

October 14, 2020

Project No. 14678-12A

Ms. Angela Little  
**SAND CREEK DEVELOPMENT L.P.**  
33725 Grand Avenue  
Winchester, CA 92596

Subject: **Infiltration Testing for Water Quality Treatment Areas, Assessor Parcel Numbers 951-220-002, Tentative Tract Map 33356, Located on the Northwest Corner of Linda Rosea Drive and Anza Road, Temecula Area, Riverside County, California**

### **INTRODUCTION**

Earth Strata Geotechnical Services is pleased to present this infiltration feasibility report for the proposed residential development, located on the northwest corner of Linda Rosea Drive and Anza Road, Assessor Parcel Number 951-220-002, in the Temecula area of Riverside County, California. The purpose of our study was to determine the infiltration rates and physical characteristics of the subsurface earth materials at the approximate depth of the proposed Water Quality Management Plan (WQMP) area within the proposed development. This feasibility report provides the infiltration rates to be used for the design and the development of the water quality management plan, where applicable.

### **PROPERTY DESCRIPTION**

The subject property is located on the northwest corner of Linda Rosea Drive and Anza Road in the Temecula area of Riverside County, California. The approximate location of the site is shown on the Vicinity Map, Figure 1.

The subject property is comprised of approximately 39.57 acres of undeveloped land. The site has not been graded. Topographic relief at the subject property is relatively high with the terrain being generally hilly to flat. Elevations at the site range from approximately 1233 to 1387 feet above mean sea level (msl), for a difference of about 154± feet across the entire site. Drainage within the subject property generally flows to the southeast.

The site is currently bordered by residential development to the west, vacant property to the north, Anza Road to the east, and Linda Rosea Drive to the south. Most of the vegetation on the site consists of moderate to dense amounts of annual weeds/grasses, along with small trees throughout the subject site.

## **PROPOSED CONSTRUCTION**

Based on plans provided by JLC Engineering & Consulting Inc., the proposed development as illustrated on the conceptual grading plans will consist of a sixteen-home residential development complete with interior streets, utilities, driveways, parking, and two (2) onsite water quality treatment areas.

## **SUBSURFACE EXPLORATION**

### **Subsurface Exploration**

Subsurface exploration within the subject site was performed on November 6, 2014, December 19, 2014, February 17/18/19, 2015, and February 24, 2015 for the exploratory excavations. A truck mounted hollow-stem-auger drill rig was utilized to drill twenty-one (21) borings throughout the site to a maximum depth of 40 feet. The exploratory holes were excavated for geotechnical evaluation purposes with respect to the proposed developments and to interpret whether groundwater or impermeable soil layers were present. An underground utilities clearance was obtained from Underground Service Alert of Southern California, prior to the subsurface exploration. The approximate locations of the exploratory excavations are shown on the attached Infiltration Location Map, Plate 1 and descriptive logs are presented in Appendix A.

Earth materials encountered during exploration were classified and logged in general accordance with the Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) of ASTM D 2488. Upon completion of laboratory testing, exploratory logs and sample descriptions may have been reconciled to reflect laboratory test results with regard to ASTM D 2487.

### **Earth Materials**

A general description of the earth materials observed on site is provided below.

Quaternary Alluvial Deposits (Qal): The alluvial deposits likely consist of Silty Clayey Sands.

Quaternary Pauba Formation (Qpfs): Pauba Formation bedrock was generally encountered below the topsoil and alluvial materials to the full depth of our exploration. These materials primarily consisted of olive gray to brown, fine to coarse grained sandstone with varying amounts of silt and clay. These materials were generally noted to be slightly moist to very moist, moderately hard to hard and poorly bedded. Typically, the upper 1 to 3 feet of this unit is slightly more weathered and not as hard with occasional lenses of less indurated rock.

## **INFILTRATION TESTING**

The double ring infiltrometer test method was utilized to perform a total of four (4) infiltration tests on October 9, 2020 to evaluate near surface infiltration rates in order to estimate the amount of storm water runoff that can infiltrate into the onsite water quality treatment plan areas. The infiltration tests were performed in general accordance with the requirements of double ring infiltration testing, ASTM D 3385 and Appendix A of the Riverside County Flood Control and Water Conservation District.

The infiltration tests were performed using double ring infiltrometer and Mariotte tubes at a depth of 5 feet below existing grades. The locations of the infiltration tests are indicated on the attached infiltration Location Map, Plate 1. The double ring infiltrometer tests were located by property boundary measurement on the site plan and by using geographic features. Infiltration test data recorded in the field are summarized in the following table and is included within Appendix B including the graph of Infiltration Rate versus Elapsed Time.

### **Infiltration Test Summary**

<b>TEST NUMBER</b>	<b>INFILTRATION HOLE DEPTH (ft.)</b>	<b>INFILTRATION RATE (in/hr)</b>	<b>DESCRIPTION</b>
DR-1	5	3.73	Silty SAND
DR-2	5	3.24	Silty SAND
DR-3	5	3.08	Silty SAND
DR-4	5	4.54	Silty SAND

The infiltration test rates ranged from 3.08 to 4.54 inches per hour (in/hr).

## **CONCLUSIONS AND RECOMMENDATIONS**

### **General**

From geotechnical and engineering geologic points of view, the proposed WQMP areas, where tested, is considered suitable for infiltration for the proposed development, provided the following conclusions and recommendations are incorporated into the plans and are implemented during construction.

### **Groundwater**

Groundwater was not observed during our subsurface exploration to a total depth of 40 feet. Potential groundwater impact is considered very low to low. Local well data indicates regional groundwater highs approximately 300 feet below existing surface, which meets the minimum separation of >10 feet from the bottom of infiltration facility to the groundwater mark.

## **Geologic/ Geotechnical Screening**

The proposed WQMP areas (see Plate 1) are located at a lower elevation than the proposed structures in competent native earth materials.

The proposed structures will be supported by compacted fill and competent earth materials, with groundwater at a depth of approximately 300 feet below ground surface. According to the County of Riverside reports, the subject site is located in an area where liquefaction potential is considered low. As such, the potential for earthquake induced liquefaction and lateral spreading beneath the proposed structures is considered low due to the recommended compacted fill, relatively low groundwater level, and the dense nature of the deeper onsite earth materials.

Preliminary laboratory test results indicate onsite earth materials exhibit an expansion potential of **VERY LOW** as classified in accordance with 2019 CBC Section 1803.5.3 and ASTM D4829.

Therefore, infiltration within the proposed WQMP areas will not encroach on any proposed structures and will not increase the risk of geologic hazards.

## **Recommended Factor of Safety**

The recommended factor of safety for the infiltration design is 2.

Based on the data presented in this report and the recommendations set forth herein, it is the opinion of Earth Strata Geotechnical Services that the WQMP area can be designed for an infiltration rate of 1.62 inches per hour in the vicinity of DR-1 and DR-2 and 1.56 inches per hour in the vicinity of DR-3 and DR-4.

## **GRADING PLAN REVIEW AND CONSTRUCTION SERVICES**

This report has been prepared for the exclusive use of **Ms. Angela Little** and their authorized representative. It likely does not contain sufficient information for other parties or other uses. Earth Strata should be engaged to review the final design plans and specifications prior to construction. This is to verify that the recommendations contained in this report have been properly incorporated into the project plans and specifications. Should Earth Strata not be accorded the opportunity to review the project plans and specifications, we are not responsible for misinterpretation of our recommendations.

Earth Strata should be retained to provide observations during construction to validate this report. In order to allow for design changes in the event that the subsurface conditions differ from those anticipated prior to construction.

Earth Strata should review any changes in the project and modify and approve in writing the conclusions and recommendations of this report. This report and the drawings contained within are intended for design input purposes only and are not intended to act as construction drawings or specifications. In the

event that conditions encountered during grading or construction operations appear to be different than those indicated in this report, this office should be notified immediately, as revisions may be required.

### **REPORT LIMITATIONS**

Our services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable soils engineers and geologists, practicing at the time and location this report was prepared. No other warranty, expressed or implied, is made as to the conclusions and professional advice included in this report.

Earth materials vary in type, strength, and other geotechnical properties between points of observation and exploration. Groundwater and moisture conditions can also vary due to natural processes or the works of man on this or adjacent properties. As a result, we do not and cannot have complete knowledge of the subsurface conditions beneath the subject property. No practical study can completely eliminate uncertainty with regard to the anticipated geotechnical conditions in connection with a subject property.

The conclusions and recommendations within this report are based upon the findings at the points of observation and are subject to confirmation by Earth Strata during construction. This report is considered valid for a period of one year from the time the report was issued.

This report was prepared with the understanding that it is the responsibility of the owner or their representative, to ensure that the conclusions and recommendations contained herein are brought to the attention of the other project consultants and are incorporated into the plans and specifications. The owners' contractor should properly implement the conclusions and recommendations during grading and construction, and notify the owner if they consider any of the recommendations presented herein to be unsafe or unsuitable.

Respectfully submitted,

EARTH STRATA GEOTECHNICAL SERVICES

  
Stephen M. Poole, PE 40219  
President  
Principal Engineer

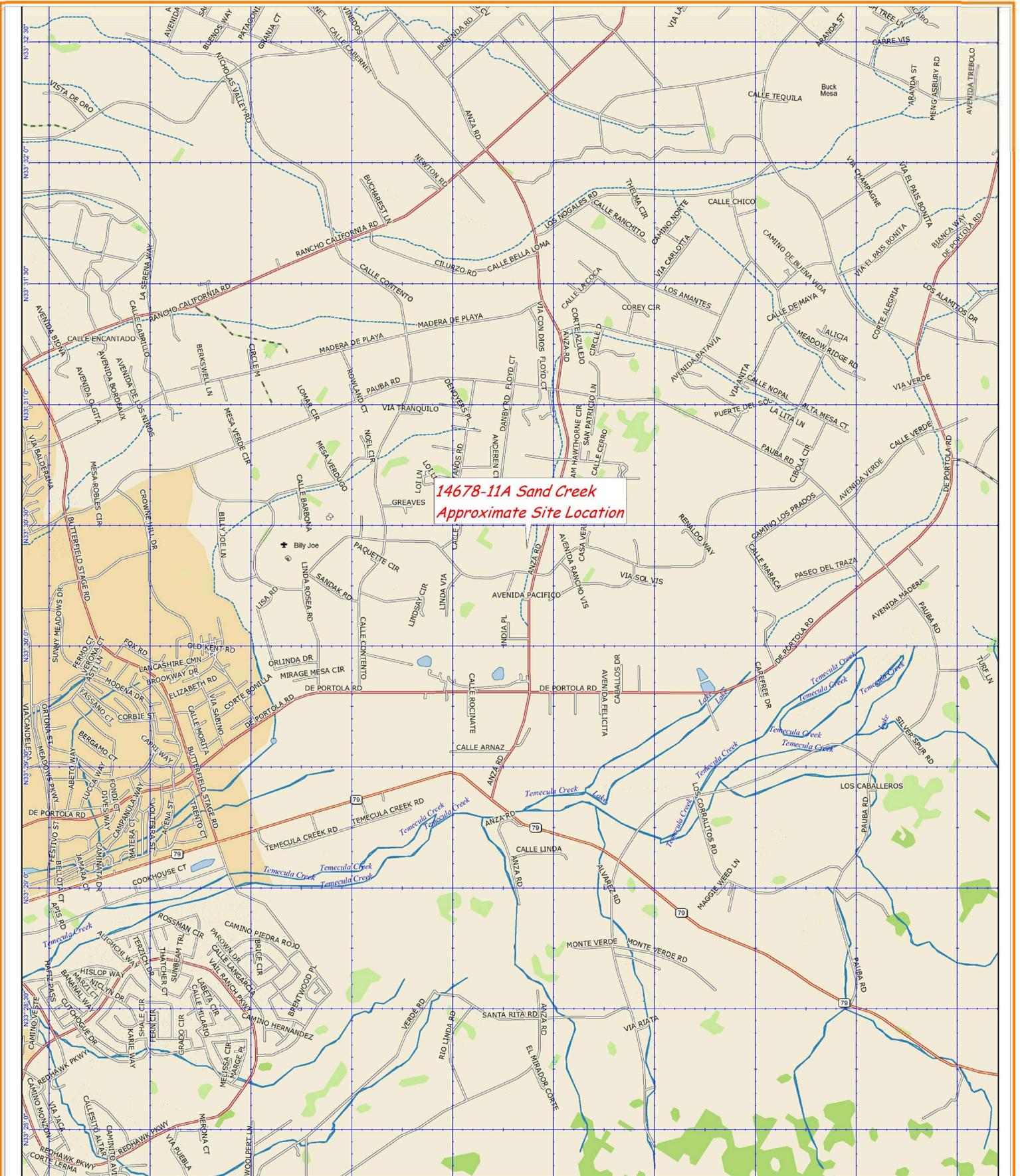


SMP/jmr

Distribution: (1) Addressee

Attachments: Figure 1 – Vicinity Map (*Rear of Text*)  
Appendix A – Exploratory Logs (*Rear of Text*)  
Appendix B – Infiltration Test Sheets (*Rear of Text*)  
Appendix C – Factor of Safety Worksheet (*Rear of Text*)  
Appendix D – Historic Groundwater Data (*Rear of Text*)  
Plate 1 – Infiltration Location Map (*Rear of Text*)

**FIGURE 1**  
**VICINITY MAP**



**14678-11A Sand Creek**  
*Approximate Site Location*

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**Earth - Strata, Inc.**  
 Geotechnical, Environmental and Materials Testing Consultants

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**SAND CREEK**

**VICINITY MAP**

**14678-12A**  
**SEE BAR SCALE**

**OCT. 2020** **FIGURE 1**

**APPENDIX A**  
**EXPLORATORY LOGS**

# Geotechnical Boring Log MW - 1 Lot 7

Date: February 19, 2015	Project Name: Sand Creek	Page: 1 of 1
Project Number: 14678-11A	Logged By: TJ	
Drilling Company: Drilling It	Type of Rig: CME45B	
Drive Weight (lbs): 140	Drop (in): 30	Hole Diameter (in): 8
Top of Hole Elevation (ft):	Hole Location: See Geotechnical Map	

Depth (ft)	Blow Count Per Foot	Sample Number	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0					SP	Poorly graded SAND; light greyish brown, loose, semi moist
5					SP-SM	Poorly graded SAND with SILT and trace gravel; light brown, moist, dense
10					SP	Poorly graded SAND with trace gravel; yellowish brown, moist, dense
					Brown	
15					SM	Silty SAND with trace gravel; dark brown, moist, very dense
						End of Boring at 16 feet No Groundwater
20						
25						
30						

# Geotechnical Boring Log MW - 1 Lot 8

Date: February 19, 2015	Project Name: Sand Creek	Page: 1 of 1
Project Number: 14678-11A	Logged By: TJ	
Drilling Company: Drilling It	Type of Rig: CME45B	
Drive Weight (lbs): 140	Drop (in): 30	Hole Diameter (in): 8
Top of Hole Elevation (ft):	Hole Location: See Geotechnical Map	

Depth (ft)	Blow Count Per Foot	Sample Number	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0					SP	Poorly graded SAND; greyish brown, loose, slightly moist
5						
10						Trace gravel
						Gravel
15						
						End of Boring at 16 feet No Groundwater
20						
25						
30						

# Geotechnical Boring Log MW - 1 Lot 9

Date: February 19, 2015	Project Name: Sand Creek	Page: 1 of 1
Project Number: 14678-11A	Logged By: TJ	
Drilling Company: Drilling It	Type of Rig: CME45B	
Drive Weight (lbs): 140	Drop (in): 30	Hole Diameter (in): 8
Top of Hole Elevation (ft):	Hole Location: See Geotechnical Map	

Depth (ft)	Blow Count Per Foot	Sample Number	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0					SP	Poorly graded SAND; light brown, loose, slightly moist
5						
						Dense below 6 feet
10						Very dense
15						End of Boring at 15 feet No Groundwater
20						
25						
30						

# Geotechnical Boring Log MW - 1 Lot 10

Date: February 19, 2015	Project Name: Sand Creek	Page: 1 of 1
Project Number: 14678-11A	Logged By: TJ	
Drilling Company: Drilling It	Type of Rig: CME45B	
Drive Weight (lbs): 140	Drop (in): 30	Hole Diameter (in): 8
Top of Hole Elevation (ft):	Hole Location: See Geotechnical Map	

Depth (ft)	Blow Count Per Foot	Sample Number	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0					SP	Poorly graded SAND; light brown, loose, slightly moist
5						Medium dense, moist
10						Dense
11					SP-SM	Poorly graded SAND with SILT; yellow brown, very dense, moist
15						Gravel below 16 feet
18						End of Boring at 18 feet
20						No Groundwater
25						
30						

# Geotechnical Boring Log MW - 1 Lot 11

Date: February 19, 2015	Project Name: Sand Creek	Page: 1 of 1
Project Number: 14678-11A	Logged By: TJ	
Drilling Company: Drilling It	Type of Rig: CME45B	
Drive Weight (lbs): 140	Drop (in): 30	Hole Diameter (in): 8
Top of Hole Elevation (ft):	Hole Location: See Geotechnical Map	

Depth (ft)	Blow Count Per Foot	Sample Number	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						<b><u>Quaternary Pauba Formation (Qpfs):</u></b>
					SP	Poorly grade SAND with trace gravel; light brown, medium dense, slightly moist
5						Very dense
10						Greyish brown
15						
						End of Boring at 17 feet No Groundwater
20						
25						
30						

# Geotechnical Boring Log MW - 1 Lot 12

Date: February 18, 2015	Project Name: Sand Creek	Page: 1 of 1
Project Number: 14678-11A	Logged By: TJ	
Drilling Company: Drilling It	Type of Rig: CME45B	
Drive Weight (lbs): 140	Drop (in): 30	Hole Diameter (in): 8
Top of Hole Elevation (ft):	Hole Location: See Geotechnical Map	

Depth (ft)	Blow Count Per Foot	Sample Number	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						<b><u>Quaternary Pauba Formation (Qpfs):</u></b>
					SP	Poorly graded SAND; light brown, loose, slightly moist
5						Medium dense
10						Dense, moist
15					SP	Poorly graded SAND with trace gravel; yellowish brown, very dense, moist
20						End of Boring at 18 feet No Groundwater
25						
30						

# Geotechnical Boring Log MW - 1 Lot 13

Date: February 18, 2015	Project Name: Sand Creek	Page: 1 of 1
Project Number: 14678-11A	Logged By: TJ	
Drilling Company: Drilling It	Type of Rig: CME45B	
Drive Weight (lbs): 140	Drop (in): 30	Hole Diameter (in): 8
Top of Hole Elevation (ft):	Hole Location: See Geotechnical Map	

Depth (ft)	Blow Count Per Foot	Sample Number	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						<b><u>Quaternary Pauba Formation (Qpfs):</u></b>
					SP	Poorly graded SAND; light brown, loose, slightly moist
5						Medium dense, moist
10						Trace gravel, very dense
15						Orange brown
20						End of Boring at 19 feet No Groundwater
25						
30						

# Geotechnical Boring Log MW - 1 Lot 14

Date: February 17, 2015	Project Name: Sand Creek	Page: 1 of 1
Project Number: 14678-11A	Logged By: TJ	
Drilling Company: Drilling It	Type of Rig: CME45B	
Drive Weight (lbs): 140	Drop (in): 30	Hole Diameter (in): 8
Top of Hole Elevation (ft):	Hole Location: See Geotechnical Map	

Depth (ft)	Blow Count Per Foot	Sample Number	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						<b><u>Quaternary Pauba Formation (Qpfs):</u></b>
					SP	Poorly graded SAND; light olive brown, slightly moist
5						Trace gravel
10						
15						Very dense
20						
25						End of Boring at 25 feet No Groundwater
30						

# Geotechnical Boring Log MW - 1 Lot 15

Date: February 18, 2015	Project Name: Sand Creek	Page: 1 of 1
Project Number: 14678-11A	Logged By: TJ	
Drilling Company: Drilling It	Type of Rig: CME45B	
Drive Weight (lbs): 140	Drop (in): 30	Hole Diameter (in): 8
Top of Hole Elevation (ft):	Hole Location: See Geotechnical Map	

Depth (ft)	Blow Count Per Foot	Sample Number	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						<b><u>Quaternary Pauba Formation (Qpfs):</u></b>
					SP-SM	Poorly graded SAND with trace SILT; dark brown, loose, slightly moist
5						No SILT
						Orange brown, dense, moist
10						
15						
20						End of Boring at 20 feet No Groundwater
25						
30						

# Geotechnical Boring Log MW - 1 Lot 16

Date: February 13, 2015	Project Name: Sand Creek	Page: 1 of 1
Project Number: 14678-11A	Logged By: TJ	
Drilling Company: Drilling It	Type of Rig: CME45B	
Drive Weight (lbs): 140	Drop (in): 30	Hole Diameter (in): 8
Top of Hole Elevation (ft):	Hole Location: See Geotechnical Map	

Depth (ft)	Blow Count Per Foot	Sample Number	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						<b><u>Quaternary Pauba Formation (Qpfs):</u></b>
					SP	Poorly graded SAND; light olive brown, loose, slightly moist
5						
10						
15					SM	Silty SAND with trace gravel; grey brown, moist, dense
						Very dense
20						
25						End of Boring at 25 feet No Groundwater
30						

# Geotechnical Boring Log MW-1 Lot 1

Date: 11/6/2014	Project Name: Sand Creek	Page: 1 of 1
Project Number: 14678-11A	Logged By: TJ	
Drilling Company: Drilling It	Type of Rig: CME 45B	
Drive Weight (lbs): -	Drop (in): -	Hole Diameter (in): 4
Top of Hole Elevation (ft):	Hole Location: See Geotechnical Map	

Depth (ft)	Blow Count Per Foot	Sample Number	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						<b><u>Quaternary Pauba Formation (Qpfs):</u></b>
					SP-SM	Poorly graded SAND with trace silt and gravel; light brown
5					SM	Silty SAND; light orangish brown
					SP-SM	Poorly graded SAND with silt; light yellowish brown
10						
						Moist below 13 feet
15						End of Boring at 15 feet No Groundwater
20						
25						
30						

# Geotechnical Boring Log MW-2 Lot 1

Date: 11/6/2014	Project Name: Sand Creek	Page: 1 of 2
Project Number: 14678-11A	Logged By: TJ	
Drilling Company: Drilling It	Type of Rig: CME 45B	
Drive Weight (lbs): -	Drop (in): -	Hole Diameter (in): 4
Top of Hole Elevation (ft):	Hole Location: See Geotechnical Map	

Depth (ft)	Blow Count Per Foot	Sample Number	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0					SM	Silty SAND; medium brown, slightly moist, soft
					SP	Poorly Graded SAND with gravel; orange brown, slightly moist, soft
5						
10						Slightly dense from 12 to 15 feet
15						Medium dense from 15 to 19 feet
20						Dense from 19 to 25 feet
25						Dark brown and very dense below 25 feet
30						

# Geotechnical Boring Log MW-2 Lot 1

Date: 11/6/2014	Project Name: Sand Creek	Page: 1 of 2
Project Number: 14678-11A	Logged By: TJ	
Drilling Company: Drilling It	Type of Rig: CME 45B	
Drive Weight (lbs): -	Drop (in): -	Hole Diameter (in): 4
Top of Hole Elevation (ft):	Hole Location: See Geotechnical Map	

Depth (ft)	Blow Count Per Foot	Sample Number	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
30						
35						
40						End of boring at 40 feet No groundwater
45						
50						
55						
60						



# Geotechnical Boring Log MW-1 Lot 2

Date: 2/24/2015	Project Name: Sand Creek	Page: 1 of 1
Project Number: 14678-11A	Logged By: DV	
Drilling Company: Drilling It	Type of Rig: CME 45B	
Drive Weight (lbs): -	Drop (in): -	Hole Diameter (in): 4
Top of Hole Elevation (ft):	Hole Location: See Geotechnical Map	

Depth (ft)	Blow Count Per Foot	Sample Number	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						<b><u>Quaternary Pauba Formation (Qpfs):</u></b>
					SM	Silty SAND; olive brown, moist
5						
10						
15						
20						
25						
30						End of Boring at 30 feet No Groundwater

# Geotechnical Boring Log MW-2 Lot 2

Date: 2/24/2015	Project Name: Sand Creek	Page: 1 of 2
Project Number: 14678-11A	Logged By: DV	
Drilling Company: Drilling It	Type of Rig: CME 45B	
Drive Weight (lbs): -	Drop (in): -	Hole Diameter (in): 4
Top of Hole Elevation (ft):	Hole Location: See Geotechnical Map	

Depth (ft)	Blow Count Per Foot	Sample Number	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						<b><u>Quaternary Pauba Formation (Qpfs):</u></b>
					SM	Silty SAND; olive brown, moist
5						
10						
15						
20						
25						
30						

# Geotechnical Boring Log MW-2 Lot 2

Date: 2/24/2015	Project Name: Sand Creek	Page: 2 of 2
Project Number: 14678-11A	Logged By: DV	
Drilling Company: Drilling It	Type of Rig: CME 45B	
Drive Weight (lbs): -	Drop (in): -	Hole Diameter (in): 4
Top of Hole Elevation (ft):	Hole Location: See Geotechnical Map	

Depth (ft)	Blow Count Per Foot	Sample Number	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
30						
35						
40						End of boring at 40 feet No Groundwater
45						
50						
55						
60						



# Geotechnical Boring Log MW-1 Lot 3

Date: 12/19/2014	Project Name: Sand Creek	Page: 1 of 1
Project Number: 14678-11A	Logged By: TJ	
Drilling Company: Drilling It	Type of Rig: CME 45B	
Drive Weight (lbs): -	Drop (in): -	Hole Diameter (in): 4
Top of Hole Elevation (ft):	Hole Location: See Geotechnical Map	

Depth (ft)	Blow Count Per Foot	Sample Number	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						<b><u>Quaternary Pauba Formation (Qpfs):</u></b>
					SP	Poorly graded SAND; dark brown, very moist, soft
5						Orange brown from 4 to 11 feet
10					SM	Silty SAND with trace gravel; olive brown, moist, soft
15						Slightly dense
20						Dense
						End of Boring at 19 feet No Groundwater
25						
30						

# Geotechnical Boring Log MW-2 Lot 3

Date: 12/19/2014	Project Name: Sand Creek	Page: 1 of 2
Project Number: 14678-11A	Logged By: TJ	
Drilling Company: Drilling It	Type of Rig: CME 45B	
Drive Weight (lbs): -	Drop (in): -	Hole Diameter (in): 4
Top of Hole Elevation (ft):	Hole Location: See Geotechnical Map	

Depth (ft)	Blow Count Per Foot	Sample Number	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						<b><u>Quaternary Pauba Formation (Qpfs):</u></b>
					SM	Silty SAND; olive brown, moist
5						
10						
15						
20						
25						
30						

# Geotechnical Boring Log MW-2 Lot 3

Date: 2/24/2015	Project Name: Sand Creek	Page: 2 of 2
Project Number: 14678-11A	Logged By: DV	
Drilling Company: Drilling It	Type of Rig: CME 45B	
Drive Weight (lbs): -	Drop (in): -	Hole Diameter (in): 4
Top of Hole Elevation (ft):	Hole Location: See Geotechnical Map	

Depth (ft)	Blow Count Per Foot	Sample Number	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
30						
35						
40						End of boring at 40 feet No Groundwater
45						
50						
55						
60						

# Geotechnical Boring Log MW-1 Lot 4

Date: 2/19/2014	Project Name: Sand Creek	Page: 1 of 1
Project Number: 14678-11A	Logged By: TJ	
Drilling Company: Drilling It	Type of Rig: CME 45B	
Drive Weight (lbs): -	Drop (in): -	Hole Diameter (in): 4
Top of Hole Elevation (ft):	Hole Location: See Geotechnical Map	

Depth (ft)	Blow Count Per Foot	Sample Number	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						<b><u>Quaternary Pauba Formation (Qpfs):</u></b>
					SP	Poorly graded SAND; olive brown, dense
5						
10						
15						
20						End of Boring at 20 feet No Groundwater
25						
30						

# Geotechnical Boring Log MW-2 Lot 4

Date: 2/19/2014	Project Name: Sand Creek	Page: 1 of 2
Project Number: 14678-11A	Logged By: TJ	
Drilling Company: Drilling It	Type of Rig: CME 45B	
Drive Weight (lbs): -	Drop (in): -	Hole Diameter (in): 4
Top of Hole Elevation (ft):	Hole Location: See Geotechnical Map	

Depth (ft)	Blow Count Per Foot	Sample Number	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						<b><u>Quaternary Pauba Formation (Qpfs):</u></b>
					SM	Silty SAND; olive brown, moist
5						
10						
15						
20						
25						
30						

# Geotechnical Boring Log MW-2 Lot 4

Date: 2/19/2014	Project Name: Sand Creek	Page: 2 of 2
Project Number: 14678-11A	Logged By: TJ	
Drilling Company: Drilling It	Type of Rig: CME 45B	
Drive Weight (lbs): -	Drop (in): -	Hole Diameter (in): 4
Top of Hole Elevation (ft):	Hole Location: See Geotechnical Map	

Depth (ft)	Blow Count Per Foot	Sample Number	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
30						
35						
40						End of boring at 40 feet No Groundwater
45						
50						
55						
60						

# Geotechnical Boring Log MW-1 Lot 5

Date: 2/19/2014	Project Name: Sand Creek	Page: 1 of 1
Project Number: 14678-11A	Logged By: TJ	
Drilling Company: Drilling It	Type of Rig: CME 45B	
Drive Weight (lbs): -	Drop (in): -	Hole Diameter (in): 4
Top of Hole Elevation (ft):	Hole Location: See Geotechnical Map	

Depth (ft)	Blow Count Per Foot	Sample Number	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						<b>Quaternary Pauba Formation (Qpfs):</b>
					SP	Poorly graded SAND; light grey, moist, dense
5						
10						
15						
20						End of Boring at 20 feet No Groundwater
25						
30						

# Geotechnical Boring Log MW-2 Lot 5

Date: 2/19/2014	Project Name: Sand Creek	Page: 1 of 2
Project Number: 14678-11A	Logged By: TJ	
Drilling Company: Drilling It	Type of Rig: CME 45B	
Drive Weight (lbs): -	Drop (in): -	Hole Diameter (in): 4
Top of Hole Elevation (ft):	Hole Location: See Geotechnical Map	

Depth (ft)	Blow Count Per Foot	Sample Number	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						<b><u>Quaternary Pauba Formation (Qpfs):</u></b>
					SP	Poorly graded SAND; light grey, moist, dense
5						
10						
15						
20						
25						
30						

# Geotechnical Boring Log MW-2 Lot 5

Date: 2/19/2014	Project Name: Sand Creek	Page: 2 of 2
Project Number: 14678-11A	Logged By: TJ	
Drilling Company: Drilling It	Type of Rig: CME 45B	
Drive Weight (lbs): -	Drop (in): -	Hole Diameter (in): 4
Top of Hole Elevation (ft):	Hole Location: See Geotechnical Map	

Depth (ft)	Blow Count Per Foot	Sample Number	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
30						
35						
40						End of boring at 40 feet No Groundwater
45						
50						
55						
60						

# Geotechnical Boring Log MW-1 Lot 6

Date: 2/19/2014	Project Name: Sand Creek	Page: 1 of 1
Project Number: 14678-11A	Logged By: TJ	
Drilling Company: Drilling It	Type of Rig: CME 45B	
Drive Weight (lbs): -	Drop (in): -	Hole Diameter (in): 4
Top of Hole Elevation (ft):	Hole Location: See Geotechnical Map	

Depth (ft)	Blow Count Per Foot	Sample Number	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						<b>Quaternary Pauba Formation (Qpfs):</b>
					SP	Poorly graded SAND; light grey, moist, dense
5						
10					SM	Silty SAND; light grey moist
15						
20						End of Boring at 20 feet No Groundwater
25						
30						

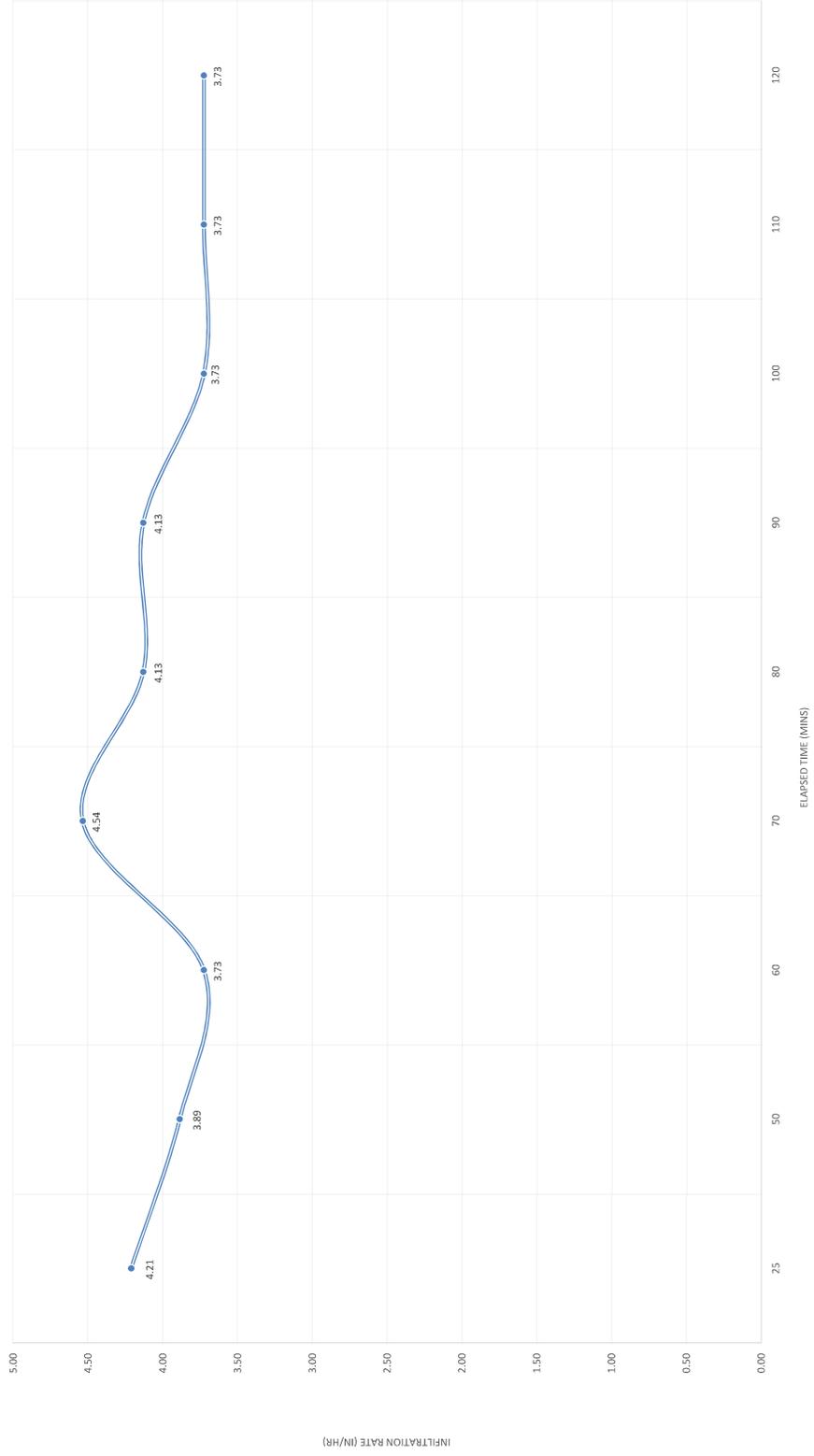
**APPENDIX B**  
**INFILTRATION TEST SHEETS**



Project Identification:	14678-12A	
Test Location:	DR-1	
Liquid Used:	TAP WATER	pH: 8.0
Tested By:	JMR	
Depth to water table:	0	



ELAPSED TIME VS. INFILTRATION RATE

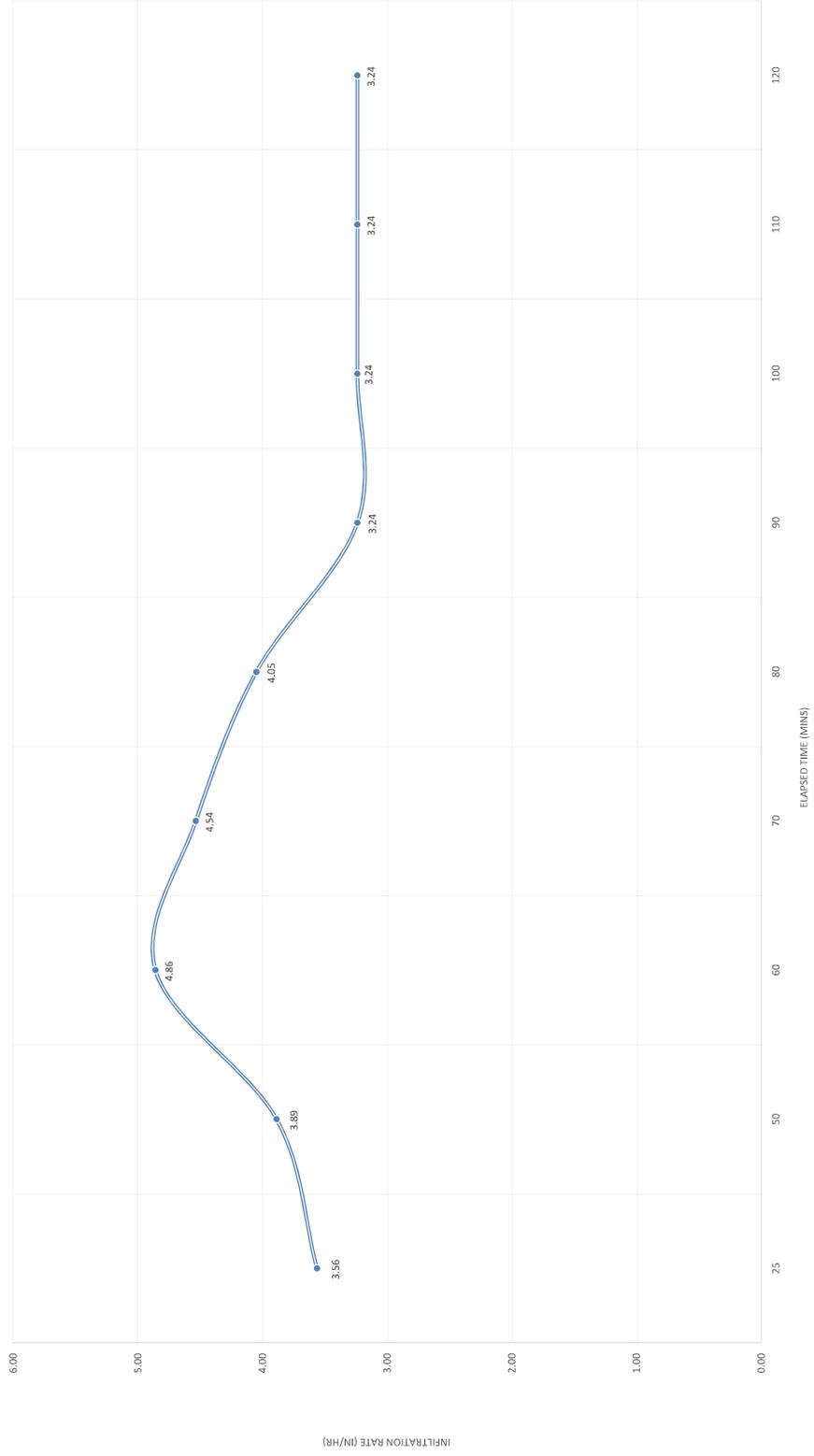




Project Identification:	14678-12A	
Test Location:	DR-2	
Liquid Used:	TAP WATER	pH: 8.0
Tested By:	JMR	
Depth to water table:	0	



### ELAPSED TIME VS. INFILTRATION RATE

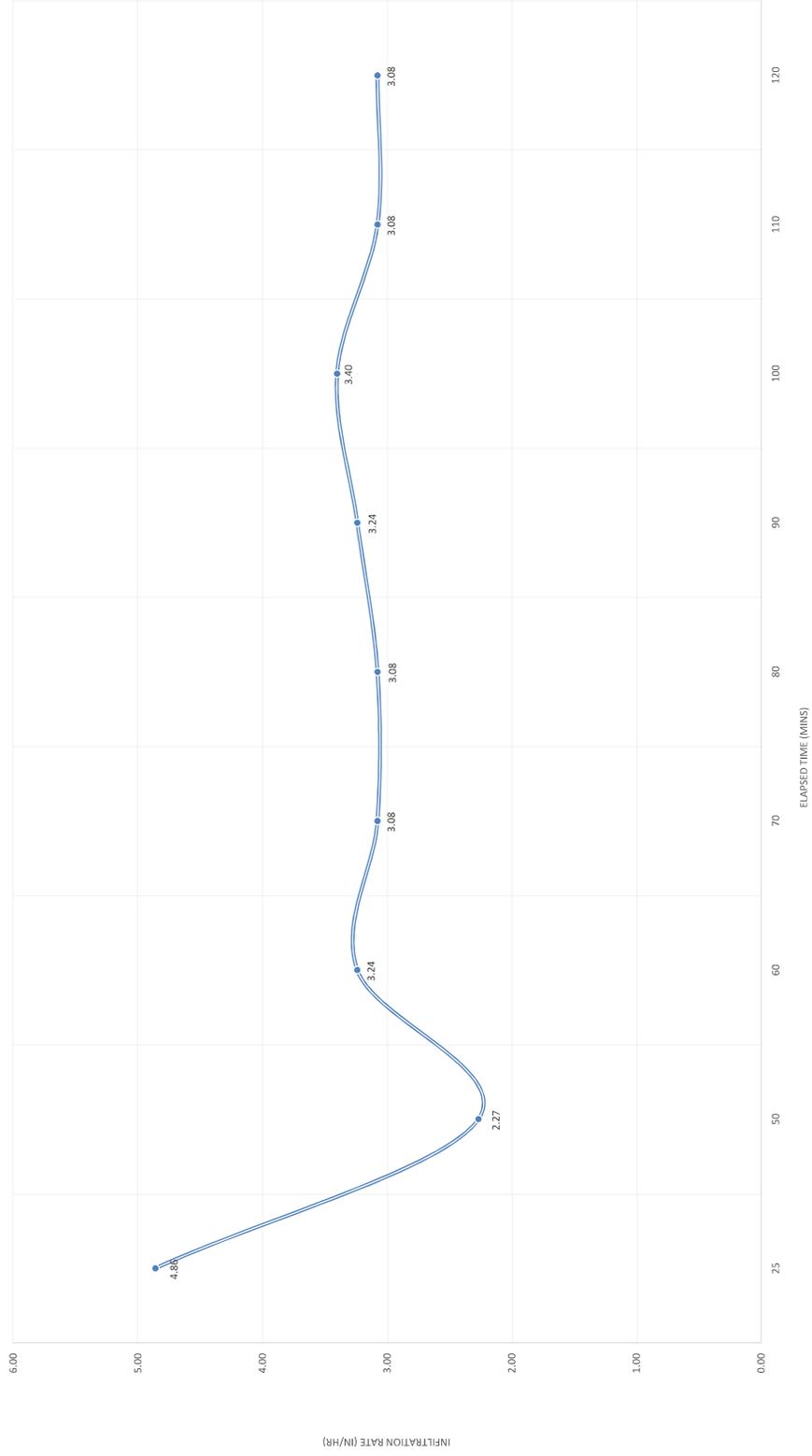




Project Identification:	14678-12A	
Test Location:	DR-3	
Liquid Used:	TAP WATER	pH: 8.0
Tested By:	JMR	
Depth to water table:	0	



### ELAPSED TIME VS. INFILTRATION RATE



**Turf-Tec International - Record Chart for IN10-W - (12 & 24 Inch Infiltration Rings)**

<b>Test No.</b>	<b>DR-1</b>	<b>Location</b>	<b>See Map</b>
<b>Project Identification:</b>	14678-12A		
<b>Test Location:</b>	DR-4		
<b>Liquid Used:</b>	TAP WATER pH: 8.0		
<b>Tested By:</b>	JMR	<b>Date</b> 10/9/2020	
<b>Depth to water table:</b>		<b>Depth of Test</b> 5	
		<b>Penetration Depth of Outer Ring:</b> 9 cm	
		<b>Inner Ring</b> Annular Ring	
		<b>Area cm<sup>2</sup></b> 729	
		<b>Depth of Liquid</b> 10.0	
		<b>Liquid Container</b> Number 1	
		<b>Marriotte Tube Volume</b> 3000	
		<b>Annular Ring</b> 2	
		<b>Liquid level maintained (X) Flow Valve ( )</b>	
		<b>Float Valve ( )</b>	
		<b>Marriotte Tubes</b> 10000	
		<b>Other</b>	

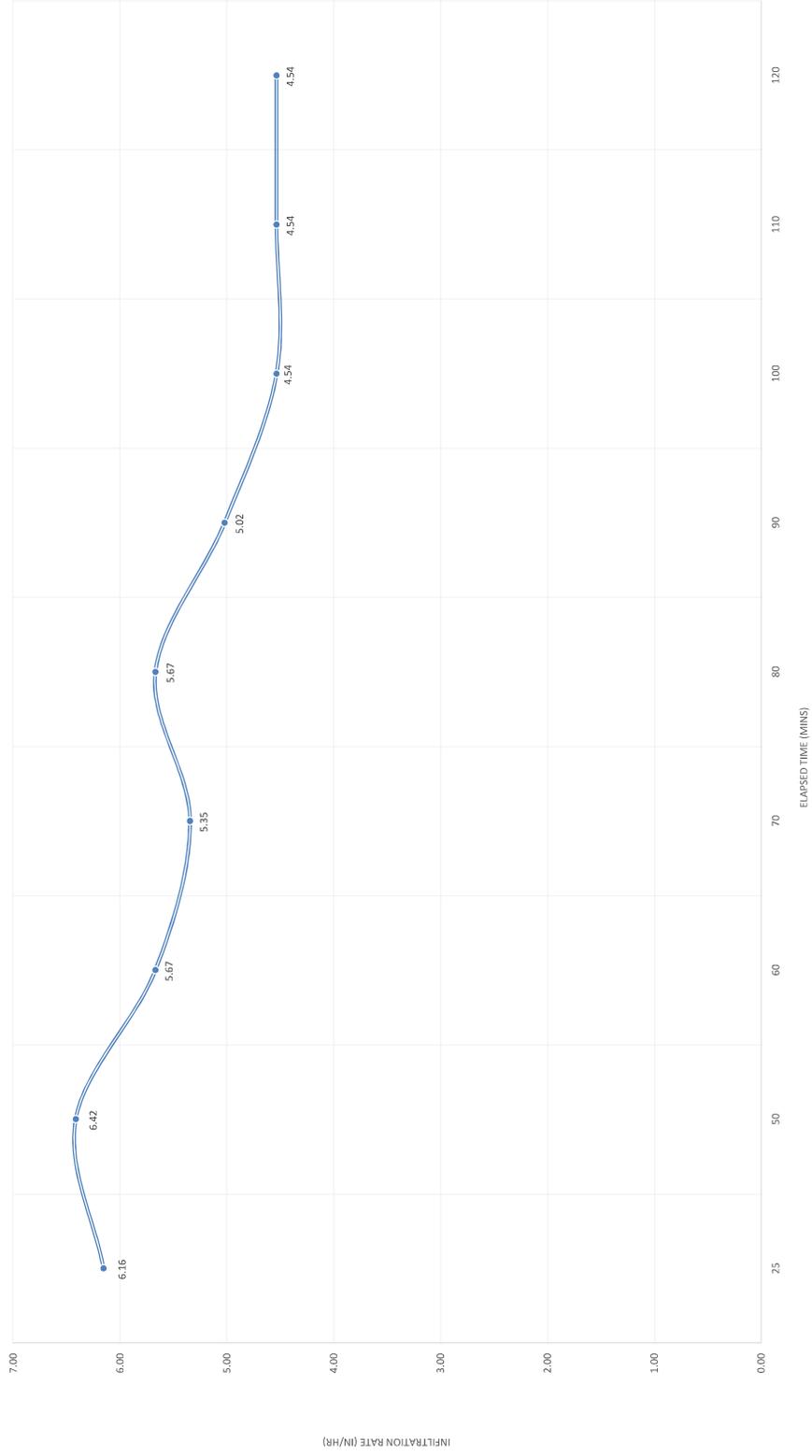
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 Geotechnical, Environmental and Materials Testing Consultants  
 www.ESGSINC.com (951) 397-8313

Trial #	Start / End	Date MM/DD/YY	Time HR:MIN	Time Increment (Total)	Elapsed Time (Min)	Flow Readings				Infiltration Rates			Ground Temperature		Remarks	
						Inner Ring Reading cm	Inner Marriotte Tube Flow (ml)	Annular Space Reading cm	Annular Space Marriotte Tube Flow (ml)	Liquid Temp °F	Inner Infiltration Rate cm/h	Inner Infiltration Rate ft/h	Annular Infiltration Rate cm/h	Annular Infiltration Rate ft/h		Ground Temp Depth (cm)
	Start Test	10/9/2020	11:05	0:25												
1	End Test	10/9/2020	11:30	0:25	25	4750	4750		8250			15.64	6.16	9.05	3.56	
	Start Test	10/9/2020	11:30	0:25												
2	End Test	10/9/2020	11:55	0:50	50	4950	4950		8100			16.30	6.42	8.88	3.50	
	Start Test	10/9/2020	11:55	0:10												
3	End Test	10/9/2020	12:05	1:00	60	1750	1750		5500			14.40	5.67	15.08	5.94	
	Start Test	10/9/2020	12:05	0:10												
4	End Test	10/9/2020	12:15	1:10	70	1650	1650		5650			13.58	5.35	15.49	6.10	
	Start Test	10/9/2020	12:15	0:10												
5	End Test	10/9/2020	12:25	1:20	80	1750	1750		5400			14.40	5.67	14.80	5.83	
	Start Test	10/9/2020	12:25	0:10												
6	End Test	10/9/2020	12:35	1:30	90	1550	1550		4000			12.76	5.02	10.96	4.32	
	Start Test	10/9/2020	12:35	0:10												
7	End Test	10/9/2020	12:45	1:40	100	1400	1400		3000			11.52	4.54	8.22	3.24	
	Start Test	10/9/2020	12:45	0:10												
8	End Test	10/9/2020	12:55	1:50	110	1400	1400		3250			11.52	4.54	8.91	3.51	
	Start Test	10/9/2020	12:55	0:10												
9	End Test	10/9/2020	13:05	2:00	120	1400	1400		3000			11.52	4.54	8.22	3.24	
	Start Test															
	End Test															
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	End Test															

Project Identification:	14678-12A
Test Location:	DR-4
Liquid Used:	TAP WATER
Tested By:	JMR
Depth to water table:	8.0
	0



ELAPSED TIME VS. INFILTRATION RATE



**APPENDIX C**  
**FACTOR OF SAFETY**  
**WORKSHEET**

## Appendix D: Approved Infiltration Rate Assessment Methods

**Worksheet D.5-1: Factor of Safety and Design Infiltration Rate Worksheet**

Factor of Safety and Design Infiltration Rate Worksheet		Worksheet D.5-1			
Factor Category		Factor Description	Assigned Weight (w)	Factor Value (v)	Product (p) $p = w \times v$
A	Suitability Assessment	Soil assessment methods	0.25	1.0	0.25
		Predominant soil texture	0.25	1.0	0.25
		Site soil variability	0.25	1.0	0.25
		Depth to groundwater / impervious layer	0.25	1.0	0.25
		Suitability Assessment Safety Factor, $S_A = \sum p$			
B	Design	Level of pretreatment/ expected sediment loads	0.5		
		Redundancy/resiliency	0.25		
		Compaction during construction	0.25		
		Design Safety Factor, $S_B = \sum p$			
Combined Safety Factor, $S_{total} = S_A \times S_B$					
Observed Infiltration Rate, inch/hr, $K_{observed}$ (corrected for test-specific bias)				3.08	
Design Infiltration Rate, in/hr, $K_{design} = K_{observed} / S_{total}$				1.54	
<b>Supporting Data</b>					
<p>Briefly describe infiltration test and provide reference to test forms:</p> <p style="margin-left: 40px;">We utilized Double Ring Infiltrometer Tests to determine onsite soil infiltration rates. Please see Plate 1 for test locations and Appendix B for test data.</p>					

**APPENDIX D**  
**HISTORIC GROUNDWATER**  
**DATA**



CALIFORNIA DEPARTMENT OF  
**WATER RESOURCES**



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[Water Quality](#)



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# Groundwater Level Report

Station 335029N1170760W001

**Station Data** [Groundwater Level Data](#)

State Well Number:	
Local Well ID:	RCWD 465
Site Code:	335029N1170760W001
Latitude (NAD83):	33.502867
Longitude (NAD83):	-117.076038
Groundwater Basin (Code):	Temecula Valley (9-005)
Well Use:	Observation
Well Status:	Active
Well Completion Report Number:	
Reference Point Elevation (NAVD88 ft):	1184.400
Ground Surface Elevation (NAVD88 ft):	1183.000
Total Depth (ft):	820
Perforated Interval Depths (ft):	432.000 818.000





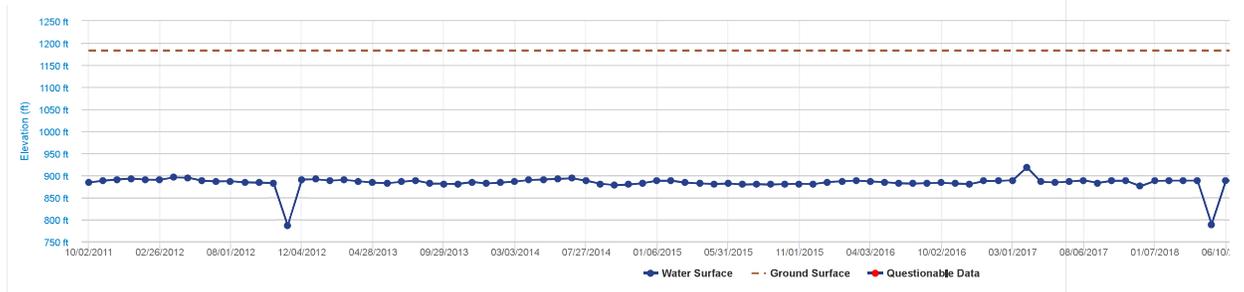
[Back to Search](#)

# Groundwater Level Report

Station 335029N1170760W001

Station Data Groundwater Level Data

## Groundwater Levels for Well 335029N1170760W001



[Download Data in CSV format](#)

Date	RPE	GSE	RPWS	WSE	GS to WS	Msmt code	Agency	Comments
10/02/2011 07:31:00	1184.400	1183.000	300.6	883.8	299.2		413	
10/30/2011 08:55:00	1184.400	1183.000	296.7	887.7	295.3		413	
12/04/2011 08:07:00	1184.400	1183.000	293.7	890.7	292.3		413	
01/02/2012 07:41:00	1184.400	1183.000	291.6	892.8	290.2		413	
01/29/2012 14:30:00	1184.400	1183.000	294.25	890.15	292.85		413	
02/26/2012 10:36:00	1184.400	1183.000	294.4	890	293		413	
04/01/2012 09:27:00	1184.400	1183.000	289	895.4	287.6		413	
04/29/2012 13:18:00	1184.400	1183.000	289.7	894.7	288.3		413	
06/03/2012 11:51:00	1184.400	1183.000	296.8	887.6	295.4		413	
07/01/2012 15:40:00	1184.400	1183.000	298	886.4	296.6		413	
08/01/2012 02:15:00	1184.400	1183.000	297.8	886.6	296.4		413	
09/01/2012 11:55:00	1184.400	1183.000	300.2	884.2	298.8		413	
09/30/2012 14:00:00	1184.400	1183.000	301.1	883.3	299.7		413	
10/28/2012 11:30:00	1184.400	1183.000	301.7	882.7	300.3		413	
12/02/2012 00:00:00	1184.400	1183.000	398.4	786	397		413	
12/04/2012 09:07:00	1184.400	1183.000	293.7	890.7	292.3		413	
01/02/2013 02:15:00	1184.400	1183.000	293.3	891.1	291.9		413	
01/27/2013 11:10:00	1184.400	1183.000	296.2	888.2	294.8		413	
03/03/2013 13:00:00	1184.400	1183.000	295	889.4	293.6		413	
03/31/2013 10:20:00	1184.400	1183.000	297.6	886.8	296.2		413	
04/28/2013 10:02:00	1184.400	1183.000	301	883.4	299.6		413	
06/02/2013 14:11:00	1184.400	1183.000	302.2	882.2	300.8		413	
06/27/2013 09:41:00	1184.400	1183.000	299.3	885.1	297.9		413	
07/28/2013 13:09:00	1184.400	1183.000	295.8	888.6	294.4		413	
09/08/2013 13:20:00	1184.400	1183.000	303	881.4	301.6		413	

1 to 25 of 107 records

**LEGEND**  
Locations are Approximate

**Symbols**

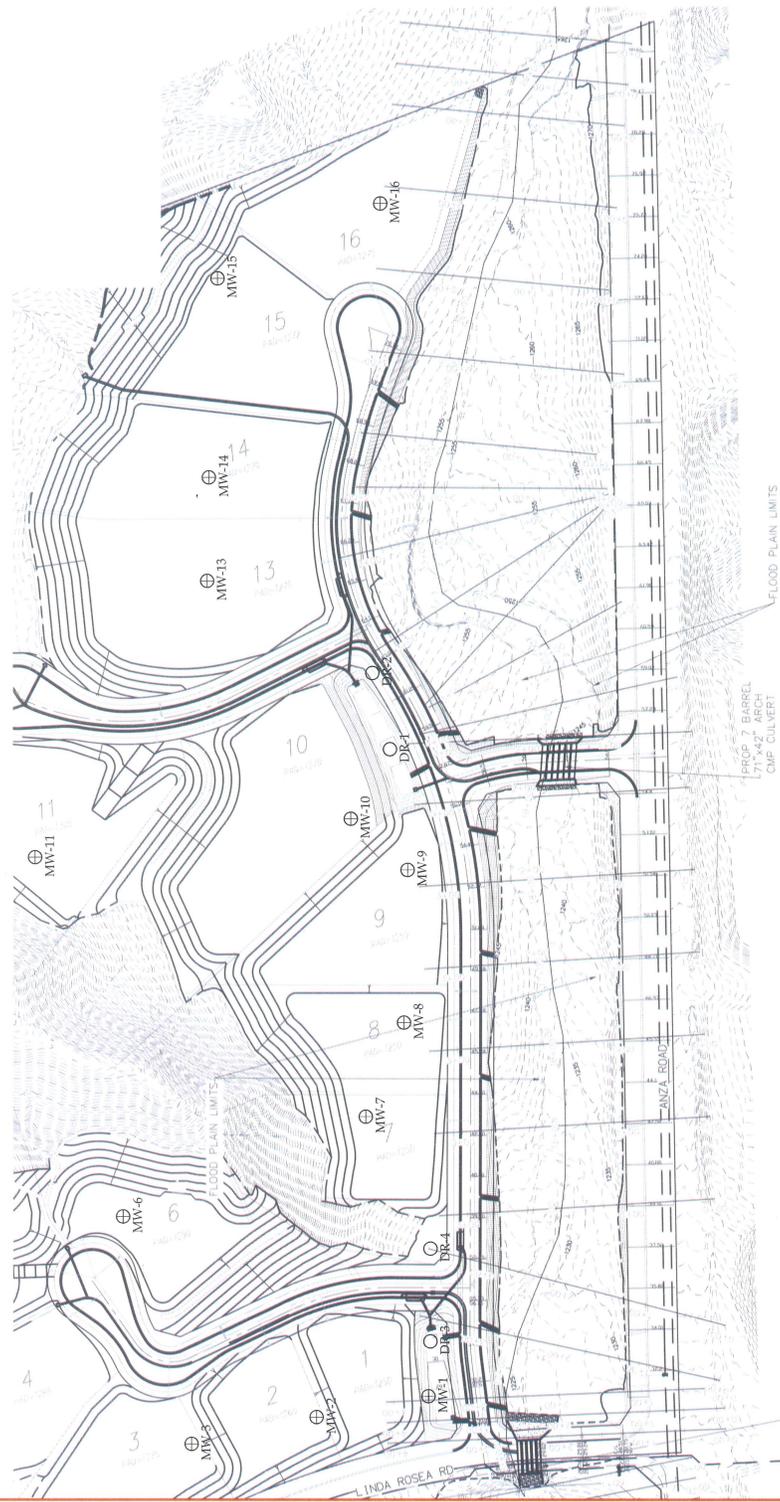
- DR-4 Double Ring Test Location
- ⊕ MW-16 Monitoring Well Location



**DOUBLE RING LOCATION MAP**

LOCATES ON THE NORTHWEST CORNER OF LINDA ROSA DRIVE AND ANZA ROAD  
TEMECULA AREA, RIVERSIDE COUNTY, CALIFORNIA  
APN 951-220-002

PROJECT	PROPOSED 16 LOT DEVELOPMENT
CLIENT	MS. ANGELA LITTLE
PROJECT NO.	14678-12A
DATE	OCTOBER 2020
SCALE	1:150
DWG XREFS	
REVISION	
DRAWN BY	JDG
PLATE	1 OF 1



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