

# Preliminary Site Investigation

**Cerrillos Road Reconstruction Phase IIC  
Camino Carlos Rey to Llano Street  
Santa Fe, New Mexico**

May 2, 2014  
Terracon Project No. 66147009

**Prepared for:**  
Parsons Brinckerhoff  
Albuquerque, New Mexico

**Prepared by:**  
Terracon Consultants, Inc.  
Albuquerque, New Mexico

[terracon.com](http://terracon.com)

**Terracon**

Environmental   ■   Facilities   ■   Geotechnical   ■   Materials

May 2, 2014



Parsons Brinckerhoff  
6100 Uptown Boulevard NE  
Suite 700  
Albuquerque, New Mexico 87110

Attn: Mr. Jim Buckman, P.E.  
P: (505) 878-6577  
buckman@pbworld.com

Re: Preliminary Site Investigation  
Cerrillos Road Reconstruction, Phase IIC  
Camino Carlos Rey to Llano Street  
Santa Fe, New Mexico  
Terracon Project No. 66147009

Dear Mr. Buckman:

Terracon Consultants, Inc. (Terracon) is pleased to submit our report of Preliminary Site Investigation (PSI) activities completed at the site referenced above. The report presents data from recent field activities that included the completion of soil borings and the collection of soil samples for chemical analysis. The activities were completed to address the findings of the Initial Site Assessment (ISA) of the property dated February 10, 2014. Terracon conducted the PSI in general accordance with our proposal P6614-0062 (NMDOT Work Plan) dated February 26, 2014 and your notice to proceed dated March 28, 2014.

Terracon appreciates this opportunity to provide environmental engineering services to Parsons Brinckerhoff. Should you have any questions or require additional information, please do not hesitate to contact our office.

Sincerely,  
**Terracon Consultants, Inc.**

A handwritten signature in blue ink, appearing to read "Mark R. Hillier".

Mark R. Hillier, P.G. (TX)  
Environmental Scientist

A handwritten signature in blue ink, appearing to read "Daniel F. Schneider".

Daniel F. Schneider, P.E.  
Principal

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**PRELIMINARY SITE INVESTIGATION  
CERRILLOS ROAD RECONSTRUCTION, PHASE IIC  
CAMINO CARLOS REY TO LLANO STREET  
SANTA FE, NEW MEXICO**

**Terracon Project No. 66147009  
May 2, 2014**

## **1.0 INTRODUCTION**

### **1.1 Purpose**

The purpose of this Preliminary Site Investigation (PSI) was to evaluate potential impacts of petroleum hydrocarbons to the portions of Cerrillos Road adjoining a historical gasoline station located at 2501 Cerrillos Road and an existing gasoline station located at 2631 Cerrillos Road. In addition, the purpose of this PSI was to perform a geophysical survey of the area adjacent to 2501 Cerrillos Road to evaluate the potential presence of relic underground storage tanks (USTs) and/or associated piping.

The existing and historical gasoline stations were identified as Recognized Environmental Conditions (RECs) in Terracon's Initial Site Assessment (ISA) (Terracon Project 66137738) conducted for the Cerrillos Road Reconstruction, Phase IIC project (the Project Corridor). Terracon conducted the PSI in general accordance with our proposal P6614-0062 (NMDOT Work Plan) dated February 26, 2014 and your notice to proceed dated March 28, 2014. The Project Corridor location is depicted on Exhibit 1 of Appendix A, which was reproduced from a portion of the USGS 7.5-minute series topographic map. Site Diagrams of the two areas assessed during this LSI are presented as Exhibit 2 and Exhibit 3 in Appendix A.

### **1.2 Scope of the Project**

The Project Corridor includes the portion of Cerrillos Road from Camino Carlos Rey to Llano Street, Santa Fe, Santa Fe County, New Mexico and consists of an approximate 150-foot wide by 3,400-foot wide portion of the Cerrillos Road right-of-way (ROW).

The project will consist of roadway reconstruction with asphalt pavement, six driving lanes, bike lanes, auxiliary lanes, raised median, curb and gutter, sidewalk, bus stops, traffic signals, street lighting, and landscaping. Utilities will include storm drain, water lines, and sanitary sewer replacement. Signal and lighting foundation shafts may be up to 16 feet deep. The maximum depth of soil disturbance for the project may be up to 17 feet below grade surface (bgs).

## **Preliminary Site Investigation**

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### **1.3 Standard of Care**

Terracon's services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time. Terracon makes no warranties, either express or implied, regarding the findings, conclusions, or recommendations. Please note that Terracon does not warrant the work of laboratories, regulatory agencies, or other third parties supplying information used in the preparation of the report. These PSI services were performed in accordance with the scope of work agreed with you, our client, as reflected in our proposal and were not restricted by ASTM E1903-11.

The PSI was conducted to determine the presence or absence of contaminants associated with the RECs identified in the ISA. The scope of services was not intended to identify every chemical possibly associated with the site. Similarly, the proposed scope was not intended to determine the extent or magnitude of any existing contamination.

### **1.4 Additional Scope Limitations**

Findings, conclusions, and recommendations resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work; such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, non-detectable, or not present during these services. We cannot represent that the site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during this PSI. Subsurface conditions may vary from those encountered at specific borings or wells or during other surveys, tests, assessments, investigations, or exploratory services. The data, interpretations, findings, and our recommendations are based solely upon data obtained at the time and within the scope of these services.

### **1.5 Reliance**

This report has been prepared for the exclusive use of Parsons Brinkerhoff (PB) and the City of Santa Fe (COSF), and any authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the site) is prohibited without the express written authorization of PB, the COSF and Terracon. Any unauthorized distribution or reuse is at PB's and the COSF's sole risk. Notwithstanding the foregoing, reliance by authorized parties will be subject to the terms, conditions, and limitations stated in the proposal, PSI report, and Professional Services Subcontract between Terracon and PB dated August 5, 2013. The limitation of liability defined in the terms and conditions is the aggregate limit of Terracon's liability to PB, the COSF and all relying parties unless otherwise agreed in writing.

## **2.0 BACKGROUND**

### **2.1 2501 Cerrillos Road**

The property located at 2501 Cerrillos Road, (currently the India House Restaurant) was historically occupied by gasoline stations from at least 1948 through 1987. Potential impacts of petroleum hydrocarbons from the historical gasoline stations and the potential presence of relic USTs associated with this property within the ROW of Cerrillos Road were identified as RECs in Terracon's ISA.

Based on a review of historical aerial photographs, it was estimated that fuel dispenser islands were located within 20 feet of the existing Cerrillos Road ROW. Based on the historical use of this property as a gasoline station for over 35 years, the absence of previous assessment of soils adjacent to this facility for impact of petroleum hydrocarbons, and the absence of Fire Department UST removal records, this facility was considered to have the potential to impact the soils of the Cerrillos Road ROW with petroleum products. In addition, relic USTs may remain within or near the Cerrillos Road ROW. The maximum anticipated depth of soil disturbance for the Cerrillos Road Phase IIC project adjacent to this site is approximately 15 feet below ground surface (bgs).

### **2.2 2631 Cerrillos Road**

The property located at 2631 Cerrillos Road is currently operating as a Fill Up gasoline station. According to review of city directories, the property has been a gasoline station since at least 1960. Potential impacts of petroleum hydrocarbons from the Fill Up gasoline station were identified as a REC in Terracon's ISA. This facility was formerly operated as a Diamond Shamrock and a Shell station.

Based on the history of releases at this facility, an absence of subsurface investigations at the facility since 2002, and the location of the existing dispensers estimated to be within 16 feet of the Cerrillos Road ROW, this facility was determined to have the potential to impact the soils of the Cerrillos Road ROW with petroleum products. The maximum depth of soil disturbance for the Cerrillos Road Phase IIC project adjacent to this site is approximately 10 feet bgs.

## **3.0 SCOPE OF SERVICES**

Terracon's PSI was undertaken in to investigate the RECs identified in Terracon's ISA. The objective of this PSI was to evaluate the presence of total petroleum hydrocarbons (TPH), benzene, toluene, ethyl benzene, total xylenes and methyl tert-butyl ether (BTEX/MTBE) (above relevant laboratory reporting limits) in the on-site soils as a result of potential releases from the RECs identified in our ISA. In addition, the objective of the PSI is to perform a geophysical

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survey of the ROW adjacent to 2501 Cerrillos Road to evaluate the potential presence of relic USTs within the ROW at that location.

Following receipt of authorization to proceed and at least two working days prior to intrusive activities, Terracon contacted a public utility locator to arrange for underground utility locates at the locations of proposed soil borings.

Terracon has a 100% commitment to the safety of all its employees. As such, and in accordance with our *Incident and Injury Free*® safety culture, Terracon developed a site-specific safety plan used by our personnel during field services. Prior to commencement of on-site activities, Terracon held a meeting to review health and safety needs for this specific project. The field work was performed in OSHA Level D work uniform consisting of hard hats, safety glasses, protective gloves, and steel-toed boots.

## 4.0 FIELD INVESTIGATION

**India House Restaurant - 2501 Cerrillos Road.** Terracon conducted the following scope to evaluate subsurface conditions within the Cerrillos Road ROW adjacent to the existing India House restaurant property, which was historically used as a gasoline station:

- Terracon contracted Sunbelt Geophysics to conduct a geophysical survey of the portion of the Cerrillos Road ROW adjacent to 2501 Cerrillos Road to identify relic USTs and/or associated piping. The survey was conducted using electromagnetic and ground penetrating radar methods.
- Terracon contracted Environmental Drillers, Inc. (EDI) to advance two soil borings to total depths of 10 feet bgs in the northeast and southwest portions of the Cerrillos Road ROW adjoining this facility. Soil samples were recovered continuously and samples collected from selected intervals were submitted for laboratory analysis of TPH and BTEX/MTBE.

**Fill Up Station - 2631 Cerrillos Road.** Terracon conducted the following scope to evaluate subsurface conditions within the Cerrillos Road ROW adjacent to the existing Fill Up station:

- Terracon contracted EDI to advance two soil borings to total depths of 15 feet bgs in the northeast and southwest portions of the Cerrillos Road ROW adjoining this facility. Soil samples were recovered continuously and samples collected from selected intervals were submitted for laboratory analysis of TPH and BTEX/MTBE.

Terracon field screened the soil samples for organic vapors using a photoionization detector (PID). This device provides a direct reading in parts per million (ppm) isobutylene equivalents.

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Upon removal of the sampler from the borehole, Terracon put a portion of each sample in a glass jar, which was sealed with aluminum foil. After a stabilization period, Terracon screened the headspace above the soil using the PID equipped with a 10.2 electron-volt (eV) ultraviolet lamp source. Terracon calibrated the PID in accordance with the manufacturer's recommendations before the field activities. The boring logs include the field screening results for each soil boring. Based on the field screening results, Terracon selected soil samples from each boring for laboratory analysis. Groundwater was not encountered during the drilling activities.

After packaging each soil sample in laboratory-provided containers, Terracon recorded the sample time on each container label in permanent ink and place the filled containers in an ice-filled cooler for transport to Hall Environmental Analysis Laboratory (HEAL) in Albuquerque, New Mexico, a National Environmental Laboratory Accreditation Conference (NELAC)-accredited laboratory.

The samples were analyzed for total petroleum hydrocarbons (TPH) using United States Environmental Protection Agency (USEPA) SW-846 Method 8015D and for benzene, toluene, ethylbenzene, xylenes and methyl tert-butyl ether (BTEX/MTBE) using USEPA SW-846 Method 8260B.

At the completion of field activities, Terracon abandoned the borings with commercial bentonite sealant. The borings completed in the paved areas were completed to surface level with cement grout.

## **5.0 RESULTS OF THE FIELD INVESTIGATION**

### **5.1 Geology/Hydrogeology**

The boring logs in Appendix B detail the observed soil stratigraphy. In general, Terracon encountered silt from the surface to depths of between 7 feet bgs to 10 feet bgs underlain by sand. Groundwater was not encountered during the drilling activities.

### **5.2 Field Screening**

The field screening results are summarized on the boring logs in Appendix B. Elevated readings above 2.4 ppm were not detected in the soil samples collected from borings B-1 through B-4.

### **5.3 Geophysical Survey**

The geophysical survey performed adjacent to the India House restaurant, located at 2501 Cerrillos Road, did not identify anomalies consistent with relic USTs or associated piping.

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Based on the results of the geophysical survey, relic USTs and/or associated piping do not appear to remain within the ROW adjacent to 2501 Cerrillos Road. A copy of the geophysical report is included in Appendix D.

## 6.0 ANALYTICAL RESULTS

Concentrations of BTEX, TPH diesel range organics (DRO) or TPH gasoline range organics (GRO) were not detected above the laboratory reporting limits in the four soil samples collected at the site. Although the soil sample collected from soil boring B-2 (0' to 2' bgs) exhibited a TPH motor oil range organics (MRO) concentration of 63 milligrams per kilogram (mg/kg), the detected TPH MRO concentration does not exceed the New Mexico Environment Department (NMED) TPH Screening Guideline of 2,500 mg/kg for waste oil. The laboratory analytical report and chain-of-custody record are attached in Appendix C.

## 7.0 CONCLUSIONS

Based on the scope of services described in this report and subject to the limitations described herein, Terracon concludes the following.

- Relic USTs and/or associated piping do not appear to remain within the ROW adjacent to 2501 Cerrillos Road.
- The soils within the Cerrillos Road ROW adjacent to 2501 Cerrillos Road and 2631 Cerrillos Road have not been affected by releases of petroleum hydrocarbons above levels requiring special handling or disposal. Although soil borings B-3 and B-4 were terminated at 10 feet bgs, approximately five feet above the maximum construction depth adjacent to 2501 Cerrillos Road, the soils between 10 feet bgs and 15 feet bgs in this area are not suspected to be impacted based on the absence of relic USTs in that area, and the absence of elevated PID readings or detected concentrations of BTEX or TPH in the soil samples collected from 8 feet bgs to 10 feet bgs in soil borings B-3 and B-4.

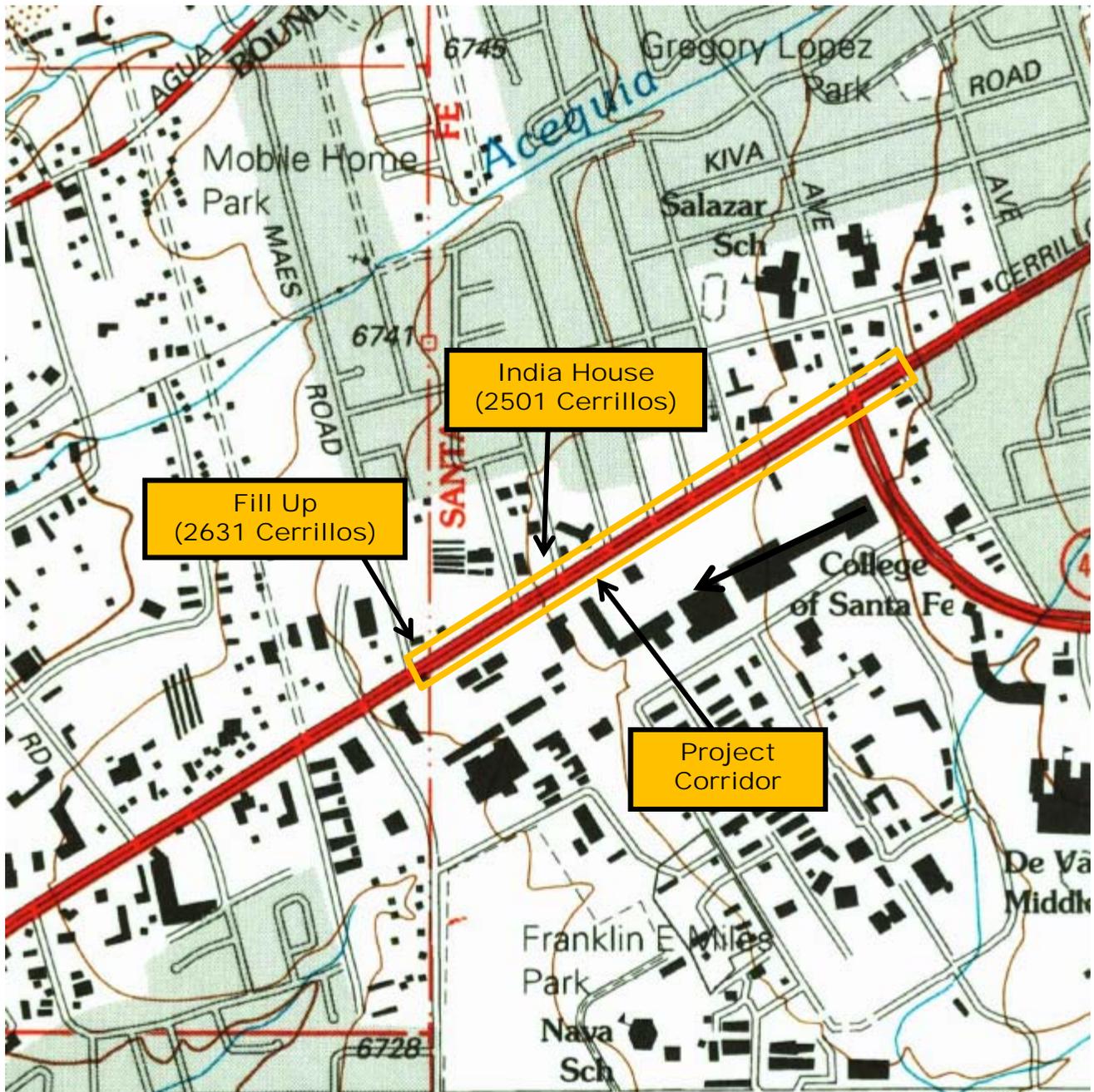
## 8.0 RECOMMENDATIONS

Based on the results of this PSI, Terracon recommends no further environmental assessment of potential releases of petroleum products to the Project Corridor or the presence of relic USTs within the Project Corridor.

## **APPENDIX A – EXHIBITS**

Exhibit 1 – Topographic Map

Exhibit 2 – Site Diagram



USGS Santa Fe, NM published 2002 (1:24,000)



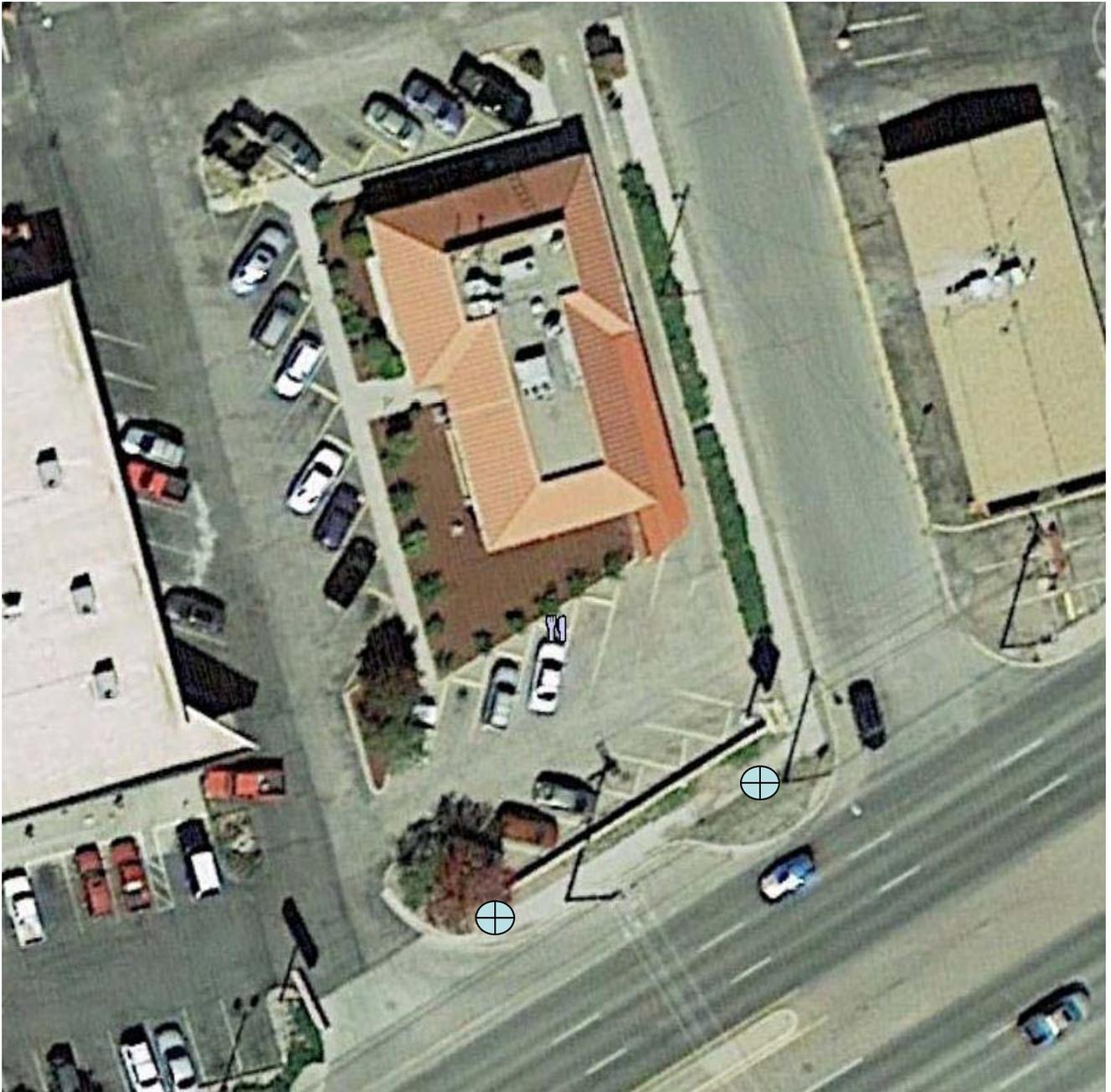
DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager:	MRH	Project No.	66137738
Drawn by:	JAS	Scale:	1" ≈ 530'
Checked by:	MRH	File Name:	
Approved by:	MRH	Date:	SEPT 2013

**Terracon**  
 Consulting Engineers & Scientists  
 4905 Hawkins, NE Albuquerque, New Mexico 87109  
 PH. (505) 797-4287 FAX. (505) 797-4288

<b>TOPOGRAPHIC MAP</b>
CERRILLOS ROAD RECONSTRUCTIN, PHASE IIC CAMINO CARLOS REY TO LLANO STREET SANTA FE, SANTA FE COUNTY, NEW MEXICO

EXHIBIT
1



Soil Boring Location



DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

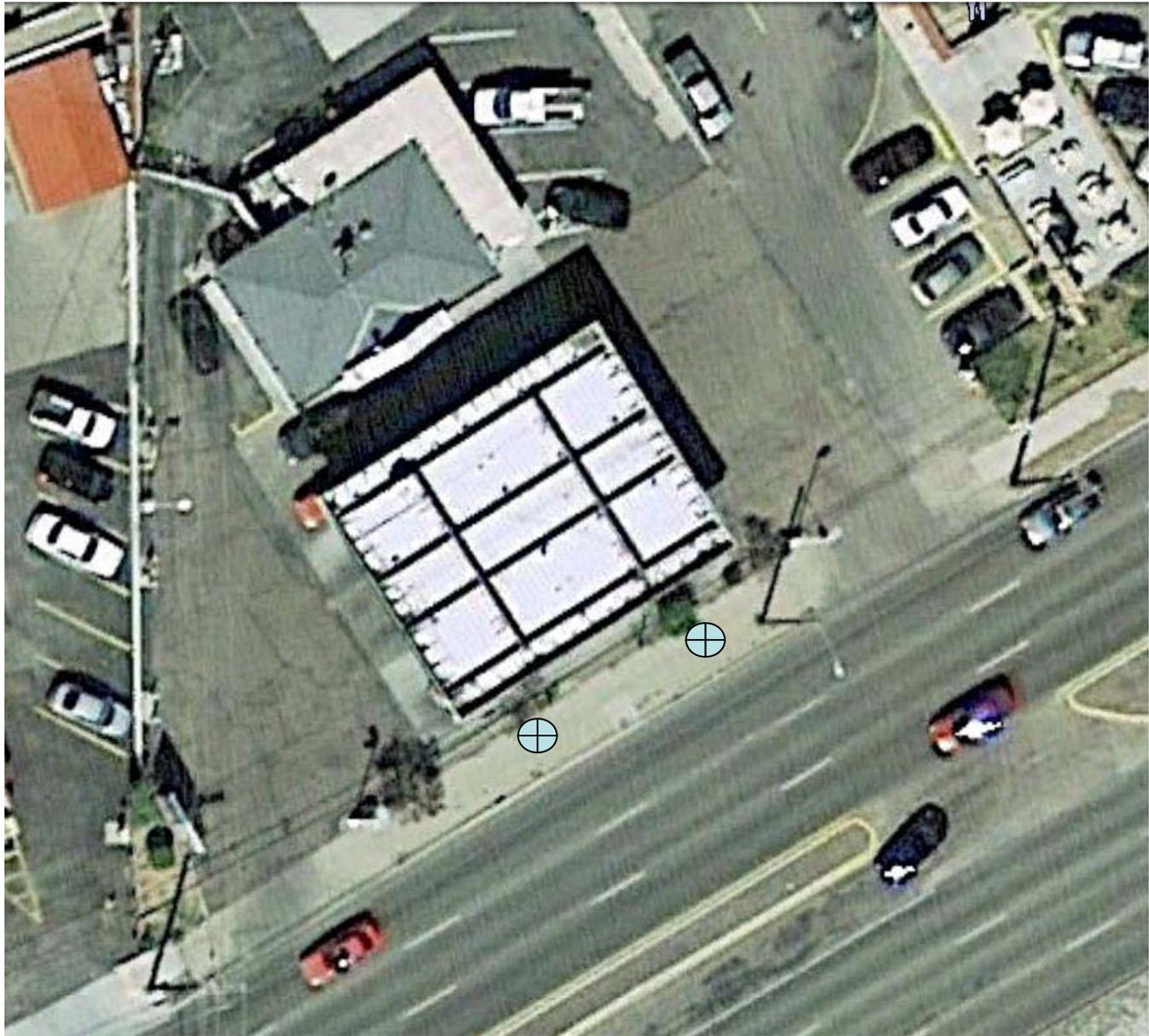
Project Manager: MRH	Project No. 66137738
Drawn by: JAS	Scale: 1" ≈ 38'
Checked by: MRH	File Name:
Approved by: MRH	Date: FEB 2014

**Terracon**  
Consulting Engineers & Scientists

4905 Hawkins, NE Albuquerque, New Mexico 87109  
PH. (505) 797-4287 FAX. (505) 797-4288

<b>SITE DIAGRAM</b>
INDIA HOUSE RESTAURANT 2501 CERILLOS ROAD SANTA FE, NEW MEXICO

EXHIBIT
2



Soil Boring Location



DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager: MRH	Project No. 66147009
Drawn by: JAS	Scale: 1" ≈ 30'
Checked by: MRH	File Name:
Approved by: MRH	Date: apr 2014

**Terracon**  
Consulting Engineers & Scientists

4905 Hawkins, NE Albuquerque, New Mexico 87109  
PH. (505) 797-4287 FAX. (505) 797-4288

<b>SITE DIAGRAM</b>
FILL UP 2631 CERRILLOS ROAD SANTA FE, NEW MEXICO

EXHIBIT
<b>3</b>

## **APPENDIX B – SOIL BORING LOGS**

Boring Logs for B-1 through B-4

# BORING LOG NO. B-1

**PROJECT: Cerrillos Road Reconstruction  
Phase IIC**

**CLIENT: Parsons Brinkerhof  
Albuquerque, New Mexico**

**SITE: 2501 and 2631 Cerrillos Road  
Santa Fe, New Mexico**

GRAPHIC LOG	LOCATION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	PID
	2631 Cerrillos, Fill Up Station, southwest boring					
	<b>DEPTH</b>					
0.5	<b>PORTLAND CEMENT CONCRETE</b>					
	<b>FILL - SILTY SAND WITH GRAVEL</b> , trace sand, fine grained, brown, moist					
2.0	<b>SILT (ML)</b> , trace sand, brown, moist					0.8
		5				0.0
						0.0
8.0	<b>WELL GRADED SAND WITH SILT (SW-SM)</b> , brown, trace granitic gravel fragments, moist					0.0
		10				0.0
						1.0
						0.3
14.0	<b>SILTY SAND (SM)</b> , fine grained, reddish yellow, moist					0.3
15.0	<b>Boring Terminated at 15 Feet</b>	15				

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:	See Exhibit B for description of field procedures  See Appendix B for description of laboratory procedures and additional data (if any).	Notes:	
Abandonment Method: Borings backfilled with cement-bentonite grout upon completion.	See Appendix B for explanation of symbols and abbreviations.		
<b>WATER LEVEL OBSERVATIONS</b> <i>No water encountered</i>		Boring Started: 4/16/2014	Boring Completed: 4/16/2014
		Drill Rig: CME-75	Driller: Enviro-Drill
		Project No.: 66147009	Exhibit: B-1



THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 66147009 BORING LOGS.GPJ TEMPLATE UPDATE 3-31-14.GPJ 4/29/14

# BORING LOG NO. B-2

**PROJECT: Cerrillos Road Reconstruction  
Phase IIC**

**CLIENT: Parsons Brinkerhof  
Albuquerque, New Mexico**

**SITE: 2501 and 2631 Cerrillos Road  
Santa Fe, New Mexico**

GRAPHIC LOG	LOCATION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	PID
	2631 Cerrillos, Fill Up Station, northeast boring					
	<b>DEPTH</b>					
0.5	<b>PORTLAND CEMENT CONCRETE</b>					2.4
	<b>SILT (ML)</b> , trace gravel, fine grained, brown, moist					
7.0	<b>WELL GRADED SAND (SW)</b> , brown, trace granitic gravel, moist	5				0.3
						0.0
		10				0.0
						0.0
		15				0.0
	<b>Boring Terminated at 15 Feet</b>					0.0

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:	See Exhibit B for description of field procedures  See Appendix B for description of laboratory procedures and additional data (if any).	Notes:	
Abandonment Method: Borings backfilled with cement-bentonite grout upon completion.	See Appendix B for explanation of symbols and abbreviations.		
<b>WATER LEVEL OBSERVATIONS</b> <i>No water encountered</i>		Boring Started: 4/16/2014	Boring Completed: 4/16/2014
		Drill Rig: CME-75	Driller: Enviro-Drill
		Project No.: 66147009	Exhibit: B-2



THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 66147009 BORING LOGS.GPJ TEMPLATE UPDATE 3-31-14.GPJ 4/29/14

# BORING LOG NO. B-3

**PROJECT: Cerrillos Road Reconstruction  
Phase IIC**

**CLIENT: Parsons Brinkerhof  
Albuquerque, New Mexico**

**SITE: 2501 and 2631 Cerrillos Road  
Santa Fe, New Mexico**

GRAPHIC LOG	LOCATION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	PID
	2501 Cerrillos Road, India House Restaurant, southwest boring					
	<b>DEPTH</b>					
	<b>SILT (ML)</b> , trace clay, brown, damp					0.0
	trace sand, fine grained					0.0
		5				0.0
						0.0
						0.0
						0.0
						0.0
		10				
	<b>Boring Terminated at 10 Feet</b>					

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:  Abandonment Method: Borings backfilled with cement-bentonite grout upon completion.	See Exhibit B for description of field procedures  See Appendix B for description of laboratory procedures and additional data (if any).  See Appendix B for explanation of symbols and abbreviations.	Notes:   
<b>WATER LEVEL OBSERVATIONS</b>  <i>No water encountered</i>	 4905 Hawkins, NE Albuquerque, New Mexico	Boring Started: 4/16/2014 Drill Rig: CME-75 Project No.: 66147009
		Boring Completed: 4/16/2014 Driller: Enviro-Drill Exhibit: B-3

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL\_66147009 BORING LOGS.GPJ TEMPLATE UPDATE 3-31-14.GPJ 4/29/14

# BORING LOG NO. B-4

**PROJECT: Cerrillos Road Reconstruction  
Phase IIC**

**CLIENT: Parsons Brinkerhof  
Albuquerque, New Mexico**

**SITE: 2501 and 2631 Cerrillos Road  
Santa Fe, New Mexico**

GRAPHIC LOG	LOCATION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	PID
	2501 Cerrillos Road, India House Restaurant, northeast boring					
	DEPTH					
0.5	<b>PORTLAND CEMENT CONCRETE</b>					0.0
	<b>SILT (ML)</b> , trace gravel, fine grained, light brown to brown, moist					0.0
6.0	<b>SILT WITH SAND (SM)</b> , brown, moist	5				no recovery
	-becomes pale red with granite particles					0.0
10.0	<b>Boring Terminated at 10 Feet</b>	10				0.0

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:  Abandonment Method: Borings backfilled with cement-bentonite grout upon completion.	See Exhibit B for description of field procedures  See Appendix B for description of laboratory procedures and additional data (if any).  See Appendix B for explanation of symbols and abbreviations.	Notes:   
<b>WATER LEVEL OBSERVATIONS</b> <i>No water encountered</i>	 4905 Hawkins, NE Albuquerque, New Mexico	Boring Started: 4/16/2014 Drill Rig: CME-75 Project No.: 66147009
		Boring Completed: 4/16/2014 Driller: Enviro-Drill Exhibit: B-4

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL\_66147009 BORING LOGS.GPJ TEMPLATE UPDATE 3-31-14.GPJ 4/29/14

**APPENDIX C – ANALYTICAL REPORT AND CHAIN OF  
CUSTODY**



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)

April 25, 2014

Mark Hillier

Terracon

4905 Hawkins, NE

Albuquerque, NM 87109

TEL: (505) 715-0375

FAX (505) 797-4288

RE: Cerrillos Road IIC

OrderNo.: 1404778

Dear Mark Hillier:

Hall Environmental Analysis Laboratory received 4 sample(s) on 4/16/2014 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. In order to properly interpret your results it is imperative that you review this report in its entirety. 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. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. 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.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

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

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1404778

Date Reported: 4/25/2014

CLIENT: Terracon

Client Sample ID: B1 (10-12)

Project: Cerrillos Road IIC

Collection Date: 4/16/2014 12:45:00 PM

Lab ID: 1404778-001

Matrix: SOIL

Received Date: 4/16/2014 4:20:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE ORGANICS</b>							Analyst: <b>JME</b>
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	4/18/2014 9:44:43 AM	12758
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	4/18/2014 9:44:43 AM	12758
Surr: DNOP	106	57.9-140		%REC	1	4/18/2014 9:44:43 AM	12758
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/18/2014 6:29:49 PM	12765
Surr: BFB	85.8	74.5-129		%REC	1	4/18/2014 6:29:49 PM	12765
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>							Analyst: <b>cadg</b>
Methyl tert-butyl ether (MTBE)	ND	0.048		mg/Kg	1	4/25/2014 1:04:29 AM	12765
Benzene	ND	0.048		mg/Kg	1	4/25/2014 1:04:29 AM	12765
Toluene	ND	0.048		mg/Kg	1	4/25/2014 1:04:29 AM	12765
Ethylbenzene	ND	0.048		mg/Kg	1	4/25/2014 1:04:29 AM	12765
Xylenes, Total	ND	0.096		mg/Kg	1	4/25/2014 1:04:29 AM	12765
Surr: 1,2-Dichloroethane-d4	104	70-130		%REC	1	4/25/2014 1:04:29 AM	12765
Surr: 4-Bromofluorobenzene	95.0	70-130		%REC	1	4/25/2014 1:04:29 AM	12765
Surr: Dibromofluoromethane	110	70-130		%REC	1	4/25/2014 1:04:29 AM	12765
Surr: Toluene-d8	89.5	70-130		%REC	1	4/25/2014 1:04:29 AM	12765

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:			
*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1404778

Date Reported: 4/25/2014

CLIENT: Terracon

Client Sample ID: B2 (0-2)

Project: Cerrillos Road IIC

Collection Date: 4/16/2014 11:15:00 AM

Lab ID: 1404778-002

Matrix: SOIL

Received Date: 4/16/2014 4:20:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE ORGANICS</b>							Analyst: <b>JME</b>
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	4/21/2014 1:03:07 PM	12758
Motor Oil Range Organics (MRO)	63	50		mg/Kg	1	4/21/2014 1:03:07 PM	12758
Surr: DNOP	108	57.9-140		%REC	1	4/21/2014 1:03:07 PM	12758
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/18/2014 7:55:33 PM	12765
Surr: BFB	84.0	74.5-129		%REC	1	4/18/2014 7:55:33 PM	12765
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>							Analyst: <b>cadg</b>
Methyl tert-butyl ether (MTBE)	ND	0.049		mg/Kg	1	4/25/2014 1:33:20 AM	12765
Benzene	ND	0.049		mg/Kg	1	4/25/2014 1:33:20 AM	12765
Toluene	ND	0.049		mg/Kg	1	4/25/2014 1:33:20 AM	12765
Ethylbenzene	ND	0.049		mg/Kg	1	4/25/2014 1:33:20 AM	12765
Xylenes, Total	ND	0.099		mg/Kg	1	4/25/2014 1:33:20 AM	12765
Surr: 1,2-Dichloroethane-d4	102	70-130		%REC	1	4/25/2014 1:33:20 AM	12765
Surr: 4-Bromofluorobenzene	94.1	70-130		%REC	1	4/25/2014 1:33:20 AM	12765
Surr: Dibromofluoromethane	108	70-130		%REC	1	4/25/2014 1:33:20 AM	12765
Surr: Toluene-d8	88.2	70-130		%REC	1	4/25/2014 1:33:20 AM	12765

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:		
*	Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
E	Value above quantitation range	H Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1404778

Date Reported: 4/25/2014

CLIENT: Terracon

Client Sample ID: B3 (8-10)

Project: Cerrillos Road IIC

Collection Date: 4/16/2014 3:00:00 PM

Lab ID: 1404778-003

Matrix: SOIL

Received Date: 4/16/2014 4:20:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE ORGANICS</b>							Analyst: <b>JME</b>
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	4/18/2014 10:46:38 AM	12758
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	4/18/2014 10:46:38 AM	12758
Surr: DNOP	72.5	57.9-140		%REC	1	4/18/2014 10:46:38 AM	12758
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	4/18/2014 10:46:55 PM	12765
Surr: BFB	85.5	74.5-129		%REC	1	4/18/2014 10:46:55 PM	12765
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>							Analyst: <b>cadg</b>
Methyl tert-butyl ether (MTBE)	ND	0.046		mg/Kg	1	4/25/2014 2:02:07 AM	12765
Benzene	ND	0.046		mg/Kg	1	4/25/2014 2:02:07 AM	12765
Toluene	ND	0.046		mg/Kg	1	4/25/2014 2:02:07 AM	12765
Ethylbenzene	ND	0.046		mg/Kg	1	4/25/2014 2:02:07 AM	12765
Xylenes, Total	ND	0.092		mg/Kg	1	4/25/2014 2:02:07 AM	12765
Surr: 1,2-Dichloroethane-d4	96.7	70-130		%REC	1	4/25/2014 2:02:07 AM	12765
Surr: 4-Bromofluorobenzene	95.9	70-130		%REC	1	4/25/2014 2:02:07 AM	12765
Surr: Dibromofluoromethane	107	70-130		%REC	1	4/25/2014 2:02:07 AM	12765
Surr: Toluene-d8	85.8	70-130		%REC	1	4/25/2014 2:02:07 AM	12765

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:		
*	Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
E	Value above quantitation range	H Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1404778

Date Reported: 4/25/2014

**CLIENT:** Terracon

**Client Sample ID:** B4 (8-10)

**Project:** Cerrillos Road IIC

**Collection Date:** 4/16/2014 2:20:00 PM

**Lab ID:** 1404778-004

**Matrix:** SOIL

**Received Date:** 4/16/2014 4:20:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015D: DIESEL RANGE ORGANICS</b>							Analyst: <b>JME</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	4/18/2014 1:57:11 PM	12758
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	4/18/2014 1:57:11 PM	12758
Surr: DNOP	105	57.9-140		%REC	1	4/18/2014 1:57:11 PM	12758
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	4/18/2014 11:15:26 PM	12765
Surr: BFB	86.4	74.5-129		%REC	1	4/18/2014 11:15:26 PM	12765
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>							Analyst: <b>cadg</b>
Methyl tert-butyl ether (MTBE)	ND	0.047		mg/Kg	1	4/25/2014 2:30:52 AM	12765
Benzene	ND	0.047		mg/Kg	1	4/25/2014 2:30:52 AM	12765
Toluene	ND	0.047		mg/Kg	1	4/25/2014 2:30:52 AM	12765
Ethylbenzene	ND	0.047		mg/Kg	1	4/25/2014 2:30:52 AM	12765
Xylenes, Total	ND	0.094		mg/Kg	1	4/25/2014 2:30:52 AM	12765
Surr: 1,2-Dichloroethane-d4	103	70-130		%REC	1	4/25/2014 2:30:52 AM	12765
Surr: 4-Bromofluorobenzene	92.9	70-130		%REC	1	4/25/2014 2:30:52 AM	12765
Surr: Dibromofluoromethane	113	70-130		%REC	1	4/25/2014 2:30:52 AM	12765
Surr: Toluene-d8	89.5	70-130		%REC	1	4/25/2014 2:30:52 AM	12765

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:		
*	Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
E	Value above quantitation range	H Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits	

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1404778

25-Apr-14

**Client:** Terracon  
**Project:** Cerrillos Road IIC

Sample ID <b>MB-12758</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015D: Diesel Range Organics</b>							
Client ID: <b>PBS</b>	Batch ID: <b>12758</b>		RunNo: <b>18068</b>							
Prep Date: <b>4/17/2014</b>	Analysis Date: <b>4/18/2014</b>		SeqNo: <b>521273</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		102	57.9	140			

Sample ID <b>LCS-12758</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015D: Diesel Range Organics</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>12758</b>		RunNo: <b>18068</b>							
Prep Date: <b>4/17/2014</b>	Analysis Date: <b>4/18/2014</b>		SeqNo: <b>521275</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	46	10	50.00	0	91.4	60.8	145			
Surr: DNOP	4.4		5.000		88.6	57.9	140			

Sample ID <b>MB-12781</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015D: Diesel Range Organics</b>							
Client ID: <b>PBS</b>	Batch ID: <b>12781</b>		RunNo: <b>18068</b>							
Prep Date: <b>4/18/2014</b>	Analysis Date: <b>4/18/2014</b>		SeqNo: <b>521276</b>		Units: <b>%REC</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	9.6		10.00		96.0	57.9	140			

Sample ID <b>LCS-12781</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015D: Diesel Range Organics</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>12781</b>		RunNo: <b>18068</b>							
Prep Date: <b>4/18/2014</b>	Analysis Date: <b>4/18/2014</b>		SeqNo: <b>521898</b>		Units: <b>%REC</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.6		5.000		91.5	57.9	140			

**Qualifiers:**

- |   |  |
|---|--|
| * Value exceeds Maximum Contaminant Level.        | B Analyte detected in the associated Method Blank    |
| E Value above quantitation range                  | H Holding times for preparation or analysis exceeded |
| J Analyte detected below quantitation limits      | ND Not Detected at the Reporting Limit               |
| O RSD is greater than RSDlimit                    | P Sample pH greater than 2.                          |
| R RPD outside accepted recovery limits            | RL Reporting Detection Limit                         |
| S Spike Recovery outside accepted recovery limits |  |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1404778

25-Apr-14

**Client:** Terracon  
**Project:** Cerrillos Road IIC

Sample ID <b>MB-12765</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>PBS</b>	Batch ID: <b>12765</b>		RunNo: <b>18084</b>							
Prep Date: <b>4/17/2014</b>	Analysis Date: <b>4/18/2014</b>		SeqNo: <b>522600</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	860		1000		85.6	74.5	129			

Sample ID <b>LCS-12765</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>12765</b>		RunNo: <b>18084</b>							
Prep Date: <b>4/17/2014</b>	Analysis Date: <b>4/18/2014</b>		SeqNo: <b>522601</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	97.9	71.7	134			
Surr: BFB	910		1000		91.5	74.5	129			

Sample ID <b>1404778-001AMS</b>	SampType: <b>MS</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>B1 (10-12)</b>	Batch ID: <b>12765</b>		RunNo: <b>18084</b>							
Prep Date: <b>4/17/2014</b>	Analysis Date: <b>4/18/2014</b>		SeqNo: <b>522619</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	4.8	24.15	0	95.7	69.5	145			
Surr: BFB	910		966.2		93.9	74.5	129			

Sample ID <b>1404778-001AMSD</b>	SampType: <b>MSD</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>B1 (10-12)</b>	Batch ID: <b>12765</b>		RunNo: <b>18084</b>							
Prep Date: <b>4/17/2014</b>	Analysis Date: <b>4/18/2014</b>		SeqNo: <b>522620</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	4.8	24.04	0	90.0	69.5	145	6.69	20	
Surr: BFB	890		961.5		92.9	74.5	129	0	0	

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1404778

25-Apr-14

**Client:** Terracon  
**Project:** Cerrillos Road IIC

Sample ID	<b>mb-12765</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8260B: Volatiles Short List</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>12765</b>	RunNo:	<b>18198</b>					
Prep Date:	<b>4/17/2014</b>	Analysis Date:	<b>4/25/2014</b>	SeqNo:	<b>525686</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	0.050								
Benzene	ND	0.050								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 1,2-Dichloroethane-d4	0.51		0.5000		101	70	130			
Surr: 4-Bromofluorobenzene	0.44		0.5000		88.7	70	130			
Surr: Dibromofluoromethane	0.55		0.5000		110	70	130			
Surr: Toluene-d8	0.44		0.5000		87.7	70	130			

Sample ID	<b>ics-12765</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8260B: Volatiles Short List</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>12765</b>	RunNo:	<b>18198</b>					
Prep Date:	<b>4/17/2014</b>	Analysis Date:	<b>4/25/2014</b>	SeqNo:	<b>525687</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.80	0.050	1.000	0	80.2	70	130			
Benzene	0.79	0.050	1.000	0	79.4	70	130			
Toluene	0.78	0.050	1.000	0	78.5	60.1	120			
Ethylbenzene	0.82	0.050	1.000	0	81.8	70	130			
Xylenes, Total	2.6	0.10	3.000	0	85.5	70	130			
Surr: 1,2-Dichloroethane-d4	0.47		0.5000		94.8	70	130			
Surr: 4-Bromofluorobenzene	0.47		0.5000		95.0	70	130			
Surr: Dibromofluoromethane	0.51		0.5000		103	70	130			
Surr: Toluene-d8	0.45		0.5000		90.5	70	130			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit



# Sample Log-In Check List

Client Name: TER-Alb

Work Order Number: 1404778

RcptNo: 1

Received by/date: AG 04/16/14  
 Logged By: Lindsay Mangin 4/16/2014 4:20:00 PM  
 Completed By: Lindsay Mangin 4/17/2014 6:31:20 AM  
 Reviewed By: AT 04/17/14

*Lindsay Mangin*  
*Lindsay Mangin*

**Chain of Custody**

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

**Log In**

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

**Special Handling (if applicable)**

- 16. 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: \_\_\_\_\_

17. Additional remarks:

**18. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	7.9	Good	Not Present			

# Chain-of-Custody Record

Client: Terracon Consultants

Mailing Address: 4905 Hawkins NE

Phone #: 505-797-4287

ABQ Nm 87109

email or Fax#: prhillier@terracon.com

QA/QC Package:  
 Standard  
 Level 4 (Full Validation)  
 NELAP  
 Other \_\_\_\_\_  
 EDD (Type) \_\_\_\_\_

Accreditation

Sample Temperature: 7.9

Container Type and #

Matrix

Sample Request ID

Date

Time

11/16/14 1245 SS B1 (10-12)

11/16/14 1115 SS B2 (0-2)

11/16/14 1500 SS B3 (8-10)

11/16/14 1420 SS B4 (8-10)

Turn-Around Time:

Standard  Rush

Project Name:

Cerrillos Road 11C

Project #:

66147009

Project Manager:

MARK R. MILLER

Sampler:

On Ice:  Yes  No

Sample Temperature: 7.9

Container Type and #

Preservative Type

HEAL No.

4oz jars (2)

-001

-002

-003

-004

# HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

## Analysis Request

BTEX + MTBE + TMB's (8021)	
BTEX + MTBE + TPH (Gas only)	
TPH 8015B (GRO / DRO / MRO)	<u>X</u>
TPH (Method 418.1)	
EDB (Method 504.1)	
PAH's (8310 or 8270 SIMS)	<u>*</u>
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)	

Remarks:

\* IF DRD exceeds 100 mg/kg - The sample with the highest will also be sampled for PAHs

Received by: [Signature] Date: 11/16/14

Received by: [Signature] Date: 11/20

Relinquished by: [Signature]

Relinquished by: \_\_\_\_\_

Date: 11/16/14

Time: 1620

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.

## **APPENDIX D – GEOPHYSICAL SURVEY REPORT**

**Geophysical Investigation for Abandoned USTs  
India House Restaurant at 2501 Cerrillos Road  
Santa Fe, New Mexico**

Prepared for:  
Terracon Consultants, Inc.  
4905 Hawkins NE  
Albuquerque, New Mexico 87109

David A. Hyndman

April 2014

## **Introduction**

A geophysical investigation has been conducted over the road right-of-way in front of the property identified as the India House restaurant at 2501 Cerrillos Road, Santa Fe, New Mexico. The objective of the investigation was to map detect underground storage tanks (USTs) and associated piping remaining from previous land use.

The investigation consisted of a high-resolution metal detection survey and a ground penetrating radar (GPR) survey. The field work for the geophysical investigations was conducted on 3 April 2014. Labor, instrumentation, and technical expertise for the surveys were provided by Sunbelt Geophysics of Socorro, New Mexico. Guidance and coordination were provided by Terracon Consultants Inc. of Albuquerque, New Mexico.

## **Methods**

Geophysical surveying was conducted over a spatial control and data acquisition grid which was placed using a transit and tape. The grid established parallel data acquisition lines separated by 4 feet which were marked with small dots of spray paint. The grid was oriented along Cerrillos Road and extended 100 ft from the driveway entrance into the restaurant and neighboring business to Luana Street. The grid was 22 ft wide, covering the area in front of a low wall across the face of the property, over the sidewalk and a turn lane, to a point 2 ft short of the first traffic lane of Cerrillos Road.

An initial survey was conducted using a Geonics EM-61 metal detector with the 17-cm antenna set. The EM-61 is a time domain electromagnetic instrument capable of detecting concentrations of buried metal, such as a UST, to a depth of approximately 6 ft with this antenna. The EM-61 data were acquired every 0.65 feet along the parallel traverses.

A second survey was performed using a Sensors & Software 250 MHz ground penetrating radar (GPR) system. GPR traces were acquired every 0.16 ft along the parallel lines.

Qualitative screen was performed with a Schonstedt magnetic locator.

Data from the EM-61 and GPR were transferred to a computer for analysis and mapping. The DAT61 program (Geonics Ltd.) and Ekko\_View Deluxe and Ekko\_Interp programs (Sensors & Software Inc.) were used for data processing and the Oasis montaj mapping package (Geosoft Ltd.) was used for image preparation.

## **Results**

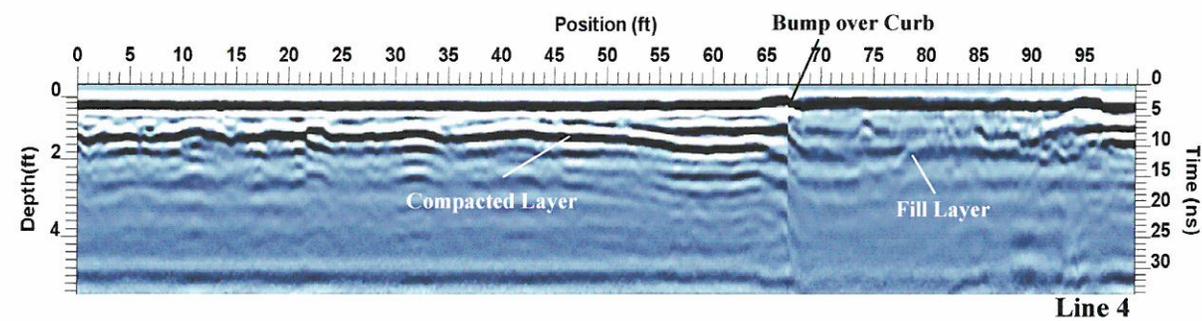
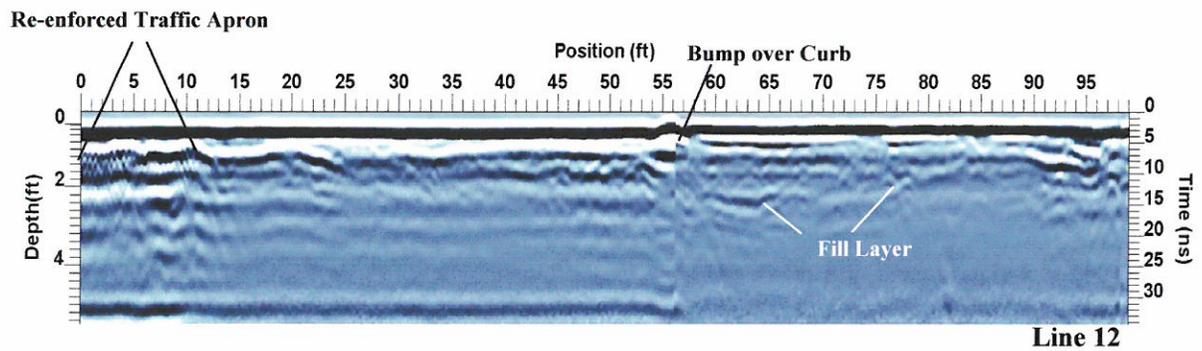
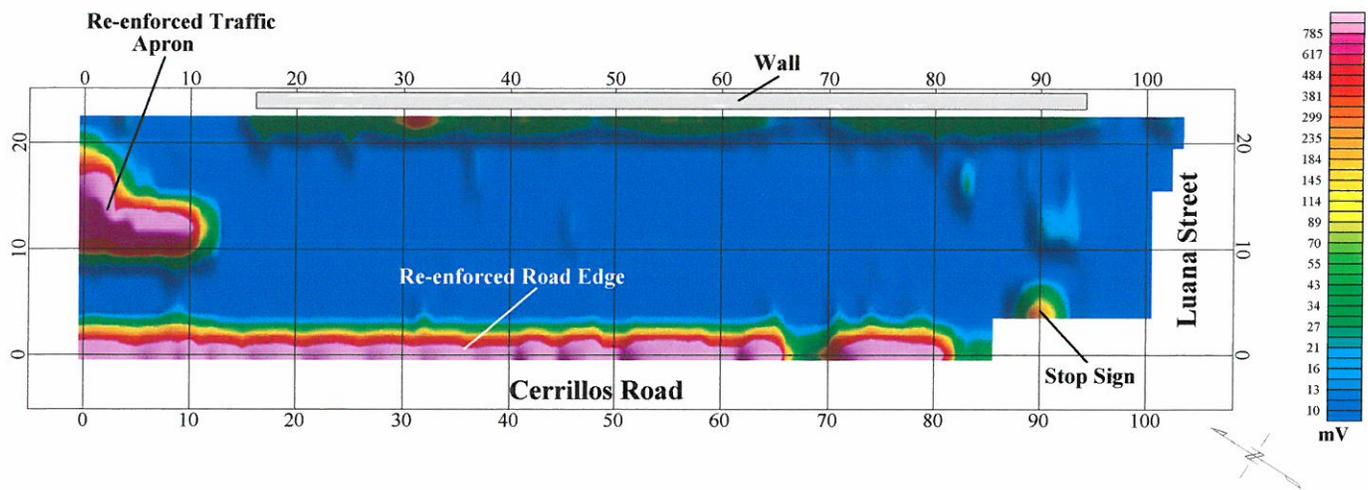
The EM-61 provides a response in milliVolts (mV) that is proportional to the mass and distance to both buried metal and metal at the surface. Small metallic objects generate a low response; larger objects generate stronger response depending on the size and depth of burial. An abandoned UST can be expected to generate a very strong response with spatial extent greater than the UST.

An image of the EM-61 data is presented at the top of Figure 1. An abandoned UST would be expected to generate a strong (red to pink) response on this color scale. Strong response is observed along Cerrillos Road where there is a re-enforced concrete road edge. Additional strong response is seen at the left end of the survey, where there is a re-enforced concrete traffic apron or entrance to the property. A low response (green) is seen along the wall. No features consistent with a UST are observed. No linear features suggestive of pipes are observed.

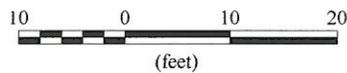
GPR profiles along Line 4 (4 ft from Cerrillos Rd.) and Line 12 (12 ft from Cerrillos Rd.) are also given on Figure 1. Compacted and loose fill layers are observed and the re-enforced concrete traffic apron generates a response. No features suggestive of a UST or piping are observed on these or the other GPR profiles.

## **Conclusions**

The geophysical investigation in front of the property at 2501 Cerrillos Road found no subsurface features suggestive of abandoned USTs or related pipes.



**Figure 1. 2501 Cerrillos Road, Santa Fe, New Mexico  
EM-61 Response and GPR Profiles**



## **APPENDIX E – WORK PLAN**

February 26, 2014



Mr. Jim Buckman, P.E.  
Parsons Brinckerhoff  
6100 Uptown Boulevard NE, Suite 700  
Albuquerque, NM 87110

Telephone: (505) 878-6577  
Email: buckman@pbworld.com

Re: Proposal for Preliminary Site Investigation (NMDOT Work Plan)  
Cerrillos Road Reconstruction, Phase IIC  
Camino Carlos Rey to St. Michael's Drive  
Santa Fe, Santa Fe County, New Mexico  
Terracon Proposal No: P6614-0062

Dear Mr. Buckman:

Terracon Consultants, Inc. (Terracon) appreciates the opportunity to submit this proposal to conduct a Preliminary Site Investigation (PSI) at the above-referenced site. The following sections provide an outline of the project, Terracon's PSI scope of services, including schedule, and compensation.

## 1.0 PROJECT INFORMATION

For the purpose of this proposal, the site is defined as the existing right-of-way (ROW) of Cerrillos Road from Camino Carlos Rey northward to St. Michael's Drive in Santa Fe, Santa Fe County, New Mexico. Terracon understands that the improvements to the Cerrillos Road ROW will include, but are not limited to: the reconstruction of Cerrillos Road roadway typical in the project area; geometric and interconnect; storm drainage improvements; pedestrian, bicycle and ADA improvements to include sidewalks, curb ramps and bicycle lanes; irrigation and landscaping; and, design of bus bays/lanes and permanent signing and striping.

Terracon previously performed an Initial Site Assessment (ISA) for the project corridor (Terracon Report No. 66137738). The following two Recognized Environmental Conditions (RECs) were identified in the ISA:

- The India House Restaurant, located at 2501 Cerrillos Road, was historically occupied by gas stations. Potential impacts of petroleum hydrocarbons from the historical gas stations and the potential presence of relic USTs associated with this property within the ROW of Cerrillos Road were considered RECs. Based on a review of historical aerial photographs, it appears that dispensers were located within 20 feet of the existing Cerrillos Road ROW. Based on the suspected use of this property as a gas station for over 35 years, the

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absence of previous assessment of soils adjacent to this facility for impact of petroleum hydrocarbons, and the absence of Fire Department UST removal records, this facility has the potential to have impacted the soils of the Cerrillos Road ROW with petroleum products and relic underground storage tanks (USTs) may remain within or near the Cerrillos Road ROW. The maximum depth of soil disturbance for the project adjacent to this facility is approximately 15 feet below grade surface (bgs).

- The Fill Up gas station, located at 2631 Cerrillos Road, has been a gas station since at least 1960. Potential impacts of petroleum hydrocarbons from the Fill Up gas station were considered RECs. This facility was formerly operated as a Diamond Shamrock and a Shell station. Based on the history of releases at this facility, an absence of subsurface investigations at the facility since 2002, and the location of the existing dispensers within 16 feet of the Cerrillos Road ROW, this facility has the potential to have impacted the soils of the Cerrillos Road ROW with petroleum products. The maximum depth of soil disturbance for the project adjacent to this facility is approximately 10 feet below grade surface (bgs).

## 2.0 SCOPE OF SERVICES

At your request, the proposed scope of work is in response to the results of Terracon's ISA. The objective of the proposed PSI is to evaluate the presence of total petroleum hydrocarbons (TPH), benzene, toluene, ethyl benzene, total xylenes and methyl tert butyl ether (BTEX/MTBE), and polycyclic aromatic hydrocarbons (PAHs) (above relevant laboratory reporting limits) in the on-site soils as a result of potential releases from the RECs identified in our ISA. In addition, the objective of the proposed PSI is to perform a geophysical survey of the ROW adjacent to 2501 Cerrillos Road to evaluate the potential presence of relic USTs within the ROW at that location.

Following receipt of authorization to proceed and no later than 48 hours prior to intrusive activities, Terracon will contact a utility locator to arrange for underground utility locates at the locations of proposed soil borings.

Terracon has a 100% commitment to the safety of all its employees. As such, and in accordance with our *Incident and Injury Free*® safety culture, Terracon will develop a safety plan to be used by our personnel during field services. Prior to commencement of on-site activities, Terracon will hold a meeting to review health and safety needs for this specific project. At this time, we anticipate performing fieldwork in a OSHA Level D work uniform consisting of hard hats, safety glasses, protective gloves, and steel-toed boots. It may become necessary to upgrade this level of protection, at additional cost, while sampling activities are being conducted in the event that petroleum or chemical constituents are encountered in soils or groundwater that present an increased risk for personal exposure.

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### **2.1 Soil Borings**

Terracon will advance two soil borings adjacent to each of the two facilities identified as RECs using concrete coring and direct-push drilling equipment. One soil boring will be advanced in the location of a planned storm sewer drop inlet adjacent to 2631 Cerrillos Road. This location is near the southern dispenser island at the facility. One soil boring will be advanced adjacent to the northern dispenser island at 2631 Cerrillos Road. One soil boring will be advanced in the location of a planned storm sewer drop inlet adjacent to the southwest portion of 2501 Cerrillos Road. This location is near the location of a suspected historical dispenser island. One soil boring will be advanced adjacent to the northeast portion of 2501 Cerrillos Road. The soil borings adjacent to 2631 Cerrillos Road will be advanced to a maximum depth of approximately 15 feet bgs or until refusal, whichever occurs first. The soil borings adjacent to 2501 Cerrillos Road will be advanced to a maximum depth of approximately 10 feet bgs or until refusal, whichever occurs first. The proposed total boring depths will not be exceeded without verbal approval from the client. Maps depicting the locations of the proposed soil borings are include as attached Exhibit 1 and Exhibit 2.

Drilling equipment will be cleaned using a high-pressure washer prior to beginning the project and before beginning each boring. Non-dedicated sampling equipment will be cleaned using an Alconox® detergent wash and potable water rinse prior to commencement of the project and between collection of each sample.

Soil samples will be collected continuously using split spoon samplers to document lithology, color, and relative moisture content. In addition, the soil samples will be field screened using sensory methods and a photoionization detector (PID) to detect the presence of volatile organic compounds (VOCs).

Following completion of sampling activities, the soil borings will be closed in place in accordance with applicable state regulations and guidelines.

### **2.2 Geophysical Survey**

Terracon proposes to subcontract Sunbelt Geophysics to conduct a geophysical survey using electromagnetic and ground penetrating radar methods to evaluate the ROW adjacent to 2501 Cerrillos Road for anomalies consistent with the presence of USTs.

A spatial control grid will be placed over the area of interest establishing parallel data acquisition lines separated by 4 ft, oriented parallel to Cerrillos Rd. The grid will be marked with small dots of spray paint and tied to local landmarks.

An initial survey will be conducted using a Geonics EM-61 high-resolution metal detector. This instrument has a proven ability to map buried metal features, such as USTs, to a depth of approximately 10 ft. A second survey will be conducted over the site using a Sensors & Software

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250 MHz ground-penetrating radar (GPR) system. Additional screening will be performed with a Schonstedt magnetic locator and a Radiodetection CAT 3+ line tracer as needed.

The results of the survey and the interpretations of the geophysicist performing the survey will be provided in a written report, which will include maps of the site and anomalies, if identified.

### **2.3 Sampling Program**

Terracon's soil sampling program will consist of the following:

- Collection of one soil sample from each soil boring from the zone exhibiting the highest PID readings. If, based on these observations, no elevated PID reading is observed, the sample will be collected from the interval exhibiting a change in lithology, from the bottom of the boring, or from the interval of most likely environmental impact as determined in the field by the sampling professional.

The soil samples will be collected and placed in laboratory prepared containers, labeled, and placed on ice in a cooler which will be secured with a custody seal. The samples and completed chain-of-custody forms will be transported to the selected analytical laboratory for analysis on a standard 5-day turnaround.

### **2.4 Laboratory Analytical Program**

The soil samples collected from the soil borings will be analyzed for TPH using United States Environmental Protection Agency (USEPA) SW-846 Method 8015 and for BTEX/MTBE using USEPA SW-846 Method 8260. If TPH diesel range organics (DRO) are detected at concentrations exceeding 100 milligrams per kilogram (mg/kg), the soil sample from each source area exhibiting the highest TPH DRO concentrations will be additionally analyzed for PAHs using USEPA SW-846 Method 8310.

### **2.5 Preparation of PSI Report**

Upon completion of site activities and receipt of the laboratory analytical results, a report will be prepared that will include the following:

- Documentation of field activities;
- Site plan showing pertinent site features;
- Soil boring logs;
- Analytical laboratory results;
- Geophysical survey results;
- Data evaluation and presentation of findings; and,
- Recommendations concerning further action, if necessary.

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Terracon is prepared to commence work on this project within five days following receipt of written notification to proceed. We anticipate completing the field activities in two days. The standard analytical turnaround time is five working days (expedited turnaround is available at an additional charge). Preliminary verbal results of the PSI may be available within 24 hours of Terracon's receipt of laboratory analytical reports. The PSI report will be available two weeks following Terracon's receipt of final laboratory analytical reporting. This written report will reflect results, findings, and recommendations, and, as such, will take precedence over any verbal reports that Terracon personnel may have provided. The analysis, comments and recommendations presented in the written report will be based on the information collected as discussed in this proposal.

Terracon's services will be performed in a manner consistent with generally accepted practices of the professional undertaken in similar studies in the same geographic area during the same period. Terracon- makes no warranties, expressed or implied, regarding its services, findings, conclusions or recommendations. Please note that Terracon does not warrant the work of laboratories, regulatory agencies or other third parties supplying information used in the preparation of the report. These PSI services will be performed in accordance with the scope of work agreed with you, our client, as set forth in this proposal and are not intended to be in strict conformance with ASTM E1903-11.

Findings, conclusions, and recommendations resulting from these services will be based upon information derived from on-site activities and other services performed under this scope of work; such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, nondetectable, or not present during these services, and we cannot represent that the site contains no hazardous substances, toxic substances, petroleum products, or other latent conditions beyond those identified during this PSI. Subsurface conditions may vary from those encountered at specific borings or during other surveys, tests, assessments, investigations or exploratory services; the data, interpretations, findings and our recommendations are based solely upon data obtained at the time and within the scope of these services.

### 3.0 COMPENSATION

The Scope of Services outlined in this proposal will be performed on a Lump Sum basis for [REDACTED]. If, as a result of these services, additional work is required outside the scope of this proposal, you will be contacted, and upon request, proposed costs for additional work will be provided. Client authorization will be obtained prior to commencement of any additional work outside the scope of this proposal. A summary of estimated costs is provided in the following table:

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<b>ESTIMATED TOTAL PROJECT COST</b>	
Consulting Labor	[REDACTED]
Subcontracted Drilling	[REDACTED]
Subcontracted Laboratory Analysis	[REDACTED]
Subcontracted Geophysical Survey	[REDACTED]
Expenses	[REDACTED]
<b>ESTIMATED TOTAL</b>	[REDACTED]

This proposal and cost estimate were prepared based on the following assumptions:

- Client will provide to Terracon, prior to mobilization, legal right of entry to the site (and other areas if required) to conduct the scope of services.
- Client will notify Terracon, prior to mobilization, of any restrictions, special site access requirements, or known potentially hazardous conditions at the site (e.g., hazardous materials or processes, specialized protective equipment requirements, unsound structural conditions, etc.)
- Work can be performed during normal business hours (Monday through Friday, 7:00 am to 7:00 pm).
- Traffic control services are not required beyond those required for the geophysical survey.
- The site is readily accessible by truck.

If any of these assumptions or conditions are not accurate or change during the project, the stated fee is subject to change. Please contact us immediately if you are aware of any inaccuracies in these assumptions and conditions, so we may revise the proposal or fee. If affected soil is discovered during the PSI, the owner, operator, or similar responsible party may have release reporting obligations under applicable state law or regulations.

**4.0 GENERAL COMMENTS**

If this Scope of Services meets with your approval, work may be initiated by returning a client contract with mutually agreed upon terms and conditions to our Albuquerque, New Mexico office via Email or fax to (505) 797-4288.

**Proposal for Limited Site Investigation**

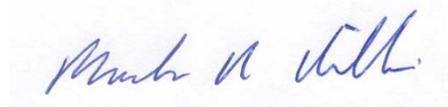
Cerrillos Road Phase IIC ■ Santa Fe, New Mexico

February 26, 2014 ■ Terracon Proposal No. P6614-0062

If you should have any questions or comments regarding this proposal, please contact either of the undersigned.

Sincerely,

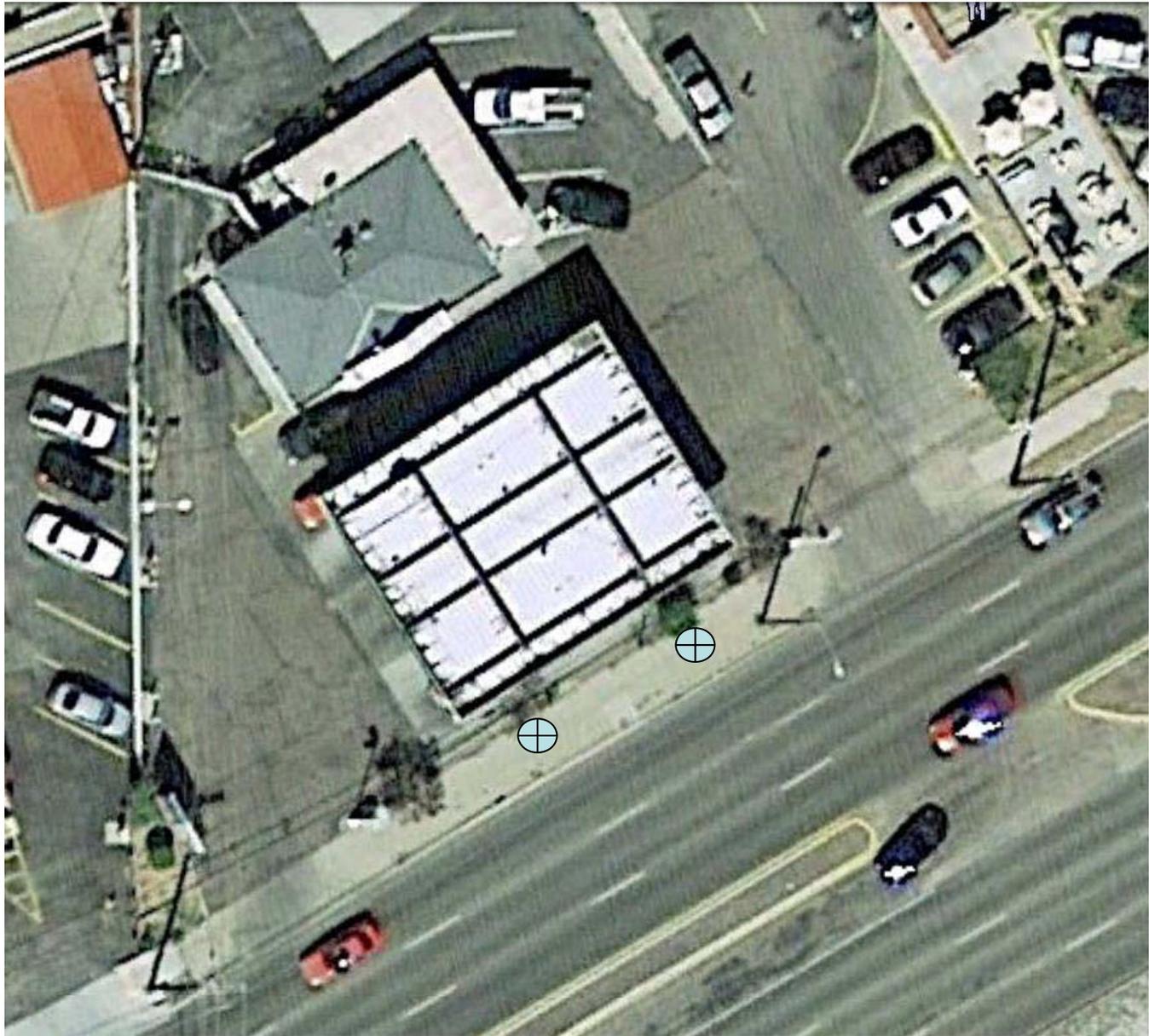
**Terracon**



Mark R. Hillier, P.G. (TX)

Department Manager

Attachments: Exhibit 1 and Exhibit 2 – Soil Boring Location Maps



Proposed Soil Boring Location



DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager: MRH	Project No. 66137738
Drawn by: JAS	Scale: 1" ≈ 30'
Checked by: MRH	File Name:
Approved by: MRH	Date: FEB 2014

**Terracon**  
Consulting Engineers & Scientists

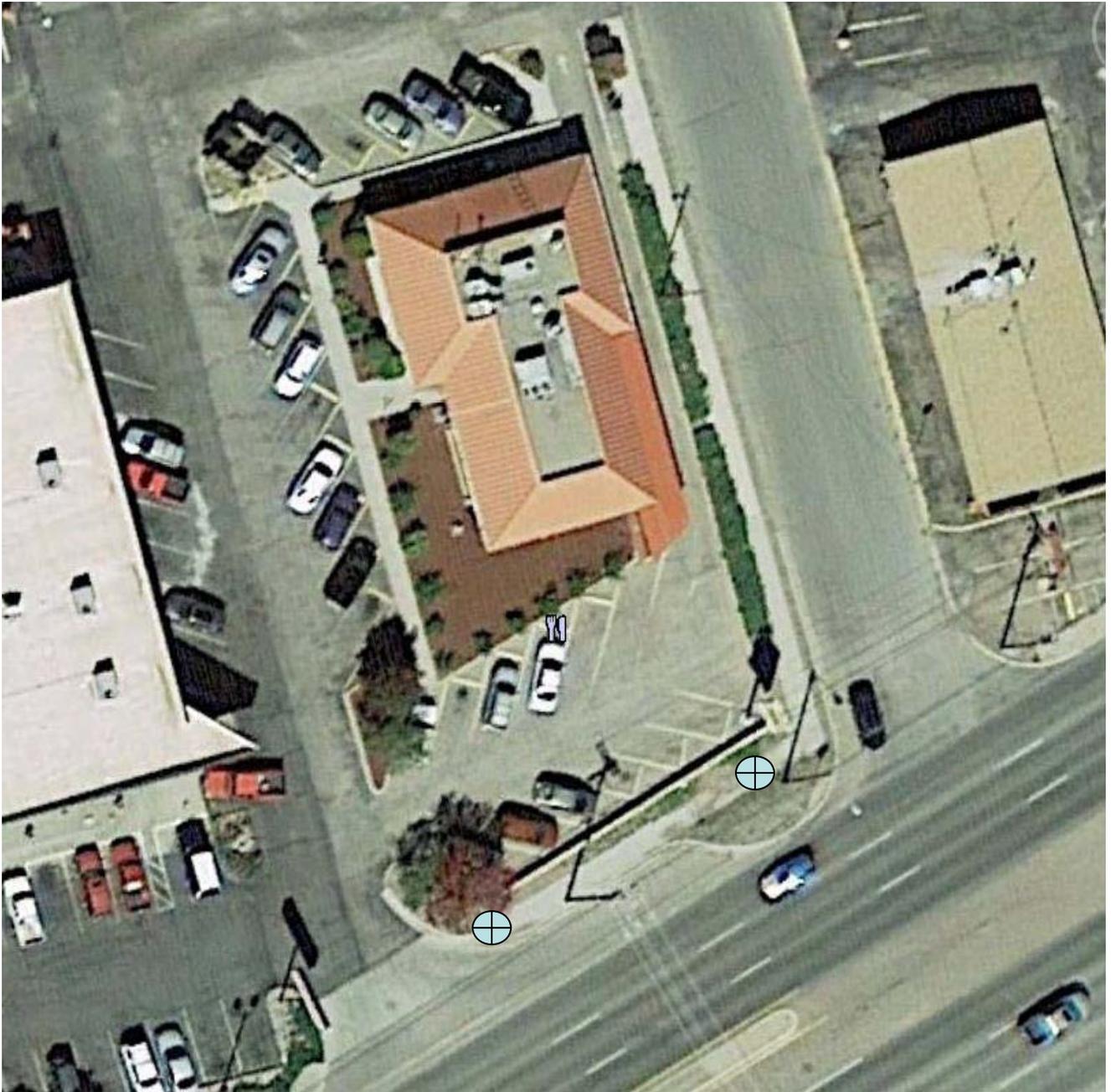
4905 Hawkins, NE Albuquerque, New Mexico 87109  
PH. (505) 797-4287 FAX. (505) 797-4288

**PROPOSED SOIL BORING MAP**

FILL UP  
2631 CERRILLOS ROAD  
SANTA FE, NEW MEXICO

EXHIBIT

1



Proposed Soil Boring Location



DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager: MRH	Project No. 66137738	 Consulting Engineers & Scientists <small>4905 Hawkins, NE Albuquerque, New Mexico 87109          PH. (505) 797-4287 FAX. (505) 797-4288</small>	<b>PROPOSED SOIL BORING MAP</b>	EXHIBIT
Drawn by: JAS	Scale: 1" ≈ 38'		INDIA HOUSE RESTAURANT 2501 CERILLOS ROAD SANTA FE, NEW MEXICO	<b>2</b>
Checked by: MRH	File Name:			
Approved by: MRH	Date: FEB 2014			