A3	11/20/2013	11:21	1.18	0.62	Football Storage Shed
	2/5/2014	11:55	-4.45	-4.92	
	5/21/2014	9:58	-1.11	-1.81	
	8/13/2014	9:19	-1.01	-0.47	
LF5B-A4	11/20/2013	11:17	0.99	-0.09	Concession Stand
	2/5/2014	12:10	-2.96	-4.96	
	5/21/2014	9:31	1.26	-1.03	
	8/13/2014	9:30	-1.34	-1.59	
LF5B-A5	11/20/2013	11:10	1.42	-0.07	West Side of Barn
	2/5/2014	12:01	-4.51	-5.01	
	5/21/2014	9:43	-1.10	-2.38	
	8/13/2014	9:26	-0.86	-1.28	
LF5B-A6	11/20/2013	11:07	1.57	0.08	East Side of Barn
	2/5/2014	12:03	-3.88	-4.90	
	5/21/2014	9:45	0.62	-1.38	
	8/13/2014	9:27	-1.12	-1.32	
LF5C-A8	11/20/2013	11:39	2.14	0.51	Buyer's Lounge
	2/5/2014	12:50	-4.42	-4.84	
	5/21/2014	11:01	0.89	0.17	
	8/13/2014	10:32	-1.22	-1.56	
LF5C-A9	11/20/2013	11:43	9.83	1.68	Main Office
	2/5/2014	12:31	-4.58	-5.12	
	5/21/2014	10:47	0.13	-1.02	
	8/13/2014	10:34	-0.51	-1.32	
LF5C-A10	11/20/2013	11:45	2.08	0.67	Back Office
	2/5/2014	12:33	-4.31	-4.95	
	5/21/2014	10:50	0.41	-0.85	
	8/13/2014	10:35	-0.25	-0.92	
LF5C-A11	11/20/2013	11:48	1.75	0.95	Kitchen
	2/5/2014	12:37	-4.17	-5.01	
	5/21/2014	10:52	-1.08	-1.51	
	8/13/2014	10:36	-0.22	-1.13	

**Table 2**  
**Landfill Gas Sampling Results for Ambient Locations Within Structures**  
**Closed International Paper Landfill 5, Permit #44-01**  
**Canton, North Carolina**

Location	Date	Time	FID (ppm)		Notes
			without carbon filter	with carbon filter	
<b>Exceedence Limit</b>			<b>12,500</b>	<b>12,500</b>	
LF5C-A12	11/20/2013	11:52	2.11	0.84	Education Room
	2/5/2014	12:40	-4.46	-5.12	
	5/21/2014	10:58	-0.21	-1.81	
	8/13/2014	10:39	-0.96	-2.02	
LF5C-A13	11/20/2013	11:54	1.51	0.36	Lobby Area
	2/5/2014	12:42	-4.56	-4.99	
	5/21/2014	10:57	-1.02	-1.31	
	8/13/2014	10:38	-0.65	-1.06	
LF5C-A14	11/20/2013	11:50	1.91	0.86	Arena
	2/5/2014	12:45	-1.86	-4.97	
	5/21/2014	10:54	0.57	-0.21	
	8/13/2014	10:37	-1.44	-1.82	
LF5C-A15	11/20/2013	11:55	1.74	0.52	Men's Restroom
	2/5/2014	12:48	-4.72	-4.82	
	5/21/2014	11:04	0.96	-0.12	
	8/13/2014	10:40	-0.52	-1.80	
Ambient Air	11/20/2013	10:58	0.82	-0.12	Reading Taken On-Site in Parking Lot
	2/5/2014	11:42	-4.61	-5.06	
	5/21/2014	9:25	-2.52	-1.26	
	8/13/2014	9:14	-1.14	-0.59	
Sharpie Cap	11/20/2013	11:01	18.04	-0.09	
	2/5/2014	11:45	11.68	-5.08	
	5/21/2014	9:29	-2.52	-1.26	
	8/13/2014	9:16	43.81	-0.83	

Notes:

1. FID indicates flame ionization detector, which detects hydrocarbon vapors including methane.
2. ppm indicates parts per million.
3. Regular tip versus carbon filter indicates one reading was taken without a detachable carbon filter and one reading was taken with a filter.
4. Exceedence limits were calculated based on 25 percent of the Lower Explosive Limit (LEL) for detected explosive gases in structures, according to the North Carolina Solid Waste Management Rules 15A NCAC 13B.0544. 25 percent of the LEL is 1.25 percent methane. 1.25 percent of 1 million is 12,500 ppm.