



Leighton Consulting, Inc.
A LEIGHTON GROUP COMPANY

TRANSMITTAL

To: **WILLIAMS ARCHITECTS**
276 North Second Street
Upland, CA 91786

Date: July 20, 2011

Project No. 603176-001

Attention: Ms. Rene' Glynn, Vice President

Transmitted:

Herewith
 Via Courier
 Client Pick Up
 Fed Ex

The Following:

Draft Report
 Final Report
 Extra Report
 Proposal
 Other

For:

Your Use
 As Requested

Subject: Percolation Feasibility Report, Proposed Animal Shelter, APN 0597-021-080-000,
Southeast Corner of Paseo Los Ninos and Malin Way, Yucca Valley, California _____

LEIGHTON CONSULTING, INC.

By: Bob Riha CEG / Simon I. Saiid, GE

Distribution: (3) Addressee:
1 wet signed/stamped and 2 copies

PERCOLATION FEASIBILITY PROPOSED ANIMAL SHELTER
APN 0597-021-080-000
SOUTHEAST CORNER OF PASEO LOS NINOS AND MALIN WAY
YUCCA VALLEY, CALIFORNIA

Prepared for:

WILLIAMS ARCHITECTS

276 NORTH SECOND STREET
UPLAND, CA 91786

Project No. 603176-001

July 20, 2011



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Project No. 603176-001

WILLIAMS ARCHITECTS
276 North Second Street
Upland, CA 91786

Attention: Ms. Rene' Glynn, Vice President

Subject: Percolation Feasibility Report - DEH Contact Date June 25, 2011, Proposed Animal Shelter, APN 0597-021-080-000, Southeast Corner of Paseo Los Ninos and Malin Way, Yucca Valley, California

Reference: County of San Bernardino *On-Site Waste Water Disposal System* (August, 1992).

In accordance with your request and authorization, Leighton Consulting, Inc. (Leighton) is pleased to present this soils percolation report for the subject development located on the southeastern corner of Paseo Los Ninos and Marlin Way within the community of Yucca Valley, San Bernardino County, California (See Figure 1, Site Location Map).

PURPOSE AND SCOPE OF WORK

The purpose of our testing was to assess the feasibility of utilizing a leach line type disposal system for the proposed single-story structure as depicted on a site plan provided by Williams Architects, Inc. dated April 28, 2011. Services provided for this study consisted of the following:

- Percolation testing of 2 shallow borings in accordance with the procedures outlined in Reference above (County of San Bernardino, 1992);
- Compilation of this report that presents the results of our testing and provides general design and construction recommendations for an onsite septic system/ Leach field.

SITE DESCRIPTION

The site consists of approximately 5-acres of gently to moderately sloping terrain in southeasterly direction. Based on a conceptual site plan provided, the proposed leach lines will be located south of the proposed single-story structure (See Figure 2). The leach line design is based on an assumption that there will be one septic tank with a maximum capacity of 3,000

gallons. Although County procedures recommend minimum 4 tests per one commercial lot, two shallow percolation test holes were performed and considered representative of the overall leach field area.

SUBSURFACE INVESTIGATION

Our field investigation consisted of excavating two shallow percolation test holes (~3.5 feet) and one deep test pit (15 feet) on June 27, 2011 utilizing a rubber-tire backhoe equipped with an 8-inch solid-stem auger. A geologist from our office logged and observed all excavations. The locations of the exploratory deep test pit and percolation test holes are shown on Figure 2. The log of the exploratory deep test pit and percolation test holes is included in Appendix A.

SOILS AND GROUNDWATER CONDITIONS

Based on the results of this study the site is underlain by Quaternary alluvium formation. The soils encountered within the test holes were classified as silty sand (SM). Groundwater was not reported in any of the test pits or percolation test holes during the investigation. Furthermore, our review of available regional ground water well data from the California Department of Water Resources web page (<http://wdl.water.ca.gov>) indicates the regional water table is in excess of 50 feet. Thus, groundwater is not expected to impact the proposed septic system on this property.

PERCOLATION TEST RESULTS

The percolation tests were performed in general accordance with the procedures suggested by Department of Environmental Health of the County of San Bernardino. Results reported below are the most conservative reading in minutes per inch drop for tests 1 and 2. Field test data are included in Appendix A.

Summary of Percolation Test Results

Test Hole #	Test Hole Depth (ft)	Percolation Rate (MPI)	Soil Description
P-1	3.5	3.21	Silty Sand (SM)
P-2	3.5	1.94	Silty Sand (SM)

PRELIMINARY DESIGN REQUIREMENTS

Septic Tank: Based on the above test results, a percolation rate of 3.2 MPI should be used to design the proposed leach field / septic system. The actual design of the proposed septic system should comply with all relevant requirements included in the San Bernardino County, Department of Environmental Health – Technical Guidance Manual referenced above.

LIMITATIONS

The findings and design recommendations presented in this report are based on a general interpretation of soils conditions between test locations, utilizing contemporary engineering principles and practice. We make no other warranty, either expressed or implied. Please notify the engineer in the event conditions are encountered that are not reflected in this report.

If you have any question, please do not hesitate to contact this office. We appreciate this opportunity to be of service.

Respectfully submitted,
LEIGHTON CONSULTING, INC.

Simon I. Saiid
GE 2641(Exp. 09/30/11)
Principal Engineer



Jeffrey T. Deland
Staff Geologist

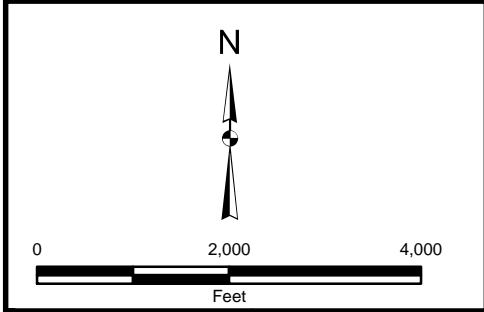
Robert F. Riha
CEG 1921 (Exp. 02/29/12)
Senior Principal Geologist



Attachments: Figure 1 – Site Location Map
Figure 2 – Percolation Test Location Plan
Appendix A – Leach Line Percolation Data Sheets, Logs of Exploratory Test Pits / Trench & Percolation Tests

Distribution: (3) Addressee, only one wet signed copy.





Project: 603176-001	Eng/Geol: SIS/RFR
Scale: 1" = 2,000'	Date: July, 2011
Base Map: ESRI Resource Center, 2010 Thematic Info: Leighton Author: (mmurphy)	

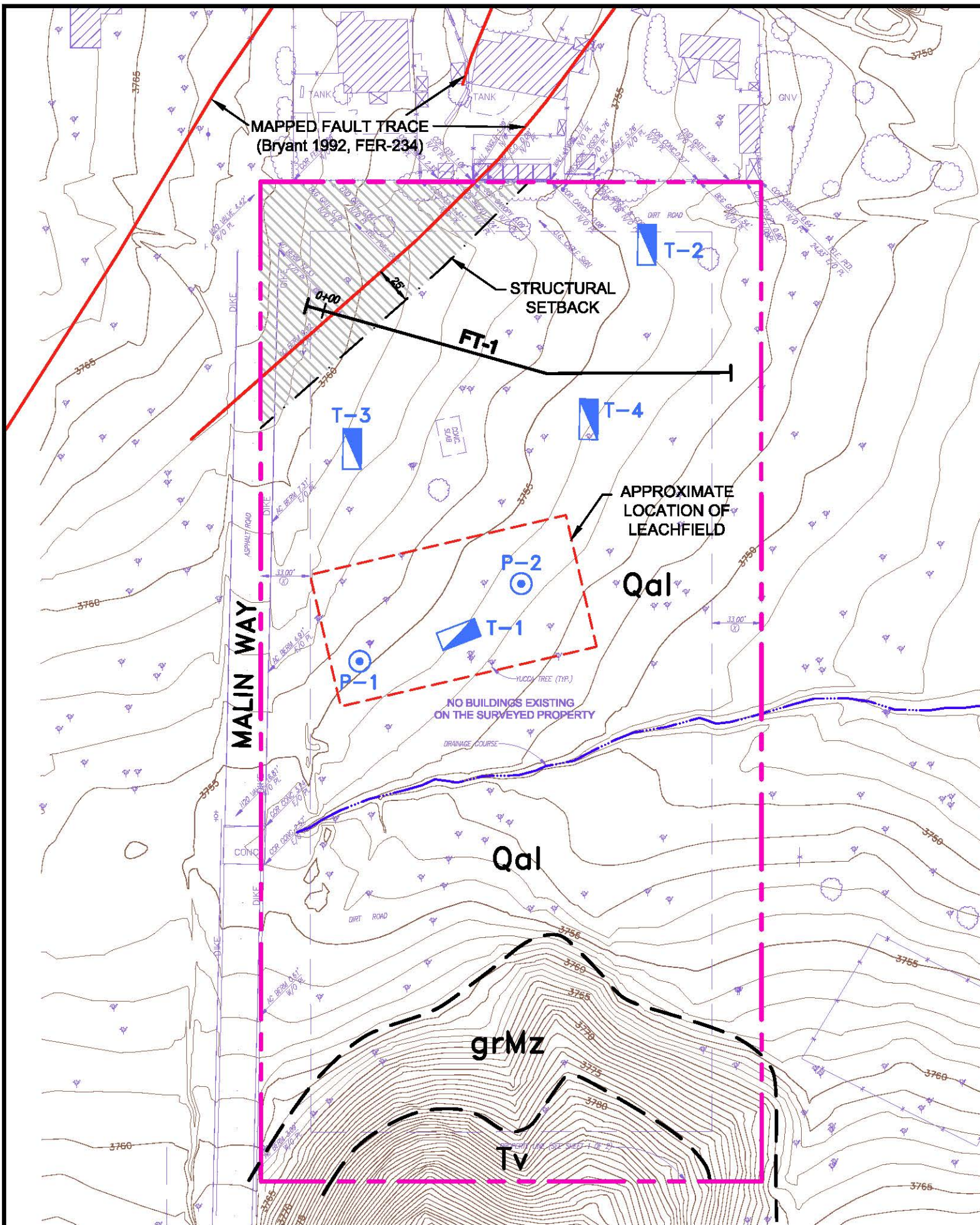
SITE LOCATION MAP

Yucca Valley Animal Shelter



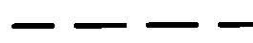




Yucca Valley, California

Figure 1





LEGEND

-  SITE BOUNDARY
-  LOCATION OF FAULT EXPLORATION TRENCH (SEPARATE STUDY, LEIGHTON, 2011)
-  APPROXIMATE GEOLOGIC CONTACT
-  FAULT TRACE, BRYANT 1992
-  STRUCTURE SETBACK ZONE
-  APPROXIMATE TEST PIT LOCATION
-  APPROXIMATE LOCATION OF PERCOLATION TEST
- Qal** ALLUVIUM
- Tv** TERTIARY VOLCANICS
- grMz** MESOZOIC UNDIFFERENTIATED GRANITIC BEDROCK

REFERENCE: KELSOE AND ASSOCIATES, INC., ALTA/ACSM LAND TITLE SURVEY, JOB NO. KA1 11-2093, DATED 05-12-11

PERCOLATION TEST LOCATION PLAN

YUCCA VALLEY ANIMAL SHELTER
YUCCA VALLEY, CALIFORNIA

Proj: 603176-001

Eng/Geol: SIS/RFR

Scale: 1"=80'

Date: 07/2011

Drafted By: MAM Checked By: P:\KRAFT\060317601\07_2011-07-19\FIGURE2A.DWG 07-20-11 4:18:27PM Plotted by: nrm/ny

FIGURE 2



Leighton

APPENDIX A

Leach Line Percolation Data Sheet

Log of Exploratory Test Pits / Trench and Percolation Tests

TEST NO. / LOCATION P-1, Yucca Valley Animal Shelter
 DEPTH OF TEST HOLE: 3.5 Feet
 SOIL DESCRIPTION: Light Gray, silty fine to coarse SAND with fine Gra

DATE: 6/27/2011
 TEST HOLE SIZE: 8"

PRESOAK PERIOD

TIME INTERVAL
 START- 6/27/2011 9:00 AM
 STOP- 6/27/2011 9:30 AM (no water left in test hole)

AMOUNT OF WATER USED
2.5 Gallons

TEST PERIOD

Time	Time Interval (min)	Initial Water Level (inches)	Final Water Level (inches)	Δ in Water Level (inches)	Percolation Rate (min/inch)
9:33 AM	20.0	22.8	31.2	8.40	2.38
9:53 AM					
9:53 AM	30.0	20.2	32.0	11.80	2.54
10:23 AM					
10:23 AM	20.0	25.8	32.0	6.24	3.21
10:43 AM					
10:43 AM	10.0	28.9	32.0	3.12	3.21
10:53 AM					

Engineer/Technician: JTD DATE: 6/27/2011

TEST NO. / LOCATION P-2, Yucca Valley Animal Shelter
 DEPTH OF TEST HOLE: 3.5 Feet
 SOIL DESCRIPTION: Light Gray, silty fine to coarse SAND with fine Gra

EXCAVATION DATE: 6/27/2011
 TEST HOLE SIZE: 8"

PRESOAK PERIOD

TIME INTERVAL
 START- 6/27/2011 9:00 AM
 STOP- 6/27/2011 9:30 AM (No water left in test hole)

AMOUNT OF WATER USED
2.5 Gallons

TEST PERIOD

Time	Time Interval (min)	Initial Water Level (inches)	Final Water Level (inches)	Δ in Water Level (inches)	Percolation Rate (min/inch)
9:35 AM	20.0	17.7	32.0	14.3	1.40
9:55 AM					
9:55 AM	30.0	15.2	32.0	16.8	1.79
10:25 AM					
10:25 AM	20.0	21.6	32.0	10.4	1.92
10:45 AM					
10:45 AM	10.0	26.8	32.0	5.2	1.94
10:55 AM					

Engineer/Technician: JTD DATE: 6/27/2011

Seal/ Signature

LOG OF TEST PIT

PROJECT NO.: 603176-001
 PROJECT NAME: Yucca Valley Animal Shelter
 LOCATION: See Figure 2
 ELEVATION: ~3754

LOGGED BY: JTD
 EQUIPMENT: Cat 460 Backhoe
 DATE: 6/27/2011
 TREND OF TRENCH: N 80° W

Depth (ft)	SAMPLES		USCS Symbol	TEST PIT NO.: T-1	REMARKS
	Sample Type*	Sample Number		MATERIAL DESCRIPTION AND COMMENTS	
5			SM	@ Surface: Quaternary Alluvium (Qal) ; Light Gray-Brown, dry-to-damp, silty fine to coarse grained SAND with fine Gravel, organics @ 0-2.0': Brown, damp-to-moist, Silty fine to coarse grained SAND, abundant roots @ 2.0'-12.0': Gray-Brown, moist, Silty fine to coarse grained SAND, interbedded Sand and Silt layers, few fine gravel and cobble	
10			SW	@ 12.0'-15.0': Older Alluvium (Qalo) ; Dark Yellow-Brown, moist, fine to coarse grained SAND with fine Gravel, few Silt and Clay	
15				Total Depth = 15.0' Below Ground Surface, Backfilled with Spoils	

LEGEND	Sample Type: <input type="checkbox"/> ---Small Bulk	<input checked="" type="checkbox"/> ---Large Bulk	<input type="checkbox"/> ---Chunk
	Laboratory Testing: AL = Atterberg Limits	EI = Expansion Index	RV = R-Value Test
	SA = Sieve Analysis	SR = Sulfate/Resistivity Test	SH = Shear Testing MD = Maximum Density

LOG OF TEST PIT

PROJECT NO.: 603176-001
 PROJECT NAME: Yucca Valley Animal Shelter
 LOCATION: See Figure 2
 ELEVATION: ~3754

LOGGED BY: JTD
 EQUIPMENT: Cat 630 Backhoe
 DATE: 6/27/2011
 TREND OF TRENCH: East/West

Depth (ft)	SAMPLES		USCS Symbol	TEST PIT NO.: P-1	Dry Density (pcf)	Moisture (%)	Remarks
	Sample Type*	Sample Number		MATERIAL DESCRIPTION AND COMMENTS			
0			SM	@ Surface: Quaternary Alluvium (Qal) ; Light Gray-Brown, dry-to-damp, fine to coarse silty SAND with fine Gravel, organics @ 0-2.0': Light Gray-Brown, damp-to-moist, fine to coarse silty SAND interbedded with Silt layers, few fine gravel, abundant roots @ 2.0'-3.5': Light Gray-Brown, damp-to-moist, fine to coarse silty SAND, few Silt, few fine Gravel (22% -200)			
5		P-1		Total Depth = 3.5' below ground surface, no groundwater encountered, backfilled with spoils on 06-27-11			
10							
15							

LEGEND	Sample Type: ---Small Bulk	---Large Bulk	---Chunk
	Laboratory Testing: AL = Atterberg Limits SA = Sieve Analysis SR = Sulfate/Resistivity Test	EI = Expansion Index SH = Shear Testing	RV = R-Value Test MD = Maximum Density

LOG OF TEST PIT

PROJECT NO.: 603176-001
 PROJECT NAME: Yucca Valley Animal Shelter
 LOCATION: See Figure 2
 ELEVATION: ~3753

LOGGED BY: JTD
 EQUIPMENT: Cat 630 Backhoe
 DATE: 6/27/2011
 TREND OF TRENCH: East/West

Depth (ft)	SAMPLES		USCS Symbol	TEST PIT NO.: P-2	Dry Density (pcf)	Moisture (%)	Remarks
	Sample Type*	Sample Number		MATERIAL DESCRIPTION AND COMMENTS			
5	P-2	SM	@ Surface: <u>Quaternary Alluvium (Qal)</u> ; Light Gray-Brown, dry-to-damp, fine to coarse silty SAND with fine Gravel, organics @ 0-2.0': Light Gray-Brown, damp-to-moist, fine to coarse silty SAND interbedded with Silt layers, few fine gravel, abundant roots @ 2.0'-3.5': Light Gray-Brown, damp-to-moist, fine to coarse silty SAND, few fine Gravel, trace roots (24% -200)				
10			Total Depth = 3.5' below ground surface, no groundwater encountered, backfilled with spoils on 06-27-11				
15							

LEGEND	Sample Type: ---Small Bulk	---Large Bulk	---Chunk
	Laboratory Testing: AL = Attiberg Limits SA = Sieve Analysis SR = Sulfate/Resisitivity Test	EI = Expansion Index SH = Shear Testing	RV = R-Value Test MD = Maximum Density