

# CASCADE SURVEYING & ENGINEERING, INC.

105 E. Division · P. O. Box 326 · Arlington, WA 98223  
Phone (360) 435-5551 Fax (360) 435-4012  
[www.cascadesurveying.com](http://www.cascadesurveying.com)



SURVEYORS  
ENGINEERS  
PLANNERS

Date: January 26, 2022

Name: Evan Haines and Zach Crumb  
Address: 29919 80<sup>th</sup> Ave NW  
City: Stanwood

**RE: Tax Parcel #32041800100100** Residential Treatment Facility North - 22 102230 CUP

Dear Evan Haines and Zach Crumb,

As per your request, I have evaluated the soils found on the above referenced lot to determine the feasibility of installing a subsurface sewage disposal field in accordance with county regulations.

It is my opinion, that at this time the above referenced lot does meet minimal county standards for a pre-treated sub-surface drip onsite sewage drainfield. This evaluation is based off of a daily usage of 90 gpd per resident and 10 gpd per employee which is estimated by the project engineers to be an acceptable usage. Each proposed building would have the capacity to support up to 16 residents and 25 employees. The calculated usage would require a total daily design rate of 3,380 gpd.

The on site soils are classified as Tokul gravelly loam, 8% to 15% slopes. Soil logs were taken in the horse corral directly east of the "Arena" depicted on the map in the northwest area of the property. There is an existing underground power line through the horse corral that divides the eastern 1/3 from the western 2/3. Soil logs taken along the eastern fence line of the corral found a high water table ranging 9"-12" in depth from the surface. Surface water was also noticed in the middle eastern portion of the horse corral which creates a 100' setback for any drainfield or reserve. Moving up the hill to the west, the water table was encountered much deeper, but mottled soil was found at varied depths. Mottled soil can indicate the season high water table level, but mottling can remain in the soil long after changes to the site have changed or lowered the seasonal high water table. The Mottling layer was typically at 17" or deeper, but some test holes had a band of mottling that raised above the mottled layer and was recorded at depths of 10" – 14". Soil saturation was found at depths of 17" or deeper with exception of the holes along the easter fence line. Hard pan was encountered at depths of 24" or greater. Based on recent rain and snowmelt, we estimate that the water table is close to its typical seasonal maximum. The useable area found is around 3/4 acre located in the western 2/3 of the studied horse corral.

Based on Snohomish Health District Guidelines the pre-treated drip drainfield to support both proposed buildings would require approximately 8,450 sq ft for the primary area and an equal 8,450 sq ft of area for the reserve area. We would also propose a curtain drain that would surround the uphill side of the drainfield and reserve area's in order to lower the water table further. Also, due to the shallow depth of sub-surface drip lines in the drainfield area, horses would need to be removed and prevented from entering the drainfield area permanently.

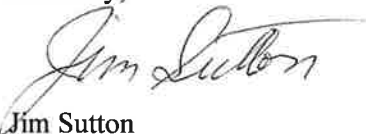
These conditions will require the following site modifications, installation precautions, and/or equipment:

- 1) A Snohomish Health District approved Drainfield design for a Pre-treated sub-surface drip System.

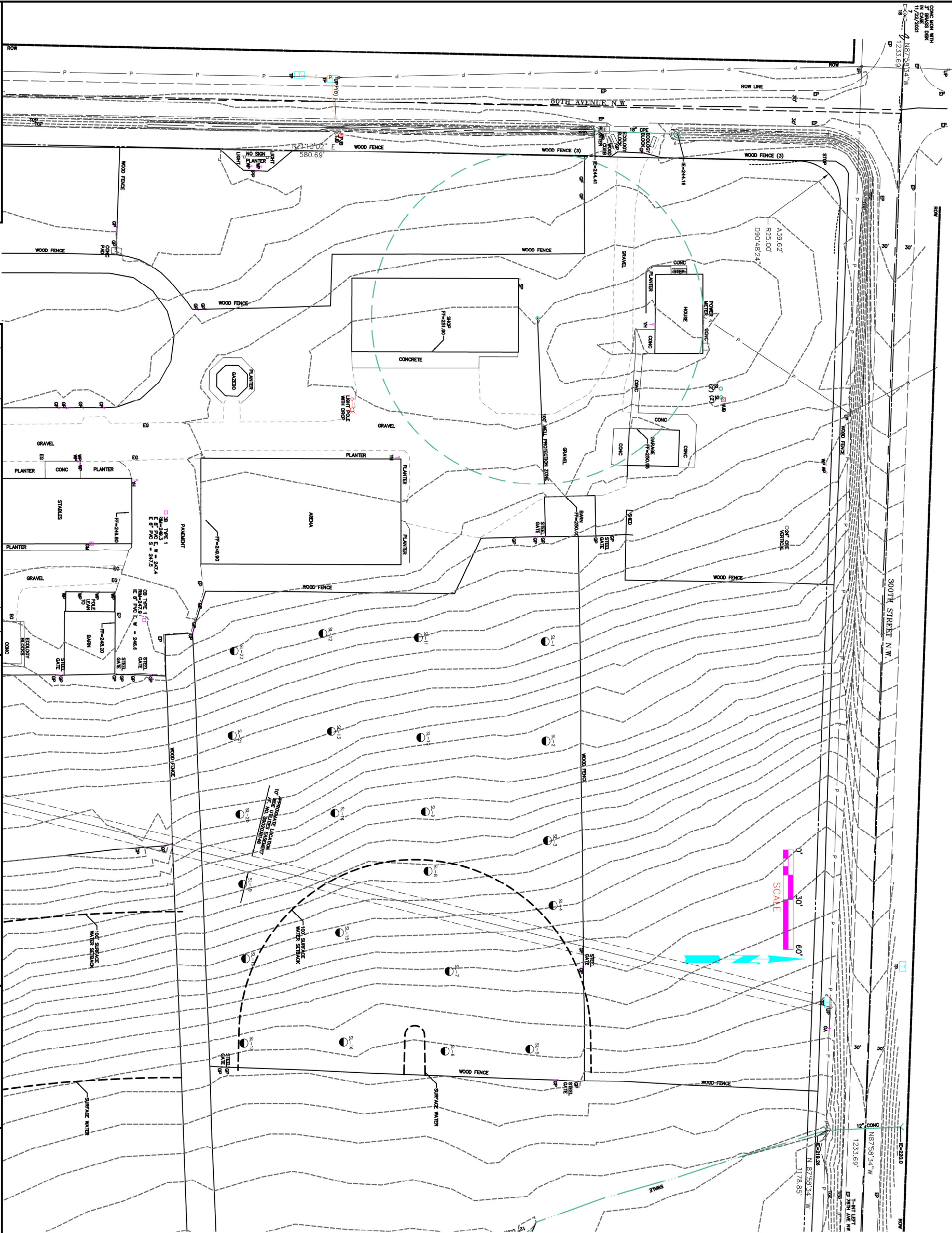
Please be aware that this opinion applies only to the conditions on the property as they presently exist. Any clearing, ditching or significant site modification may disrupt the usable area and hence, may invalidate the opinions expressed herein. Further, this letter does not constitute nor imply official county action of any kind. The ultimate acceptability of this site can only be determined by the county health department.

If you require any further information, please do not hesitate to call or write me. I am generally in the office between the hours of 9:00 a.m. and 12:00 p.m.

Sincerely,



Jim Sutton  
Soils Department  
Cascade Surveying & Engineering, Inc.



SURVEY DESCRIPTION

LOTS 1 AND 2 OF SHORT PLAT NO. Z49007394SP RECORDED UNDER AUDITOR'S FILE NUMBER 910614004, RECORDS OF SNOHOMISH COUNTY, WASHINGTON, BEING A PORTION OF THE NORTHEAST QUARTER OF SECTION 18, TOWNSHIP 32 NORTH, RANGE 4 EAST, W.M.

EXCEPT THAT PORTION DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHWEST CORNER OF LOT 2 OF SHORT PLAT Z49007394SP, BEING ALSO THE NORTHEAST CORNER OF THE SOUTH 198.00 FEET OF THE NORTHEAST QUARTER OF THE NORTHEAST QUARTER OF SECTION 198, TOWNSHIP 32 NORTH, RANGE 4 EAST, W.M.;

LESS THE WEST 30.00 FEET THEREOF;

THENCE NORTH 01°13'02" EAST ALONG THE WEST BOUNDARY A DISTANCE OF 19.64 FEET TO AN EXISTING WOOD FENCE;

THENCE SOUTH 87°48'17" EAST ALONG SAID FENCE A DISTANCE OF 610.22 FEET;

THENCE SOUTH 87°56'04" EAST ALONG SAID FENCE A DISTANCE OF 610.31 FEET TO A POINT ON THE EAST BOUNDARY OF SAID SUBDIVISION, BEING 12.38 FEET NORTH OF THE NORTH LINE OF THE SOUTH 198.00 FEET OF SAID SUBDIVISION;

THENCE SOUTH 002°1'31" WEST ALONG THE EAST LINE OF SAID SUBDIVISION A DISTANCE OF 12.28 FEET TO THE NORTH LINE OF THE SOUTH 198.00 FEET OF SAID SUBDIVISION;

THENCE NORTH 88°12'55" WEST ALONG THE NORTH LINE OF SAID SOUTH 198.00 FEET A DISTANCE OF 1220.62 FEET TO THE POINT OF BEGINNING.

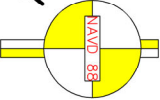
SITUATE IN THE COUNTY OF SNOHOMISH, STATE OF WASHINGTON.

NOTES

1. BASIS OF BEARING: PREVIOUS ALTA SURVEY ALONG THE NORTH QUARTER SECTION LINE, RECORDED UNDER AUDITOR'S FILE NUMBER 201110255005, BEARING S 87°38'34" E
2. DATUM: NAD83 FROM RTK GPS
3. SURVEY PROCEDURE: STANDARD FIELD TRAVERSE AND RTK GPS
4. INSTRUMENTATION USED: LEICA MS50 THEODOLITE DISTANCE METER, LEICA VIVA 14 GPS/GNSS RECEIVERS
5. BENCH MARK FOR THIS SURVEY IS TOP OF MONUMENT IN CASE AT INTERSECTION OF 300TH STREET NW AND 67TH AVE NW, ELEVATION = 240.87 MAND8.
6. CONTOUR INTERVAL, 1 FOOT
7. EXISTING UTILITIES ARE SHOWN FROM VISIBLE EVIDENCE AND EXISTING UTILITY COMPANY PAINT MARKS. ONE CALL SYSTEM WAS NOT USED FOR THIS SURVEY.
8. LEGAL DESCRIPTION IS FROM ALTA SURVEY RECORD UNDER AUDITOR'S FILE NUMBER 20110255005. NO TITLE REPORT OR SUBDIVISION GUARANTEE WAS ORDERED OR PROVIDED FOR THIS SURVEY
9. WETLAND FLAG LOCATIONS WERE MARKED IN THE FIELD BY SOUNDVIEW CONSULTANTS.

LEGEND

- SET 1/2" REBAR WITH YELLOW CAP, SEMRAU28826
- FOUND REBAR, AS NOTED
- SIGN, AS NOTED
- MB MAILBOX
- GP GATE POST
- WP WOOD POST
- SP STEEL POST FENCE
- PP POWER ON POST
- UP UTILITY POLE
- GA GUY ANCHOR
- JB JUNCTION BOX AS NOTED
- PUB POWER JUNCTION BOX
- TAB TELEPHONE JUNCTION BOX
- TP TELEPHONE PEDESTAL
- YH YARD HYDRANT
- WAB WATER JUNCTION BOX
- WV WATER VALVE
- WP CARSONITE POST WATER
- GM GAS METER
- SLD SEPTIC LID
- SCD SEPTIC CLEAN OUT
- CB CATCH BASIN, AS NOTED
- EP EDGE OF PAVEMENT
- EG EDGE OF GRAVEL
- FF FINISH FLOOR ELEVATION
- ★ CONIFER TREE, AS NOTED
- DL DRAIN LINE
- P POWER (BURIED)
- P(E) POWER (BURIED)
- T TELEPHONE (BURIED)
- X FENCE (WOOD FENCE, 4 BOARD)



PRELIMINARY

SEMRAU ENGINEERING & SURVEYING, PLLC  
CIVIL ENGINEERING • LAND SURVEYING • PLANNING  
2118 RIVERSIDE DRIVE - SUITE 208  
MOUNT VERNON, WA 98273  
360-424-9566

NO.	DATE	REVISION	BY	REV.

TOPOGRAPHIC  
SURVEY

SCALES:  
HORIZONTAL : 1" = 30'  
VERTICAL : N/A  
NOTE: IF THIS SHEET IS LESS  
THAN 22" X 34" THEN SHEET  
HAS BEEN REDUCED

RTFN  
BCRA DESIGN  
SECTION 18, T. 32 N., R. 4 E., W.M.  
SNOHOMISH COUNTY, WASHINGTON

FIELD BK./G.: 325/104-151  
DATE: 12/17/2021  
DRAWING: 6170.DWG  
JOB NO.: 6170  
SHEET: 1 OF 4

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## Korsmo Construction (Job #23088)

## Tax Parcel #32041800100100

SOIL LOG 1	0"-12"	Brown sandy loam
	12"-18"	Brown/red sandy loam
	18"-36"	Mottled
	36" Hard Pan/H <sub>2</sub> O @ 35"/ Roots to 24"	
SOIL LOG 2	0"-12"	Brown sandy loam
	12"-17"	Brown/red sandy loam
	17"-36"	Mottled
	36" Hard Pan/H <sub>2</sub> O @ 36"/ Roots to 24"/Saturation @ 18"	
SOIL LOG 3	0"-12"	Brown sandy loam
	12"-19"	Brown/red sandy loam
	19"-38"	Mottled
	38" Hard Pan/H <sub>2</sub> O @ 35"/ Roots to 19"/Saturation @ 24"	
SOIL LOG 4	0"-10"	Brown sandy loam
	10"-14"	Brown/red sandy loam
	14"-33"	Mottled
	33" Hard Pan/H <sub>2</sub> O @ 25"/ Roots to 18"/Saturation @ 18"	
SOIL LOG 5	0"-8"	Brown sandy loam
	8"-12"	Brown/red sandy loam
	H <sub>2</sub> O @ 12"/Saturation @ 10"	
SOIL LOG 6	0"-10"	Brown sandy loam
	10"-16"	Brown/red sandy loam
	16"-27"	Mottled
	27" Hard Pan/H <sub>2</sub> O @ 24"/ Roots to 18"/Saturation @ 12"	



SOIL LOG 7	0"-10"	Brown sandy loam
	10"-14"	Brown/red sandy loam
	14"-24"	Mottled
	24" Hard Pan/H <sub>2</sub> O @ 19"/ Roots to 18"/Saturation @ 17"	
SOIL LOG 8	0"-10"	Brown sandy loam
	10"-21"	Brown/red sandy loam
	21"-29"	Mottled
	29" Hard Pan/H <sub>2</sub> O @ 31"/ Roots to 22"/Saturation @ 19"	
SOIL LOG 9	0"-10"	Brown sandy loam
	10"-20"	Brown/red sandy loam
	20"-29"	Mottled
	29" Hard Pan/H <sub>2</sub> O @ 26"/ Roots to 20"/Saturation @ 24"	
SOIL LOG 10	0"-12"	Brown sandy loam
	12"-14"	Brown/red sandy loam
	14"-33"	Mottled
	33" Hard Pan/H <sub>2</sub> O @ 36"/ Roots to 18"/Saturation @ 30"	
SOIL LOG 11	0"-6"	Brown sandy loam
	6"-14"	Brown/red sandy loam
	14"-31"	Mottled
	31" Hard Pan/H <sub>2</sub> O @ 27"/ Roots to 14"/Saturation @ 23"	
SOIL LOG 12	0"-6"	Brown sandy loam
	6"-12"	Brown/red sandy loam
	12"-27"	Mottled
	27" Hard Pan/H <sub>2</sub> O @ 30"/ Roots to 16"/Saturation @ 27"	
SOIL LOG 13	0"-14"	Brown sandy loam
	14"-21"	Brown/red sandy loam
	21"-33"	Mottled
	33" Hard Pan/H <sub>2</sub> O @ 36"/ Roots to 20"/Saturation @ 30"	
SOIL LOG 14	0"-11"	Brown sandy loam
	11"-14"	Brown/red sandy loam
	14"-40"	Mottled
	40" Hard Pan/H <sub>2</sub> O @ 36"/ Roots to 22"/Saturation @ 29"	

SOIL LOG 15	0"-10"	Brown sandy loam
	10"-22"	Brown/red sandy loam
	22"-30"	Mottled
	30" Hard Pan/H <sub>2</sub> O @ 26"/ Roots to 26"/Saturation @ 25"	
SOIL LOG 16	0"-9"	Brown sandy loam
	H <sub>2</sub> O @ 9"	
SOIL LOG 17	0"-10"	Brown sandy loam
	H <sub>2</sub> O @ 10"	
SOIL LOG 18	0"-12"	Brown sandy loam
	12"-18"	Brown/red sandy loam
	18"-34"	Mottled
	34" Hard Pan/H <sub>2</sub> O @ 28"/ Roots to 24"/Saturation @ 24"	
SOIL LOG 19	0"-12"	Brown sandy loam
	12"-22"	Brown/red sandy loam
	22"-36"	Mottled
	36" Hard Pan/H <sub>2</sub> O @ 38"/ Roots to 30"/Saturation @ 32"	
SOIL LOG 20	0"-10"	Brown sandy loam
	10"-16"	Brown/red sandy loam
	16"-24"	Mottled
	24" Hard Pan/H <sub>2</sub> O @ 30"/ Roots to 18"/Saturation @ 18"	
SOIL LOG 21	0"-8"	Brown sandy loam
	8"-12"	Brown/red sandy loam
	12"-27"	Mottled
	27" Hard Pan/H <sub>2</sub> O @ 30"/ Roots to 17"/Saturation @ 20"	
SOIL LOG 22	0"-7"	Brown sandy loam
	7"-10"	Brown/red sandy loam
	10"-32"	Mottled
	32" Hard Pan/H <sub>2</sub> O @ 34"/ Roots to 24"/Saturation @ 30"	