

APPENDIX E

Energy Calculations



Table 1 – Total Construction-Related Fuel Consumption

County Line Road Recharge Basin and Turnout Project

Fuel	Consumption	
Diesel		
On-Road Construction Trips ¹	18,447	Gallons
Off-Road Construction Equipment ²	33,338	Gallons
Diesel Total	51,785	Gallons
Gasoline		
On-Road Construction Trips ¹	3,106	Gallons
Off-Road Construction Equipment ³	-	Gallons
Gasoline Total	3,106	Gallons

Notes:

1. On-road mobile source fuel use based on vehicle miles traveled (VMT) from CalEEMod for construction in 2024 and fleet-average fuel consumption in gallons per mile from EMFAC2021 web based data for Riverside (South Coast). See Table 2 for calculation details.
2. Off-road mobile source fuel usage based on a fuel usage rate of 0.05 gallons of diesel per horsepower (HP)-hour, based on SCAQMD CEQA Air Quality Handbook, Table A9-3E.
3. All emissions from off-road construction equipment were assumed to be diesel.

Table 2 – On-Road Construction Trip Estimates

County Line Road Recharge Basin and Turnout Project

Trip Type	Trips	Trip length	Vehicle Miles Traveled (VMT)	Fuel Efficiency	Annual Fuel Usage ¹	
	(trips)	(miles)	(miles)	(mpg)	(Fuel)	(gallon)
Worker ^{2,3}	4,295	18.5	79,458	26.2	Gasoline	3,106
Vendor ⁴	1,620	10.2	16,524	7.5	Diesel	2,276
Hauling ⁵	8,976	11	98,736	6.1	Diesel	16,171

Notes:

1. On-road mobile source fuel use based on vehicle miles traveled (VMT) from CalEEMod (See Air Quality/GHG Memo) for construction and fleet-average fuel consumption in gallons per mile from EMFAC2021 web based data for 2024 in Riverside (South Coast).
2. Worker trips were assumed to be 100% gasoline powered vehicles.
3. Per CalEEMod, worker Trips were assumed to be 25% LDA, 50% LDT1, and 25% LDT2.
4. Vendor trips were assumed to be 50% MHDT and 50% HHDT, split evenly between the MHDT and HHDT construction categories.
5. Per CalEEMod, hauling trips were assumed to be 100% HHDT. Trip Length is 11 miles to the nearest landfill.

APPENDIX F.1

Infiltration/Percolation Feasibility Investigation



**INFILTRATION/PERCOLATION
FEASIBILITY INVESTIGATION
PROPOSED RECHARGE BASIN
APN 411-150-027
CALIMESA, CALIFORNIA**

**PROJECT NO. 33109.4
FEBRUARY 21, 2022**

Prepared For:

Land Engineering Consultants, Inc.
P.O. Box 541
Calimesa, California 92320

Attention: Mr. Daniel J. Haskins

February 21, 2022

Land Engineering Consultants, Inc.
P.O. Box 541
Calimesa, California 92320

Project No. 33109.4

Attention: Mr. Daniel J. Haskins

Subject: Infiltration/Percolation Feasibility Investigation, Proposed Recharge Basin,
APN 411-150-027, Calimesa, California.

Transmitted with this letter is our report entitled Infiltration/Percolation Feasibility Investigation, Proposed Recharge Basin, APN 411-150-027, Calimesa, California, prepared for Land Engineering Consultants, Inc., Project No. 33109.4. This report was based upon a scope of services generally outlined in our Work Authorization Agreement dated January 10, 2022.

The borings placed during this evaluation indicated that the subsurface materials within the currently proposed recharge basin location consist of older alluvial materials comprised predominantly of silty sand and sandy silt to the total depth explored of approximately 50 feet.

It is our understanding that the recharge basin is currently proposed with a bottom elevation that averages 35 to 40 in depth below the existing site elevations. At these depths, a clear water absorption rate of approximately 4.5 gallons per square foot per day (0.3 inches per hour) appears warranted based on the results of our testing. This application rate is a clear water rate. An appropriate factor of safety should be applied in accordance with the San Bernardino County Stormwater Program (CDM Smith Inc., 2013).

Detailed information regarding our testing and our findings are presented within this report.

LOR Geotechnical Group, Inc.

Table of Contents

	<u>Page No.</u>
INTRODUCTION.	1
PROJECT CONSIDERATIONS.	1
FIELD INVESTIGATION.	1
LABORATORY TESTING.	2
PERCOLATION TESTING PROGRAM.	2
SUMMARY OF FINDINGS.	3
RECOMMENDATIONS.	3
CLOSURE.	4
REFERENCES.	5
ENCLOSURES	
APPENDICES	
<u>Appendix A</u>	
Index Map.	A-1
Site Plan.	A-2
<u>Appendix B</u>	
Field Investigation Program.	B
Boring Log Legend.	B-i
Soil Classification Chart.	B-ii
Boring Logs.	B-1 through B-6
<u>Appendix C</u>	
Laboratory Testing Program.	C
Gradation Curves.	C-1
<u>Appendix D</u>	
Infiltration Test Results.	D-1 through D-5

INTRODUCTION

During February of 2022, LOR Geotechnical Group, Inc., investigated the infiltration/percolation characteristics of the earth materials underlying the location of the proposed San Geronio Pass Water Agency recharge basin to be located in the central western portion of APN 411-150-027 in the City of Calimesa, California. The purpose of this study was to establish the absorption characteristics of the earth materials present in that area at a depth of approximately 35 to 40 feet. The scope of our services included: 1) A subsurface field investigation; 2) Falling head percolation testing to assess the absorption properties of the earth materials with the currently proposed recharge basin location; 3) Development of an application rate; 4) Recommendations for design; and 5) Preparation of this report.

The findings of this evaluation, as well as our recommendations, are presented in the following sections of this report. The approximate location of the site is indicated on the accompanying Index Map, presented as Enclosure A-1 within Appendix A.

PROJECT CONSIDERATIONS

The proposed recharge basin is to be located within the west central portion of the currently vacant site. The recharge basin is proposed to be at a depth of approximately 35 to 40 feet below the existing ground elevations, depending upon location. This depth was predetermined as indicated on the attached Site Plan, Enclosure A-2 within Appendix A, and the locations for our testing were provided on the drawing provided for our use. The purpose of this investigation was to determine the infiltration/percolation characteristics of the soil materials at the approximate proposed basin bottom elevations.

FIELD INVESTIGATION

Our field exploration program was conducted on January 27th and 28th 2022 and consisted of drilling six exploratory borings with a track mounted Mobile B-61 drill rig equipped with 8-inch diameter hollow stem augers. Our first exploratory boring, B-1, was not used for testing and was drilled for the purposes of confirming that groundwater was not present at shallow depth below the basin bottom and to confirm continuity of the soil conditions below this elevation. The infiltration/percolation test borings (P-1 through P-5) were drilled to a depth of within approximately 2 feet of the basin bottom elevation and soil samples were obtained at the approximate proposed basin bottom elevation by driving a Standard Penetration Sampler 18 inches into these materials. Logs of our borings are presented as

Enclosures B-1 through B-6 within Appendix B and the approximate locations of our exploratory borings are presented on our Site Plan, Enclosure A-2 within Appendix A.

Logs of the subsurface conditions encountered in the exploratory borings were created by a geologist from this firm. The borings placed during this evaluation indicate that the subsurface materials within the currently proposed recharge basin location consist of a variable thickness but relatively thin layer of fill/topsoil overlying older alluvial materials comprised of silty sand and sandy silt. Groundwater was not encountered within our borings as advanced to a maximum depth of approximately 50 feet below the existing ground surface. Information previously provided by this firm during earlier preliminary geotechnical investigation of the property indicated that groundwater lies at a depth of 150 or more feet below the ground surface (LOR, 2014).

LABORATORY TESTING

Sieve analysis testing was conducted on three representative samples recovered from our Standard Penetration Test samples retrieved from the approximate proposed basin bottom elevation with these results presented graphically on Enclosure C-1 within Appendix C. Quantitative determination of the grain size distribution was performed on the samples in accordance with the Caltrans Standard CT 202 laboratory test procedure. The determination is performed by passing the soil through a series of sieves, and recording the weights of retained particles on each screen.

PERCOLATION TESTING PROGRAM

Following drilling of the test holes on January 27, 2022, a 3-inch diameter, perforated PCV pipe wrapped in filter fabric was placed within the holes and gravel was placed between the outside of the pipe and the hole wall. Percolation testing took place on the following day, January 28, 2022. The holes were filled using a 400-gallon water buffalo equipped with a 1-inch diameter hose. The bottom approximate 5 to 8 feet of the holes were tested to allow for an average wetted depth of approximately 6 feet. Test periods consisted of allowing the water to drop in 30 minute intervals. After each 30 minute reading, each hole was refilled as stated above. Testing was conducted for a total of 6 hours within each test hole.

Applying the Porchet method to convert the percolation rates obtained to an infiltration rate, clear water rates ranged from 0.15 to 0.52 inches per hour. The test results are provided on the attached Falling Head Percolation Test Results, Enclosures D-1 through D-5 in Appendix D.

SUMMARY OF FINDINGS

The borings placed during this evaluation indicate that the subsurface materials at the proposed recharge basin location and depth consist of relatively dense/stiff, fine-grained older alluvial materials within the general depth range for the proposed recharge basin bottom elevation.

The infiltration rate calculated by using the Porchet method to convert the percolation data obtained to an infiltration rate indicates an average clear water value of 0.3 inches per hour. This is a clear water rate and should incorporate an appropriate factor of safety for design.

Groundwater was not encountered within our borings as advanced to a maximum depth of approximately 50 feet below the existing ground surface. Information previously provided indicated that groundwater lies approximately 200 feet below the existing ground surface (LOR, 2014).

RECOMMENDATIONS

Based upon our field investigation and test data, for design of the recharge basin placed at a depth of 35 to 40 feet below the existing grades, an average infiltration rate of 0.3 inches per hour is suggested. This infiltration rate is a clear water rate and an appropriate factor of safety should be applied for design. This factor of safety should be applied as indicated by the San Bernardino County Stormwater Program, Technical Guidance Document for Water Quality Management Plans (WQMP). The design infiltration rate should be adjusted using a factor of safety determined using Worksheet H, with a minimum factor of safety applied of 2.0 (2013).

To ensure continued infiltration capability of the infiltration area, a program to maintain the facilities should be considered. This program should include periodic removal of accumulated materials, which can slow the infiltration and decrease the water quality. Materials to be removed from the catch basin areas typically consist of litter, dead plant matter, and soil fines (silts and clays). Proper maintenance of the system is critical. A maintenance program which meets or exceeds those developed by the local governing agency should be prepared and properly executed. At a minimum, the program should be as outlined in the San Bernardino County Stormwater Program, Technical Guidance Document for Water Quality Management Plans (WQMP).

The program should also incorporate the recommendations presented below and any other jurisdictional agency requirements.

Systems should be set back at least 10 feet from foundations or as required by the design engineer.

During site development, care should be taken to not disturb the area(s) proposed for infiltration as changes in the soil structure could occur resulting in a change of the soil infiltration characteristics.

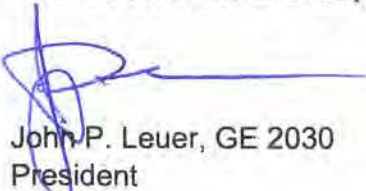
CLOSURE

This report was prepared using generally accepted geotechnical engineering practices under the direction of a state licensed geotechnical engineer. No warranty, expressed or implied, is made as to conclusions and professional advice included in this report. Any person using this report for bidding or construction purposes should perform such independent investigations as deemed necessary to satisfy themselves as to the surface and subsurface conditions to be encountered and the procedures to be used in the performance of work on this project.

Should conditions be encountered during construction that appear to be different than indicated by this report, please contact this office immediately in order that we may evaluate their effect.

It has been our pleasure in assisting you with this project. We look forward to being of further assistance as construction begins. Should you have any questions regarding this report, please do not hesitate to contact this office at your convenience.

Respectfully submitted,
LOR Geotechnical Group, Inc.


John P. Leuer, GE 2030
President



RMM:JPL:ss

Distribution: Addressee (2) and via email dan@lecincorporated.com

REFERENCES

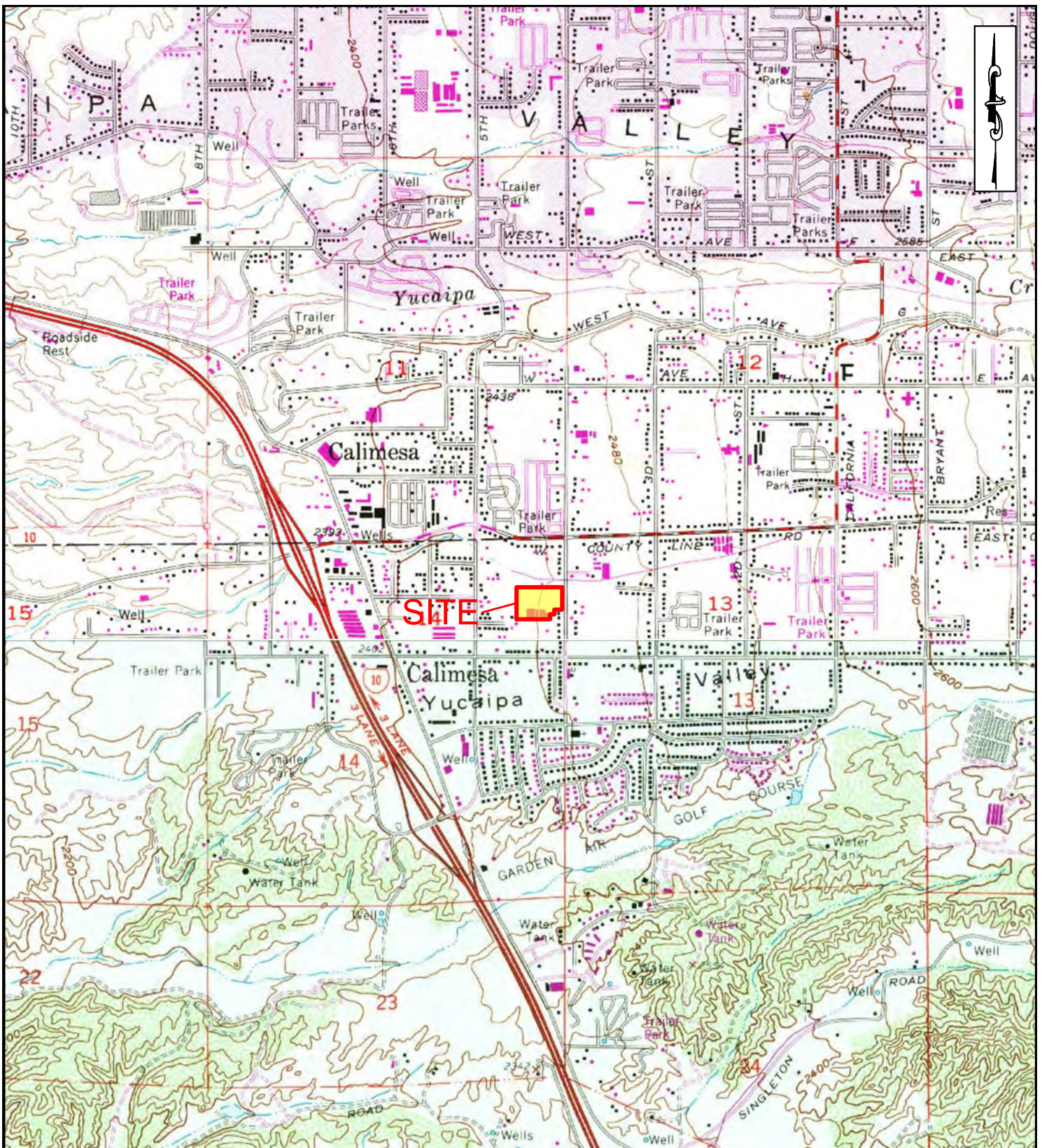
Land Engineering Consultants, Inc., Preliminary Site Development Plan, 30-scale, dated December 2021.

LOR Geotechnical Group, Inc., 2014, Preliminary Geotechnical Investigation and Infiltration Feasibility Investigation, APN's 411-150-012, 411-160-006, and a Portion of 411-160-032, SWC of 4th Street and Robertson Circle, Calimesa, California, Project No. 33109.1, dated September 23, 2014.

CDM Smith Inc., 2013, The County of San Bernardino Areawide Stormwater Program, NPDES No. CAS618036, ORDER No. R8-2010-0036, Technical Guidance Document for Water Quality Management Plans, Effective Date: September 19, 2013.

APPENDIX A

Index Map and Site Plan



INDEX MAP

PROJECT: San Geronio Pass Water Agency-Recharge Basin	PROJECT NO.: 33109.4
CLIENT: Land Engineering Consultants, Inc.	ENCLOSURE: A-1
LOR GEOTECHNICAL GROUP, INC.	DATE: February 2022
	SCALE: 1" ≈ 2,000'

[illegible]

(Locations Approximate)

 P-5 - Percolation Test
 B-1 - Exploratory Boring

BEING A DEVELOPMENT OF A PORTION OF BLOCKS 199, 216, AND 217 OF SUBDIVISION NO. 3 OF PART OF YUCAIPA VALLEY, IN THE CITY OF CALUMESA, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 9, PAGE 3 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

<u>APPLICANT:</u>	<u>APPLICANT:</u>	<u>ENGINEER/SURVEYOR:</u>
SAN GORDONIA PASS WATER AGENCY 1315 BEAUMONT AVE BEAUMONT, CA 92223 PH: (951) 845-2577	SOUTH MESA WATER COMPANY 391 WEST AVENUE L CALIFORNIA, CA 92322 PH: (909) 798-2401 DARVISHROOZ@SWMWATER.COM	LAND ENGINEERING CONSULTANTS, P.O. BOX 341, 850 AVENUE K, CALIFORNIA, CA 92320 PH: (909) 798-8882 STEVE@ECNCPROFESS.COM

1. PROPOSED PROJECT DESCRIPTION:
A. POTABLE WATER RESERVOIR FOR SOUTH MEHA WATER COMMUNITY, PROPOSED: 3.1 ACRES
B. POTABLE WATER RESERVOIR FOR NORTH MEHA WATER COMMUNITY, PROPOSED: WATER RESERVOIR 1.0 ACRES
C. WASTEWATER TREATMENT PLANT, PROPOSED: 1.0 ACRES
D. SINGLE FAMILY PARCEL, HOME DEVELOPMENT

2. ASSESSOR'S PARCEL NUMBER: A/P# 411-150-020

3. PROPERTY DATA:
A. 0.00 ACRES NOT TO BE DIVIDED INTO 3 PARCELS. THE RESERVOIR SITE IS 1.13 ACRES, THE RECHARGE BASIN SITE IS 4.82 ACRES AND THE RESIDENTIAL SURPLUS PROPERTY IS 0.81 ACRES

4. GENERAL TRAIL LAND USE:
A. THESE PROPERTY AND THE SURROUNDING PROPERTIES TO THE WEST, SOUTH AND EAST ARE ALL ZONED LOW DENSITY LOW MEDIUM (L-1) (T-4) AND TO THE NORTH IS ZONED CO-COMMUNITY COMMERCIAL (FAR 30.1).

5. PROPOSED FACILITIES:
A. RAW EIT & EXHIBIT # 170,000 E.Y.

6. THIS PROJECT PROPOSES WATER QUALITY UPGRADE DESIGNS TO COLLECT FLOWS FROM AERIFORM AREAS WITH BRANICAE RAKES CONTAINING PUMP DEVICES THAT INVOLE TRASH BASKETS TO CAPTURE FIRST FLUSH DEBRIS. THE GRITTE FLOWS ARE THEN CONVEYED THROUGH THE RECHARGE BASIN TO THE RESERVOIR. THE RECHARGE BASIN IS A 10' DEEP CONCRETE BASIN. THE REQUIRED DEPTH CAPTURE VOLUME FOR WATER QUALITY TREATMENT PURPOSES WILL INFILTRATE THROUGH THE RECHARGE BASIN. THE SIZE OF THE RECHARGE BASIN IS ACCORDATE TO RETAIN THE PEAK STORM FLOWS FROM LEAVING THE SITE

THE BASIS OF BEARINGS FOR THIS MAP IS THE CENTERLINE OF AVENUE "L" BEING EAST PER
PAGE 59/1-2.

NCD DESIGNATION: C-38 (P/O DAJ760)
DISH SET IN TOP OF CONCRETE POST STAMPED "C-38 1983" IN MIDDLE OF 60.7' E OF THE CL
OF THE NORTHEAST LANE OF CALUMESA BLVD., 41.5' E OF THE E CURB OF THE BLVD., 22.0' S
OF THE WESTBOUND CL OF MYRTLEWOOD DR., 19.7' NG OF THE EASTBOUND CL OF MYRTLEWOOD.
SR: 3.9' W OF A PALM TREE. ELEVATION = 2402.83

LOCAL UTILITY COMPANIES		
WATER:	POWER:	TELEPHONE:
PACIFIC SOUTHERN WATER COMPANY 381 WEST AVENUE L DANESBORO, CA 92025 (PH) (909) 793-2421	SOUTHERN CALIFORNIA Edison 287 TOWNSHIP STREET VIRLANDIA, CA 92532 (PH) (909) 337-8746	PACIFIC BELL TELEPHONE 11 N. 11TH STREET REDLANDIA, CA 92075 (PH) (909) 217-2118
SEWER:	GAS:	CABLE:
PACIFIC VALLEY WATER DISTRICT 17000 10TH STREET DANESBORO, CA 92024 (PH) (909) 790-3300	SOUTHERN CALIFORNIA GAS 1401 N. LUGOIA AVENUE REDLANDIA, CA 92024 (PH) (909) 335-7871	SPECTRUM COMMUNICATIONS 7337 CENTER AVENUE DANESBORO, CA 92024 (PH) (909) 232-7341

— PROPOSED FINISH CONTOUR (DASHED LINE)
 — EXISTING CONTOUR ELEVATION
 — STREET CENTERLINE
 — CURB AND GUTTER
 — PROJECT PROPERTY LINE
 — DRAINAGE FLOW LINE
 — LANDSCAPED AREA
 — ASPHALT PAVED AREA
 — STONE SLOPE PROTECTION
 — STONE SLOPE PROTECTION
 — EX. CHALK LINE FENCE
 — EXISTING WATER MAIN
 — EXISTING SEWER MAIN
 — EXISTING GAS MAIN
 — PROPOSED WATER MAIN

FM = FIRE HYDRANT	MF = EXISTING MANHOLE
FN = WATER METER	FG = FINISH GRADE
FP = EXISTING POWER POLE	FS = FINISH SURFACE
FF = EXISTING FLOOD DEVICES	FL = FLOW LINE
M = EXISTING WATER METER	TS = TOP OF CURB
W = EXISTING WATER MAIN	TS = TOP OF GRADE
WV = EXISTING WATER VALVE	PC = POVERTY GRADE
GV = EXISTING GAS MAIN	CS = SEWER CLEAN OUT
WV = EXISTING WATER VALVE	LT = LIGHTING
GV = EXISTING GAS VALVE	TM = TOP OF WALL
SL = EXISTING STREET LIGHT	

SOILS ENGINEER:
SOL EXPLORATION COMPANY
7535 JORNADA AVENUE UNIT 1
RIVERSIDE, CA 92504
PH: (951) 688-7200
SOL@EXPLORATIONRIVERSIDE.COM

4TH STREET
TYPICAL SECTION

LEC
LAND
ENGINEERING
CONSULTANTS, INC.

P.O. BOX 541, 850 AVENUE K
CALIMESA, CALIFORNIA 92320
TEL: 909-795-8882 FAX:
909-795-8818

Steve Ritchey 12/14/23
STEVEN H. RITCHEY DATE
R.C.E. 51129 EXP. 9/30/23

SITE PLAN

PROJECT:	San Gorgonio Pass Water Agency-Recharge Basin	PROJECT NO.:	33109.4
-----------------	---	---------------------	---------

CLIENT:	Land Engineering Consultants, Inc.	ENCLOSURE:	A-2
----------------	------------------------------------	-------------------	-----

	DATE:	February 2022
--	-------	---------------

LOR
GEOTECHNICAL GROUP, INC.

1" ≈ 100'

LOR

APPENDIX B

Field Investigation Program and Boring Logs

APPENDIX B

FIELD INVESTIGATION

Subsurface Exploration

The site was investigated on January 27, 2022 and consisted of the excavation and logging of 6 exploratory borings to depths ranging from approximately 37.5 to 50 feet below the existing ground surface. The approximate locations of the borings are shown on Enclosures A-2 within Appendix A.

The drilling exploration was conducted using a Mobile B-61 drill rig equipped with 8-inch diameter hollow stem augers. The soils were continuously logged by our geologist who inspected the site, created detailed logs of the borings, obtained soil samples for evaluation and testing, and classified the soils by visual examination in accordance with the Unified Soil Classification System.

Samples of the subsoils were obtained from the approximate recharge basin bottom elevation within each of our test borings. The samples were recovered by using a Standard Penetration Sampler (SPT) and placed in sealed containers for transport to our geotechnical laboratory. The samplers were driven by a 140 pound automatic trip hammer dropped from a height of 30 inches. The number of hammer blows required to drive the sampler into the ground the final 12 inches were recorded and further converted to an equivalent SPT N-value. Factors such as efficiency of the automatic trip hammer used during this investigation (80%), borehole diameter (8"), and rod length at the test depth were considered for further computing of equivalent SPT N-values corrected for field procedures (N₆₀) which are included in the boring logs, Enclosures B-1 through B-6. A Boring Log Legend and Soil Classification Chart are presented on Enclosures B-i and B-ii, respectively.

CONSISTENCY OF SOIL

SANDS

SPT BLOWS

0-4	Very Loose
4-10	Loose
10-30	Medium Dense
30-50	Dense
Over 50	Very Dense

CONSISTENCY

SAMPLE KEY

Symbol

Description



INDICATES CALIFORNIA
SPLIT SPOON SOIL
SAMPLE

INDICATES BULK SAMPLE

INDICATES SAND CONE
OR NUCLEAR DENSITY
TEST

INDICATES STANDARD
PENETRATION TEST (SPT)
SOIL SAMPLE

COHESIVE SOILS

SPT BLOWS

0-2	Very Soft
2-4	Soft
4-8	Medium
8-15	Stiff
15-30	Very Stiff
30-60	Hard
Over 60	Very Hard

CONSISTENCY

TYPES OF LABORATORY TESTS

- | | |
|----|--|
| 1 | Atterberg Limits |
| 2 | Consolidation |
| 3 | Direct Shear (undisturbed or remolded) |
| 4 | Expansion Index |
| 5 | Hydrometer |
| 6 | Organic Content |
| 7 | Proctor (4", 6", or Cal216) |
| 8 | R-value |
| 9 | Sand Equivalent |
| 10 | Sieve Analysis |
| 11 | Soluble Sulfate Content |
| 12 | Swell |
| 13 | Wash 200 Sieve |

BORING LOG LEGEND

PROJECT: San Gorgonio Pass Water Agency-Recharge Basin, Calimesa ,California

PROJECT NO.: 33109.4

CLIENT: Land Engineering Consultants, Inc.

ENCLOSURE: B-i

LOR GEOTECHNICAL GROUP, INC.

DATE: February 2022

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		 	SM SC	SILTY SANDS, SAND - SILT MIXTURES CLAYEY SANDS, SAND - CLAY MIXTURES	
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

PARTICLE SIZE LIMITS

BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	
12"	3"	3/4"	No. 4 (U.S. STANDARD SIEVE SIZE)	No. 10	No. 40	200	

SOIL CLASSIFICATION CHART

PROJECT:	San Gorgonio Pass Water Agency-Recharge Basin, Calimesa ,California	PROJECT NO.:	33109.4
CLIENT:	Land Engineering Consultants, Inc.	ENCLOSURE:	B-ii
LOR GEOTECHNICAL GROUP, INC.		DATE:	February 2022

LOG OF BORING B-1

DEPTH IN FEET	TEST DATA						U.S.C.S.	DESCRIPTION
	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	
0								SM @ 0 feet, <u>FILL/TOPSOIL</u> : SILTY SAND, approximately 5% fine gravel with occasional fragments of man-made debris (asphalt, concrete), 5% coarse grained sand, 10% medium grained sand, 40% fine grained sand, 40% silty fines, brown, damp, loose. @ 1 foot, <u>OLDER ALLUVIUM</u> : SILTY SAND, approximately 5% mostly fine gravel, 10% coarse grained sand, 20% medium grained sand, 30% fine grained sand, 35% silty fines, brown, moist, medium dense. below 7± feet, slightly finer grained. below 15± feet, sandier, includes occasional small gravels. @ 20 to 30 feet, water added.
5								
10								
15								
20								
25								ML @ 30± feet, SANDY SILT, approximately 5% coarse grained sand, 15% medium grained sand, 25% fine grained sand, 55% silty fines, brown to reddish-brown, moist, dense.
30								
35								SM @ 35± feet, SILTY SAND, approximately 5% coarse grained sand, 20% medium grained sand, 30% fine grained sand, 45% silty fines, reddish-brown, damp, dense. @ 38 feet, medium dense to dense, fine to medium grained SILTY SAND with trace of clay. from 40 to 50 feet, minor variations in silt content locally. from 46 to 48 feet, trace to minor amounts of gravel. below 48 feet, finer grained.
40								
45								
50								
55								

PROJECT: S.G.P.W.A. Recharge Basin

PROJECT NO.: 33109.4

CLIENT: Land Engineering Consultants

ELEVATION: --

LOR GEOTECHNICAL GROUP, INC.

DATE DRILLED: January 27, 2022

EQUIPMENT: Mobile B-61

HOLE DIA.: 8" ENCLOSURE: B-1

LOG OF BORING P-1

DEPTH IN FEET	TEST DATA						U.S.C.S.	DESCRIPTION
	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	
0								SM @ 0 feet, <u>FILL/TOPSOIL</u> : SILTY SAND, approximately 5% fine gravel with occasional fragments of man-made debris (asphalt, concrete), 5% coarse grained sand, 10% medium grained sand, 40% fine grained sand, 40% silty fines, brown, damp, loose. @ 1 foot, <u>OLDER ALLUVIUM</u> : SILTY SAND, approximately 5% mostly fine gravel, 10% coarse grained sand, 20% medium grained sand, 30% fine grained sand, 35% silty fines, brown, moist, medium dense. below 7± feet, slightly finer grained.
5								
10								
15								
20								
25								below 15± feet, sandier, includes occasional small gravels.
30								@ 20 to 30 feet, water added.
35								ML @ 30± feet, SANDY SILT, approximately 5% coarse grained sand, 15% medium grained sand, 25% fine grained sand, 55% silty fines, brown to reddish-brown, moist, dense.
40	44							
45								SM @ 35± feet, SILTY SAND, approximately 5% coarse grained sand, 20% medium grained sand, 30% fine grained sand, 45% silty fines, reddish-brown, damp, dense. @ 38 feet, medium dense to dense, fine to medium grained SILTY SAND with trace of clay.
								END OF BORING @ 41.5' Fill to 1' No groundwater No bedrock

PROJECT: S.G.P.W.A. Recharge Basin

PROJECT NO.: 33109.4

CLIENT: Land Engineering Consultants

ELEVATION: --

LOR GEOTECHNICAL GROUP, INC.

DATE DRILLED: January 27, 2022

EQUIPMENT: Mobile B-61

HOLE DIA.: 8" ENCLOSURE: B-2

LOG OF BORING P-2

DEPTH IN FEET	TEST DATA						U.S.C.S.	DESCRIPTION
	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE		
0							SM	@ 0 feet, <u>FILL/TOPSOIL</u> : SILTY SAND, approximately 5% fine gravel with occasional fragments of man-made debris (asphalt, concrete), 5% coarse grained sand, 10% medium grained sand, 40% fine grained sand, 40% silty fines, brown, damp, loose.
5								@ 1.5 feet, <u>OLDER ALLUVIUM</u> : SILTY SAND, approximately 5% fine gravel, 15% coarse grained sand, 20% medium grained sand, 30% fine grained sand, 30% silty fines, brown, moist, loose to medium dense.
10								below 7± feet, slightly sandier.
15								below 12± feet, finer grained overall, slightly reddish-brown in color.
20								below 20 feet, trace of clay included.
25							ML	@ 23± feet, SANDY SILT, approximately 5% coarse grained sand, 10% medium grained sand, 30% fine grained sand, 55% silty fines, reddish-brown, damp, stiff.
30							SM	@ 30± feet, SILTY SAND, approximately 5% coarse grained sand, 15% medium grained sand, 35% fine grained sand, 45% silty fines, brown to reddish-brown, moist, dense, includes occasional thin SANDY SILT, layers.
35	37 29							@ 34.5 feet, sample displays fine to coarse grained SILTY SAND overall with variable silt content. @ 36 feet, finer grained, approximately 5% coarse grained sand, 15% medium grained sand, 35% fine grained sand, 45% silty fines.
40								END OF BORING @ 37.5'
45								Fill to 1.5' No groundwater No bedrock

PROJECT: S.G.P.W.A. Recharge Basin

PROJECT NO.: 33109.4

CLIENT: Land Engineering Consultants

ELEVATION: --

LOR GEOTECHNICAL GROUP, INC.

DATE DRILLED: January 27, 2022

EQUIPMENT: Mobile B-61

HOLE DIA.: 8" ENCLOSURE: B-3

LOG OF BORING P-3

DEPTH IN FEET	TEST DATA						DESCRIPTION
	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	
0							SM @ 0 feet, <u>FILL/TOPSOIL</u> : SILTY SAND, approximately 5% fine gravel with occasional fragments of man-made debris (asphalt, concrete), 5% coarse grained sand, 10% medium grained sand, 40% fine grained sand, 40% silty fines, brown, damp, loose.
5							@ 1 foot, <u>OLDER ALLUVIUM</u> : SILTY SAND, approximately 5% gravel, 15% coarse grained sand, 25% medium grained sand, 30% fine grained sand, 25% silty fines, brown, moist, loose to medium dense.
10							
15							@ 15 feet, finer grained overall, approximately 5% fine gravel, 10% coarse grained sand, 20% medium grained sand, 35% fine grained sand, 30% silty fines, moist.
20							
25							from 25 to 30 feet, increase in coarse grained sand and fine gravel, less silt.
30							
35	48						@ 34 feet, fine to coarse grained sand with local variations of grain size and amount of silt.
	64						@ 35 feet, <u>SANDY SILT</u> , approximately 5% coarse grained sand, 10% medium grained sand, 30% fine grained sand, 55% silty fines, brown, damp, stiff.
40							END OF BORING @ 37.5'
45							Fill to 1' No groundwater No bedrock

PROJECT: S.G.P.W.A. Recharge Basin

PROJECT NO.: 33109.4

CLIENT: Land Engineering Consultants

ELEVATION: --

LOR GEOTECHNICAL GROUP, INC.

DATE DRILLED: January 27, 2022

EQUIPMENT: Mobile B-61

HOLE DIA.: 8" ENCLOSURE: B-4

LOG OF BORING P-4

DEPTH IN FEET	TEST DATA						DESCRIPTION
	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	
0							SM @ 0 feet, <u>FILL/TOPSOIL</u> : SILTY SAND, approximately 5% fine gravel with occasional fragments of man-made debris (asphalt, concrete), 5% coarse grained sand, 10% medium grained sand, 40% fine grained sand, 40% silty fines, brown, damp, loose.
5							@ 1 foot, <u>OLDER ALLUVIUM</u> : SILTY SAND, approximately 10% fine gravel and coarse grained sand, 20% medium grained sand, 30% fine grained sand, 40% silty fines, brown, moist, medium dense.
10							below 7 feet, includes trace to minor amounts of clay.
15							below 12 feet, much sandier, approximately 5% coarse grained sand, 35% medium grained sand, 45% fine grained sand, 15% silty fines, yellowish-brown.
20							below 18 feet, siltier, still mostly fine to medium grained.
25							ML @ 25 feet, SANDY SILT, approximately 5% coarse grained sand, 15% medium grained sand, 25% fine grained sand, 55% silty fines, yellowish-brown to reddish-brown, moist, stiff.
30							below 30 feet, darker (reddish-brown) in color.
35							SM @ 35 feet, SILTY SAND, approximately 5% coarse grained sand, 15% medium grained sand, 35% fine grained sand, 45% silty fines, brown, moist, medium dense.
40	29						@ 38 feet, sample is of fine grained SILTY SAND, approximately 10% medium grained sand, 45% fine grained sand, 45% silty fines, brown to reddish-brown, moist, medium dense.
45							END OF BORING @ 40' Fill to 1' No groundwater No bedrock

PROJECT: S.G.P.W.A. Recharge Basin

PROJECT NO.: 33109.4

CLIENT: Land Engineering Consultants

ELEVATION: --

LOR GEOTECHNICAL GROUP, INC.

DATE DRILLED: January 27, 2022

EQUIPMENT: Mobile B-61

HOLE DIA.: 8" ENCLOSURE: B-5

LOG OF BORING P-5

DEPTH IN FEET	TEST DATA						U.S.C.S.	DESCRIPTION
	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY		
0							SM	@ 0 feet, <u>FILL/TOPSOIL</u> : SILTY SAND, approximately 5% fine gravel with occasional fragments of man-made debris (asphalt, concrete), 5% coarse grained sand, 10% medium grained sand, 40% fine grained sand, 40% silty fines, brown, damp, loose.
5								@ 2 feet, <u>OLDER ALLUVIUM</u> : SILTY SAND, approximately 5% fine gravel, 10% coarse grained sand, 20% medium grained sand, 35% fine grained sand, 30% silty fines, brown, moist, medium dense.
10								
15								@ 12 to 15 feet, includes minor amounts of mostly fine gravel.
20								@ 20± feet, finer grained, includes trace to minor amounts of clay.
25							ML	@ 23± feet, SANDY SILT, approximately 10% medium grained sand, 35% fine grained sand, 55% silty fines, reddish-brown, moist, stiff.
30							ML SM	below 30± feet mostly fine to medium grained SILTY SAND with local fine gravels with occasional layers/lenses of fine grained SANDY SILT.
35								@ 35± feet, water added to aid drilling/flushing of cuttings.
40	41							@ 40 feet, sample consists of approximately 5% medium grained sand, 35% fine grained sand, 60% silt with clay.
45								END OF BORING @ 42' Fill to 2' No groundwater No bedrock

PROJECT: S.G.P.W.A. Recharge Basin

PROJECT NO.: 33109.4

CLIENT: Land Engineering Consultants

ELEVATION: --

LOR GEOTECHNICAL GROUP, INC.

DATE DRILLED: January 27, 2022

EQUIPMENT: Mobile B-61

HOLE DIA.: 8" ENCLOSURE: B-6

APPENDIX C

Laboratory Testing Program and Test Results

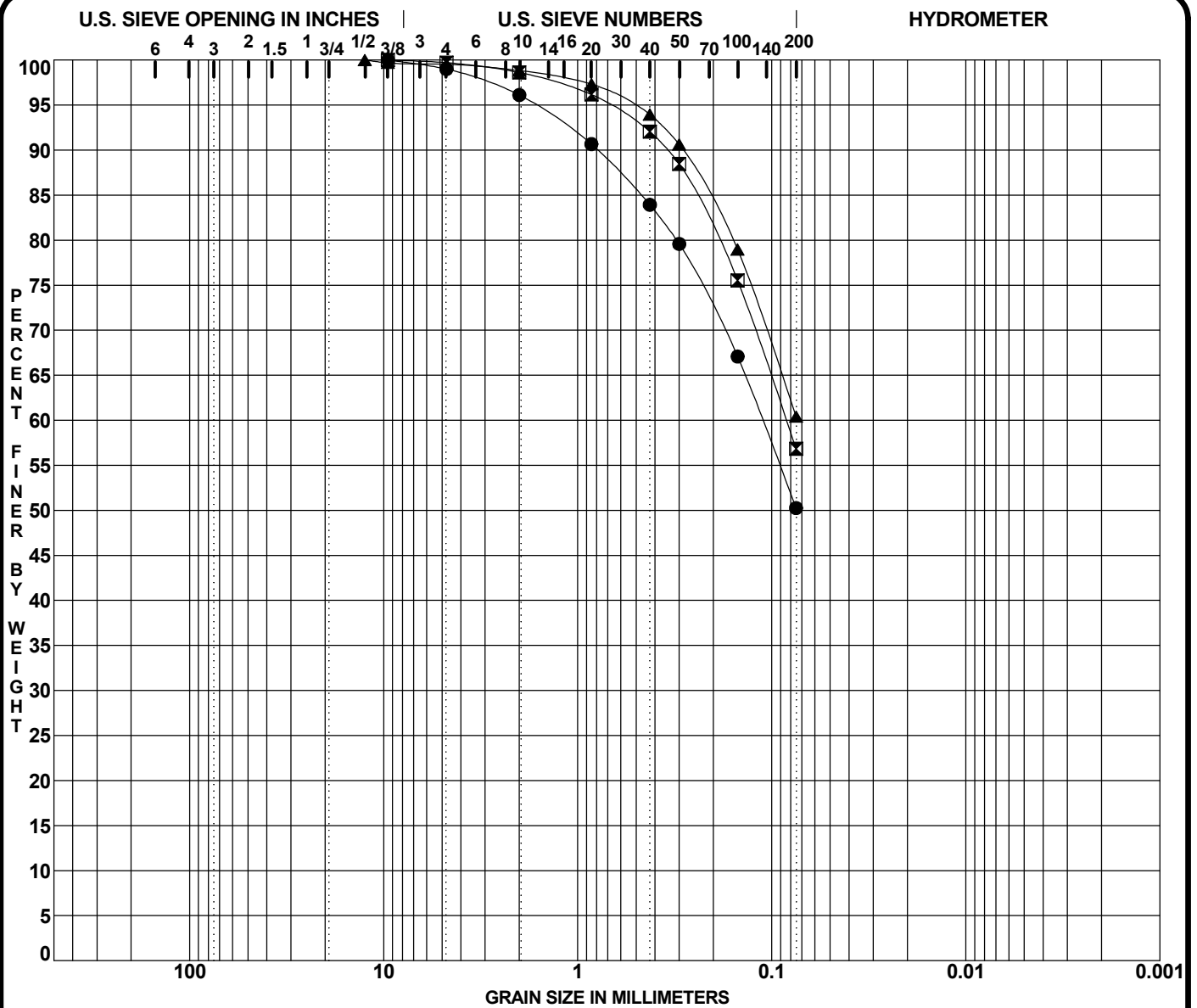
APPENDIX C LABORATORY TESTING

Laboratory Testing Program - General

Selected soil samples obtained from our borings were tested in our geotechnical laboratory to evaluate the physical properties of the soils affecting the proposed basin. The laboratory testing program performed in conjunction with our investigation was limited to sieve analysis, as outlined below:

Sieve Analysis

A quantitative determination of the grain size distribution was performed for selected samples in accordance with the Caltrans Standard CT 202 laboratory test procedure. The determination is performed by passing the soil through a series of sieves, and recording the weights of retained particles on each screen. The results of the sieve analysis are presented graphically on Enclosure C-1.



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Soil Classification			SE	RV	PL	PI	Cc	Cu
●	P-2	@ 36 ft.	(ML) Sandy Silt			--	--				
☒	P-4	@ 38 ft.	(ML) Sandy Silt			--	--				
▲	P-5	@ 40 ft.	(ML) Sandy Silt			--	--				
Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay
●	P-2	@ 36 ft.	9.50	0.11			1.0	48.7	50.3		
☒	P-4	@ 38 ft.	9.50	0.08			0.3	42.9	56.8		
▲	P-5	@ 40 ft.	12.50				0.5	39.1	60.4		

PROJECT:	S.G.P.W.A. Recharge Basin	PROJECT NO.:	33109.4
CLIENT:	Land Engineering Consultants	DATE:	February 2022

GRADATION CURVES

APPENDIX D

Percolation Test Results

BOREHOLE METHOD PERCOLATION TEST RESULTS

Project: SGPWA Recharge Basin
 Project No.: 33109.4
 Soil Classification: see Log of Boring P-1
 Depth of Test Hole: 40.8 ft.
 Tested By: Andrew L.

Test Date: January 28, 2022
 Test Hole No.: P-1
 Hole Diameter: 8.0 in.
 Date Drilled: January 27, 2022

READING	TIME START	TIME STOP	TIME INTERVAL		TOTAL TIME hr.	INITIAL WATER LEVEL in.	FINAL WATER LEVEL in.	INITIAL HOLE DEPTH in.	FINAL HOLE DEPTH in.	CHANGE IN WATER LEVEL in.	AVERAGE WETTED DEPTH in.	PERCOLATION RATE (min/in)
			min	hr.								
1	9:26 AM	9:56 AM	30	0.50	0.50	402.00	421.00	489.60	489.00	19.00	77.80	1.6
2	9:56 AM	10:26 AM	30	0.50	1.00	394.00	411.00	489.00	489.00	17.00	86.50	1.8
3	10:26 AM	10:56 AM	30	0.50	1.50	372.00	391.00	489.00	489.00	19.00	107.50	1.6
4	10:56 AM	11:26 AM	30	0.50	2.00	384.00	401.00	489.00	489.00	17.00	96.50	1.8
5	11:26 AM	11:56 AM	30	0.50	2.50	386.00	402.00	489.00	489.00	16.00	95.00	1.9
6	11:56 AM	12:26 PM	30	0.50	3.00	388.00	404.00	489.00	489.00	16.00	93.00	1.9
7	12:26 PM	12:56 PM	30	0.50	3.50	384.00	398.00	489.00	489.00	14.00	98.00	2.1
8	12:56 PM	1:26 PM	30	0.50	4.00	387.00	401.00	489.00	489.00	14.00	95.00	2.1
9	1:26 PM	1:56 PM	30	0.50	4.50	386.00	399.00	489.00	489.00	13.00	96.50	2.3
10	1:56 PM	2:26 PM	30	0.50	5.00	385.00	397.00	489.00	489.00	12.00	98.00	2.5
11	2:26 PM	2:56 PM	30	0.50	5.50	389.00	400.00	489.00	489.00	11.00	94.50	2.7
12	2:56 PM	3:26 PM	30	0.50	6.00	384.00	397.00	489.00	489.00	13.00	98.50	2.3

PERCOLATION RATE TO INFILTRATION RATE CONVERSION (Porchet Method):

H_o 105.00
 H_f 92.00
 ΔH 13.00
 H_{avg} 98.50
 I_t **0.52** in/hr (clear water rate)

BOREHOLE METHOD PERCOLATION TEST RESULTS

Project: SGPWA Recharge Basin
 Project No.: 33109.4
 Soil Classification: see Log of Boring P-2
 Depth of Test Hole: 35.5 ft.
 Tested By: Andrew L.

Test Date: January 28, 2022
 Test Hole No.: P-2
 Hole Diameter: 8.0 in.
 Date Drilled: January 27, 2022

READING	TIME START	TIME STOP	TIME INTERVAL		TOTAL TIME hr.	INITIAL WATER LEVEL in.	FINAL WATER LEVEL in.	INITIAL HOLE DEPTH in.	FINAL HOLE DEPTH in.	CHANGE IN WATER LEVEL in.	AVERAGE WETTED DEPTH in.	PERCOLATION RATE (min/in)
			min	hr.								
1	9:30 AM	10:00 AM	30	0.50	0.50	356.00	363.00	426.00	426.00	7.00	66.50	4.3
2	10:00 AM	10:30 AM	30	0.50	1.00	363.00	366.50	426.00	426.00	3.50	61.25	8.6
3	10:30 AM	11:00 AM	30	0.50	1.50	349.00	357.00	426.00	426.00	8.00	73.00	3.8
4	11:00 AM	11:30 AM	30	0.50	2.00	357.00	364.00	426.00	426.00	7.00	65.50	4.3
5	11:30 AM	12:00 PM	30	0.50	2.50	364.00	370.00	426.00	426.00	6.00	59.00	5.0
6	12:00 PM	12:30 PM	30	0.50	3.00	346.00	353.00	426.00	426.00	7.00	76.50	4.3
7	12:30 PM	1:00 PM	30	0.50	3.50	353.00	359.00	426.00	426.00	6.00	70.00	5.0
8	1:00 PM	1:30 PM	30	0.50	4.00	343.00	350.00	426.00	426.00	7.00	79.50	4.3
9	1:30 PM	2:00 PM	30	0.50	4.50	350.00	356.00	426.00	426.00	6.00	73.00	5.0
10	2:00 PM	2:30 PM	30	0.50	5.00	356.00	362.00	426.00	426.00	6.00	67.00	5.0
11	2:30 PM	3:00 PM	30	0.50	5.50	349.00	355.00	426.00	426.00	6.00	74.00	5.0
12	3:00 PM	3:30 PM	30	0.50	6.00	355.00	361.00	426.00	426.00	6.00	68.00	5.0

PERCOLATION RATE TO INFILTRATION RATE CONVERSION (Porchet Method):

H_o 71.00
 H_f 65.00
 ΔH 6.00
 H_{avg} 68.00
 I_t **0.34** in/hr (clear water rate)

BOREHOLE METHOD PERCOLATION TEST RESULTS

Project: SGPWA Recharge Basin
 Project No.: 33109.4
 Soil Classification: see Log of Boring P-3
 Depth of Test Hole: 37.4 ft.
 Tested By: Andrew L.

Test Date: January 28, 2022
 Test Hole No.: P-3
 Hole Diameter: 8.0 in.
 Date Drilled: January 27, 2022

READING	TIME START	TIME STOP	TIME INTERVAL		TOTAL TIME	INITIAL WATER LEVEL	FINAL WATER LEVEL	INITIAL HOLE DEPTH	FINAL HOLE DEPTH	CHANGE IN WATER LEVEL	AVERAGE WETTED DEPTH	PERCOLATION RATE
			min	hr.		in.	in.	in.	in.	in.	in.	(min/in)
1	9:34 AM	10:04 AM	30	0.50	0.50	384.00	388.50	448.80	449.00	4.50	62.65	6.7
2	10:04 AM	10:34 AM	30	0.50	1.00	380.00	383.00	449.00	449.00	3.00	67.50	10.0
3	10:34 AM	11:04 AM	30	0.50	1.50	383.00	388.00	449.00	449.00	5.00	63.50	6.0
4	11:04 AM	11:34 AM	30	0.50	2.00	390.00	395.00	449.00	449.00	5.00	56.50	6.0
5	11:34 AM	12:04 PM	30	0.50	2.50	395.00	399.00	449.00	449.00	4.00	52.00	7.5
6	12:04 PM	12:34 PM	30	0.50	3.00	382.00	388.00	449.00	449.00	6.00	64.00	5.0
7	12:34 PM	1:04 PM	30	0.50	3.50	388.00	393.00	449.00	449.00	5.00	58.50	6.0
8	1:04 PM	1:34 PM	30	0.50	4.00	378.00	385.00	449.00	449.00	7.00	67.50	4.3
9	1:34 PM	2:04 PM	30	0.50	4.50	385.00	391.00	449.00	449.00	6.00	61.00	5.0
10	2:04 PM	2:34 PM	30	0.50	5.00	377.00	384.00	449.00	449.00	7.00	68.50	4.3
11	2:34 PM	3:04 PM	30	0.50	5.50	384.00	390.00	449.00	449.00	6.00	62.00	5.0
12	3:04 PM	3:34 PM	30	0.50	6.00	390.00	395.00	449.00	449.00	5.00	56.50	6.0

PERCOLATION RATE TO INFILTRATION RATE CONVERSION (Porchet Method):

H_o 59.00
 H_f 54.00
 ΔH 5.00
 H_{avg} 56.50
 I_t **0.34** in/hr (clear water rate)

BOREHOLE METHOD PERCOLATION TEST RESULTS

Project: SGPWA Recharge Basin
 Project No.: 33109.4
 Soil Classification: see Log of Boring P-4
 Depth of Test Hole: 39.1 ft.
 Tested By: Andrew L.

Test Date: January 28, 2022
 Test Hole No.: P-4
 Hole Diameter: 8.0 in.
 Date Drilled: January 27, 2022

READING	TIME START	TIME STOP	TIME INTERVAL		TOTAL TIME	INITIAL WATER LEVEL	FINAL WATER LEVEL	INITIAL HOLE DEPTH	FINAL HOLE DEPTH	CHANGE IN WATER LEVEL	AVERAGE WETTED DEPTH	PERCOLATION RATE
			min	hr.	hr.	in.	in.	in.	in.	in.	in.	(min/in)
1	9:38 AM	10:08 AM	30	0.50	0.50	394.00	394.50	469.20	469.00	0.50	74.85	60.0
2	10:08 AM	10:38 AM	30	0.50	1.00	394.50	397.00	469.00	469.00	2.50	73.25	12.0
3	10:38 AM	11:08 AM	30	0.50	1.50	397.00	400.00	469.00	469.00	3.00	70.50	10.0
4	11:08 AM	11:38 AM	30	0.50	2.00	400.00	402.00	469.00	469.00	2.00	68.00	15.0
5	11:38 AM	12:08 PM	30	0.50	2.50	402.00	404.00	469.00	469.00	2.00	66.00	15.0
6	12:08 PM	12:38 PM	30	0.50	3.00	392.00	395.00	469.00	469.00	3.00	75.50	10.0
7	12:38 PM	1:08 PM	30	0.50	3.50	395.00	399.00	469.00	469.00	4.00	72.00	7.5
8	1:08 PM	1:38 PM	30	0.50	4.00	399.00	402.00	469.00	469.00	3.00	68.50	10.0
9	1:38 PM	2:08 PM	30	0.50	4.50	402.00	406.00	469.00	469.00	4.00	65.00	7.5
10	2:08 PM	2:38 PM	30	0.50	5.00	384.00	387.00	469.00	469.00	3.00	83.50	10.0
11	2:38 PM	3:08 PM	30	0.50	5.50	387.00	390.00	469.00	469.00	3.00	80.50	10.0
12	3:08 PM	3:38 PM	30	0.50	6.00	390.00	393.00	469.00	469.00	3.00	77.50	10.0

PERCOLATION RATE TO INFILTRATION RATE CONVERSION (Porchet Method):

H_o 79.00
 H_f 76.00
 ΔH 3.00
 H_{avg} 77.50
 I_t **0.15** in/hr (clear water rate)

BOREHOLE METHOD PERCOLATION TEST RESULTS

Project: SGPWA Recharge Basin
 Project No.: 33109.4
 Soil Classification: see Log of Boring P-5
 Depth of Test Hole: 42.1 ft.
 Tested By: Andrew L.

Test Date: January 28, 2022
 Test Hole No.: P-5
 Hole Diameter: 8.0 in.
 Date Drilled: January 27, 2022

READING	TIME START	TIME STOP	TIME INTERVAL		TOTAL TIME hr.	INITIAL WATER LEVEL in.	FINAL WATER LEVEL in.	INITIAL HOLE DEPTH in.	FINAL HOLE DEPTH in.	CHANGE IN WATER LEVEL in.	AVERAGE WETTED DEPTH in.	PERCOLATION RATE (min/in)
			min	hr.								
1	9:42 AM	10:12 AM	30	0.50	0.50	435.00	441.00	505.20	505.00	6.00	67.10	5.0
2	10:12 AM	10:42 AM	30	0.50	1.00	434.00	439.00	505.00	505.00	5.00	68.50	6.0
3	10:42 AM	11:12 AM	30	0.50	1.50	432.00	438.00	505.00	505.00	6.00	70.00	5.0
4	11:12 AM	11:42 AM	30	0.50	2.00	430.00	437.00	505.00	505.00	7.00	71.50	4.3
5	11:42 AM	12:12 PM	30	0.50	2.50	435.00	439.00	505.00	505.00	4.00	68.00	7.5
6	12:12 PM	12:42 PM	30	0.50	3.00	434.00	438.00	505.00	505.00	4.00	69.00	7.5
7	12:42 PM	1:12 PM	30	0.50	3.50	435.00	439.00	505.00	505.00	4.00	68.00	7.5
8	1:12 PM	1:42 PM	30	0.50	4.00	433.00	437.00	505.00	505.00	4.00	70.00	7.5
9	1:42 PM	2:12 PM	30	0.50	4.50	432.00	438.00	505.00	505.00	6.00	70.00	5.0
10	2:12 PM	2:42 PM	30	0.50	5.00	434.00	439.00	505.00	505.00	5.00	68.50	6.0
11	2:42 PM	3:12 PM	30	0.50	5.50	432.00	438.00	505.00	505.00	6.00	70.00	5.0
12	3:12 PM	3:42 PM	30	0.50	6.00	433.00	438.00	505.00	505.00	5.00	69.50	6.0

PERCOLATION RATE TO INFILTRATION RATE CONVERSION (Porchet Method):

H_o 72.00
 H_f 67.00
 ΔH 5.00
 H_{avg} 69.50
 I_t **0.28** in/hr (clear water rate)