

**GEO-TEST**

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**LANDFILL GAS ASSESSMENT  
FOUR HILLS ESTATES  
ALBUQUERQUE, NEW MEXICO**

**JOB NO. 5-20503**

**GEO-TEST**

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**LANDFILL GAS ASSESSMENT  
FOUR HILLS ESTATES  
ALBUQUERQUE, NEW MEXICO**

**JOB NO. 5-20503**

Prepared for:  
*Mark Goodwin & Associates  
8916 Adams Street Street, NE.  
Albuquerque, NM 87113  
Mr. Mark Goodwin*

Prepared by:  
*Geo-Test, Inc.  
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July 24, 2012  
Job No. 5-20503

**Mark Goodwin & Associates.  
8916 Adams Street, NE.  
Albuquerque, NM 87113**

**Attn: Mr. Mark Goodwin**

**Re: Landfill Gas Assessment,  
Four Hills Estates  
Albuquerque, New Mexico**

Dear Mr. Goodwin:

Geo-Test, Inc. is pleased to submit our report on the landfill gas assessment conducted at the site referenced above. Written authorization to proceed with the assessment was granted on May 17, 2012 by Mark Goodwin with Mark Goodwin & Associates, Inc. in response to Geo-Test's proposal dated July 20, 2011.

The following report has been prepared by the undersigned. It has been a pleasure to serve you on this project and we look forward to providing services to you in the future. Should there be any questions concerning this report, please do not hesitate to contact us in Albuquerque at (505) 857-0933.

Sincerely,  
**GEO-TEST, INC.**

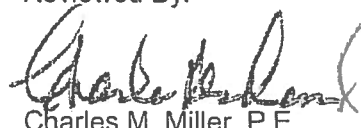


James E. Criss  
Environmental Scientist

Attachment

Copies to: Addressee (3)

Reviewed By:



Charles M. Miller, P.E.

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## EXECUTIVE SUMMARY

Geo-Test, Inc. was retained to conduct a landfill gas assessment at the site of the proposed Four Hills Estates subdivision located at the south end of Juan Tabo Boulevard in Albuquerque, New Mexico.

The objective of the work was to evaluate subsurface soil at the site for the possible presence of methane gas and volatile organic compound (VOC) vapors that may have migrated from the closed City of Albuquerque South Eubank Landfill and address possible future impact to the site due to migration of landfill gasses.

On June 14, 2012, four permanent vapor monitoring points were installed. The vapor monitoring points were placed adjacent to the Tijeras Arroyo along the northwest property boundary of the proposed development. The vapor monitoring points were positioned to obtain data concerning possible methane and VOC vapor concentrations in the soil that may have migrated from buried refuse. The wells were installed to an approximate depth of 15 to 20 feet. On June 27, 2012 Geo -Test conducted field screening of air extracted from each vapor monitoring point. Field screening of air extracted from the vapor points found neither concentrations of methane gas nor volatile organic compound vapors.

On June 27, 2012, samples of air from each vapor point were collected and submitted to Hall Environmental Analysis Laboratory in Albuquerque for analysis for methane. Hall Environmental subcontracted the methane analysis to Energy Laboratories, Inc. in Gillette, Wyoming.

Field screening of air extracted from the vapor points found neither concentrations of methane gas nor volatile organic compound vapors. The laboratory analysis did not detect the presence of methane in either of the vapor samples submitted for analysis.

At the time the survey was conducted, no concentrations of methane gas or volatile organic compounds appeared to be present in the soils at the monitoring points. Only minor amounts of VOCs were detected in each sample. The results of the VOC analyses indicate that these levels may simply be background levels and are well below the current levels required for clean-up activities. Methane concentrations in landfills and adjoining properties vary depending on the moisture content of organic refuse and soil, ground temperature, atmospheric pressure, and time of day. Should the moisture content of the buried refuse increase (e.g. infiltration of storm water runoff and/or irrigation water or several years of wetter weather) higher concentrations of methane could be generated at the landfill and migrate to adjoining properties.

It is difficult to predict to what degree methane or other vapors may migrate and collect in a building constructed on the site. Due to the potential for methane generation in the nearby landfill and migration to adjoining properties, Geo-Test recommends, as a precautionary measure, that all expansion joints, shrinkage cracks, and utility penetrations of floor slabs of buildings constructed within the 1000 foot land fill barrier be sealed with air tight packing, caulking, or other methods. The installation of below slab heating and air conditioning ducts should be avoided. Utility trench backfill should also be compacted to a minimum of 95% if its maximum density and at optimum moisture content or greater as determined by ASTM D-1557 to lessen the tendency of

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the trench being a conduit for migration of gasses and vapors.

Based on our assessment of conditions at the site, secondary utilities such as electric lines, light poles and sign posts do not need to be vented. No subsurface debris is expected to be encountered during development of the site. It is Geo-Tests opinion that no landfill gas exists at the site and that no risks from migrating gas from the South Eubank Land fill.

In conclusion:

- No landfill gasses were detected at the four sample locations.
- No landfill materials were encountered during our subsurface exploration at the site.
- Construction workers at the site will not be at risk of exposure t landfill gases.
- No further assessment for landfill gases is recommended at this time.

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## 1.0 INTRODUCTION

Geo-Test, Inc. was retained by Mr. Mark Goodwin with Goodwin & Associates. to conduct a landfill gas assessment at the site of the proposed Four Hills Estates subdivision located at the south end of Juan Tabo Boulevard in Albuquerque, New Mexico. Written authorization to proceed with the assessment was granted on May 17, 2012 in response to Geo-Test's proposal dated July 20, 2011. This report completes the agreed scope of services.

The objective of the work was to evaluate subsurface soil at the site for the possible presence of methane gas and volatile organic compound (VOC) vapors that may have migrated from the closed City of Albuquerque South Eubank Landfill and address possible future impact to the site due to migration of landfill gasses.

The following tasks were performed for the landfill gas assessment:

1. A description of the proposed project, including the proposed use of the development and a Site Development Plan depicting the location of the property and its physical relationship to the landfill, with a scale (1"=20' minimum), at least two bounding streets, a north arrow, a vicinity map, and a legal description.
2. A statement regarding whether the property is on the landfill or within the landfill buffer.
3. Sampling and analysis of landfill gas from vapor probes or permanent wells at the proposed development property, including all sampling and analysis methodologies, sampling equipment calibration methods, and laboratory detections.
4. A statement of reliance upon existing reports available in AEHD's files (if applicable).
5. A PE's opinion concerning the current presence and/or potential for future presence and extent of landfill gases at the property and/or adjacent properties.

Project services have been completed in accordance with our understanding with our Client. This document and the information contained herein have been prepared solely for the use and reliance of our Client. Other persons wishing to use and/or rely on this report may do so only with Geo-Test's express written permission and with written acceptance of the terms and conditions under which the assessment was originally conducted and this report prepared.

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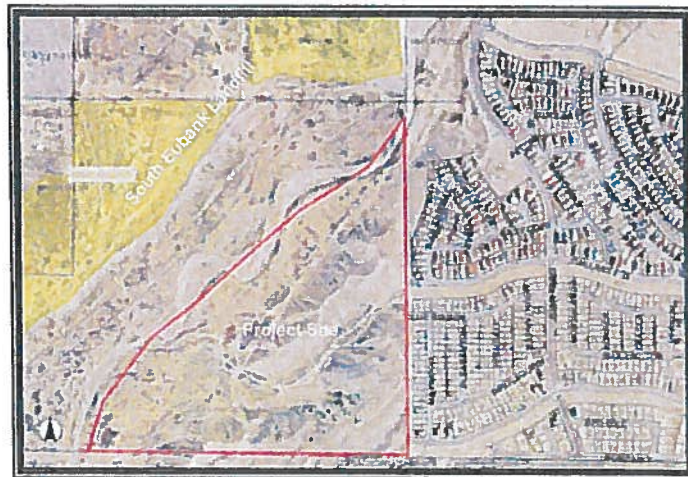
Geo-Test observed the degree of care and skill generally exercised by other consultants in the same locale, under similar circumstances and conditions. No other warranty, express or implied, is made.

There is no evaluation thorough enough to absolutely exclude the presence of methane and volatile organic compound vapors at a site in the vicinity of a landfill. Therefore, if none is identified as part of a limited scope of work, such a conclusion should not be construed as a guaranteed absence of methane and volatile organic compound vapors. It is merely the result of the evaluation. Geo-Test's findings and conclusions must not be considered as scientific certainties, but rather as our professional opinion concerning the significance of limited data gathered during the course of the landfill gas assessment. Considering reasonable limits of time and cost, no assessment can eliminate uncertainty regarding the potential for methane and volatile organic compound vapors at a site in the vicinity of a landfill. The landfill gas assessment is intended to reduce, but not eliminate uncertainty regarding the current or future presence of methane and volatile organic compound vapors. Findings, conclusions, and recommendations in this report are subject to modification if subsequent information is developed by Geo-Test or others.

## 2.0 SITE DESCRIPTION

### 2.1 Location

The site is described as Tracts A, B and C of Juan Tabo West in Albuquerque, New Mexico. The site consists of an approximate 90 acre portion of a large development tract that partially lies within the 1000 foot buffer zone of the closed City of Albuquerque South Eubank Landfill in Albuquerque, New Mexico. Figure 1 in Appendix A shows the general layout of the site.



Site construction will consist of an approximate 400 single family one and two story

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homes with paved streets

There will be no storm water ponding areas on-site. Storm drainage will be directed to the southwest corner of the site and into the existing Tijeras Arroyo.

## 2.2 Conditions

The site, which is triangular in shape, is bounded on the northwest by the Tijeras Arroyo, on the east by an existing residential subdivision, and on the south by Kirtland Air Force Base property. The 90 acre site is largely undeveloped, although a sanitary sewer line extends diagonally across the property from the northeast to the southwest and several dirt roads are present across the site. The proposed construction is approximately 950 feet southeast of South Eubank Landfill. In addition, the proposed site is approximately 70 feet lower in elevation than the South Eubank Landfill.



Underground utilities near the project area include one sanitary sewer line located along the south side of the Tijeras Arroyo. This sewer line extends from Juan Tabo Boulevard and exits the property at the east corner of the proposed development. A site map showing underground utilities is included in Appendix A

## 3.0 BACKGROUND



A small portion of the development lies within 900 feet of the closed City of Albuquerque South Eubank Landfill. Information from Albuquerque Environmental Health Department indicates that the South Eubank Landfill consists of two disposal areas that were operated from about 1963 through about 1984. Both areas were located west of Juan Tabo

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Boulevard and south of the Shaw Mobile Home Park and the PNM South Eubank Sub Station. The South Eubank Landfill was originally a part of the Tijeras Arroyo that was approximately 40 feet deep and approximately 40 acres in size. The landfill received residential, commercial, and construction trash and debris during operation.

#### **4.0 LANDFILL GAS SURVEY**

On June 14, 2012, four permanent vapor monitoring points were installed. The vapor monitoring points were placed adjacent to the Tijeras Arroyo along the northwest property boundary of the proposed development. The vapor monitoring points were positioned to obtain data concerning possible methane and VOC vapor concentrations in the soil that may have migrated from buried refuse. Locations of the vapor points are indicated on Figure 1 in Appendix A.



Boreholes to install vapor points were advanced to depths of approximately 16 to 20 feet below the surface. These depths were selected to minimize dilution from surface air and to be within a reasonable depth where methane gas or volatile organic compound (VOC) vapors may be present. After reaching the desired depth, 1 inch O.D. factory slotted PVC casing was installed through the hollow stem auger. After inserting the casing, 10-20 silica sand

was placed in the boring to fill the space between the casing and the boring side. The remainder of the boring was sealed with hydrated bentonite chips. The vent well construction diagram is presented in Appendix A and Figure 4.

Drilling was accomplished using a truck mounted drill rig equipped with 5-inch diameter continuous flight hollow-stem auger. The subsurface materials were sampled in the borings at five foot intervals or less utilizing an open tube split barrel sampler driven by a standard penetration test hammer. The texture, moisture content, relative density, color, and other physical properties of soils were observed and noted by the field engineer. Samples along with drill cuttings were visually classified to maintain a continuous geologic/lithologic log of the borings. No refuse was encountered in any of the four borings. No landfill materials such as debris or discolored soils were encountered any of the borings. The boring logs are presented in Appendix B

On June 27, 2012, Geo-Test conducted field screening of air extracted from each vapor

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monitoring point. Tubing for each vapor point was connected to a 12 volt vacuum pump (16 inches of mercury maximum vacuum) and purged for a minimum of 30 minutes prior to field screening of soil gas/vapors. Air from each point was screened for possible concentrations of methane gas using a MSA Passport Combustible Gas Indicator. The Passport measures the lower explosive limit (LEL) of methane in air. 100% LEL of methane is equivalent to 5% methane in air by volume. Methane is explosive in the range of 5 to 15% gas in air. 10% LEL (0.5% gas) is considered an action level. Instrument function was verified using a methane standard gas prior to field work. Possible VOC vapor concentrations were measured using a MSA Photon Photoionization Detector (PID). The PID was calibrated to be sensitive to VOCs using an isobutylene standard. After vacuum purging the points, the pump outlet tubing was attached to the respective instrument and readings obtained. Results of the field screening are presented in Table 1 below.

Table 1 - Results of Field Screening		
Monitoring Point	% CGI	VOCs
VW-01	ND	1.8 ppm
VW-02	ND	2.3 ppm
VW-03	ND	1.3 ppm
VW-04	ND	2.6 ppm

ND = None Detected  
ppm = parts per million

On June 27, 2012, samples of air from each vapor point were collected for laboratory analysis. As before, the tubing for each vapor point was connected to a 12 volt vacuum pump (16 inches of mercury maximum vacuum) and purged for a minimum of 20 minutes prior to collecting soil gas samples. After purging, two 1-liter Tedlar bags for each sample were individually connected to the outlet tubing on the pump and filled with air extracted from the vapor point. Upon filling, the bags were sealed, labeled, and transported to the laboratory upon completion of the field work. A chain-of-custody record was maintained and accompanied the transfer of the samples from the field engineer to the laboratory. A copy of the chain-of-custody record is included in Appendix B.

**5.0 LABORATORY ANALYSIS**

On June 27, 2012, samples from each vapor point were submitted to Hall Environmental Analysis Laboratory in Albuquerque for analysis for methane. Hall

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Environmental subcontracted the methane analysis to Energy Laboratories, Inc. in Gillette, Wyoming. Results of the laboratory analyses indicate that no methane was encountered in soil gas collected from the four vapor wells. Laboratory analytical and quality control reports are presented in Appendix B.

## 6.0 REVIEW OF EXISTING REPORTS AVAILABLE FROM AEHD'S FILES

According to information provided by the City of Albuquerque Environmental Health Division, the South Eubank Landfill has been monitored intermittently for soil gas constituents from June 2003 through the present. The most recent quarterly monitoring report (July 05, 2012) indicates that eight of the twenty-seven installed monitoring points had detectible concentrations of methane gas. According to the report, concentrations of methane and other landfill gas have been elevated intermittently during quarterly monitoring activities since April of 2003. However, the report does not suggest that concentrations of methane gas are steadily increasing.

## 7.0 CONCLUSIONS AND RECOMMENDATIONS

Field screening of air extracted from the vapor points found no concentrations of methane gas and minor concentrations of volatile organic compound vapors.

At the time the survey was conducted, no concentrations of methane gas or volatile organic compound vapors appeared to be present in the soils at the monitoring points. However, methane concentrations in landfills and adjoining properties vary depending on the moisture content of organic refuse and soil, ground temperature, atmospheric pressure, and time of day. Should the moisture content of the buried refuse increase (e.g. infiltration of storm water runoff and/or irrigation water or several years of wetter weather) higher concentrations of methane could be generated at the landfill and migrate to adjoining properties.

It is difficult to predict to what degree methane or other vapors may migrate and collect in a building constructed on the site. Due to the potential for methane generation in the nearby landfill and migration to adjoining properties, Geo-Test recommends, as a precautionary measure, that all expansion joints, shrinkage cracks, and utility penetrations of floor slabs of buildings constructed within the 1000 foot boundary on the site be sealed with air tight packing, caulking, or other methods. The installation of below slab heating and air conditioning ducts should be avoided. Utility trench backfill should also be compacted to a minimum of 95% of its maximum density and at optimum moisture content or greater as determined by ASTM D-1557 to lessen the tendency of the trench being a conduit for migration of gasses and vapors.

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Geo-Test recommends that the new sanitary sewer and water lines and the new natural gas supply lines within the 1000 foot buffer area should receive one landfill gas venting barrier in each trench. This barrier should consist of a 2-4 foot long, rounded (not crushed) 1.5-inch diameter gravel plug that extends the full height and full width of the utility trench. Non-woven filter fabric should be placed over the gravel. At the median near the southwest corner of the building, (or near the entrance to the building) a vent pipe should extend from the trench, vertically aboveground. The aboveground pipe shall be metal or UV resistant PVC and shall terminate in goosenecks approximately 1-3 feet above the surface. The gooseneck pipe openings should be covered with screen. The vented area in the perimeter landscaping is considered to present a low potential for pedestrian exposure.

Based on our assessment of conditions at the site, secondary utilities such as electric lines, light poles and sign posts do not need to be vented. No subsurface debris is expected to be encountered during development of the site. It is Geo-Tests opinion that no landfill gas exists at the site and that no risks from migrating gas from the South Eubank Land fill.

In conclusion:

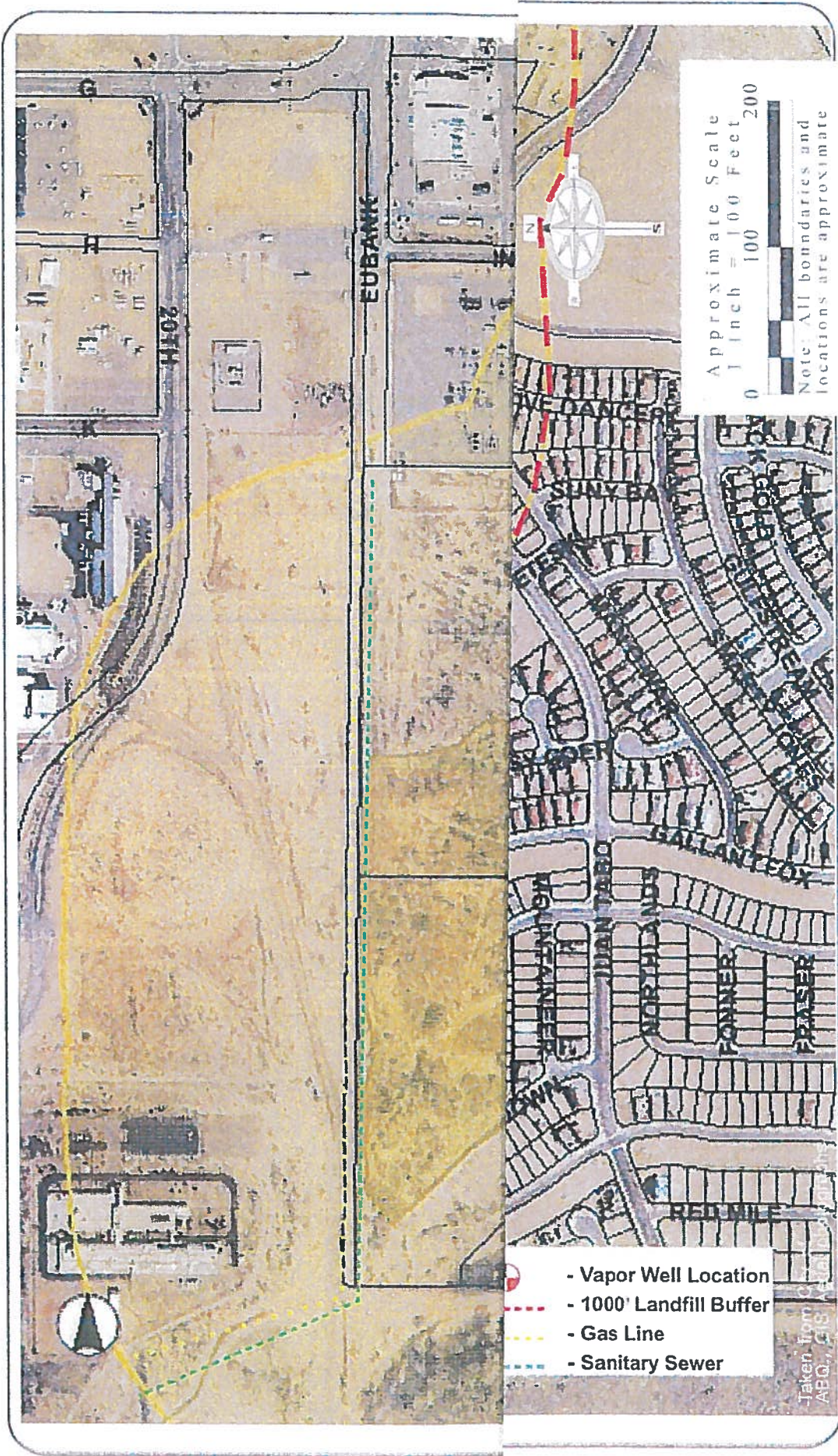
- No landfill gasses were detected at the four sample locations.
- No landfill materials were encountered during our subsurface exploration at the site.
- Construction workers at the site will not be at risk of exposure to landfill gases.
- The proposed site is partially located within the 1000 foot South Eubank Landfill buffer zone. Although it is unlikely that methane or other landfill gasses will impact the project site, in accordance with the City of Albuquerque Guidelines for Development within Designated Landfill Buffer Zones, the following information is included for this proposed development
  - - For the portion of the development located within the buffer zone precautionary measures may need to be taken to ensure public safety. Recommendations made by a professional engineer with expertise in landfills and landfill gas issues shall be consulted prior to development of the site.
    - If solid waste is encountered during excavation activities performed at the site, the contractor shall cease operations and notify the owner and the City of Albuquerque Environmental Health Department. Any removal of landfill materials will require special operations approved by the AEHD. All solid waste material must be disposed at an NMED approved landfill.
- No further assessment for landfill gases is recommended at this time.

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**APPENDIX A**



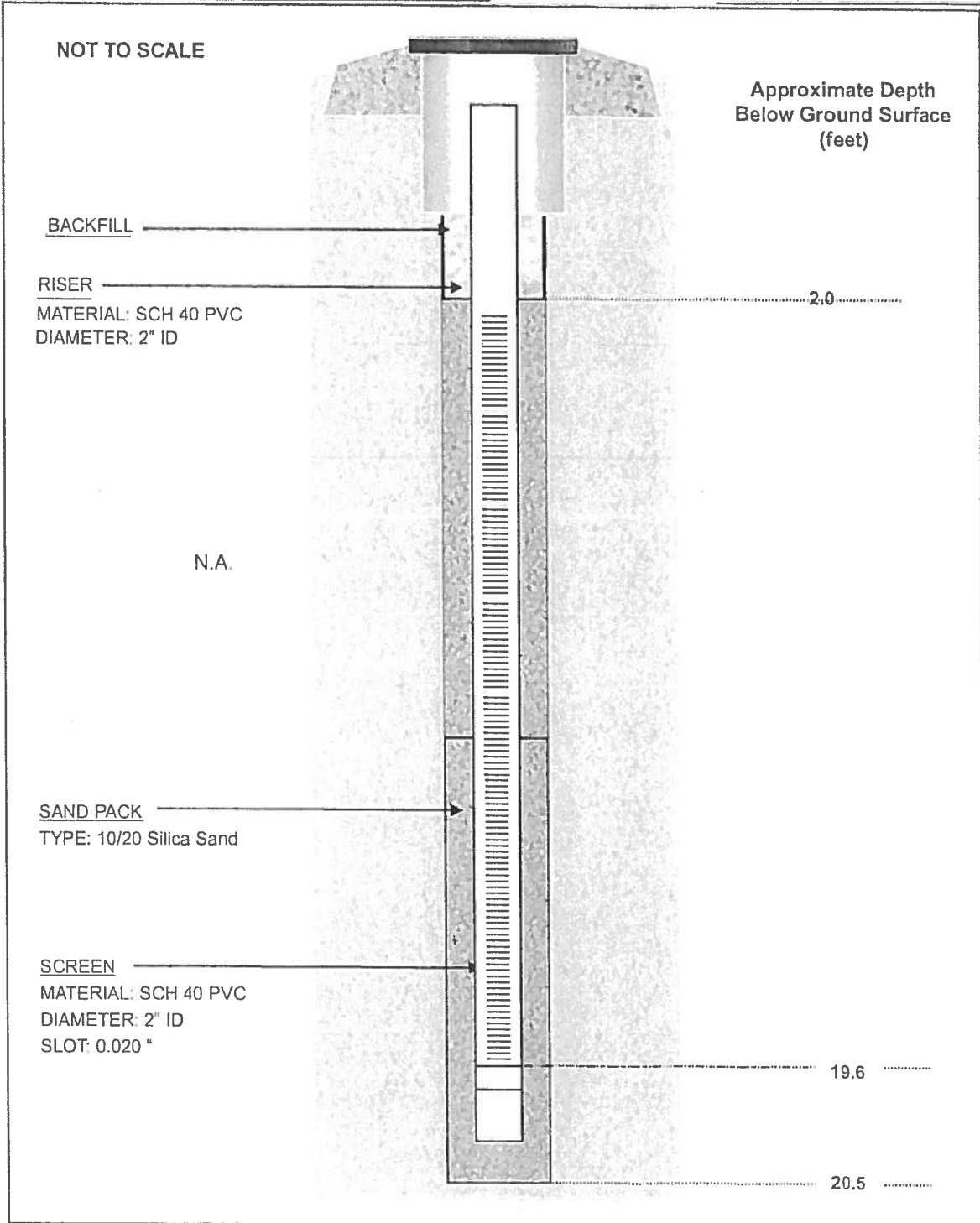
**Figure 1**  
**Landfill Gas Assessment**  
**Four Hills Estates**  
**Albuquerque, New Mexico**

City Utility Locations  
Near the Project Site

Project Name: Landfill Gas  
Juan Tabo Hills  
Project Number: 5-20503

# WELL CONSTRUCTION DIAGRAM

WELL NUMBER: Typical DIAMETER: 2" ID INSPECTOR: JC.  
LOCATION: ABQ, NM DATE INSTALLED: 4-14-12  
DRILL METHOD: Hollow Stem Auger DRILL COMPANY: Geo-Test, Inc.



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Project Number 5-20503

July 2012

Figure 2  
VMW 1 & 3

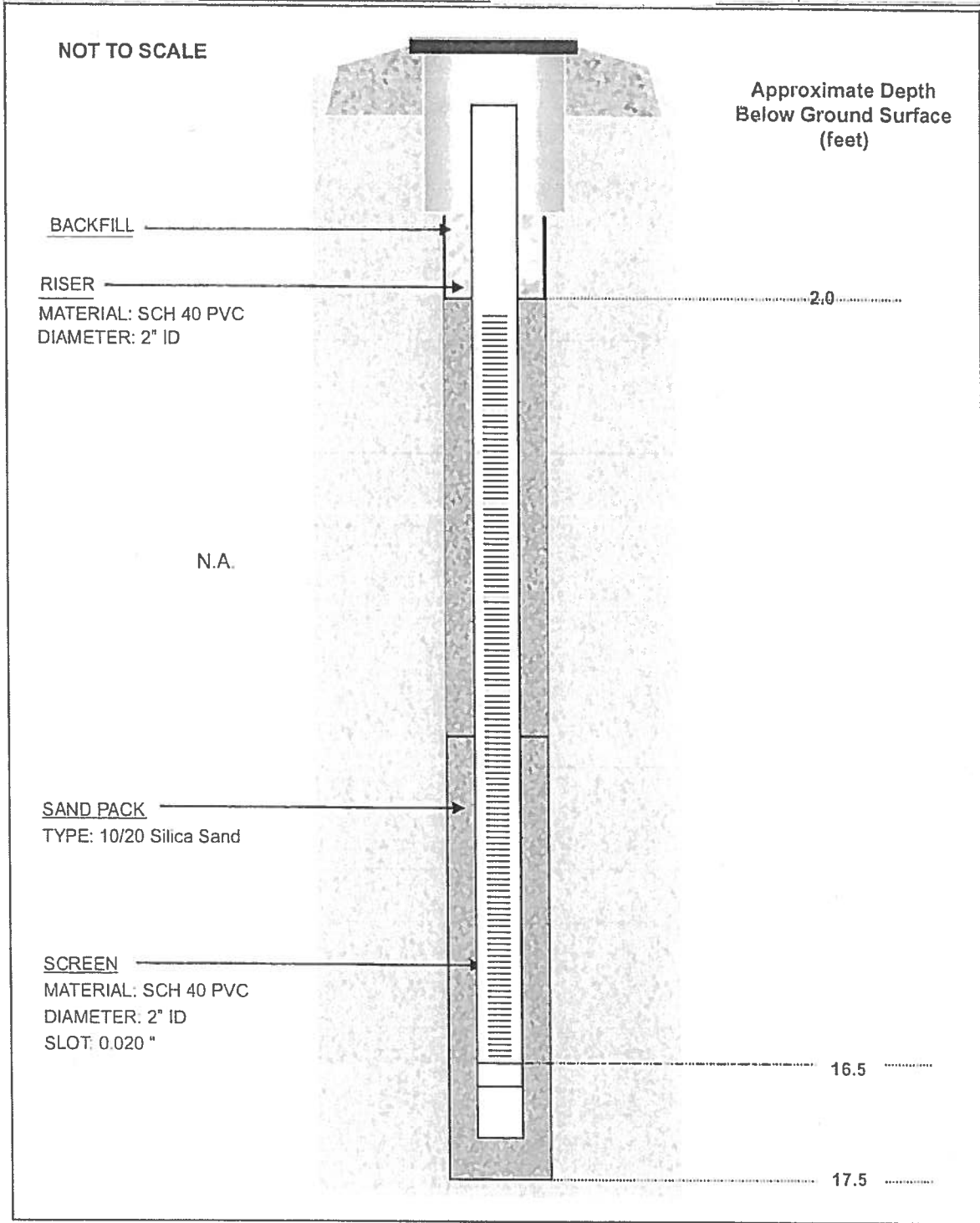
Landfill Gas Assessment  
Four Hills Estates  
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Project Number 5-20503

July 2012

Figure 2  
VMW 2 & 4

Landfill Gas Assessment  
Four Hills Estates  
Albuquerque, New Mexico

**APPENDIX B**



Project: Four Hills Estates

Date: 06/13/2012

Elevation:

Project No: 1-20508

Type: 5" OD HSA

LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: 24

During Drilling: None

After 24 Hours:

DEPTH (Ft)	LOG	SAMPLE						SUBSURFACE PROFILE	
		SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION	N blows/ft
									20 40 60 80
5		8-13-10	SS	23	1		SW-SC	GRAVELLY SAND, trace clay, fine grained, low plasticity, medium dense, dry, brown	23
		5-6-7	SS	13	7		CL	SANDY CLAY, some gravel, low plasticity, moderately firm, brown	13
10		14-12-14	SS	26	2		SP	SAND, fine to coarse grained, non-plastic, medium dense to very dense, dry, brown	26
15		23-27-28	SS	55	2				55
20								STOPPED AUGER AT 15' STOPPED SAMPLER AT 16'	
25									
30									
35									

LOG OF TEST BORING 1-20508 FOUR HILLS WEST.GPJ GEO TEST.GDT 6/28/12

LEGEND

SS - Split Spoon  
 AC - Auger Cuttings  
 UD/SL - Undisturbed Sleeve

AMSL - Above Mean Sea Level  
 CS - Continuous Sampler  
 UD - Undisturbed  
 ST - Shelby Tube

Stratification lines represent approximate boundaries between soil types. Transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.



Project: Four Hills Estates

Date: 06/13/2012

Elevation:

Project No: 1-20508

Type: 5" OD HSA

LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: 30

During Drilling: None

After 24 Hours:

DEPTH (Ft)	LOG	SAMPLE						SUBSURFACE PROFILE	
		SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION	N blows/ft
5			SS	5-4-3 7	4		SC	CLAYEY SAND, fine to coarse grained, low plasticity, loose to medium dense, dry, brown	7
			SS	6-8-8 16	4				16
10			SS	4-7-7 14	3		SM	SILTY SAND, fine to coarse grained, non-plastic, medium dense to very dense, dry, brown	14
15			SS	18-30-45 75	1				75
16.5								AUGER REFUSAL AT 16.5' STOPPED SAMPLER AT 16'	

LOG OF TEST BORING 1-20508 FOUR HILLS WEST.GPJ GEO.TEST.GDT 6/28/12

LEGEND

SS - Split Spoon  
 AC - Auger Cuttings  
 UD/SL - Undisturbed Sleeve

AMSL - Above Mean Sea Level  
 CS - Continuous Sampler  
 UD - Undisturbed  
 ST - Shelby Tube

Stratification lines represent approximate boundaries between soil types. Transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.



Project: Four Hills Estates

Date: 06/12/2012

Elevation:

Project No: 1-20508

Type: 5" OD HSA

LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: 39

During Drilling: None

After 24 Hours:

DEPTH (Ft)	LOG	SAMPLE						SUBSURFACE PROFILE	
		SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION	N blows/ft
									20 40 60 80
5		5-5-5	SS	5			SC-SM	CLAYEY SAND, fine to medium grained, low plasticity, medium dense, dry, brown	10
		10	SS	7					10
10		10.5-10.5	SS	1			SW-SM	SAND, trace silt, some gravel, fine to medium grained, non-plastic, medium dense to dense, dry, brown	14
15		16-16	SS	1					38
20	21-21	SS	1			50			
25									
30									
35									
								STOPPED AUGER AT 19.5'	
								STOPPED SAMPLER AT 21'	

LOG OF TEST BORING 1-20508 FOUR HILLS WEST.GPJ GEO TEST.GDT 6/28/12

LEGEND

SS - Split Spoon  
 AC - Auger Cuttings  
 UD/SL - Undisturbed Sleeve

AMSL - Above Mean Sea Level  
 CS - Continuous Sampler  
 UD - Undisturbed  
 ST - Shelby Tube

Stratification lines represent approximate boundaries between soil types. Transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.



Project: Four Hills Estates

Date: 06/12/2012

Elevation:

Project No: 1-20508

Type: 5" OD HSA

LOG OF TEST BORINGS

GROUNDWATER DEPTH

NO: 38

During Drilling: None

After 24 Hours:

DEPTH (Ft)	LOG	SAMPLE						SUBSURFACE PROFILE	
		SAMPLE INTERVAL	TYPE	N. BLOWS/FT	MOISTURE %	DRY DENSITY (pcf)	USC	DESCRIPTION	N blows/ft 20 40 60 80
4-5		4-5-5	SS	10	2				10
5-6		3-6-4	SS	10	2				10
6-11		6-11-13	SS	24	3		SM	SILTY SAND, fine to medium grained, non-plastic, loose to very dense, dry, brown	24
9-9		9-9-10	SS	19	2				19
12-36		12-36-32	SS	68	1				68
20-21									
20-21								STOPPED AUGER AT 20' STOPPED SAMPLER AT 21'	
20-21								NOTE: Boring caved to 3'	

LOG OF TEST BORING 1-20508 FOUR HILLS WEST.GPJ GEO TEST.GDT 6/28/12

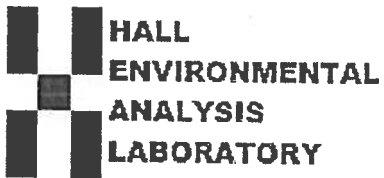
LEGEND

SS - Split Spoon  
AC - Auger Cuttings  
UD/SL - Undisturbed Sleeve

AMSL - Above Mean Sea Level  
CS - Continuous Sampler  
UD - Undisturbed  
ST - Shelby Tube

Stratification lines represent approximate boundaries between soil types. Transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to factors other than those present at the time measurements were made.

**APPENDIX C**



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

Jim Criss  
Geo-Test  
8528 Calle Alameda NE  
Albuquerque, NM 87113  
TEL: (505) 857-0933  
FAX (505) 857-0803

RE: Juan Tabo Hills GWS Assessment

OrderNo.: 1206B55

Dear Jim Criss:

Hall Environmental Analysis Laboratory received 4 sample(s) on 6/27/2012 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a horizontal line.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109





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### LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

**Client:** Hall Environmental  
**Project:** Not Indicated  
**Client Sample ID:** 1206B55-001A; 1  
**Location:**  
**Lab ID:** G12060729-001

**Report Date:** 07/05/12  
**Collection Date:** 06/27/12 09:00  
**Date Received:** 06/28/12

**Sampled By:** Not Provided

Analyses	Result	Units	Qualifier	Method	Analysis Date / By
<b>NATURAL GAS CHROMATOGRAPHIC ANALYSIS REPORT</b>					
Oxygen	21.447	Mol %		GPA 2261	07/03/12 16:13 / djb
Nitrogen	78.364	Mol %		GPA 2261	07/03/12 16:13 / djb
Carbon Dioxide	0.190	Mol %		GPA 2261	07/03/12 16:13 / djb
Hydrogen Sulfide	< 0.001	Mol %		GPA 2261	07/03/12 16:13 / djb
Methane	< 0.001	Mol %		GPA 2261	07/03/12 16:13 / djb
Ethane	< 0.001	Mol %		GPA 2261	07/03/12 16:13 / djb
Propane	< 0.001	Mol %		GPA 2261	07/03/12 16:13 / djb
Isobutane	< 0.001	Mol %		GPA 2261	07/03/12 16:13 / djb
n-Butane	< 0.001	Mol %		GPA 2261	07/03/12 16:13 / djb
Isopentane	< 0.001	Mol %		GPA 2261	07/03/12 16:13 / djb
n-Pentane	< 0.001	Mol %		GPA 2261	07/03/12 16:13 / djb
Hexanes plus	< 0.001	Mol %		GPA 2261	07/03/12 16:13 / djb
<b>GPM @ STD COND/1000 CU.FT., MOISTURE FREE GAS</b>					
GPM Ethane	< 0.0003	gal/MCF		GPA 2261	07/03/12 16:13 / djb
GPM Propane	< 0.0003	gal/MCF		GPA 2261	07/03/12 16:13 / djb
GPM Isobutane	< 0.0003	gal/MCF		GPA 2261	07/03/12 16:13 / djb
GPM n-Butane	< 0.0003	gal/MCF		GPA 2261	07/03/12 16:13 / djb
GPM Isopentane	< 0.0004	gal/MCF		GPA 2261	07/03/12 16:13 / djb
GPM n-Pentane	< 0.0004	gal/MCF		GPA 2261	07/03/12 16:13 / djb
GPM Hexanes plus	< 0.0004	gal/MCF		GPA 2261	07/03/12 16:13 / djb
GPM Pentanes plus	< 0.0004	gal/MCF		GPA 2261	07/03/12 16:13 / djb
GPM Total	< 0.0004	gal/MCF		GPA 2261	07/03/12 16:13 / djb
<b>CALCULATED PROPERTIES</b>					
Calculation Pressure Base	14.730	psia		GPA 2261	07/03/12 16:13 / djb
Calculation Temperature Base	60	°F		GPA 2261	07/03/12 16:13 / djb
Compressibility Factor, Z	0.99963	unitless		GPA 2261	07/03/12 16:13 / djb
Molecular Weight	28.90	unitless		GPA 2261	07/03/12 16:13 / djb
Pseudo-critical Pressure, psia	546	psia		GPA 2261	07/03/12 16:13 / djb
Pseudo-critical Temperature, deg R	239	deg R		GPA 2261	07/03/12 16:13 / djb
Specific Gravity (air=1.000)	1.001	unitless		GPA 2261	07/03/12 16:13 / djb
Gross BTU per cu ft @ std cond, dry	< 0.01	BTU/cu. ft.		GPA 2261	07/03/12 16:13 / djb
Gross BTU per cu ft @ std cond, wet	< 0.01	BTU/cu. ft.		GPA 2261	07/03/12 16:13 / djb

**Report Definitions:** RL - Analyte reporting limit  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



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**LABORATORY ANALYTICAL REPORT**  
Prepared by Gillette, WY Branch

**Client:** Hall Environmental  
**Project:** Not Indicated  
**Client Sample ID:** 1206B55-002A; 2  
**Location:**  
**Lab ID:** G12060729-002

**Report Date:** 07/05/12  
**Collection Date:** 06/27/12 09:45  
**Date Received:** 06/28/12  
**Sampled By:** Not Provided

Analyses	Result	Units	Qualifier	Method	Analysis Date / By
----------	--------	-------	-----------	--------	--------------------

**NATURAL GAS CHROMATOGRAPHIC ANALYSIS REPORT**

Oxygen	21.604	Mol %		GPA 2261	07/03/12 16:23 / djb
Nitrogen	78.279	Mol %		GPA 2261	07/03/12 16:23 / djb
Carbon Dioxide	0.117	Mol %		GPA 2261	07/03/12 16:23 / djb
Hydrogen Sulfide	< 0.001	Mol %		GPA 2261	07/03/12 16:23 / djb
Methane	< 0.001	Mol %		GPA 2261	07/03/12 16:23 / djb
Ethane	< 0.001	Mol %		GPA 2261	07/03/12 16:23 / djb
Propane	< 0.001	Mol %		GPA 2261	07/03/12 16:23 / djb
Isobutane	< 0.001	Mol %		GPA 2261	07/03/12 16:23 / djb
n-Butane	< 0.001	Mol %		GPA 2261	07/03/12 16:23 / djb
Isopentane	< 0.001	Mol %		GPA 2261	07/03/12 16:23 / djb
n-Pentane	< 0.001	Mol %		GPA 2261	07/03/12 16:23 / djb
Hexanes plus	< 0.001	Mol %		GPA 2261	07/03/12 16:23 / djb

**GPM @ STD COND/1000 CU.FT., MOISTURE FREE GAS**

GPM Ethane	< 0.0003	gal/MCF		GPA 2261	07/03/12 16:23 / djb
GPM Propane	< 0.0003	gal/MCF		GPA 2261	07/03/12 16:23 / djb
GPM Isobutane	< 0.0003	gal/MCF		GPA 2261	07/03/12 16:23 / djb
GPM n-Butane	< 0.0003	gal/MCF		GPA 2261	07/03/12 16:23 / djb
GPM Isopentane	< 0.0004	gal/MCF		GPA 2261	07/03/12 16:23 / djb
GPM n-Pentane	< 0.0004	gal/MCF		GPA 2261	07/03/12 16:23 / djb
GPM Hexanes plus	< 0.0004	gal/MCF		GPA 2261	07/03/12 16:23 / djb
GPM Pentanes plus	< 0.0004	gal/MCF		GPA 2261	07/03/12 16:23 / djb
GPM Total	< 0.0004	gal/MCF		GPA 2261	07/03/12 16:23 / djb

**CALCULATED PROPERTIES**

Calculation Pressure Base	14.730	psia		GPA 2261	07/03/12 16:23 / djb
Calculation Temperature Base	60	°F		GPA 2261	07/03/12 16:23 / djb
Compressibility Factor, Z	0.99963	unitless		GPA 2261	07/03/12 16:23 / djb
Molecular Weight	28.89	unitless		GPA 2261	07/03/12 16:23 / djb
Pseudo-critical Pressure, psia	546	psia		GPA 2261	07/03/12 16:23 / djb
Pseudo-critical Temperature, deg R	239	deg R		GPA 2261	07/03/12 16:23 / djb
Specific Gravity (air=1.000)	1.001	unitless		GPA 2261	07/03/12 16:23 / djb
Gross BTU per cu ft @ std cond, dry	< 0.01	BTU/cu. ft.		GPA 2261	07/03/12 16:23 / djb
Gross BTU per cu ft @ std cond, wet	< 0.01	BTU/cu. ft.		GPA 2261	07/03/12 16:23 / djb

**Report Definitions:** RL - Analyte reporting limit.  
QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



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### LABORATORY ANALYTICAL REPORT

Prepared by Gillette, WY Branch

**Client:** Hall Environmental  
**Project:** Not Indicated  
**Client Sample ID** 1206B55-003A; 3  
**Location:**  
**Lab ID:** G12060729-003

**Report Date:** 07/05/12  
**Collection Date:** 06/27/12 10:45  
**Date Received:** 06/28/12  
**Sampled By:** Not Provided

Analyses	Result	Units	Qualifier	Method	Analysis Date / By
<b>NATURAL GAS CHROMATOGRAPHIC ANALYSIS REPORT</b>					
Oxygen	21.643	Mol %		GPA 2261	07/03/12 16:31 / djb
Nitrogen	78.233	Mol %		GPA 2261	07/03/12 16:31 / djb
Carbon Dioxide	0.124	Mol %		GPA 2261	07/03/12 16:31 / djb
Hydrogen Sulfide	< 0.001	Mol %		GPA 2261	07/03/12 16:31 / djb
Methane	< 0.001	Mol %		GPA 2261	07/03/12 16:31 / djb
Ethane	< 0.001	Mol %		GPA 2261	07/03/12 16:31 / djb
Propane	< 0.001	Mol %		GPA 2261	07/03/12 16:31 / djb
Isobutane	< 0.001	Mol %		GPA 2261	07/03/12 16:31 / djb
n-Butane	< 0.001	Mol %		GPA 2261	07/03/12 16:31 / djb
Isopentane	< 0.001	Mol %		GPA 2261	07/03/12 16:31 / djb
n-Pentane	< 0.001	Mol %		GPA 2261	07/03/12 16:31 / djb
Hexanes plus	< 0.001	Mol %		GPA 2261	07/03/12 16:31 / djb
<b>GPM @ STD COND/1000 CU.FT., MOISTURE FREE GAS</b>					
GPM Ethane	< 0.0003	gal/MCF		GPA 2261	07/03/12 16:31 / djb
GPM Propane	< 0.0003	gal/MCF		GPA 2261	07/03/12 16:31 / djb
GPM Isobutane	< 0.0003	gal/MCF		GPA 2261	07/03/12 16:31 / djb
GPM n-Butane	< 0.0003	gal/MCF		GPA 2261	07/03/12 16:31 / djb
GPM Isopentane	< 0.0004	gal/MCF		GPA 2261	07/03/12 16:31 / djb
GPM n-Pentane	< 0.0004	gal/MCF		GPA 2261	07/03/12 16:31 / djb
GPM Hexanes plus	< 0.0004	gal/MCF		GPA 2261	07/03/12 16:31 / djb
GPM Pentanes plus	< 0.0004	gal/MCF		GPA 2261	07/03/12 16:31 / djb
GPM Total	< 0.0004	gal/MCF		GPA 2261	07/03/12 16:31 / djb
<b>CALCULATED PROPERTIES</b>					
Calculation Pressure Base	14.730	psia		GPA 2261	07/03/12 16:31 / djb
Calculation Temperature Base	60	°F		GPA 2261	07/03/12 16:31 / djb
Compressibility Factor, Z	0.99963	unitless		GPA 2261	07/03/12 16:31 / djb
Molecular Weight	28.90	unitless		GPA 2261	07/03/12 16:31 / djb
Pseudo-critical Pressure, psia	546	psia		GPA 2261	07/03/12 16:31 / djb
Pseudo-critical Temperature, deg R	239	deg R		GPA 2261	07/03/12 16:31 / djb
Specific Gravity (air=1.000)	1.001	unitless		GPA 2261	07/03/12 16:31 / djb
Gross BTU per cu ft @ std cond, dry	< 0.01	BTU/cu. ft.		GPA 2261	07/03/12 16:31 / djb
Gross BTU per cu ft @ std cond, wet	< 0.01	BTU/cu. ft.		GPA 2261	07/03/12 16:31 / djb

**Report** RL - Analyte reporting limit.  
**Definitions:** QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



**LABORATORY ANALYTICAL REPORT**

Prepared by Gillette, WY Branch

**Client:** Hall Environmental  
**Project:** Not Indicated  
**Client Sample ID:** 1206B55-004A; 4  
**Location:**  
**Lab ID:** G12060729-004

**Report Date:** 07/05/12  
**Collection Date:** 06/27/12 11:50  
**Date Received:** 06/28/12  
**Sampled By:** Not Provided

Analyses	Result	Units	Qualifier	Method	Analysis Date / By
<b>NATURAL GAS CHROMATOGRAPHIC ANALYSIS REPORT</b>					
Oxygen	21.591	Mol %		GPA 2261	07/03/12 16:39 / djb
Nitrogen	78.241	Mol %		GPA 2261	07/03/12 16:39 / djb
Carbon Dioxide	0.168	Mol %		GPA 2261	07/03/12 16:39 / djb
Hydrogen Sulfide	< 0.001	Mol %		GPA 2261	07/03/12 16:39 / djb
Methane	< 0.001	Mol %		GPA 2261	07/03/12 16:39 / djb
Ethane	< 0.001	Mol %		GPA 2261	07/03/12 16:39 / djb
Propane	< 0.001	Mol %		GPA 2261	07/03/12 16:39 / djb
Isobutane	< 0.001	Mol %		GPA 2261	07/03/12 16:39 / djb
n-Butane	< 0.001	Mol %		GPA 2261	07/03/12 16:39 / djb
Isopentane	< 0.001	Mol %		GPA 2261	07/03/12 16:39 / djb
n-Pentane	< 0.001	Mol %		GPA 2261	07/03/12 16:39 / djb
Hexanes plus	< 0.001	Mol %		GPA 2261	07/03/12 16:39 / djb
<b>GPM @ STD COND/1000 CU.FT., MOISTURE FREE GAS</b>					
GPM Ethane	< 0.0003	gal/MCF		GPA 2261	07/03/12 16:39 / djb
GPM Propane	< 0.0003	gal/MCF		GPA 2261	07/03/12 16:39 / djb
GPM Isobutane	< 0.0003	gal/MCF		GPA 2261	07/03/12 16:39 / djb
GPM n-Butane	< 0.0003	gal/MCF		GPA 2261	07/03/12 16:39 / djb
GPM Isopentane	< 0.0004	gal/MCF		GPA 2261	07/03/12 16:39 / djb
GPM n-Pentane	< 0.0004	gal/MCF		GPA 2261	07/03/12 16:39 / djb
GPM Hexanes plus	< 0.0004	gal/MCF		GPA 2261	07/03/12 16:39 / djb
GPM Pentanes plus	< 0.0004	gal/MCF		GPA 2261	07/03/12 16:39 / djb
GPM Total	< 0.0004	gal/MCF		GPA 2261	07/03/12 16:39 / djb
<b>CALCULATED PROPERTIES</b>					
Calculation Pressure Base	14.730	psia		GPA 2261	07/03/12 16:39 / djb
Calculation Temperature Base	60	°F		GPA 2261	07/03/12 16:39 / djb
Compressibility Factor, Z	0.99963	unitless		GPA 2261	07/03/12 16:39 / djb
Molecular Weight	28.90	unitless		GPA 2261	07/03/12 16:39 / djb
Pseudo-critical Pressure, psia	547	psia		GPA 2261	07/03/12 16:39 / djb
Pseudo-critical Temperature, deg R	239	deg R		GPA 2261	07/03/12 16:39 / djb
Specific Gravity (air=1.000)	1.001	unitless		GPA 2261	07/03/12 16:39 / djb
Gross BTU per cu ft @ std cond, dry	< 0.01	BTU/cu. ft.		GPA 2261	07/03/12 16:39 / djb
Gross BTU per cu ft @ std cond, wet	< 0.01	BTU/cu. ft.		GPA 2261	07/03/12 16:39 / djb

**Report** RL - Analyte reporting limit  
**Definitions:** QCL - Quality control limit.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Gillette, WY Branch

Client: Hall Environmental

Report Date: 07/05/12

Project: Not Indicated

Work Order: G12060729

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: GPA 2261</b>										
Analytical Run: Varian GC_120705A										
<b>Sample ID: ICV-1207030849</b>	12 Initial Calibration Verification Standard									
07/03/12 08:50										
Oxygen		0.479700	Mol %	0.0010	98	90	110			
Nitrogen		5.17950	Mol %	0.0010	100	90	110			
Carbon Dioxide		4.94160	Mol %	0.0010	98	90	110			
Hydrogen Sulfide		0.118500	Mol %	0.0010	115	90	150			
Methane		72.3057	Mol %	0.0010	99	90	110			
Ethane		5.16530	Mol %	0.0010	103	90	110			
Propane		5.21510	Mol %	0.0010	104	90	110			
Isobutane		2.08130	Mol %	0.0010	104	90	110			
n-Butane		2.08250	Mol %	0.0010	104	90	110			
Isopentane		1.04190	Mol %	0.0010	104	90	110			
n-Pentane		1.04550	Mol %	0.0010	105	90	110			
Hexanes plus		0.343300	Mol %	0.0010	113	90	120			
<b>Method: GPA 2261</b>										
Batch: R195943										
<b>Sample ID: LCS-1207030923</b>	12 Laboratory Control Sample									
Run: Varian GC_120705A										
07/03/12 09:24										
Oxygen		0.982300	Mol %	0.0010	98	90	110			
Nitrogen		0.958500	Mol %	0.0010	95	90	110			
Carbon Dioxide		0.937100	Mol %	0.0010	94	90	110			
Hydrogen Sulfide		0.0207000	Mol %	0.0010	83	80	120			
Methane		93.4828	Mol %	0.0010	100	90	110			
Ethane		1.00530	Mol %	0.0010	100	90	110			
Propane		1.00340	Mol %	0.0010	101	90	110			
Isobutane		0.514500	Mol %	0.0010	103	90	110			
n-Butane		0.514000	Mol %	0.0010	103	90	110			
Isopentane		0.206800	Mol %	0.0010	103	90	110			
n-Pentane		0.206400	Mol %	0.0010	103	90	110			
Hexanes plus		0.168200	Mol %	0.0010	112	80	120			
<b>Sample ID: G12060729-004ADUP</b>	12 Sample Duplicate									
Run: Varian GC_120705A										
07/03/12 16:44										
Oxygen		21.58	Mol %	0.0010				0.0	10	
Nitrogen		78.25	Mol %	0.0010				0.0	10	
Carbon Dioxide		0.1699	Mol %	0.0010				1.1	10	
Hydrogen Sulfide		< 0.001000	Mol %	0.0010					10	
Methane		< 0.001000	Mol %	0.0010					10	
Ethane		< 0.001000	Mol %	0.0010					10	
Propane		< 0.001000	Mol %	0.0010					10	
Isobutane		< 0.001000	Mol %	0.0010					10	
n-Butane		< 0.001000	Mol %	0.0010					10	
Isopentane		< 0.001000	Mol %	0.0010					10	
n-Pentane		< 0.001000	Mol %	0.0010					10	
Hexanes plus		< 0.001000	Mol %	0.0010					10	
<b>Sample ID: LCS-1207031700</b>	12 Laboratory Control Sample									
Run: Varian GC_120705A										
07/03/12 17:01										
Oxygen		0.981500	Mol %	0.0010	98	90	110			
Nitrogen		0.954500	Mol %	0.0010	95	90	110			

### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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## QA/QC Summary Report

Prepared by Gillette, WY Branch

Client: Hali Environmental

Report Date: 07/05/12

Project: Not Indicated

Work Order: G12060729

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: GPA 2261								Batch: R195943		
Sample ID: LCS-1207031700		12 Laboratory Control Sample			Run: Varian GC_120705A			07/03/12 17:01		
Carbon Dioxide		0.937500	Mol %	0.0010	94	90	110			
Hydrogen Sulfide		0.0208000	Mol %	0.0010	83	80	120			
Methane		93.4887	Mol %	0.0010	100	90	110			
Ethane		1.00470	Mol %	0.0010	100	90	110			
Propane		1.00280	Mol %	0.0010	100	90	110			
Isobutane		0.512300	Mol %	0.0010	102	90	110			
n-Butane		0.513300	Mol %	0.0010	103	90	110			
Isopentane		0.207300	Mol %	0.0010	104	90	110			
n-Pentane		0.206600	Mol %	0.0010	103	90	110			
Hexanes plus		0.170100	Mol %	0.0010	113	80	120			

### Qualifiers:

RL - Analyte reporting limit

ND - Not detected at the reporting limit.



Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87105  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com.

# Sample Log-In Check List

Client Name: **GEO TEST** Work Order Number: **1206B55**

Received by/date: **KMS 06/27/12**  
 Logged By: **Ashley Gallegos 6/27/2012 3:00:00 PM** *AG*  
 Completed By: **Ashley Gallegos 6/27/2012 3:11:43 PM** *AG*  
 Reviewed By: *[Signature]* **06/27/12**

**Chain of Custody**

- 1. Were seals intact? Yes No Not Present
- 2. Is Chain of Custody complete? Yes  No Not Present
- 3. How was the sample delivered? Client

**Log In**

- 4. Coolers are present? (see 19. for cooler specific information) Yes  No NA
- 5. Was an attempt made to cool the samples? Yes  No NA
- 6. Were all samples received at a temperature of >0° C to 6.0°C Yes  No NA
- 7. Sample(s) in proper container(s)? Yes  No
- 8. Sufficient sample volume for indicated test(s)? Yes  No
- 9. Are samples (except VOA and ONG) properly preserved? Yes  No
- 10. Was preservative added to bottles? Yes No  NA
- 11. VOA vials have zero headspace? Yes No No VOA Vials
- 12. Were any sample containers received broken? Yes No
- 13. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes  No # of preserved bottles checked for pH
- 14. Are matrices correctly identified on Chain of Custody? Yes  No (<2 or >12 unless noted)
- 15. Is it clear what analyses were requested? Yes  No Adjusted?
- 16. Were all holding times able to be met? (if no, notify customer for authorization.) Yes  No Checked by:

**Special Handling (if applicable)**

- 17. Was client notified of all discrepancies with this order? Yes No NA

Person Notified: \_\_\_\_\_ Date: \_\_\_\_\_  
 By Whom: \_\_\_\_\_ Via: eMail Phone Fax In Person  
 Regarding: \_\_\_\_\_  
 Client Instructions: \_\_\_\_\_

18. Additional remarks:

19. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1		Good	Not Present			

### Chain-of-Custody Record

Client: Geo-Tech  
 Mailing Address: 8528 Calle Arroyo NW Albuquerque NM  
 Phone #: 505-770-9333  
 email or Fax#: 505-7-0803  
 QA/QC Package:  Standard  Level 4 (Full Validation)  
 Accreditation:  NELAP  Other  EDD (Type)

Turn-Around Time:  
 Standard  Rush  
 Project Name: Juan Tabo Hills  
 Project #: 5-2053  
 Project Manager: JIM  
 Sampler: HEAL N

**HALL ENVIRONMENTAL ANALYSIS LABORATORY**  
 www.hallenvironmental.com  
 4901 Hawkins NE - Albuquerque, NM 87109  
 Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	Analysis Request
6-27	9:00	Air	1	HEAL N 1002B		BTEX + MTBE + TMB's (8021)
9:45	9:45	Jumbo Glass	2			BTEX + MTBE + TPH (Gas only)
10:45	10:45	Jumbo Glass	3			TPH 8015B (GRO / DRO / MRO)
11:50	11:50	Jumbo Glass	4			TPH (Method 418.1)
						EDB (Method 504.1)
						PAH's (8310 or 8270 SIMS)
						RCRA 8 Metals
						Anions (F, Cl, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub> )
						8081 Pesticides / 8082 PCB's
						8260B (VOA)
						8270 (Semi-VOA)
						Air Bubbles (Y or N)

Received by: [Signature] Date: 6/27/12 Time: 15:00  
 Received by: [Signature] Date:          Time:         

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.