

Landfill Gas Assessment

**Proposed Medical Facility
NWC of Flightway Avenue SE and Transport Street SE
Albuquerque, New Mexico**

September 11, 2015
Terracon Project No. 66157037

Prepared for:
Genesis KC Development, LLC
Tulsa, Oklahoma

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

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Terracon

Geotechnical ■ Environmental ■ Construction Materials ■ Facilities

September 11, 2015



Genesis KC Development, LLC
2125 W. 73rd Street
Tulsa, Oklahoma 74132

Attn: Mr. Marshall Stewman
P: (918) 810-3700
E: Marshall.stewman@davita.com


Re: Landfill Gas Assessment
Proposed Medical Facility
NWC of Flightway Avenue SE and Transport Street SE
Schwartzman Landfill Buffer Zone
Albuquerque, New Mexico
Project No. 66157037

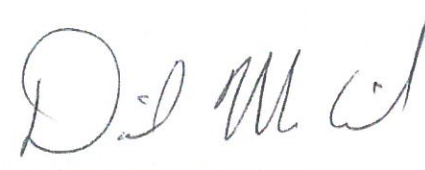
Dear Mr. Stewman:


Terracon Consultants, Inc. (Terracon) is pleased to submit this Landfill Gas Assessment for the above referenced site. This document was prepared in accordance with Terracon's Proposal Number P66150314 dated August 27, 2015.

We appreciate the opportunity to perform these services for Genesis KC Development, LLC. Please call Mark Hillier at (505) 797-4287 if you have questions regarding the information provided in the report.

Sincerely,
Terracon Consultants, Inc.


Mark R. Hillier, P.G. (TX)
Albuquerque Department Manager


David C McCormick, P.E.
Senior Project Manager


Lawrence R. Keefe
Principal

Attachments

Terracon Consultants Inc. 4905 Hawkins NE Albuquerque NM 87109
P [505] 797-4287 F [505] 797-4288



9-11-15
NM CAO-2437846

TABLE OF CONTENTS

1.0	INTRODUCTION	1
1.1	Location	1
1.2	Proposed Development.....	2
2.0	SITE INVESTIGATION	2
2.1	Temporary Soil Vapor Probe Installation.....	2
2.2	Landfill Gas Measurements	3
3.0	OPINIONS	4
3.1	Current Presence of Landfill Gas	4
3.2	Potential for Future Presence of Landfill Gas	4
3.3	Landfill Gas Abatement and Monitoring	4
3.4	Scope Limitations.....	4
3.5	Reliance.....	5

APPENDICES

- Appendix A: Exhibits
- Appendix B: Project Plans
- Appendix C: Analytical Data Tables
- Appendix D: Voluntary Remediation Program Certificate of Completion

**LANDFILL GAS ASSESSMENT
PROPOSED MEDICAL FACILITY
NWC OF FLIGHTWAY AVENUE SE AND TRANSPORT STREET SE
ALBUQUERQUE, NEW MEXICO**

Project No. 66157037

September 11, 2015

1.0 INTRODUCTION

Terracon Consultants, Inc. (Terracon) was retained by Genesis KC Development, LLC (client) to develop and prepare a Landfill Gas Assessment (LGA) for the construction of a medical facility (site) within the City of Albuquerque (COA) Environmental Health Department (EHD) buffer zone for the Schwartzman Landfill. This LGA has been prepared in conformance with the COA draft *Interim Guidelines for Development within Designated Landfill Buffer Zones* (Guidelines) dated October 2013.

As described in the Guidelines, the purpose of this LGA is to assess the current presence and/or potential for future presence and extent of landfill gas at the site. The presence of buried construction debris, consisting primarily of concrete and asphalt, was documented in portions of the site in Terracon's Voluntary Remediation Completion Report prepared for Albuquerque Airpark Partners (Terracon Report No. 66127003, dated January 7, 2013). This LGA includes the unqualified opinion of a New Mexico licensed Professional Engineer (P.E.), with experience in landfill gas issues, concerning the following:

- The current presence of landfill gasses at the site and adjoining properties;
- The potential for future presence of landfill gasses at the site and adjoining properties; and,
- The sufficiency of on-site risk abatement measures to eliminate any hazards or potential hazards associated with landfill gasses

This LGA is sealed by David C. McCormick, P.E., the qualified P.E. for this assessment.

1.1 Location

The site consists of an 8.3-acre tract of undeveloped land located at the northwest corner (NWC) of the intersection of Flightway Avenue SE and Transport Street SE in Albuquerque, New Mexico. The site is located within the COA buffer zone for the Schwartzman Landfill. The site location is depicted on Exhibit 1 of Appendix A, which was reproduced from a portion of the USGS 7.5-minute series topographic map. A diagram of the site and adjoining properties is included as Exhibit 2 of Appendix A. A diagram of the site in relation to the boundaries of the Schwartzman Landfill buffer zone is provided as Exhibit 3 of Appendix A.

1.2 Proposed Development

The proposed site development includes an approximate 90,000 square-foot, two-story medical facility and associated utilities and paved parking. Vehicular access is provided by a southern entry to Transport Street SE, and a northern entry to Mulberry Street SE. Building construction will consist of steel frame and/or concrete tilt-wall construction atop a concrete shallow spread foundation.

2.0 SITE INVESTIGATION

The site consists of an 8.3-acre tract of undeveloped land owned by Albuquerque Airpark Partners and under consideration for purchase by Genesis KC Development, LLC. The site contains buried construction debris consisting primarily of concrete and asphalt. The site was entered into the New Mexico Environment Department (NMED) Ground Water Quality Bureau (GWQB) Voluntary Remediation Program (VRP) for potential impacts of total petroleum hydrocarbons (TPH), VOCs and metals. On April 8, 2013, the site received a Certificate of Completion documenting the absence of TPH, VOCs or metals in the soil and groundwater of the site above applicable state standards. A copy of the Certificate of Completion is included in Appendix D. Terracon recently completed a Phase I Environmental Site Assessment (ESA) for the site (Terracon Report No. 66157737, dated June 19, 2015. Indications of Recognized Environmental Conditions in connection with the site were not identified during the completion of the Phase I ESA.

On September 10-12, 2015, Terracon subcontracted Enviro-Drill, Inc. to assist with the sampling of soil vapors at the site for the presence of landfill gasses. Terracon's sampling program included the following:

- Installed 24 temporary soil vapor probes across the site
- Collected soil vapors from the probe locations for field analysis of volatile organic compounds (VOCs), methane, carbon monoxide, oxygen and hydrogen sulfide

The following paragraphs provide detailed information regarding the temporary soil vapor probe installation and the results of soil vapor analyses.

2.1 Temporary Soil Vapor Probe Installation

Temporary soil vapor probes 1 through 24 were installed on approximate 150-foot centers across the site. The temporary soil vapor probes were installed using a truck-mounted direct-push drilling rig mounted. The probes were advanced to a depth of approximately five feet below grade surface (bgs) with the exception of temporary soil vapor points 4, 15 and 22, which encountered refusal

between approximately 2 feet bgs and 4 feet bgs. The locations of the probes are provided on Exhibit 2 in Appendix A. A copy of the site development plan is provided in Appendix B.

Expendable tips were inserted into the 1.5-inch diameter hollow drilling rod prior to advancement and the rod was raised approximately 6 inches after reaching the total depth of each boring. The expendable tips remained at the total depth of the boring while the drilling rod was raised exposing an internal screen. This procedure created a subsurface void from which soil vapors were extracted through tubing inserted to the bottom of the sampling tool and through the drilling rod for evaluation.

Sample tubing was inserted to the bottom of the screened sampling tool and was connected to a QRAE multi-gas detector with photoionization detector (PID). Each probe location was purged using the QRAE for a minimum of 5 minutes, or until PID readings stabilized, prior to the collection of soil vapor samples for analysis.

2.2 Landfill Gas Measurements

Subsequent to purging, soil vapors were collected and analyzed for VOCs, methane, carbon monoxide, oxygen and hydrogen sulfide using a QRAE multi-gas meter. The QRAE was checked for calibration prior to beginning the assessment using 50% LEL methane calibration gas and 0.025% hydrogen sulfide, respectively. The instrument was within 98% of the calibration standard and was considered calibrated. The instrument readings were allowed to stabilize prior to data collection to ensure that the data was representative of *in-situ* soil vapor concentrations. The results of field and laboratory analyses are provided in Table 1 in Appendix C.

VOCs were detected at concentrations ranging from 0.0 parts-per-million (ppm) to 1.5 ppm in the soil vapor samples collected at the site. These readings are within the typical background range and are not considered indicative of releases of VOCs at the site.

Methane was not detected in the soil vapor samples collected at the site.

Hydrogen sulfide was not detected in the soil vapors collected at the site.

Carbon monoxide was detected at concentrations ranging from 1 ppm to 60 ppm in the soil vapor samples collected at the site. The USEPA indicates that the typical range for carbon monoxide in homes without gas stoves ranges from 0.5 ppm to 5 ppm and from 5 ppm to 15 ppm in homes with property adjusted gas stoves. Based on a typical attenuation factor for concrete slab-on-grade foundations of 0.07, the maximum detected carbon monoxide concentration of 60 ppm is not considered a threat to the indoor air of the buildings in the planned development.

Oxygen concentrations detected in the soil vapor probe locations ranged from 17.5% to 22.9% and the detected concentrations are within the typical range of subsurface oxygen concentrations in areas unaffected by landfill gases.

Copies of field measurement notes are provided in Appendix C.

3.0 OPINIONS

3.1 Current Presence of Landfill Gas

Based on the results of field analyses, the site does not appear to be affected by landfill gases.

3.2 Potential for Future Presence of Landfill Gas

Based on the results of field analysis, the future presence of landfill gas at the site is considered low.

3.3 Landfill Gas Abatement and Monitoring

Based on the absence of detected landfill gas and the high oxygen levels detected in the soil vapor probes, landfill gas abatement measures and monitoring are not required for development of the site. However, in accordance with NMED Solid Waste Bureau regulations, monitoring of landfill gases will be employed if buried debris is excavated at the site.

Based on the unlikely future presence of landfill gas in the vicinity of the project, landfill gas abatement measures and monitoring are not required for the project.

3.4 Scope Limitations

These opinions are expressed in consideration of the existing and future site utilities, including infrastructure improvements. The potential for landfill gas migration pathways along utility corridors has also been considered.

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 landfill gases, hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, nondetectable, or not present during these services. Subsurface conditions may vary from those encountered at specific sample collection points 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.

3.5 Reliance

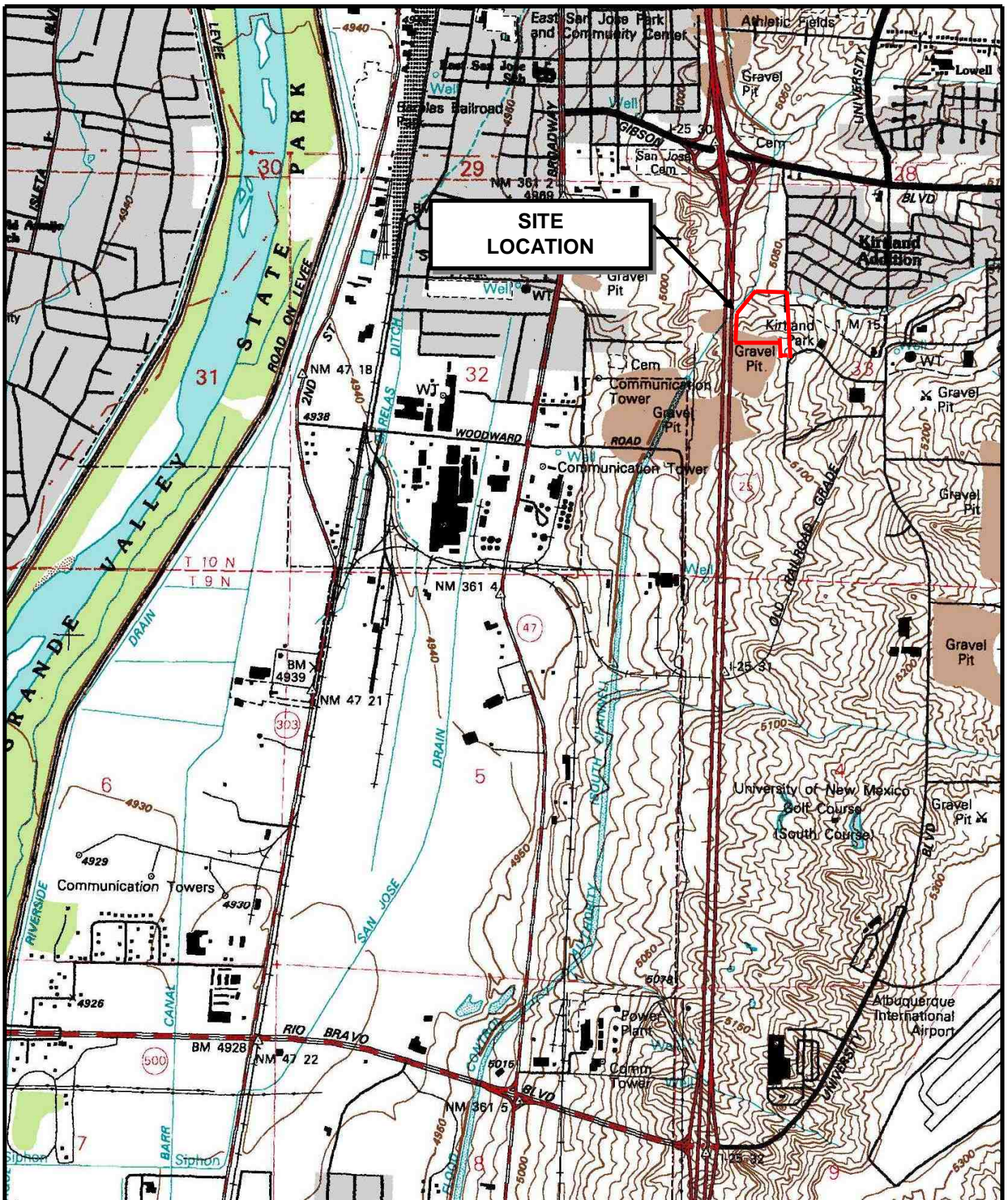
This report has been prepared for the exclusive use of Genesis KC Development, LLC, and any authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the site) is prohibited without the express written authorization of Genesis KC Development, LLC and Terracon. Any unauthorized distribution or reuse is at Genesis KC Development, LLC's sole risk. Notwithstanding the foregoing, reliance by authorized parties will be subject to the terms, conditions, and limitations stated in the proposal, LGA report, and Terracon's Agreement for Services. The limitation of liability defined in the terms and conditions is the aggregate limit of Terracon's liability to Capstone and all relying parties unless otherwise agreed in writing.

APPENDIX A

Exhibit 1 – Site Location Map

Exhibit 2 – Site Diagram

Exhibit 3 – Schwartzman Landfill Buffer Zone Diagram



USGS Albuquerque West, New Mexico, published 1990 (1:24,000)

Project Mngr:	MRH
Drawn By:	MRH
Checked By:	LRK
Approved By:	DCM

Project No.	66157037
Scale	1" = 1,000'
File No.	
Date:	September 2015

Terracon
 Consulting Engineers & Scientists
 4905 Hawkins, NE
 Albuquerque, New Mexico 87109
 505.797.4287 Fax: 505.797.4288

SITE LOCATION MAP

**PROPOSED MEDICAL FACILITY
 NWC FLIGHTWAY SE AND TRANSPORT SE
 Albuquerque, New Mexico**

EXHIBIT
1



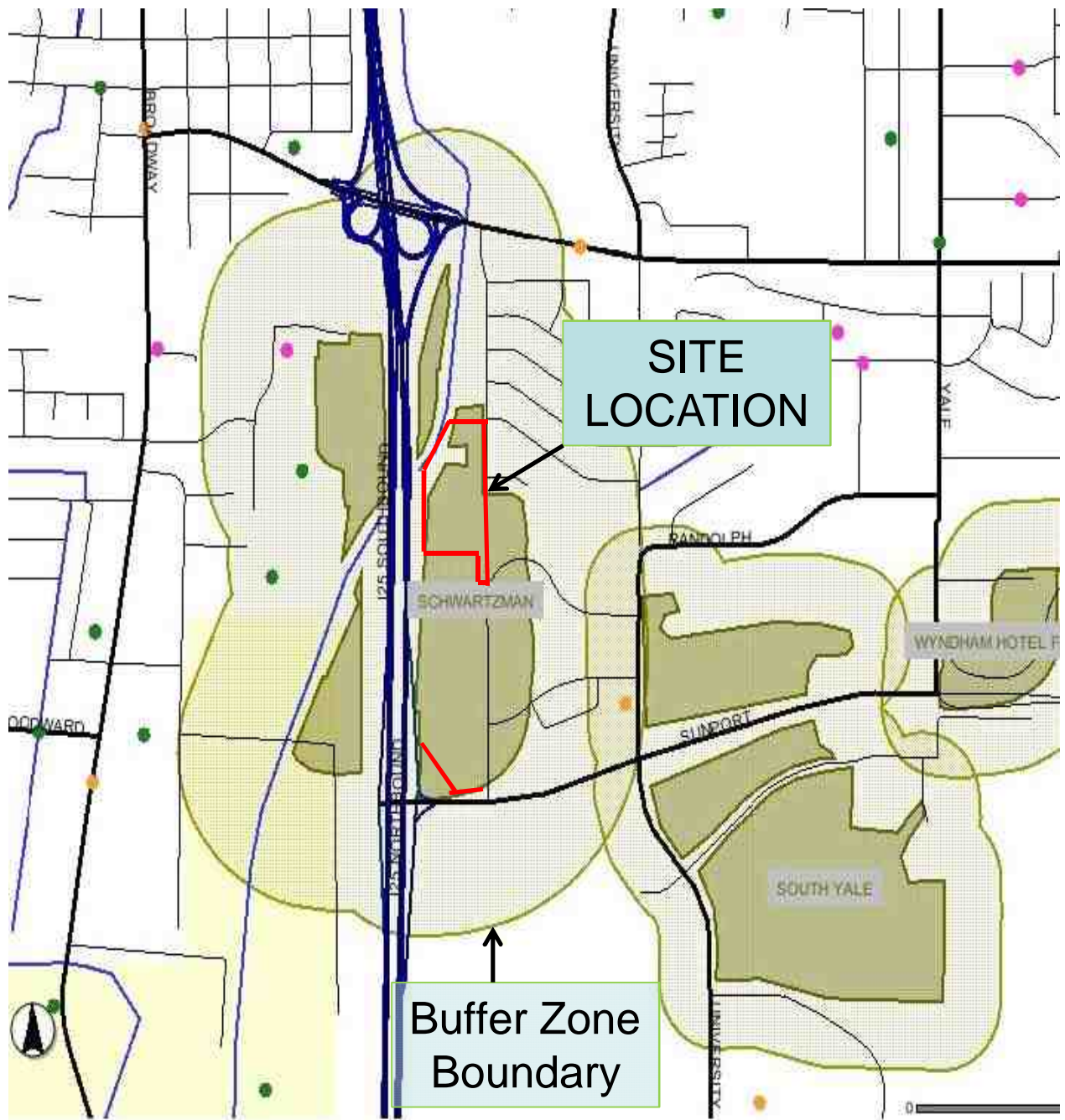
Aerial Photograph Source: Google Earth Pro

Project Manager:	MRH	Project No.	66157037
Drawn by:	MRH	Scale:	
Checked by:	LRK	File Name:	
Approved by:	DCM	Date:	May 2013

Terracon
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SAMPLE LOCATION MAP
PROPOSED MEDICAL FACILITY NWC TRANSPORT SE ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO

EXHIBIT
2



Map Source: City of Albuquerque



Project Manager:	MRH	Project No.	66157037
Drawn by:	MRH	Scale:	
Checked by:	LRK	File Name:	
Approved by:	DCM	Date:	September 2015

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 Consulting Engineers & Scientists
 4905 Hawkins, NE Albuquerque, New Mexico 87109
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LANDFILL BUFFER ZONE MAP
PROPOSED MEDICAL FACILITY NWC FLIGHTWAY SE AND TRANSPORT SE ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO

EXHIBIT
3

APPENDIX B

Exhibit 4 - Project Plans

REVISIONS

DRAWN BY	CM
REVIEWED BY	MB
DATE	07/02/2015
PROJECT NO.	15-P071
DRAWING NAME	SITE PLAN

PROJECT NUMBER: 1000318

APPLICATION NUMBER: DRB Site Development Plan-Building Permit

Is an Infrastructure List Required? (x) Yes () No If yes, then a set of approved DRC plans with a work order is required for any construction within Public Right-of-Way or for construction of public improvements.

DRB SITE DEVELOPMENT PLAN APPROVAL:

TRAFFIC ENGINEER, TRANSPORTATION DIVISION	DATE
UTILITIES DIVISION	DATE
PARKS AND RECREATION DEPARTMENT	DATE
CITY ENGINEER	DATE
SOLID WASTE MANAGEMENT	DATE
FIRE MARSHALL	DATE
DRB CHAIRPERSON, PLANNING DEPARTMENT	DATE

PROJECT DATA

ADDRESS: 2901 TRANSPORT STREET SE, ALBUQUERQUE, NM 87106

LEGAL DESCRIPTION: TRACT 2, CAPSTONE SUBDIVISION

ZONE ATLAS PAGE: M-15-Z

SITE AREA: 8.3555 ACRES

CURRENT ZONING: SU-1, I| PERMISSIVE USES AND STUDENT HOUSING

PROPOSED ZONING: NO CHANGE

BUILDING FOOTPRINT: 90,000 SF (PHASE 1: 84,000 SF; PHASE 2: 6,000 SF)

LANDSCAPING: REFER TO SHEET SDP-2.1 FOR LANDSCAPE PLAN

PARKING CALCULATIONS

TOTAL PARKING SPACES REQUIRED PER CODE:
MEDICAL OR DENTAL OFFICE, CLINIC: FIVE SPACES FOR EACH DOCTOR= 425 SPACES

TOTAL PROPOSED PARKING:	
STANDARD CAR SPACES	455
ACCESSIBLE SPACES	14 (12 REQUIRED)
TOTAL CAR SPACES	467
MOTORCYCLE SPACES	6 (6 REQUIRED)
BICYCLE PARKING	32 (24 REQUIRED)



VICINITY MAP

ZONING MAP M-15-Z

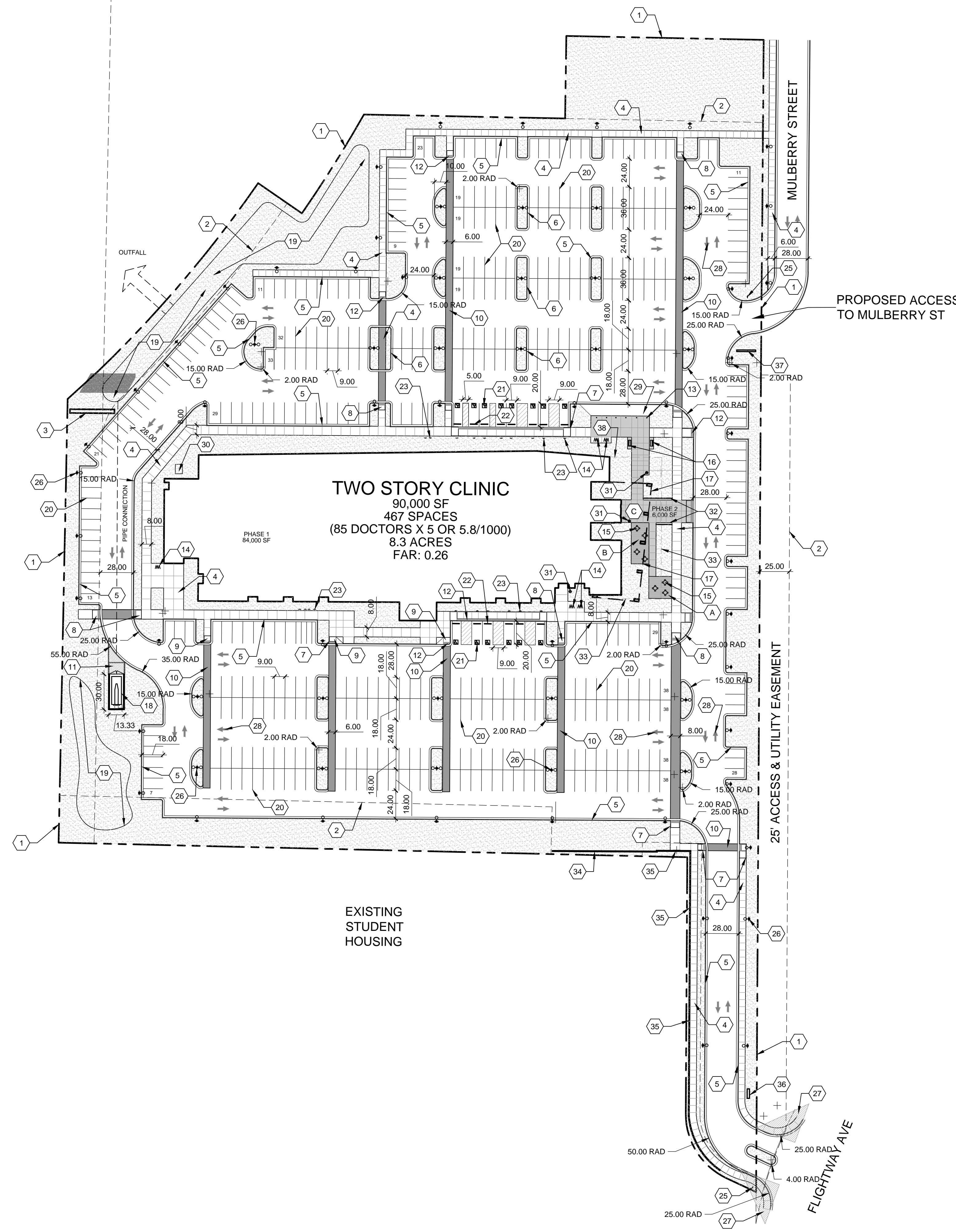
0 750' 1,500'

- GENERAL SHEET NOTES**
- THIS SUBMITTAL ILLUSTRATES THE DESIGN AND DEVELOPMENT INTENT FOR A NEW CLINIC AND ASSOCIATED SITE, LANDSCAPE GRADING AND UTILITY IMPROVEMENTS. SITE LIGHTING WILL CONSIST OF A COMBINATION OF BUILDING MOUNTED LIGHT FIXTURES AND POLE MOUNTED FIXTURES. SEE PLAN FOR POLE FIXTURES.
 - POLE LIGHTS AND SITE FURNISHINGS WILL HAVE COORDINATED AND COMPLEMENTARY LIGHT COLORED, METAL OR PAINTED METAL FINISHES.
 - TWO PHASES ARE INDICATED IN THE SITE PLAN. THE MAJORITY OF BUILDING AND SITE DEVELOPMENT WILL OCCUR IN PHASE 1. PHASE 2 INCLUDES DEVELOPMENT OF ADDITIONAL BUILDING SQUARE FOOTAGE IN THE CONFIGURATION INDICATED ON THE PLANS. SEE SITE DETAILS AND LANDSCAPE DETAILS FOR SITE DESIGN INFORMATION FOR PHASE 1 AROUND THE BUILDINGS MAIN ENTRANCE.
 - MECHANICAL UNITS WILL BE PLACED ON THE ROOF. MECHANICAL UNITS WILL BE SCREENED FROM VIEW WITH A COMBINATION OF STRATEGIC PLACEMENT AND ARCHITECTURAL SCREENING.

- SHEET KEYED NOTES**
- PROPERTY LINE
 - EASEMENT LINE
 - EXISTING BILLBOARD SIGN TO REMAIN
 - CONCRETE SIDEWALK
 - CONCRETE CURB AND GUTTER
 - CONCRETE FLUSH CURB
 - CONCRETE HEADER CURB
 - CONCRETE ACCESSIBLE RAMP, TYPE A PER COA DPM STANDARDS
 - CONCRETE ACCESSIBLE RAMP, TYPE B PER COA DPM STANDARDS
 - HEAVY DUTY DECORATIVE CONCRETE PAVING, COLOR TBD
 - REINFORCED CONCRETE PAVING IN SERVICE YARD, COLOR NONE
 - DETECTABLE WARNING SURFACE
 - BOLLARD, COLOR TBD
 - BIKE RACKS
 - TABLE AND CHAIRS
 - 5' BENCH
 - OVERHEAD SEE ARCHITECTURAL SHEETS
 - COMPACTOR, 34 CU. YD. CAPACITY, SEE A1/SDP-1.2 FOR ENCLOSURE GATE ELEVATION
 - POND
 - PARKING STRIPING
 - ADA PAVEMENT MARKING
 - PARKING BUMPER
 - ACCESSIBLE PARKING SIGN, SEE C1/SDP-1.2
 - MOTORCYCLE PARKING SIGN, SEE C1/SDP-1.2
 - STOP SIGN, SEE C1/SDP-1.2
 - SITE LIGHTING, SEE LEGEND
 - CLEAR SIGHT TRIANGLE
 - PAVEMENT ARROWS
 - DROP OFF AREA
 - TRANSFORMER
 - LITTER RECEPTACLE
 - SEATWALL
 - PHASE 2 BOUNDARY
 - 5' TALL CMU WITH STUCCO SCREEN WALL
 - 6' TALL CMU WITH STUCCO SCREEN WALL
 - DOUBLE SIDED MONUMENT SIGN A, SEE A3/SDP-1.2
 - DOUBLE SIDED MONUMENT SIGN B SEE B1/SDP-1.2

- LEGEND**
- PROPERTY LINE
 - EXISTING EASEMENT (ALL EASEMENTS ARE EXISTING)
 - 24'-0" MAX HT. POLE LIGHT, DOUBLE, FULL CUT-OFF, DARK COLOR TO COORDINATE WITH EXISTING FIXTURES
 - 24'-0" MAX HT. POLE LIGHT, SINGLE, FULL CUT-OFF, DARK COLOR TO COORDINATE WITH EXISTING FIXTURES
 - STABILIZED CRUSHER FINES
 - REINFORCED CONCRETE PAVING
 - DECORATIVE CONCRETE PAVING, COLOR TBD
 - HEAVY DUTY DECORATIVE CONCRETE PAVING, COLOR TBD
 - LANDSCAPE AREA, SEE SDP-2.1

- SITE PATIO / AMENITIES**
- A PATIO A - 76 SF
 - B PATIO B - 100 SF
 - C PATIO C - 470 SF



TWO STORY CLINIC
90,000 SF
467 SPACES
(85 DOCTORS X 5 OR 5.8/1000)
8.3 ACRES
FAR: 0.26

EXISTING STUDENT HOUSING



APPENDIX C

Analytical Data Table

Landfill Gas Field Log
Capstone Student Housing Phase I
NWC of Sunport Boulevard SE and Transport Street SE
Albuquerque, New Mexico
Terracon Project No. 66137017

CO VOC
LEL H2S
C2

Sample No.	Latitude / Longitude	Date / Time	VOC (ppm)	O2 (% vol.)	CO (ppm)	H2S (ppm)	Methane (% of LEL)
1		09/03/15/1140	0.0	20.5	3	0	0
2		"09/03" 12 28	0.0	20.2	4	0	0
3		"09/03" 13 55	0.0	20.9	3	0	0
4		"09/03" 15 22	0.0	22.9	5	0	0
5		09/03 14 58	0.0	20.9	3	0	0
6		"09/03" 14 37	0.0	22.2	3	0	0
7		"09/03" 14 13	0.0	20.9	3	0	0
8		09/05 11 23	0.0	20.3	3	0	0
9		"09/03" 15 50	0.0	20.5	3	0	0
10		"09/03" 16 11	0.0	20.4	4	0	0
11		09/04/15 11 40	0.0	20.1	2	0	0
12		09/04/15 11 25	1.0	20.2	4	0	0
13		09/05 11 40	0.0	19.5	1	0	0
14		09/04/15 12 48	0.0	19.5	2	0	0
15		09/04/15 12 22	1.0	19.9	29	0	0
16		09/04/15 11 58	0.0	19.7	3	0	0
17		09/04/15 11 10	0.0	20.3	3	0	0
18		09/09/15 11 54	0.0	19.6	3	0	0
19		"09/04" 13 04	0.0	17.5	60	0	0
20		09/04 13 20	0.0	18.6	1	0	0
21		09/04 13 37	0.0	17.5	2	0	0
22		09/04 13 55	0.0	20.1	1	0	0
23		09/05 10 25	1.5	20.3	3	0	0
24		09/05 10 45	1.0	20.0	3	0	0

3.5 ft →

2.0 ft →

4.0 ft →

APPENDIX D

**Voluntary Remediation Program
Certificate of Completion**

NEW MEXICO ENVIRONMENT DEPARTMENT
VOLUNTARY REMEDIATION PROGRAM

CERTIFICATE OF COMPLETION

Pursuant to §74-4G-1 *et seq.* NMSA 1978, the Voluntary Remediation Act, and the Voluntary Remediation Regulations (20.6.3 NMAC), the New Mexico Environment Department has determined that the participant, **John Lorentzen, Albuquerque Airpark Partners**, has successfully complied with the Voluntary Remediation Agreement and that site conditions meet applicable standards for the **Albuquerque Airpark Partners Site, VRP Site No. 53121002**, as of **February 28, 2013** for the tract of land and for the environmental conditions described in Exhibit A, attached hereto, and that the final site remedy is not dependent upon post-closure care, maintenance of engineering controls, remediation systems, nor affirmation of future non-residential use.

A purchaser of the site who did not contribute to the site contamination covered by the Voluntary Remediation Agreement as of the date of this Certificate is entitled to a Covenant Not To Sue from NMED pursuant to §74-4G-8 NMSA 1978.

EXECUTED this 9 day of April, 2013



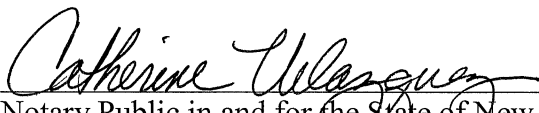
Secretary or Designee
New Mexico Environment Department

STATE OF NEW MEXICO
SANTA FE COUNTY

BEFORE ME, on this, the 9 day of April, 2013, personally appeared
Jerry Schoeppner, known to me to be the person and agent of said department
whose name is subscribed to the foregoing instrument, and he/she acknowledged to me that
he/she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE this, the 9 day of April, 2013





Notary Public in and for the State of New Mexico
My commission expires: 12-05-15

Attachment: Exhibit A, Description of Site and Environmental Conditions