



R·A·M

Preliminary Leach Field Percolation Testing
Los Montanas Unit 3
Weaver Road and Martin Road
Pinal County, Arizona
R.A.M. Project No. G11933



RICKER • ATKINSON • McBEE & ASSOCIATES, INC.

Geotechnical Engineering • Construction Materials Testing

**Preliminary Leach Field Percolation Testing
Los Montanas Unit 3
Weaver Road and Martin Road
Pinal County, Arizona
R.A.M. Project No. G11933**

For:
CommercialOne X LLC
6333 North Scottsdale Road, Unit 18
Scottsdale, Arizona 85250



By:
Ricker-Atkinson-McBee & Associates, Inc.
2105 South Hardy Drive, Suite 13
Tempe, Arizona 85282



RICKER • ATKINSON • McBEE & ASSOCIATES, INC.

Geotechnical Engineering • Construction Materials Testing

CommercialOne X LLC
6333 North Scottsdale Road, Unit 18
Scottsdale, Arizona 85250

June 30, 2005

Attention: Zazok Eli

Subject: Preliminary Leach Field Percolation Testing
Los Montanas Unit 3
Weaver Road and Martin Road
Pinal County, Arizona

R.A.M. Project No. G11933

At your request and with your authorization, this firm has performed preliminary leach field-type percolation tests at the above-referenced site. The tests were conducted in accordance with the guidelines presented in Title 18, Chapter 9 of the Arizona Administrative Code, and as directed by the Pinal County Environmental Health Department. The investigation consisted of drilling sixteen exploratory test borings at the locations originally specified (and staked in the field) by Kolinski, Inc., the project Civil Engineer. Exploratory Test Borings 1 through 15 were drilled to a depth of 15 feet each using a CME-55 drill rig advancing 8-inch diameter hollow-stem auger. Adjacent to the exploratory test borings, 15-inch diameter percolation test holes were drilled to depths of 4 to 6 feet, representing the typical depths of shallow and deep disposal trench systems. At the location of Test Boring 16, the exploratory test boring could not be advanced beyond a depth of 3 feet due to the presence of cobbles and boulders. This test boring was then widened with the 15-inch diameter auger to a depth of 3 feet for the percolation testing. Previous attempts to drill this location resulted in refusal at 1.0 and 1.5 feet.

The locations of the test borings and percolation tests are shown on the Site Plan in Appendix A. Logs of the test borings and percolation test holes, with a description of the soils encountered, are also included in Appendix A. The locations of the test borings and percolation test holes are identified by the number assigned by Kolinski, Inc. The percolation test holes are further identified by P before the number.

After presoaking as required in the aforementioned guidelines, the following stabilized percolation rates were determined:

<u>Location</u>	<u>Depth of Test</u>	<u>Stabilized Percolation Rate (min. per inch)</u>
1	5 ft.	23
2	6 ft.	21
3	4 ft.	21

<u>Location</u>	<u>Depth of Test</u>	<u>Stabilized Percolation Rate (min. per inch)</u>
4	5 ft.	23
5	4 ft.	21
6	6 ft.	25
7	5 ft.	22
8	6 ft.	22
9	5 ft.	31
10	5 ft.	22
11	4 ft.	25
12	6 ft.	25
13	6 ft.	31
14	5 ft.	26
15	4 ft.	24
16	3 ft.	23

Copies of the field measurements are included in Appendix A following the boring logs.

During the test drilling, representative disturbed samples of the soils were obtained from various depths for visual and laboratory analysis, and the test borings were logged by our field engineer. The laboratory testing consisted of partial gradation (sieve analysis) and plasticity index). Results of the laboratory testing are presented in Appendix B of this report.

The surface and subsurface conditions encountered in the exploratory test borings were somewhat variable, and detailed descriptions are presented in the test boring logs in Appendix A. In general, the surface and near-surface soils encountered in the exploratory test borings, extending to the maximum depth of our exploration (15 feet), consisted of clayey to silty sand. These soils were medium dense, had non-plastic to medium plasticity fines, had intermittent light cementation, and contained a trace to some gravel. At the location of Test Boring 16, the site soils consisted of clayey sand and gravel containing some cobbles, extending to a depth of 3 feet (the maximum depth of our exploration at this location), with auger refusal occurring in soils containing some to considerable cobbles. Soil moisture conditions were described as slightly damp to damp throughout the depths explored.

Based on a review of well drilling records in the near-vicinity of the site (the closest being the well with Registration No. 55-542067, drilled in 1994) published over the internet by the Arizona Department of Water Resources (ADWR), the depth to static groundwater in the general vicinity of the site is expected to be in excess of 100 feet, and could very well be deeper than 300 feet. No groundwater (perched or otherwise) was observed in any of the test borings.

The preliminary percolation testing was conducted at depths typical for both shallow (shallower than 60 inches) and deep (60 inches or deeper) disposal trenches. Based on the table included in R18-9-A312(D)(2)(a) and the results of the percolation testing, stabilized percolation rates ranging from 21 to 31 minutes per inch were determined which equates to maximum Soil Absorption Rates (SARs) of 0.43 to 0.35 gallons per day per square foot for shallow disposal fields and 0.29 to 0.24 gallons per day per square foot for deep disposal fields. Using the soil evaluation method described in R18-9-A310(G) and R18-9-A312(D)(2)(b), assuming a weakly structured sandy loam soil classification for the soils at and below the disposal trenches, an SAR of 0.40 gallons per day per square foot was determined for shallow disposal fields and an SAR of 0.27 gallons per day per square foot was determined for deep disposal fields.

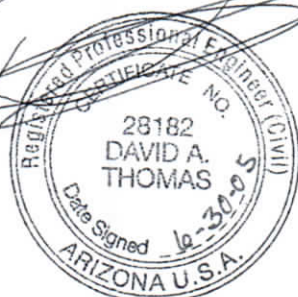
The site soils at and below the depth of shallow and deep disposal trenches across a majority of the site contain less than 50 percent rock. However, along the eastern perimeter of the site and especially in the southeastern portion of the site, the site soils may contain greater than 50 percent rock and may ultimately be underlain by relatively shallow bedrock. Test Boring 16 was drilled near the base of a mountain which borders the site to the east.

The ultimate design of shallow on-site septic disposal systems for the project will ultimately require testing on each individual lot, once the location of primary and reserve disposal areas have been identified. Determination of all applicable limiting conditions and setback requirements will be the responsibility of others.

Please do not hesitate to call if you have any questions.

Respectfully submitted,

RICKER, ATKINSON, MCBEE & ASSOCIATES, INC.



By: David A. Thomas, P.E.



Reviewed by: Kenneth L. Ricker, P.E.

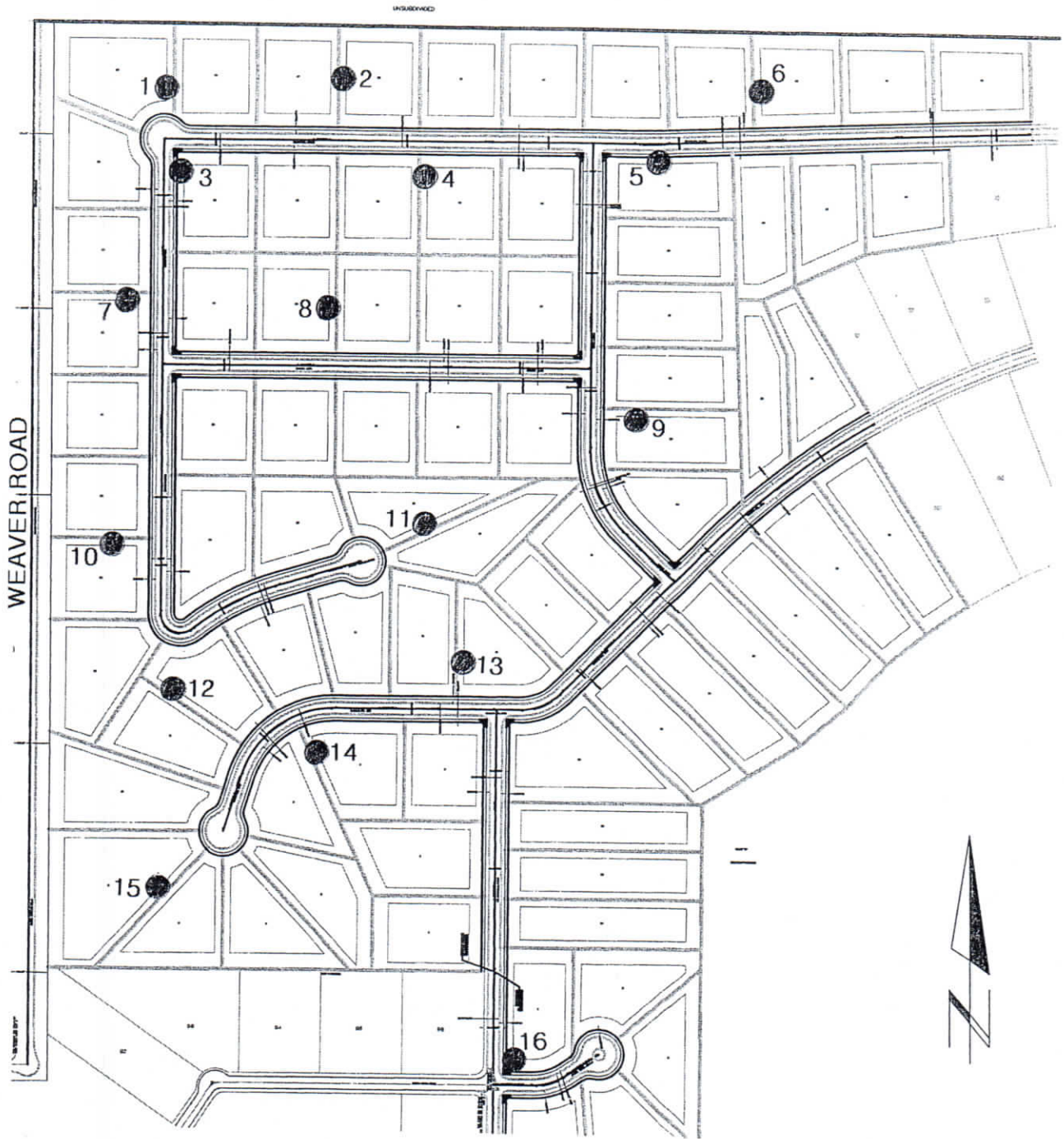
/dat

Copies to: Addressee (3)
Kolinski, Inc. (2)

APPENDIX A
FIELD EXPLORATIONS



R·A·M



● Test Boring / Percolation Test Location

Not To Scale

SITE PLAN

LEGEND

CLASSIFICATION OF SOILS

ASTM Designation: D2487-83
(Based on Unified Soil Classification System)

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests

Soil Classification

Group
Symbol Name

COARSE-GRAINED SOILS
More than 50% retained on
No. 200 Sieve

Gravels
More than 50% coarse
fraction retained on
No. 4 Sieve

Clean Gravels
Less than 5% fines

$Cu > 4$ and $1 < Cc < 3$

GW Well graded gravel

$Cu < 4$ and/or $1 > Cc > 3$

GP Poorly graded gravel

Gravels with Fines
More than 12% fines

Fines classify as ML or MH

GM Silty gravel

Fines classify as CL or CH

GC Clayey gravel

Sands
50% or more of coarse
fraction passes No.
4 sieve

Clean Sands
Less than 5% fines

$Cu > 6$ and $1 < Cc < 3$

SW Well-graded sand

$Cu < 6$ and/or $1 > Cc > 3$

SP Poorly graded sand

Sands with Fines
More than 12% fines

Fines classify as ML or MH

SM Silty sand

Fines classify as CL or CH

SC Clayey sand

Silts and Clays
Liquid limit less than 50

Inorganic

$PI > 7$ and plots on or above
"A" line

CL Lean clay

$PI < 4$ or plots below "A" line

ML Silt

Organic

$\frac{\text{Liquid Limit - oven dried}}{\text{Liquid limit - not dried}} < 0.75$

OL Organic clay
Organic silt

Silts and Clays
Liquid limit 50 or more

Inorganic

PI plots on or above "A" line

CH Fat clay

PI plots below "A" line

MH Elastic silt

Organic

$\frac{\text{Liquid limit - oven dried}}{\text{Liquid limit - not dried}} < 0.75$

OH Organic clay
Organic silt

HIGHLY ORGANIC SOILS

Primarily organic matter, dark in color, and organic odor

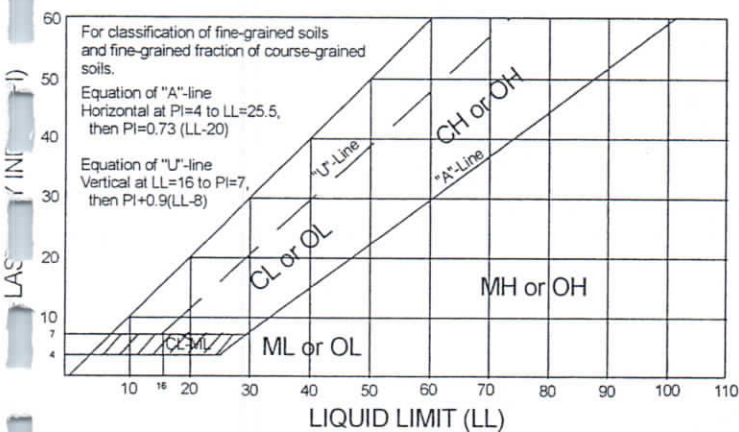
PT Peat

TEST BORING LOG DEFINITIONS

Blows per foot using 140 pound hammer with 30 inch free-fall.

Depth, feet	Blows/Foot		Sample Type	Dry Density pcf	Water Content, %	Unified Classification	Description
	C	N/R					

C = Continuous Penetration Resistance (2 inch diameter rod)
N = Standard Penetration Resistance (ASTM D1586)
R = Penetration Resistance (3 inch diameter ring line sampler)



U.S. STANDARD SERIES SIEVE

GRAIN SIZES

CLEAR SQUARE SIEVE OPENINGS

200	40	10	4	3/4"	3"	12"
SAND			GRAVEL		COBBLES	BOULDERS
FINE	MEDIUM	COARSE	FINE	COARSE		

MOISTURE CONDITION (INCREASING MOISTURE →)

DRY SLIGHTLY DAMP DAMP MOIST (Plastic Limit) VERY MOIST WET (SATURATED) (Liquid Limit)

CONSISTENCY CORRELATION

RELATIVE DENSITY CORRELATION

CLAYS & SILTS	BLOWS/FOOT*
VERY SOFT	0-2
SOFT	2-4
FIRM	4-8
STIFF	8-16
VERY STIFF	16-32
HARD	OVER 32

SANDS & GRAVELS	BLOWS/FOOT*
VERY LOOSE	0-4
LOOSE	4-10
MEDIUM DENSE	10-30
DENSE	30-50
VERY DENSE	OVER 50

*Number of blows of 140 lb hammer falling 30" to drive a 2" O.D. (1-3/8" I.D.) split-spoon sampler (ASTM D1586).

TEST BORING LOG

Project: Preliminary Percolation Testing - Los Montanas Unit 3
 Elevation: Not Determined Datum: ---

TEST BORING: 1
 Date: 6-23-05

Depth, feet	Blows/Foot		Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	C	N/R					
5						SC/ SM	Clayey to Silty Sand, Trace to Some Gravel; brown, slightly damp to damp, intermittent light cementation, non-plastic to medium plasticity, medium dense.
10							
15							
20							Stopped drilling at 15 feet. No groundwater observed.
25							
							This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.

TEST BORING LOG

Project: Preliminary Percolation Testing - Los Montanas Unit 3

TEST BORING: P1

Elevation: Not Determined Datum: ---

Date: 6-23-05

Depth, feet	Blows/Foot		Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	C	N/R					
5						SC/ SM	Clayey to Silty Sand, Trace to Some Gravel; brown, slightly damp to damp, intermittent light cementation, non-plastic to medium plasticity, medium dense.
10							Stopped drilling at 5 feet. No groundwater observed. After presoaking a stabilized percolation rate of 23 minutes per inch was measured.
15							
20							
25							
This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.							

TEST BORING LOG

Project: Preliminary Percolation Testing - Los Montanas Unit 3

TEST BORING: 2

Elevation: Not Determined Datum: ---

Date: 6-23-05

Depth, feet	Blows/Foot		Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	C	N/R					
5						SC/ SM	Clayey to Silty Sand, Trace to Some Gravel; brown, slightly damp to damp, intermittent light cementation, non-plastic to medium plasticity, medium dense.
10							
15							
20							Stopped drilling at 15 feet. No groundwater observed.
25							
This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.							

TEST BORING LOG

Project: Preliminary Percolation Testing - Los Montanas Unit 3

TEST BORING: P2

Elevation: Not Determined Datum: ---

Date: 6-23-05

Depth, feet	Blows/Foot		Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	C	N/R					
5						SC/ SM	Clayey to Silty Sand, Trace to Some Gravel; brown, slightly damp to damp, intermittent light cementation, non-plastic to medium plasticity, medium dense.
10							Stopped drilling at 6 feet. No groundwater observed. After presoaking a stabilized percolation rate of 21 minutes per inch was measured.
15							
20							
25							
This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.							

TEST BORING LOG

Project: Preliminary Percolation Testing - Los Montanas Unit 3
 Elevation: Not Determined Datum: ---

TEST BORING: 3
 Date: 6-23-05

Depth, feet	Blows/Foot		Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	C	N/R					
5						SC/ SM	Clayey to Silty Sand, Trace to Some Gravel; brown, slightly damp to damp, intermittent light cementation, non-plastic to medium plasticity, medium dense.
10							
15							
20							Stopped drilling at 15 feet. No groundwater observed.
25							
This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.							

TEST BORING LOG

Project: Preliminary Percolation Testing - Los Montanas Unit 3
 Elevation: Not Determined Datum: ---

TEST BORING: P3
 Date: 6-23-05

Depth, feet	Blows/Foot		Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	C	N/R					
						SC/SM	Clayey to Silty Sand, Trace to Some Gravel; brown, slightly damp to damp, intermittent light cementation, non-plastic to medium plasticity, medium dense.
5							Stopped drilling at 4 feet. No groundwater observed.
10							After presoaking a stabilized percolation rate of 21 minutes per inch was measured.
15							
20							
25							
This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.							

TEST BORING LOG

Project: Preliminary Percolation Testing - Los Montanas Unit 3

TEST BORING: 4

Elevation: Not Determined Datum: ---

Date: 6-23-05

Depth, feet	Blows/Foot		Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	C	N/R					
5						SC/ SM	Clayey to Silty Sand, Trace to Some Gravel; brown, slightly damp to damp, intermittent light cementation, non-plastic to medium plasticity, medium dense.
10							
15							
20							Stopped drilling at 15 feet. No groundwater observed.
25							
This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.							

TEST BORING LOG

Project: Preliminary Percolation Testing - Los Montanas Unit 3
 Elevation: Not Determined Datum: ---

TEST BORING: P4
 Date: 6-23-05

Depth, feet	Blows/Foot		Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	C	N/R					
5						SC/ SM	Clayey to Silty Sand, Trace to Some Gravel; brown, slightly damp to damp, intermittent light cementation, non-plastic to medium plasticity, medium dense.
10							Stopped drilling at 5 feet. No groundwater observed. After presoaking a stabilized percolation rate of 23 minutes per inch was measured.
15							
20							
25							
This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.							

TEST BORING LOG

Project: Preliminary Percolation Testing - Los Montanas Unit 3

TEST BORING: 5

Elevation: Not Determined Datum: ---

Date: 6-23-05

Depth, feet	Blows/Foot		Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	C	N/R					
5						SC/ SM	Clayey to Silty Sand, Trace to Some Gravel; brown, slightly damp to damp, intermittent light cementation, non-plastic to medium plasticity, medium dense.
10							
15							
20							Stopped drilling at 15 feet. No groundwater observed.
25							
This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.							

TEST BORING LOG

Project: Preliminary Percolation Testing - Los Montanas Unit 3

TEST BORING: P5

Elevation: Not Determined Datum: ---

Date: 6-23-05

Depth, feet	Blows/Foot		Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	C	N/R					
						SC/ SM	Clayey to Silty Sand, Trace to Some Gravel; brown, slightly damp to damp, intermittent light cementation, non-plastic to medium plasticity, medium dense.
5							Stopped drilling at 4 feet. No groundwater observed.
10							After presoaking a stabilized percolation rate of 21 minutes per inch was measured.
15							
20							
25							
This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.							

TEST BORING LOG

Project: Preliminary Percolation Testing - Los Montanas Unit 3
 Elevation: Not Determined Datum: ---

TEST BORING: 6
 Date: 6-23-05

Depth, feet	Blows/Foot		Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	C	N/R					
5						SC/ SM	Clayey to Silty Sand, Trace to Some Gravel; brown, slightly damp to damp, intermittent light cementation, non-plastic to medium plasticity, medium dense.
10							
15							
20							Stopped drilling at 15 feet. No groundwater observed.
25							
This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.							

TEST BORING LOG

Project: Preliminary Percolation Testing - Los Montanas Unit 3
 Elevation: Not Determined Datum: ---

TEST BORING: P6
 Date: 6-23-05

Depth, feet	Blows/Foot		Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	C	N/R					
5						SC/ SM	Clayey to Silty Sand, Trace to Some Gravel; brown, slightly damp to damp, intermittent light cementation, non-plastic to medium plasticity, medium dense.
10							Stopped drilling at 6 feet. No groundwater observed. After presoaking a stabilized percolation rate of 25 minutes per inch was measured.
15							
20							
25							
This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.							

TEST BORING LOG

Project: Preliminary Percolation Testing - Los Montanas Unit 3
 Elevation: Not Determined Datum: ---

TEST BORING: 7
 Date: 6-23-05

Depth, feet	Blows/Foot		Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	C	N/R					
5						SC/ SM	Clayey to Silty Sand, Trace to Some Gravel; brown, slightly damp to damp, intermittent light cementation, non-plastic to medium plasticity, medium dense.
10							
15							
20							Stopped drilling at 15 feet. No groundwater observed.
25							

This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.

TEST BORING LOG

Project: Preliminary Percolation Testing - Los Montanas Unit 3

TEST BORING: P7

Elevation: Not Determined Datum: ---

Date: 6-23-05

Depth, feet	Blows/Foot		Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	C	N/R					
5						SC/ SM	Clayey to Silty Sand, Trace to Some Gravel; brown, slightly damp to damp, intermittent light cementation, non-plastic to medium plasticity, medium dense.
10							Stopped drilling at 5 feet. No groundwater observed. After presoaking a stabilized percolation rate of 22 minutes per inch was measured.
15							
20							
25							
This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.							

TEST BORING LOG

Project: Preliminary Percolation Testing - Los Montanas Unit 3
 Elevation: Not Determined Datum: ---

TEST BORING: 8
 Date: 6-23-05

Depth, feet	Blows/Foot		Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	C	N/R					
5						SC/ SM	Clayey to Silty Sand, Trace to Some Gravel; brown, slightly damp to damp, intermittent light cementation, non-plastic to medium plasticity, medium dense.
10							
15							
20							Stopped drilling at 15 feet. No groundwater observed.
25							
							This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.

TEST BORING LOG

Project: Preliminary Percolation Testing - Los Montanas Unit 3

TEST BORING: P8

Elevation: Not Determined Datum: ---

Date: 6-23-05

Depth, feet	Blows/Foot		Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	C	N/R					
5						SC/ SM	Clayey to Silty Sand, Trace to Some Gravel; brown, slightly damp to damp, intermittent light cementation, non-plastic to medium plasticity, medium dense.
10							Stopped drilling at 6 feet. No groundwater observed. After presoaking a stabilized percolation rate of 22 minutes per inch was measured.
15							
20							
25							
							This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.

TEST BORING LOG

Project: Preliminary Percolation Testing - Los Montanas Unit 3

TEST BORING: 9

Elevation: Not Determined Datum: ---

Date: 6-23-05

Depth, feet	Blows/Foot		Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	C	N/R					
5						SC/ SM	Clayey to Silty Sand, Trace to Some Gravel; brown, slightly damp to damp, intermittent light cementation, non-plastic to medium plasticity, medium dense.
10							
15							
20							Stopped drilling at 15 feet. No groundwater observed.
25							
							This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.

TEST BORING LOG

Project: Preliminary Percolation Testing - Los Montanas Unit 3
 Elevation: Not Determined Datum: ---

TEST BORING: P9
 Date: 6-23-05

Depth, feet	Blows/Foot		Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	C	N/R					
5						SC/ SM	Clayey to Silty Sand, Trace to Some Gravel; brown, slightly damp to damp, intermittent light cementation, non-plastic to medium plasticity, medium dense.
10							Stopped drilling at 5 feet. No groundwater observed. After presoaking a stabilized percolation rate of 31 minutes per inch was measured.
15							
20							
25							
							This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.

TEST BORING LOG

Project: Preliminary Percolation Testing - Los Montanas Unit 3

TEST BORING: 10

Elevation: Not Determined Datum: ---

Date: 6-23-05

Depth, feet	Blows/Foot		Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	C	N/R					
5						SC/ SM	Clayey to Silty Sand, Trace to Some Gravel; brown, slightly damp to damp, intermittent light cementation, non-plastic to medium plasticity, medium dense.
10							
15							
20							Stopped drilling at 15 feet. No groundwater observed.
25							
							This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.

TEST BORING LOG

Project: Preliminary Percolation Testing - Los Montanas Unit 3

TEST BORING: P10

Elevation: Not Determined Datum: ---

Date: 6-23-05

Depth, feet	Blows/Foot		Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	C	N/R					
5						SC/ SM	Clayey to Silty Sand, Trace to Some Gravel; brown, slightly damp to damp, intermittent light cementation, non-plastic to medium plasticity, medium dense.
10							Stopped drilling at 5 feet. No groundwater observed. After presoaking a stabilized percolation rate of 22 minutes per inch was measured.
15							
20							
25							
This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.							

TEST BORING LOG

Project: Preliminary Percolation Testing - Los Montanas Unit 3

TEST BORING: 11

Elevation: Not Determined Datum: ---

Date: 6-23-05

Depth, feet	Blows/Foot		Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	C	N/R					
5						SC/ SM	Clayey to Silty Sand, Trace to Some Gravel; brown, slightly damp to damp, intermittent light cementation, non-plastic to medium plasticity, medium dense.
10							
15							
20							Stopped drilling at 15 feet. No groundwater observed.
25							
This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.							

TEST BORING LOG

Project: Preliminary Percolation Testing - Los Montanas Unit 3
 Elevation: Not Determined Datum: ---

TEST BORING: P11
 Date: 6-23-05

Depth, feet	Blows/Foot		Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	C	N/R					
						SC/ SM	Clayey to Silty Sand, Trace to Some Gravel; brown, slightly damp to damp, intermittent light cementation, non-plastic to medium plasticity, medium dense.
5							Stopped drilling at 4 feet. No groundwater observed.
10							After presoaking a stabilized percolation rate of 25 minutes per inch was measured.
15							
20							
25							
This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.							

TEST BORING LOG

Project: Preliminary Percolation Testing - Los Montanas Unit 3
 Elevation: Not Determined Datum: ---

TEST BORING: 12
 Date: 6-23-05

Depth, feet	Blows/Foot		Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	C	N/R					
5						SC/ SM	Clayey to Silty Sand, Trace to Some Gravel; brown, slightly damp to damp, intermittent light cementation, non-plastic to medium plasticity, medium dense.
10							
15							
20							Stopped drilling at 15 feet. No groundwater observed.
25							
This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.							

TEST BORING LOG

Project: Preliminary Percolation Testing - Los Montanas Unit 3
 Elevation: Not Determined Datum: ---

TEST BORING: P12
 Date: 6-23-05

Depth, feet	Blows/Foot		Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	C	N/R					
5						SC/ SM	Clayey to Silty Sand, Trace to Some Gravel; brown, slightly damp to damp, intermittent light cementation, non-plastic to medium plasticity, medium dense.
10							Stopped drilling at 6 feet. No groundwater observed. After presoaking a stabilized percolation rate of 25 minutes per inch was measured.
15							
20							
25							
							This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.

TEST BORING LOG

Project: Preliminary Percolation Testing - Los Montanas Unit 3

TEST BORING: 13

Elevation: Not Determined Datum: ---

Date: 6-23-05

Depth, feet	Blows/Foot		Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	C	N/R					
5						SC/ SM	Clayey to Silty Sand, Trace to Some Gravel; brown, slightly damp to damp, intermittent light cementation, non-plastic to medium plasticity, medium dense.
10							
15							
20							Stopped drilling at 15 feet. No groundwater observed.
25							

This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.

TEST BORING LOG

Project: Preliminary Percolation Testing - Los Montanas Unit 3

TEST BORING: P13

Elevation: Not Determined Datum: ---

Date: 6-23-05

Depth, feet	Blows/Foot		Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	C	N/R					
5						SC/ SM	Clayey to Silty Sand, Trace to Some Gravel; brown, slightly damp to damp, intermittent light cementation, non-plastic to medium plasticity, medium dense.
10							Stopped drilling at 6 feet. No groundwater observed. After presoaking a stabilized percolation rate of 31 minutes per inch was measured.
15							
20							
25							
This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.							

TEST BORING LOG

Project: Preliminary Percolation Testing - Los Montanas Unit 3

TEST BORING: 14

Elevation: Not Determined Datum: ---

Date: 6-23-05

Depth, feet	Blows/Foot		Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	C	N/R					
5						SC/ SM	Clayey to Silty Sand, Trace to Some Gravel; brown, slightly damp to damp, intermittent light cementation, non-plastic to medium plasticity, medium dense.
10							
15							
20							Stopped drilling at 15 feet. No groundwater observed.
25							
							This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.

TEST BORING LOG

Project: Preliminary Percolation Testing - Los Montanas Unit 3

TEST BORING: P14

Elevation: Not Determined Datum: ---

Date: 6-23-05

Depth, feet	Blows/Foot		Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	C	N/R					
5						SC/ SM	Clayey to Silty Sand, Trace to Some Gravel; brown, slightly damp to damp, intermittent light cementation, non-plastic to medium plasticity, medium dense.
10							Stopped drilling at 5 feet. No groundwater observed. After presoaking a stabilized percolation rate of 26 minutes per inch was measured.
15							
20							
25							
This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.							

TEST BORING LOG

Project: Preliminary Percolation Testing - Los Montanas Unit 3

TEST BORING: 15

Elevation: Not Determined Datum: ---

Date: 6-23-05

Depth, feet	Blows/Foot		Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	C	N/R					
5						SC/ SM	Clayey to Silty Sand, Trace to Some Gravel; brown, slightly damp to damp, intermittent light cementation, non-plastic to medium plasticity, medium dense.
10							
15							
20							Stopped drilling at 15 feet. No groundwater observed.
25							
							This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.

TEST BORING LOG

Project: Preliminary Percolation Testing - Los Montanas Unit 3

TEST BORING: P15

Elevation: Not Determined Datum: ---

Date: 6-23-05

Depth, feet	Blows/Foot		Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	C	N/R					
						SC/ SM	Clayey to Silty Sand, Trace to Some Gravel; brown, slightly damp to damp, intermittent light cementation, non-plastic to medium plasticity, medium dense.
5							Stopped drilling at 4 feet. No groundwater observed.
10							After presoaking a stabilized percolation rate of 24 minutes per inch was measured.
15							
20							
25							
							This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.

TEST BORING LOG

Project: Preliminary Percolation Testing - Los Montanas Unit 3
 Elevation: Not Determined Datum: ---

TEST BORING: 16/P16
 Date: 6-23-05

Depth, feet	Blows/Foot		Sample Type	Dry Density, pcf	Water Content, %	Unified Classification	Description
	C	N/R					
						SC/ GC	Clayey Sand and Gravel, Some Cobbles; brown, slightly damp, intermittent light cementation, medium plasticity, medium dense.
5							Auger refusal at 3 feet. No groundwater observed.
10							Note: previous attempts at drilling at this location resulted in refusal at 1.0 and 1.5 feet.
15							After presoaking, a stabilized percolation rate of 23 minutes per inch was measured.
20							
25							
This boring log represents the conditions encountered on the date of drilling at this particular location. No other warranty is expressed or implied to the actual conditions which may exist within the vicinity of this boring location.							

611933 Drilled 6-23-05 Tested 6-24-05

P1 (5')	P7	P2 (6')
1" 17 m	1" 19 m	1" 16 m
1" 22 m	1" 20 m	1" 18.5 m
1" 21 m	1" 22 m	1" 20 m
1" 22.5 m	1" 21.5 m	1" 20 m
1" 23 m (23)	1" 21 m (22)	1" 20.5 m (21)
5" left	5" left	5" left

P4 (5')	P3 (4')	P5 (4')
1" 18.5 m	1" 20 m	1" 16.5 m
1" 21 m	1" 19 m	1" 19 m
1" 24 m	1" 21.5 m	1" 19 m
1" 22.5 m	1" 20.5 m	1" 20.5 m
1" 22 m	1" 21 m	1" 20 m
5" left (23)	5" left (21)	5" left (20)

G 11933 Drilled 6-23-05 Tested 6-24-05

P 10 (51)	P 8 (61)	P 6 (61)
1" 20.5 m	1" 18.5 m	1" 21 m
1" 19 m	1" 20 m	1" 22.5 m
1" 20 m	1" 19 m	1" 22 m
1" 21.5 m	1" 20.5 m	1" 23.5 m
1" 21 m	1" 22 m	1" 25 m
5 left (22)	5 left (22)	5 left (25)

P 11 (41)	P 16 (31)
1" 19.5 m	1" 21.5 m
1" 22 m	1" 20 m
1" 23 m	1" 22 m
1" 25.5 m	1" 23.5 m
1" 25 m (25)	1" 22.5 m (23)
5 left	5 left

G11933 Drilled 6-23-05 Tested 6-24-05

P15 (4)

1" 26min

1" 21min

1" 25min

1" 23.5min

1" 24min

5" left (24)

P14 (5)

1" 24min

1" 24min

1" 26min

1" 26.5min

1" 26min

5" left (26)

P12 (6)

1" 26min

1" 24min

1" 27min

1" 27.5min

1" 28min

5" left (28)

P13 (6)

1" 19min

1" 24min

1" 26.5min

1" 28min

1" 31min

5" left (31)

T-9 (5)

1" 22min

1" 26min

1" 30min

1" 30.5min

1" 29min

5" left (31)

APPENDIX B
LABORATORY ANALYSIS



R·A·M

LABORATORY TEST RESULTS

Date: 30-Jun-05

SAMPLE SOURCE: As noted below

TESTING PERFORMED: Percent Passing No. 200 Sieve, Atterberg Limits (ASTM D1140, D4318)

SAMPLED BY: RAM/Reese

RESULTS:

Sample Source	Percent Retained <u>No. 4 Sieve</u>	Percent Passing <u>No. 200 Sieve</u>	Liquid Limit	Plasticity Index
3 @ 3'-10'	2	37	32	8
3 @ 3'-10'	7	28	31	11
3 @ 3'-10'	8	22	29	5