Illustration Section

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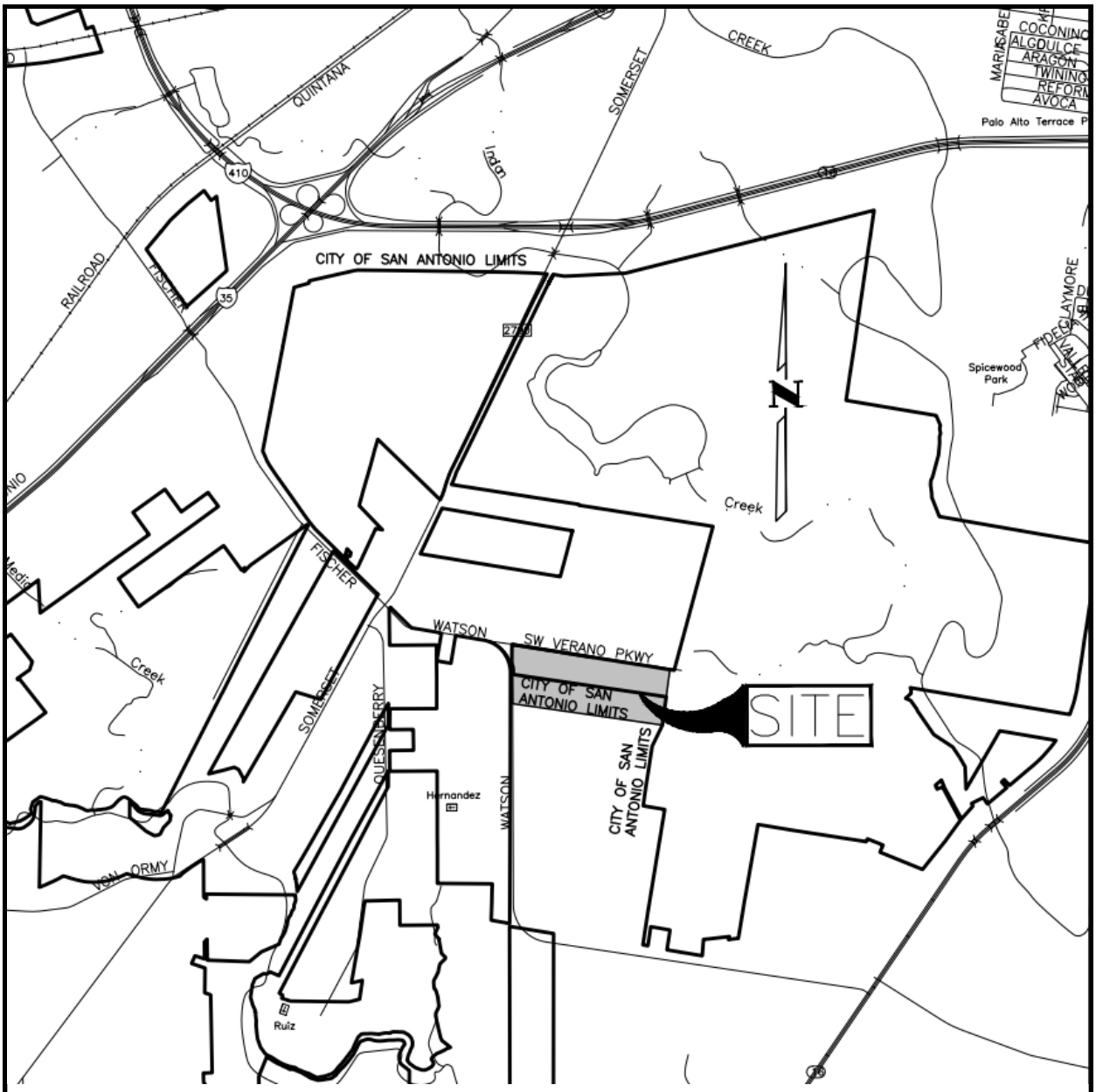
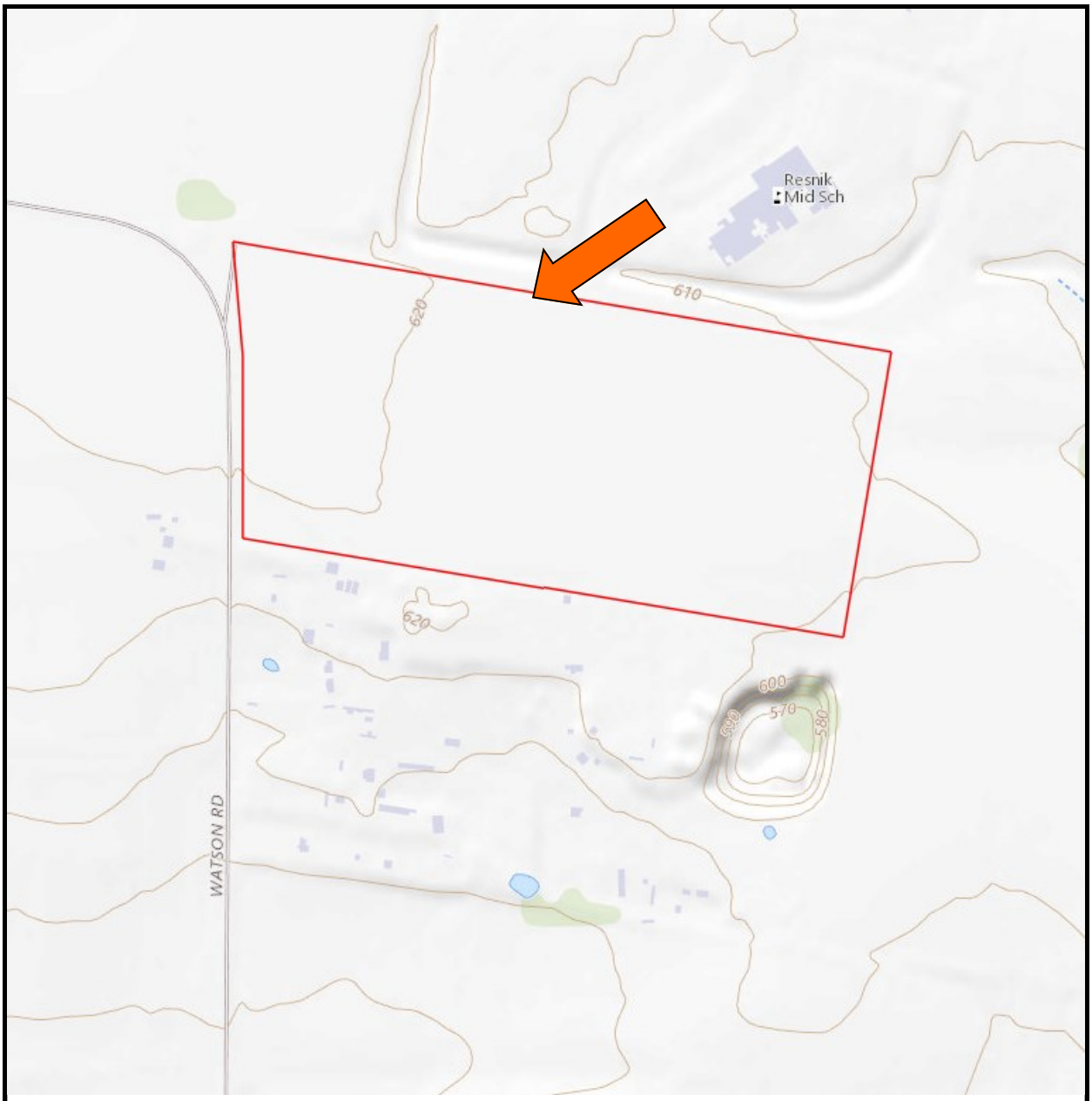
Aerial Map	Plate 1B
Topographic Map	Plate 1C
Geologic Map	Plate 1D
Soil Map	Plate 1E
Approximate Boring Locations	Plate 1F
Boring Logs	Plates 2—21
Keys to Classifications and Symbols	Plate 22
Information on Geotechnical Report	Appendix

Subsurface Exploration and Laboratory Testing Tierra Linda Subdivision San Antonio, Texas		
	InTEC Project Number: **S231273**	Date: 10/13/2023

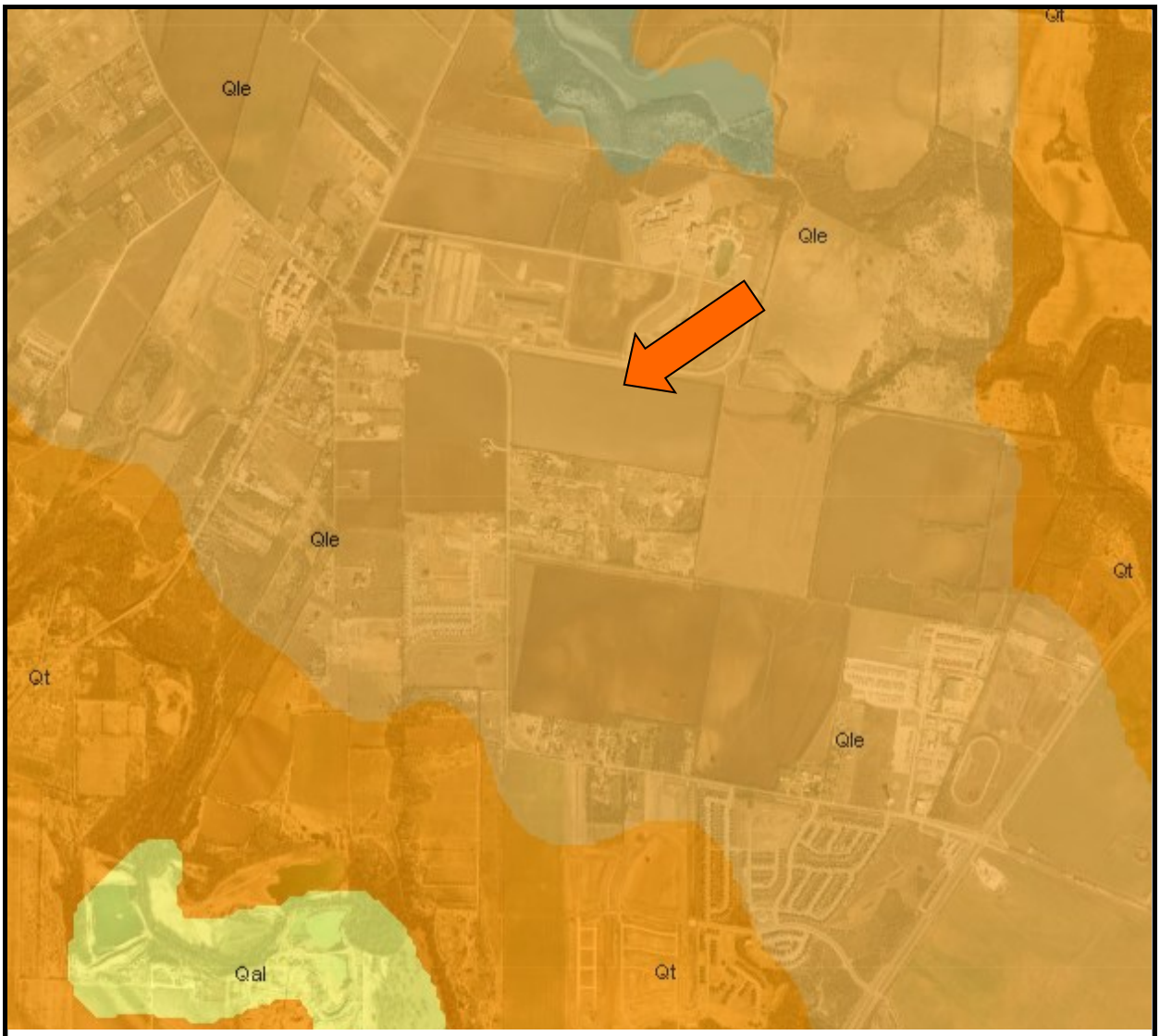


Subsurface Exploration and Laboratory Testing Tierra Linda Subdivision San Antonio, Texas	**Vicinity Map**	
	InTEC Project Number: **S231273**	Date: 10/13/2023

Subsurface Exploration and Laboratory Testing Tierra Linda Subdivision San Antonio, Texas	**Aerial Map—Approximate Location**	
	InTEC Project Number: **S231273**	Date: 10/13/2023



Subsurface Exploration and Laboratory Testing Tierra Linda Subdivision San Antonio, Texas	**Topographic Map—Approximate Location**	
	InTEC Project Number: **S231273**	Date: 10/13/2023



Qle—Leona Formation

Fine calcareous silt grading down into coarse gravel; type locality first wide terrace of Nueces and Leona Rivers below level of Uvalde Gravel. May correlate with Onion Creek Marl of Austin Sheet

Subsurface Exploration and Laboratory Testing Tierra Linda Subdivision San Antonio, Texas	**Geologic Map—Approximate Location**	
	InTEC Project Number: **S231273**	Date: 10/13/2023

Bexar County, Texas

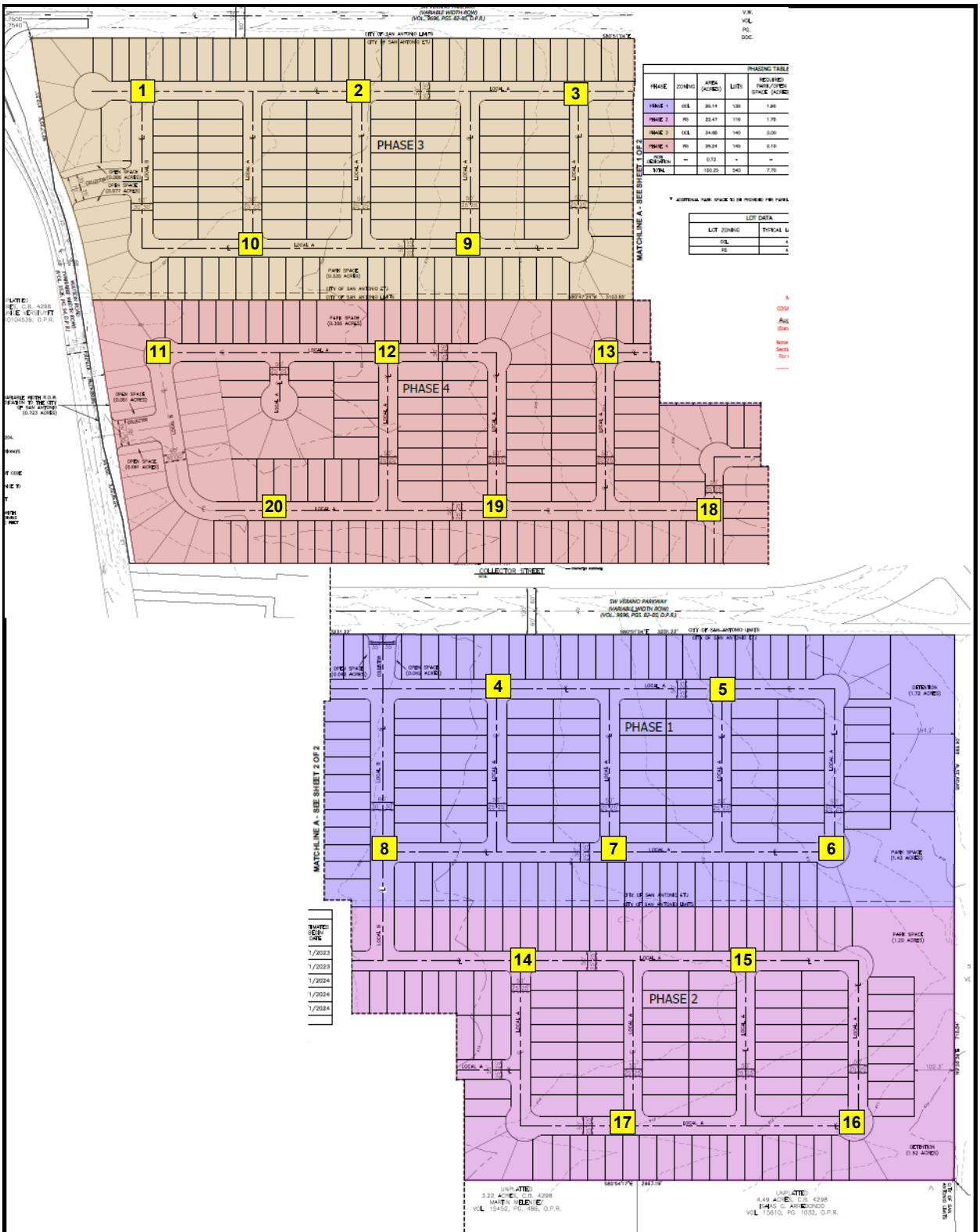
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
HtA—Branyon clay, 0 to 1 percent slopes														
Branyon	85	D	0-12	Clay	CH	A-7-6	0- 0- 0	0- 0- 0	94-96-100	78-92-100	73-90-100	64-79-92	59-63-69	35-39-43
			12-72	Clay, silty clay	CH	A-7-6	0- 0- 0	0- 0- 0	95-96-100	78-92-100	69-90-100	62-82-94	59-69-74	39-43-47
			72-80	Silty clay, silty clay loam, clay loam, clay	CH, CL	A-7-6, A-6	0- 0- 0	0- 0- 0	95-96-100	79-92-100	65-91-100	60-85-97	40-60-64	23-34-47
HtB—Branyon clay, 1 to 3 percent slopes														
Branyon	85	D	0-12	Clay	CH	A-7-6	0- 0- 0	0- 0- 0	94-96-100	78-92-100	73-90-100	64-79-92	59-63-69	35-39-43
			12-72	Clay, silty clay	CH	A-7-6	0- 0- 0	0- 0- 0	95-96-100	78-92-100	69-90-100	62-82-94	59-69-74	39-43-47
			72-80	Clay, silty clay, silty clay loam, clay loam	CH, CL	A-7-6, A-6	0- 0- 0	0- 0- 0	95-96-100	79-92-100	65-91-100	60-85-97	40-60-64	23-34-47

Subsurface Exploration and Laboratory Testing
Tierra Linda Subdivision
San Antonio, Texas

Soil Map—Approximate Location

InTEC Project Number:
S231273

Date:
10/13/2023



Subsurface Exploration and Laboratory Testing
Tierra Linda Subdivision
San Antonio, Texas

Approximate Boring Locations

InTEC Project Number:
S231273

Date:
10/13/2023

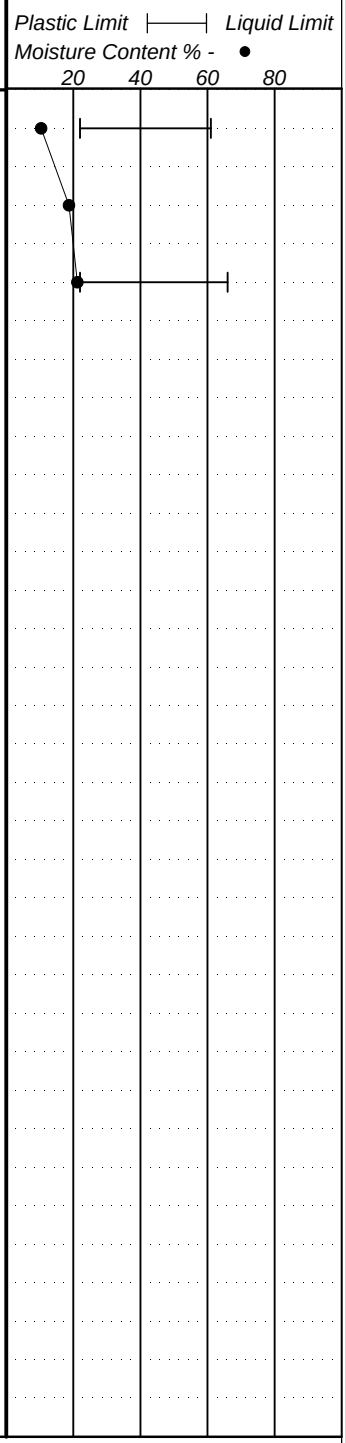
PROJECT: Tierra Linda Subdivision **PROJECT NO: S231273**

LOCATION: San Antonio, Texas **DATE:** 11/07/2023

CLIENT: San Antonio LD, LLC

BORING NO. B-1

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	SULFATE CONTENT (PPM)	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0			Dark Gray Clay							
		AU				10			61	39
		AU								
5		AU							66	44
10										
15										
20										
25										
30										



Notes:

Ground Water Observed: No

Completion Depth (ft): 6

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

PROJECT: Tierra Linda Subdivision **PROJECT NO: S231273**

LOCATION: San Antonio, Texas **DATE:** 11/07/2023

CLIENT: San Antonio LD, LLC

BORING NO. B-2

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	SULFATE CONTENT (PPM)	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0										
		AU	Dark Gray Clay			740				
		AU							69	48
5		AU								
			Tan and Gray Clay							
10										
15										
20										
25										
30										

Plastic Limit ⊢⊣ *Liquid Limit*

Moisture Content % - ●

20 40 60 80

Notes:

Ground Water Observed: No

Completion Depth (ft): 6

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

PROJECT: Tierra Linda Subdivision **PROJECT NO: S231273**

LOCATION: San Antonio, Texas **DATE:** 11/07/2023

CLIENT: San Antonio LD, LLC

BORING NO. B-3

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	SULFATE CONTENT (PPM)	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0		AU	Dark Gray Clay			520				
		AU							70	46
5		AU								
10										
15										
20										
25										
30										

Plastic Limit ⊢⊣ Liquid Limit

Moisture Content % - ● 20 40 60 80

Notes:

Ground Water Observed: No

Completion Depth (ft): 6

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

PROJECT: Tierra Linda Subdivision **PROJECT NO: S231273**

LOCATION: San Antonio, Texas **DATE:** 11/07/2023

CLIENT: San Antonio LD, LLC

inTEC

BORING NO. B-4

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	SULFATE CONTENT (PPM)	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0		AU	Dark Gray Clay			660				
		AU								
5		AU	Tan and Gray Clay							

Plastic Limit ⊢⊣ *Liquid Limit*

Moisture Content % - ●

20 40 60 80

Notes:

Ground Water Observed: No

Completion Depth (ft): 6

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

PROJECT: Tierra Linda Subdivision **PROJECT NO: S231273**

LOCATION: San Antonio, Texas **DATE:** 11/07/2023

CLIENT: San Antonio LD, LLC

inTEC

BORING NO. B-5

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	SULFATE CONTENT (PPM)	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0			Dark Gray Clay							
		AU								
		AU				730				
5		AU							72	48
10										
15										
20										
25										
30										

Plastic Limit ⊢⊣ *Liquid Limit*

Moisture Content % - ● 20 40 60 80

Notes:

Ground Water Observed: No

Completion Depth (ft): 6

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

PROJECT: Tierra Linda Subdivision **PROJECT NO: S231273**

LOCATION: San Antonio, Texas **DATE:** 11/07/2023

CLIENT: San Antonio LD, LLC

inTEC

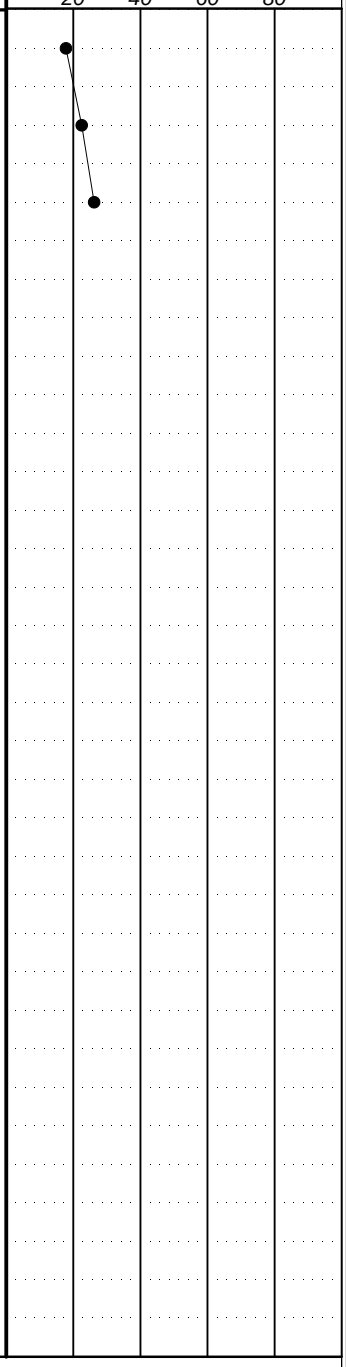
BORING NO. B-6

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	SULFATE CONTENT (PPM)	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0										
		AU	Dark Gray Clay							
		AU								
5		AU				1520				
			Tan and Gray Clay							
10										
15										
20										
25										
30										

Plastic Limit ⊢⊣ *Liquid Limit*

Moisture Content % - ●

20 40 60 80



Notes:

Ground Water Observed: No

Completion Depth (ft): 6

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

PROJECT: Tierra Linda Subdivision **PROJECT NO: S231273**

LOCATION: San Antonio, Texas **DATE:** 11/07/2023

CLIENT: San Antonio LD, LLC

inTEC

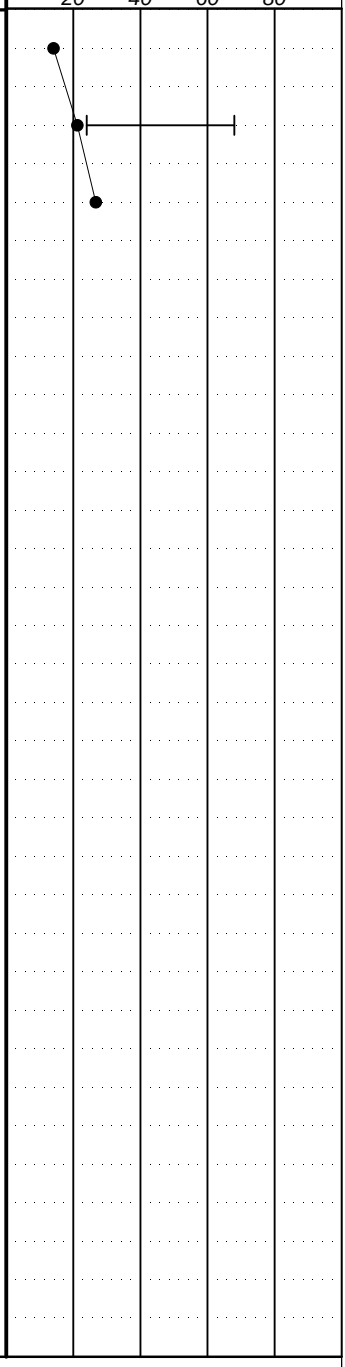
BORING NO. B-7

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	SULFATE CONTENT (PPM)	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0		AU	Dark Gray Clay			490				
		AU							68	44
5		AU	Tan and Gray Clay							

Plastic Limit ⊢⊣ *Liquid Limit*

Moisture Content % - ●

20 40 60 80



Notes:

Ground Water Observed: No

Completion Depth (ft): 6

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

PROJECT: Tierra Linda Subdivision **PROJECT NO: S231273**

LOCATION: San Antonio, Texas **DATE:** 11/07/2023

CLIENT: San Antonio LD, LLC

inTEC

BORING NO. B-8

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	SULFATE CONTENT (PPM)	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0			Dark Gray Clay							
		AU								
		AU				510				
5		AU								
10										
15										
20										
25										
30										

Plastic Limit ⊢⊣ *Liquid Limit*

Moisture Content % - ● 20 40 60 80

Notes:

Ground Water Observed: No

Completion Depth (ft): 6

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

PROJECT: Tierra Linda Subdivision **PROJECT NO: S231273**

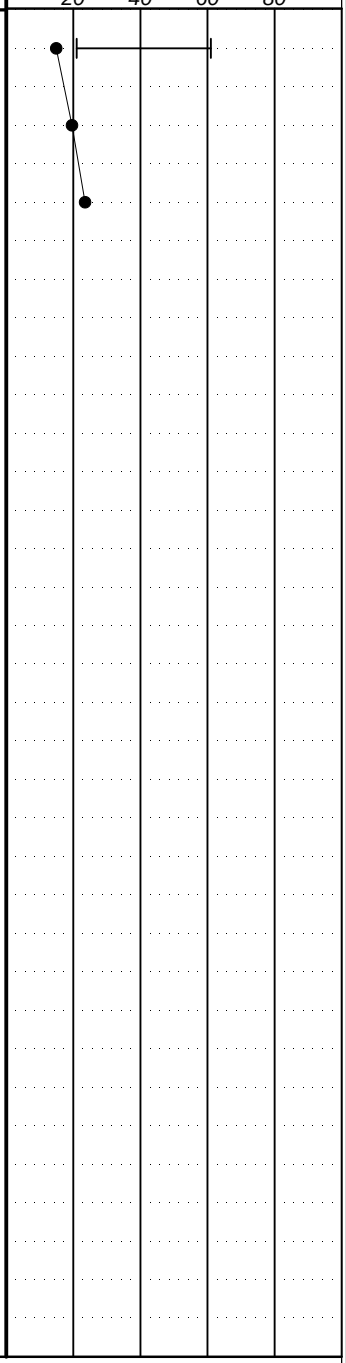
LOCATION: San Antonio, Texas **DATE:** 11/07/2023

CLIENT: San Antonio LD, LLC

inTEC

BORING NO. B-9

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	SULFATE CONTENT (PPM)	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0		AU	Dark Gray Clay						61	40
		AU								
5		AU				560				
10										
15										
20										
25										
30										



Notes:

Ground Water Observed: No

Completion Depth (ft): 6

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

PROJECT: Tierra Linda Subdivision **PROJECT NO: S231273**

LOCATION: San Antonio, Texas **DATE:** 11/07/2023

CLIENT: San Antonio LD, LLC

inTEC

BORING NO. B-10

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	SULFATE CONTENT (PPM)	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0		AU	Dark Gray Clay			840				
		AU								
5		AU	Tan and Gray Clay							

Plastic Limit ⊢⊣ Liquid Limit

Moisture Content % - ●

20 40 60 80

Notes:

Ground Water Observed: No

Completion Depth (ft): 6

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

PROJECT: Tierra Linda Subdivision **PROJECT NO: S231273**

LOCATION: San Antonio, Texas **DATE:** 11/07/2023

CLIENT: San Antonio LD, LLC

inTEC

BORING NO. B-11

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	SULFATE CONTENT (PPM)	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0		AU	Dark Gray Clay							
		AU				480				
5		AU	Tan and Gray Clay						66	43

Plastic Limit ⊢⊣ *Liquid Limit*

Moisture Content % - ●

20 40 60 80

Notes:

Ground Water Observed: No

Completion Depth (ft): 6

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

PROJECT: Tierra Linda Subdivision **PROJECT NO: S231273**

LOCATION: San Antonio, Texas **DATE:** 11/07/2023

CLIENT: San Antonio LD, LLC

inTEC

BORING NO. B-12

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	SULFATE CONTENT (PPM)	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0			Dark Gray Clay							
		AU								
		AU								
5		AU				1130				
10										
15										
20										
25										
30										

Plastic Limit ⊢⊣ *Liquid Limit*

Moisture Content % - ● 20 40 60 80

Notes:

Ground Water Observed: No

Completion Depth (ft): 6

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

PROJECT: Tierra Linda Subdivision **PROJECT NO: S231273**

LOCATION: San Antonio, Texas **DATE:** 11/07/2023

CLIENT: San Antonio LD, LLC

inTEC

BORING NO. B-13

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	SULFATE CONTENT (PPM)	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0		AU	Dark Gray Clay			510				
		AU								
5		AU	Tan and Gray Clay							

Plastic Limit ⊢⊣ *Liquid Limit*

Moisture Content % - ●

20 40 60 80

Notes:

Ground Water Observed: No

Completion Depth (ft): 6

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

PROJECT: Tierra Linda Subdivision **PROJECT NO: S231273**

LOCATION: San Antonio, Texas **DATE:** 11/07/2023

CLIENT: San Antonio LD, LLC

inTEC

BORING NO. B-14

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	SULFATE CONTENT (PPM)	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0		AU	Dark Gray Clay							
		AU				740				
5		AU	Tan and Gray Clay							

Plastic Limit ⊢⊣ Liquid Limit

Moisture Content % - ●

20 40 60 80

Notes:

Ground Water Observed: No

Completion Depth (ft): 6

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

PROJECT: Tierra Linda Subdivision **PROJECT NO: S231273**

LOCATION: San Antonio, Texas **DATE:** 11/07/2023

CLIENT: San Antonio LD, LLC

BORING NO. B-15

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	SULFATE CONTENT (PPM)	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0			Dark Gray Clay							
		AU								
		AU								
5		AU				770			64	44
10										
15										
20										
25										
30										

Plastic Limit ⊢⊣ *Liquid Limit*

Moisture Content % - ●

20 40 60 80

Notes:

Ground Water Observed: No

Completion Depth (ft): 6

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

PROJECT: Tierra Linda Subdivision **PROJECT NO: S231273**

LOCATION: San Antonio, Texas **DATE:** 11/07/2023

CLIENT: San Antonio LD, LLC

inTEC

BORING NO. B-16

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	SULFATE CONTENT (PPM)	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0		AU	Brown Sandy Clay			0				
		AU								
5		AU	Tan Sandy Clay						50	30
10										
15										
20										
25										
30										

Plastic Limit ⊢⊣ *Liquid Limit*

Moisture Content % - ● 20 40 60 80

Notes:

Ground Water Observed: No

Completion Depth (ft): 6

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

PROJECT: Tierra Linda Subdivision **PROJECT NO: S231273**

LOCATION: San Antonio, Texas **DATE:** 11/07/2023

CLIENT: San Antonio LD, LLC

inTEC

BORING NO. B-17

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	SULFATE CONTENT (PPM)	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0		AU	Dark Gray Clay							
		AU	Tan Sandy Clay			530				
5		AU								
10										
15										
20										
25										
30										

Plastic Limit ⊢⊣ *Liquid Limit*

Moisture Content % - ● 20 40 60 80

Notes:

Ground Water Observed: No

Completion Depth (ft): 6

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

PROJECT: Tierra Linda Subdivision **PROJECT NO: S231273**

LOCATION: San Antonio, Texas **DATE:** 11/07/2023

CLIENT: San Antonio LD, LLC

inTEC

BORING NO. B-18

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	SULFATE CONTENT (PPM)	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0		AU	Dark Gray Clay							
		AU								
5		AU	Tan Sandy Clay			590			53	33

Plastic Limit ⊢⊣ Liquid Limit

Moisture Content % - ● 20 40 60 80

Notes:

Ground Water Observed: No

Completion Depth (ft): 6

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

PROJECT: Tierra Linda Subdivision **PROJECT NO: S231273**

LOCATION: San Antonio, Texas **DATE:** 11/07/2023

CLIENT: San Antonio LD, LLC

inTEC

BORING NO. B-19

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	SULFATE CONTENT (PPM)	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0		AU	Dark Gray Clay			790				
		AU								
5		AU	Tan and Gray Clay							

Plastic Limit ⊢⊣ Liquid Limit

Moisture Content % - ●

20 40 60 80

Notes:

Ground Water Observed: No

Completion Depth (ft): 6

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

HA - Hand Auger
AU - Auger Sample

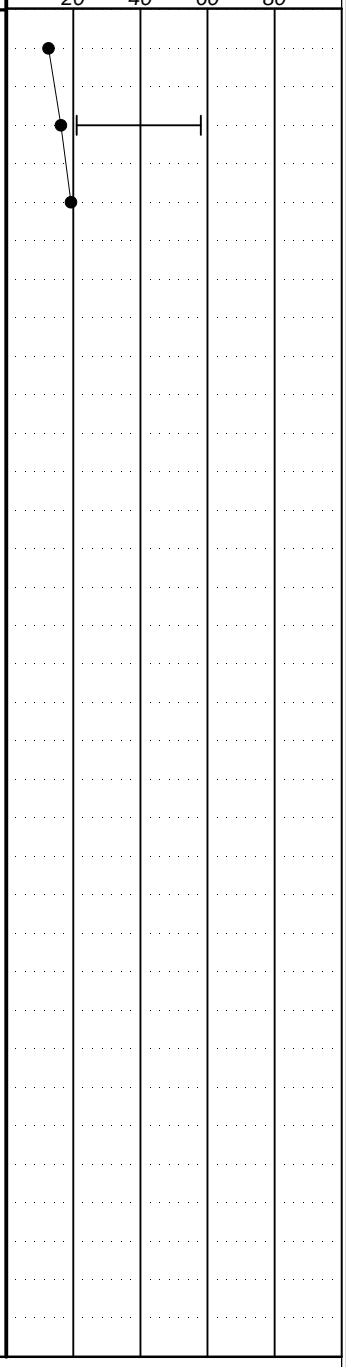
PROJECT: Tierra Linda Subdivision **PROJECT NO: S231273**

LOCATION: San Antonio, Texas **DATE:** 11/07/2023

CLIENT: San Antonio LD, LLC

BORING NO. B-20

DEPTH (feet)	SYMBOL	SAMPLES	SOIL DESCRIPTION	% MINUS 200 SIEVE	UNIT DRY WT IN PCF	SULFATE CONTENT (PPM)	BLOWS PER FOOT	SHEAR STRENGTH TSF	LIQUID LIMIT	PLASTICITY INDEX
0			Dark Gray Clay							
		AU								
		AU				640			58	37
5		AU								
10										
15										
20										
25										
30										



Notes:

Ground Water Observed: No

Completion Depth (ft): 6

S.S by P.P - Shear Strength in TSF by Hand Penetrometer

S.S. - Split Spoon Sample
S.T. - Shelby Tube Sample

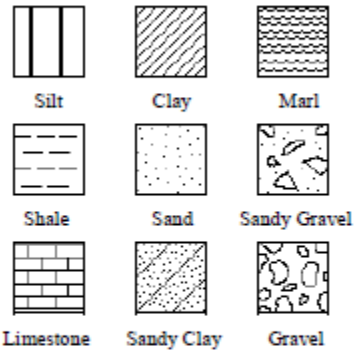
HA - Hand Auger
AU - Auger Sample

KEY TO CLASSIFICATIONS AND SYMBOLS

Soil Fractions

Component	Size Range
Boulders	Greater than 12"
Cobbles	3" - 12"
Gravel	3" - #4 (4.76mm)
Coarse	3" - ¾"
Fine	¾" - #4
Sand	#4 - #200 (0.074mm)
Coarse	#4 - #10 (2.00mm)
Medium	#10 - #40 (0.42mm)
Fine	#40 - #200 (0.074mm)
Silt and Clay	Less than #200

Soil or Rock Types
(Shown in symbols column)
(Predominate Soil Types Shown Heavy)



TERMS DESCRIBING SOIL CONSISTENCY

Description (Cohesive Soils)	Unconfined Compression TSF	Blows/Ft. Std. Penetration Test	Description (Cohesionless Soils	Blows/Ft. Std. Penetration Tests
Very Soft	0.25	<2	Very Loose	0 – 4
Soft	0.25 – 0.50	2 – 4	Loose	4 – 10
Firm	0.50 – 1.00	4 – 8	Medium Dense	10 – 30
Stiff	1.00 – 2.00	8 – 15	Dense	30 – 50
Very Stiff	2.00 – 4.00	15 – 30	Very Dense	50
Hard	>4.00	>30		

SOIL STRUCTURE

Calcareous	Containing deposits of calcium carbonate; generally nodular.
Slickenside	Having inclined planes of weakness that are slick and glossy in appearance.
Laminated	Composed of thin layers of varying color and texture.
Fissured	Containing shrinkage cracks frequently filled with fine sand or silt. Usually more or less vertical.
Interbedded	Composed of alternate layers of different soil types.
Jointed	Consisting of hair cracks that fall apart as soon as the confining pressure is removed.
Varved	Consisting of alternate thin layers of sand, silt or clay formed by variations in sedimentations during the various seasons of the year, of often exhibiting contrasting colors when partially dried. Each layer is generally less than ½" in thickness.
Stratified	Composed of, or arranged in layers (usually 1 inch or more)
Well-graded	Having a wide range of grain sizes and substantial amount of all intermediate particle sizes.
Poorly or Gap-graded	Having a range of sizes with some intermediate sizes missing.
Uniformly-graded	Predominantly of one grain size.

Subsurface Exploration and Laboratory Testing Tierra Linda Subdivision San Antonio, Texas		
	InTEC Project Number: **S231273**	Date: 10/13/2023

Appendix

Subsurface Exploration and Laboratory Testing Tierra Linda Subdivision San Antonio, Texas		
	InTEC Project Number: **S231273**	Date: 10/13/2023

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, you can benefit from a lowered exposure to problems associated with subsurface conditions at project sites and development of them that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed herein, contact your GBA-member geotechnical engineer. Active engagement in GBA exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will not be adequate to develop geotechnical design recommendations for the project.

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do not rely on an executive summary. Do not read selective elements only. *Read and refer to the report in full.*

You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept*

responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface using various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are not final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals' plans and specifications; and
- be available whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction-phase observations.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for information purposes only.* To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer's services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration. Confront the risk of moisture infiltration*** by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are not building-envelope or mold specialists.***

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