ASSESSING SOIL-RELATED TERROIR FACTORS IN SUNNYSLOPE DISTRICT VINEYARDS OF SOUTHWEST IDAHO

by

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The following individuals read and discussed the thesis submitted by student Rachael Nicole Haggen, and they evaluated their presentation and response to questions during the final oral examination. They found that the student passed the final oral examination.

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DEDICATION

To my family, I love you. Mom, Dad, and Andrew, thank you for pushing me to pursue my passions and my happiness. Life is not spent looking in the rearview mirror; instead, it should be spent making memories and enjoying time with the ones you love.

To Daniel, I love you. I can't wait to spend more days riding bikes with you.

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Lastly, I would like to thank my advisor, Dr. David Wilkins, for his enthusiasm and patience these three years. Dave, thank you for taking a chance on a fresh-out-of-college graduate who wanted to study terroir.

I raise a glass to you, all!

ABSTRACT

Terroir is the set of factors including climate, soil, and management practices that influence the character of a wine. Of these factors, soil texture and chemistry is a major determinant in wine grape quality (van Leeuwen et al., 2009). Understanding the characteristics of the soil is key to making decisions that support the production of the highest possible quality grapes from the resources available. Few studies have been conducted in the Snake River Valley AVA (SRVAVA). This study seeks to build upon the data already available and provide analysis of vineyard-scale terroir in a leading grape growing district of the SRVAVA.

Nine vineyards from the Sunnyslope wine grape growing district of southwestern Idaho were selected for their diversity of geographic location and growing environment. Soil pit locations in each vineyard were determined using a stratified-random sampling technique and normalized difference vegetation indices (NDVI) calculated from aerial imagery. This study combines field collection, sampling and analyses of soil texture and chemistry to characterize the soils in the selected vineyards. The results show the majority of vineyards contain aeolian or colluvium-derived soils composed of coarse silts and fine sands. Only two vineyards, those located closest to the Snake River, contain basalt gravels and lithic sands not observed in the other vineyards. Geochemical data show an increase in Ca with elevation and a decrease in Fe and Mn with elevation, which may be the result of varying soil parent materials or recent deposition of sediments.

The results of my study support the presence of vineyard-scale terroir and the assertion that intra- and inter-vineyard heterogeneity is inherent. Further, my results show recent sediment deposition and agricultural practices have overprinted the original soil profiles. Understanding vineyard-specific soil characteristics like those investigated in this study will allow vineyard owners to manage for specific soil traits and promote the unique terroir of their product. Management of vineyards in this way can support the growth of high-quality grapes and the production of desirable wines that reflect the unique conditions under which they were grown, their terroir.

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LIST OF ABBREVIATIONS

SRVAVA	Snake River Valley American Viticulture Area
CEC	Cation Exchange Capacity
USDA-NRCS	United States Department of Agriculture Natural Resource Conservation Service
SOM	Soil Organic Matter
XRF	X-Ray Fluorescence
pXRF	Portable X-Ray Fluorescence
MS2000	Masteriszer2000
NDVI	Normalized Difference Vegetation Index
NIR	Near Infrared
RS	Rock Spur
SC	Scoria
KD	Kindred
HR	Hat Ranch
FM	Famici
BT	Bitner
PC	Polo Cove
WI	Williamson
ES	Emerald Slopes
$CaCO_3$	Calcium carbonate

CHAPTER ONE: INTRODUCTION TO TERROIR

Terroir, as a concept in winemaking and wine grape growing, has been in place for centuries. As it has become more popularized in recent decades (e.g. Goode, 2020; MacNeil, 2015; Puckette, 2015), it has also become more debated. Goode (2014) describes terroir as a "sense of place." His definition is poetic and cannot be applied to quantitative studies, instead portraying a sense of mystique surrounding the process of grape growing and wine making. Other scholars such as Deloire et al. (2005) and van Leeuwen & Seguin (2006)**,** insist upon a more rigorous and scientific approach when investigating the origin of a wine. By considering the practical and measurable aspects of terroir – temperature, annual precipitation, soil chemistry and texture, canopy density, etc. – its poetic veil is lifted, making it a more approachable topic for rigorous study.

While disagreements do exist, terroir is most often referred to as the set of factors including climate, soil, and management practices that influence the character of a wine (Figure 1.1). This definition focuses on the relationship between physical conditions involved in grapevine growth and the sensory attributes of the finished product (Haynes, 1999; van Leeuwen et al., 2004; Seguin, 1986). Research with the goal of collecting and cataloging climate and soil data allows for better informed decision making on the part of the vineyard owners and managers.

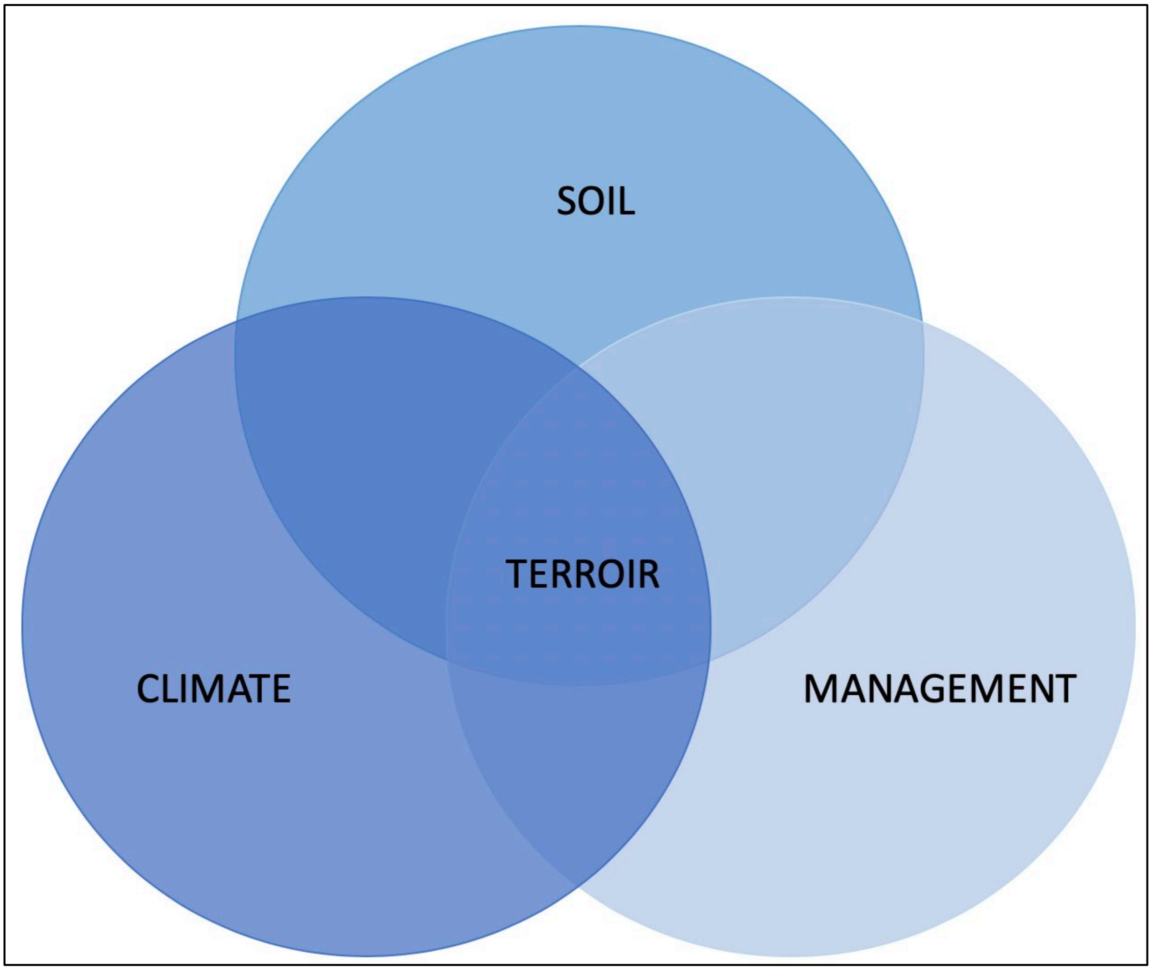


Figure 1.1 Factors of terroir include climate, management, and soil.

1.1 Factor One: Climate

Climate, like most environmental factors, cannot be controlled, however, an understanding of climate conditions and patterns as well as their effect on grapevine health can help guide vineyard management best practices. Additionally, this knowledge can be used to mitigate possible negative effects of current climate and climate change (Irimia et al., 2018; Mozell & Thach, 2014; Santillán et al., 2019). For example, temperature largely controls the start and end of growing season. Warming temperatures of the spring months bring grapevines out of dormancy and the start of growing season begins. Warm temperatures at the start of growing season are beneficial for flowering and shoot growth, but conversely, too warm of temperatures at the end of growing season causes the berries to produce excessive sugars resulting in wine with higher alcohol by volume – a negative effect.

The role of temperature in viticulture is also evident in the selection of cultivars. Certain cultivars prefer and prosper in distinctly different climates. Cultivars such as Pinot Gris and Gewürztraminer thrive in cool average growing season temperatures (13-15°C) while Malbec, Viognier, and Sangiovese do better in warm conditions (17-19°C) (Jones, 2018). Furthermore, climate conditions in winter, between growing seasons, can also determine the success of a cultivar. In winter, extreme low temperatures during vine dormancy can kill rootstocks and require replanting the following spring, interrupting wine production. Understanding daily, monthly, and yearly climate trends is important to vine growth, grape production, and maturation.

The importance of having a balance between extreme lows and highs is important in precipitation, as well. In more humid regions of the world, high volume and frequency of precipitation can negatively impact the quality of grapes. In semi-arid and arid regions of the world, lack of water also has a negative effect on grape production and quality especially in the absence of irrigation (Meinert, 2018). In regions that are not constrained in management practices set by law or doctrine, such as those of new world vineyards, irrigation can mitigate the effects of extreme aridity thus increasing the likelihood of producing quality grapes. The production of high-quality wine grapes relies on the balance of both precipitation – seasonality and amount – as well as temperature – annual, growing season, and diurnal ranges.

1.2 Factor Two: Vineyard Management

Well-informed vineyard management promotes the growth of quality grapes and, as a result, quality wine. The role of the vineyard manager is to make decisions based on both environmental factors and cultivar tendencies. Canopy control, fertilizing, shoot training, pruning, planting of inter-row cover crops, tilling, and harvesting are the responsibility of the vineyard manager and the introduction of a human element in terroir (Deloire et al., 2005; Gladstones, 2011; Klodd et al., 2016). Depending on the region's laws and doctrines, old world (i.e., European) vineyards do not always allow the use of irrigation in the production of grapes. As a result, the roles of climate and soil are felt more strongly in old world terroir and wines (Lanari et al., 2014). In contrast, new world vineyards like those in the United States allow the use of irrigation and other interventions, and vineyard managers have greater control on plant available water and nutrients. In both cases, though management practices are largely, if not wholly, determined by the other factors of terroir – climate and soil.

1.3 Factor Three: Soil

Soil, like climate and management practices, has a prominent effect on the quality of the fruit. For example, soil chemistry controls the macronutrients and micronutrients available to the plant affecting vine development and grape ripening (Hakimi-Rezaei, 2009; van Leeuwen et al., 2004). Soil texture, pH, salinity, depth, color, water holding capacity, and cation exchange capacity (CEC) are all crucial to understanding soil's effect on grape quality (Burns, 2012). While soil chemistry plays a vital role in the health of the plant, soil texture also works to determine the growing pattern and fruit production quality of the vine (Koundouras et al., 1999; van Leeuwen & Seguin, 2006; van Leeuwen et al., 2009). Given this, it is critical to understand how the physical and chemical properties of soil vary within a vineyard and a grape-growing region to best support the production of quality grapes and wine.

1.4 Problem Statement

Relative to other, more mature wine-grape growing regions, the Snake River Valley American Viticulture Area (SRVAVA) was established in 2007 and is growing its recognition as a wine region in the United States (Wilkins et al., 2015). The SRVAVA extends from Twin Falls, ID to Baker City, OR, but wine-grape production occurs in only a few districts including the Sunnyslope District (Sunnyslope) in Caldwell, ID (Figure 1.2). Management practices in existing Sunnyslope vineyards have provided quality grapes annually, and with increased knowledge of growing conditions and vineyard soil heterogeneity, site specific adjustments can be applied. Additionally, as the SRVAVA grows in recognition, uncovering and identifying vineyard-specific characteristics can provide growers and winemakers with a marketable history to aid in the promotion of the region and their product.

While the broad characteristics of soils in Sunnyslope have been mapped by the USDA-NRCS, multiple in-situ observations show that soils are more widely varied than the published data available suggests (United States Department of Agriculture Natural Resources Conservation Service, 2019; Wilkins et al., 2015). A gap may exist between the current broadly mapped soils data and the actual soil conditions and characteristics present in vineyards. This study seeks to improve upon existing macro-scale soil data and provide an assessment and analysis of soil chemical and physical properties within and between vineyards.

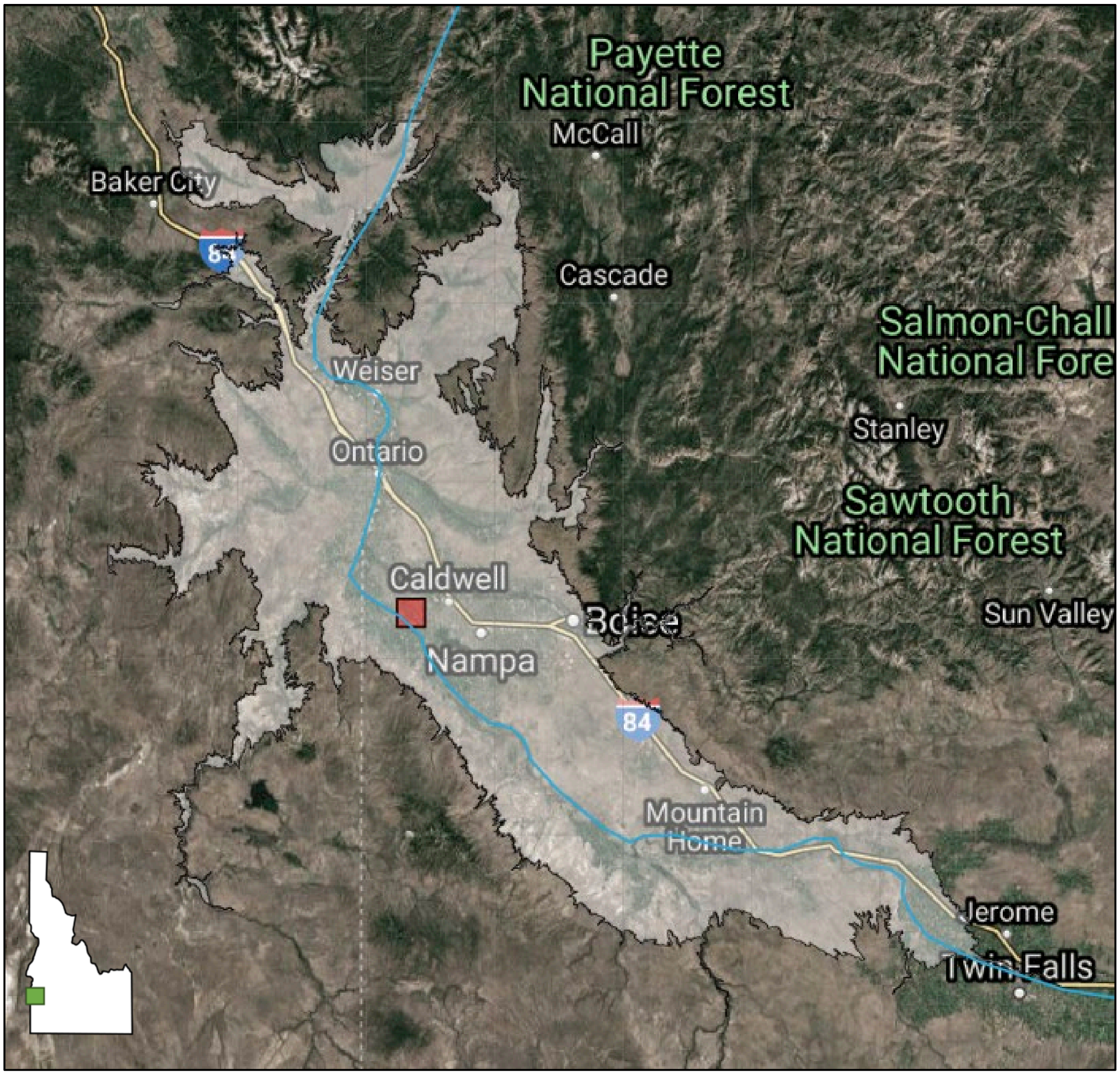


Figure 1.2 Boundary of the SRVAVA and the location of the Sunnyslope District displayed in red (Becker, 2020).

CHAPTER TWO: LITERATURE REVIEW

2.1 Soil Formation and Regional Geology

A theoretical model introduced by Jenny (1941) states the soil is a function of its climate, organisms, relief and geomorphology of the area, parent material, and time. These factors of soil formation, or *pedogenesis*, are commonly referred to as the "ClORPT" model. Soil profiles are developed *in situ* through processes of addition, erosion, transformation, and translocation of material (Birkeland et al., 1991). Regional geologic history controls the soil composition, texture, and hydrology through the introduction of parent material for soil formation and development (Birkeland et al., 1991; Jenny, 1941). In the case of Sunnyslope, possible soil parent material sources range from flood to aeolian deposits to weathering of local bedrock.

2.2 Soil Chemistry

Parent material composition influences soil nutrient concentrations, but underlying geology is not the only factor to consider when thinking about plant available nutrients. Other factors that may contribute to nutrient abundances include rainfall, physical and chemical weathering of large clasts such as cobbles and gravels, and the decomposition of soil organic matter (SOM). SOM is broken down through microbial activity and provides readily available mineral ions for plant root uptake (Haddix et al., 2020). Decaying SOM alters the pH of the soil, affecting its cation exchange capacity (CEC) by introducing negatively charged particles that attract positively charged plant macronutrient ions. (Brady & Weil, 2010; Haddix et al., 2020; Sharma et al., 2015).

Plant physiology and growth patterns are affected by available macronutrients-potassium (K), nitrogen (N), magnesium (Mg), and phosphorous (P), and micronutrients-iron (Fe), manganese (Mn), zinc (Zn), and copper (Cu) (Barlow, 2017; Goode, 2014; Hakimi-Rezaei, 2009; Sharma et al., 2015; White, 2015). For example, elevated K in soils prevent the fruit from producing acid, an important quality in red wines (Goode, 2014; Hakimi-Rezaei, 2009; Keller, 2015). Fruit quality can decrease as a result of excessive N. High concentrations of plant-available N increase vegetative growth which decreases the plant's fruit production (Hakimi-Rezaei, 2009). Mg plays a vital role in the vines processes of respiration and photosynthesis, while P is used for the production of sugar phosphates and nucleic acids (Barlow, 2017). Micronutrients are needed in smaller quantities for successful vine development, but deficiencies can be detrimental to vine health and fruit quality. Fe, Mn, and Zn deficiencies can affect leaf development and fruit set, while Cu may affect flowering (Barlow, 2017; White, 2015). Simply stated, each soil nutrient performs a unique role in the production and maturation of grapes, and a delicate balance between toxicity and deficiency must be maintained.

2.3 Soil Texture

While soil chemistry determines available nutrients, it is the physical characteristics, primarily soil texture, that are most important when considering grape quality. Van Leeuwen et al. (2004) show that grape quality is quantified by the fruit's weight, sugar accumulation, anthocyanin concentration, and pH. Of these factors, van Leeuwen et al. (2004) demonstrates berry weight, sugar concentration, and anthocyanin concentration are all functions of soil texture. Changes in texture will affect the porosity or pore space where water and dissolved mineral nutrients are stored (Fayolle et al., 2019;

Hakimi-Rezaei, 2009; Hall, 2018). This influences the storage and availability of water and plant-available nutrients that affect the growth pattern of the vine and grape maturation (Koundouras et al., 1999; van Leeuwen & Seguin, 2006; van Leeuwen et al., 2009). Dry soils may have very few water soluble nutrients available for vine root uptake, while saturated soils have plenty (Brady & Weil, 2010; Keller, 2015). In saturated soils, a vine will undergo vigorous, vegetative growth. It will put energy toward growing its canopy up and out rather than spending energy on reproductive growth such as berry generation and maturation (Koundouras et al., 1999; van Leeuwen & Seguin, 2006; van Leeuwen et al., 2009). Conversely, vines grown in conditions that provide just enough water to limit vegetative growth while promoting reproductive growth will begin to produce fruit (van Leeuwen & Seguin, 2006; Leibar et al., 2017; Wilson, 1999). Therefore, the importance of soil texture lies in its ability to control the storage and movement of water near the plant root system.

Soil texture can be estimated in the field by using hand texture methods (Birkeland et al., 1991). These estimates, collected by hand with soil and water, provide the relative amounts of sand, silt, and clay sized particles.

However, hand texture estimates are prone to human error and are inherently subjective. For this reason, other methods of texture analysis need to be used including laser diffraction, hydrometer, and sieve analysis. Unlike hand texture analysis, these methods provide subjective, quantitative data.

2.5 Problem Statement Refined

Unknown characteristics in soil geochemistry and texture can have negative impacts on vine health as well as grape production and maturation through uninformed management practices (Gavioli et al., 2019). The collection of soil chemistry and texture data at this scale has not been conducted in the Sunnyslope District. This research will provide data that may help designate different management zones within individual vineyards based on soil conditions and identify micro-terroirs within a single winemaking region for well-informed cultivar selection and product promotion. Increased success in wine-grape growing, subsequent wine production, and promotion of its unique terroir may have a positive impact on Sunnyslope and the SRVAVA as a whole.

CHAPTER THREE: GEOLOGY AND GEOGRAPHY

3.1 Geologic and Geomorphic History

The Snake River Valley has a complex geologic and geomorphic history. The Sunnyslope District is located on the terraced interfluve between the Snake and Boise Rivers in the western Snake River Plain. This area of Idaho has a rich volcanic and geomorphic history most notably dating back to its Miocene age (18-14 Ma) silicic volcanism. The inception of this volcanism was met by extensive rifting and faulting followed by a series of basaltic eruptions and lava flows. The formation of a large lacustrine environment led to the deposition of sands, silts, and clays. The lacustrine body, known as Lake Idaho, reached its maximum extent 4 Ma (Gillerman et al., 2006). In the later regressive stages of this lake environment, basaltic volcanism returned to the region. As a result, shield volcanoes and volcanic vents are dispersed throughout the Sunnyslope District of southwestern Idaho (Othberg & Gillerman, 1994).

More recent regionally influential geomorphic activity includes the Pleistocene Bonneville Flood. First reported by G.K. Gilbert in the 1870s, Ancient Lake Bonneville, once located in the Bonneville Basin in present day Utah, burst through a natural alluvial dam near Red Rock Pass, ID ~18 ka (Abril-Hernández et al., 2018; Currey, 1982; Gilbert, 1890; O'Connor, 2016). The flood released 4,750 cubic kilometers (km^3) of water downstream through the Snake River Valley at a maximum discharge of 0.85 million cubic meters per second (m^3•sec^{-1}) eroding and depositing massive clasts of bedrock and sediment along its path through the Snake River Valley (Abril-Hernández et al., 2018;

O’Connor, 1993, 2016). Eroded bedrock that was transported as the bedload and suspended load of the flood was deposited as the power of the flood decreased over time and where channel constraints widened (Bierman & Montgomery, 2014). Using identifiable flood deposits and elevation contours, maximum inundation boundaries estimated by Othberg (1992) and O’Connor (1993) suggest Bonneville Flood sediment is present in select Sunnyslope vineyards (Figure 3.1).

Subsequent to the flood, regional deposition of wind-blown fine sands and silts, or loess, comprises the uppermost layer of parent material from which the agricultural soils in the area may have formed. These aeolian sediments, generally < 70 micrometers (µm), are transported by means of windblown suspension, soil creep, or saltation before deposition (Pierce et al., 2011; Roehner, 2018).

Cultivation of the land through tilling, planting, and the introduction of controlled irrigation practices may have altered the uppermost portion of the soil profiles (0 to 40 centimeters). Soil structure is broken down or altered by biological (plant roots) or mechanical (tilling) processes and further altered by the translocation of materials down through the soil profile through irrigation. Distinguishing characteristics of soil such as texture, hydrology, and chemistry are initially determined by parent material but can be dramatically altered by human interference. These soil forming processes, in conjunction with the ClORPT model (Jenny, 1941), should produce a soil profile unique to each vineyard in Sunnyslope.

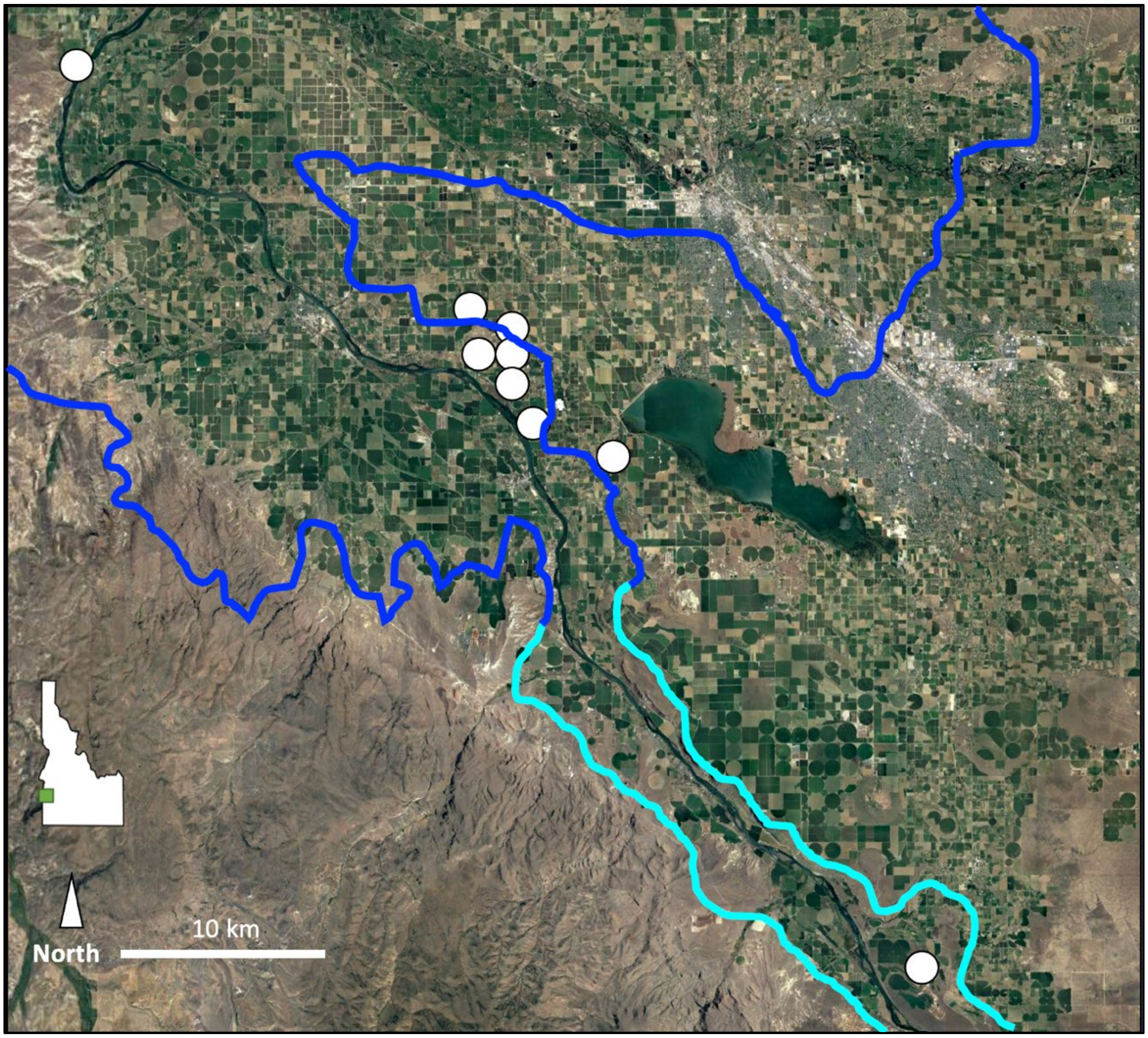


Figure 3.1 Bonneville Flood inundation boundaries estimated by Othberg (dark blue) and O'Connor (light blue) at different reaches of the flood path. Vineyard locations shown as white data points.

3.2 Study Sites

This study seeks to identify differences in soil texture and chemistry due to changes in topography and possible parent material. The following vineyard sites were selected following vertical and longitudinal transects of Sunnyslope and listed here in order of elevation from lowest to highest: Emerald Slopes, Kindred, Hat Ranch, Williamson, Rock Spur, Famici, Bitner, Scoria, Polo Cove (Table 3.1). These vineyards are a part of the Sunnyslope wine district located in the Snake River Valley of southern

Idaho (Figure 3.2). Sunnyslope, a small townsite roughly central to the district, is 45 km west of Boise and extends from Melba, Idaho to Adrian, Oregon.

In the following sections, I provide basic physical descriptions of the vineyard sites used in this study. Vineyard planting dates are determined through personal communication with vineyard owners as well as historic imagery. Soil descriptions are taken from USDA-NRCS data provided through the UCD SoilWeb layer in Google Earth – these are presented only as broad categorizations to provide comparisons with field observations.

The location of these vineyards allows for a look at the complex relationship between elevation, soil development, and cultivar selection due to differences in terroir. The results of this study will provide better understanding of the district's unique micro-terroirs. This knowledge enables vineyard owners to make evidence-based decisions regarding crop management practices and cultivar selection and produce wines that reflect their vineyard's *terroir*.

Table 3.1 Summary of field site characteristics and sample size.

Vineyards	**Abbreviation**	**Elevation Range (m)**	**Estimated Area (ha) (as of 2019)**	**Number of Pits**	**Number of Samples**
Emerald Slope	ES	685-706	4.9	5	43
Kindred	KD	691-704	0.4	4	40
Hat Ranch	HR	701-708	2.4	9	93
Williamson	WI	721-749	17.0	8	76
Rock Spur	RS	741-752	6.9	9	75
Famici	FM	740-742	1.2	8	81
Bitner	BT	768-784	2.0	8	74
Scoria	SC	796-808	7.3	9	73
Polo Cove	PC	809-819	16.2	8	70
Total			**58.3**	**69**	**625**

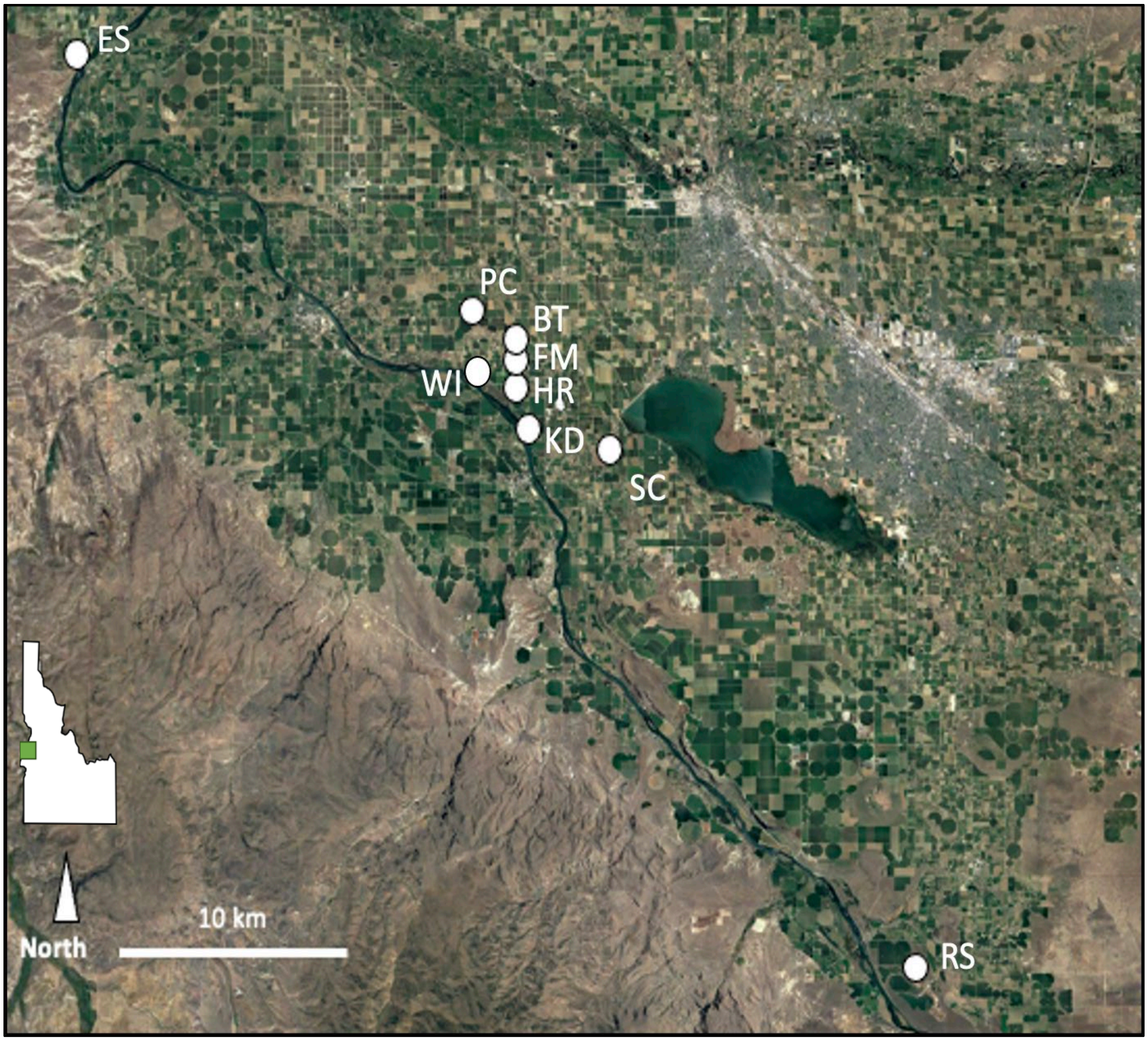


Figure 3.2 Locations of the selected vineyards in Sunnyslope (Google Earth, 2021).

3.2.1 Emerald Slope Vineyard

ES is a 4.9 ha, eastward facing vineyard with elevations ranging from 685 to 706 m. Located in Adrian, OR, ES is the northwestern most site in this study and is the furthest downstream of the Snake River. At its highest point, ES is 38 m above the Snake River. For the purposes of this study, the vineyard was divided into upstream and downstream blocks. Land adjacent to the blocks had been farmed as early as 1994 (Google Earth historic imagery), though vineyard siting and grape production in the north block did not begin until 2003, and production in the south block followed ten years later. UCD and NRCS classify the soil of ES as a silt loam with 0 to 20% slopes (University of California Davis et al., 2019).

3.2.2 Kindred Vineyard

The smallest of the nine study sites, KD is a 0.4 ha vineyard that sits 0.5 km northeast of the Snake River. The vineyard is located upslope from a drainage canal and is primarily westward facing. At its highest point, with elevations ranging from 691 to 704 m, KD is 29 m above the Snake River. Siting for the vineyard began in 2016, and planting started the following year. KD is planted in fine sandy loam with 0 to 12% slopes (University of California Davis et al., 2019).

3.2.3 Hat Ranch Vineyard

HR is a 2.4 ha located in Caldwell, ID 1.7 km northeast of the Snake River. Elevation ranges from 701 to 708 m, and HR has a primarily southwestward facing slope and its highest point is 33 m above the Snake River. This property has been the site of large-scale agriculture for at least the past 28 years (Google Earth historic imagery). Vineyard siting and planting began in 2011 and 2012 and continues to 2019 with the removal and replanting of the southeast corner of the vineyard. HR is planted in fine sandy loam and loamy fine sand with 0 to 7% slopes (University of California Davis et al., 2019).

3.2.4 Williamson Vineyard

Covering 17 ha of land, WI is the largest of the nine vineyards. WI ranges in elevation from 721 to 749 m and is 74 m above the Snake River at its highest elevation. Historic imagery shows this primarily southward facing vineyard was planted in phases from 2002 to 2006 (Google Earth historic imagery). Vines at WI are planted in fine sandy loam with 0 to 7% slopes (University of California Davis et al., 2019).

3.2.5 Rock Spur Vineyard

RS is a 6.9 ha site located in Melba, ID. It is the southeastern most site and is the furthest upstream of the Snake River in the Sunnyslope District. Elevations here range from 741 to 752 m and at its highest point, RS is 66 m above the Snake River. The vineyard is northeastward facing and is uniquely situated upon a Bonneville Flood deposited basalt gravel bar that has been mined as early as 1992 (per Google Earth historic imagery). Grape planting began in 2018. UCD and the NRCS list the soil at RS as a gravelly coarse sandy loam (University of California Davis et al., 2019).

3.2.6 Famici Vineyard

The second smallest of the nine study sites, FM sits on 1.2 ha of land located 2.3 km northeast of the Snake River. Elevations range from 740 to 742 m above sea level. At its highest point, FM is 66 m above the Snake River. Historic imagery reveals the presence of established agriculture by 2002, but the land was not tilled and planted for a vineyard until 2013 with its first plantings in 2014. FM is planted in loamy fine sand with 0 to 7% slopes (University of California Davis et al., 2019).

3.2.7 Bitner Vineyard

BT is a southeastward facing 2.0 ha vineyard located 2.8 km from the Snake River. The slopes of BT are among the steepest of the nine study sites and hardpans of $CaCO_3$ rich soil are common. Elevations range from 768 to 784 m, and at its highest point the vineyard is 109 m above the Snake River. Planting started in 1980 and new blocks were added in the early 2000s (Google Earth historic imagery). BT is planted in fine sandy loam and loamy fine sand with 0 to 25% slopes (University of California Davis et al., 2019).

3.2.8 Scoria Vineyard

Situated on historic family land that had been previously uncultivated, SC is a 7.3 ha, primarily southwestward facing vineyard, with elevations ranging from 796 to 808 m above sea level. At 133 m above the Snake River, SC is positioned the second furthest from the channel of the river. A mafic volcanic vent that has produced layers of gravel-sized basaltic rock and flows is located to the northeast of SC. This *scoria*, for which the vineyard was named at its start in 2014, can be found peppered throughout the soil profile. SC is broadly planted in fine sandy loam with 0 to 12% slopes (University of California Davis et al., 2019).

3.2.9 Polo Cove Vineyard

PC, the second largest vineyard in this study, covers an estimated 16.2 ha of land. The surface of PC is relatively flat and has no dominant aspect. PC is located at the highest elevation of the study with a range from 809 to 819 m. The vineyard is situated on a terrace surface 143 m above the Snake River. The vineyard is split into a north and south block, and both blocks of the vineyard were planted prior to 1992 (Google Earth historic imagery). PC is planted in loamy fine sand and fine sandy loam with 0 to 3% slopes (University of California Davis et al., 2019).

CHAPTER FOUR: METHODS

4.1 Field Methods

4.1.1 NDVI as a Proxy for Differences in Soil Texture

As discussed in section 2.3, soil texture can affect vine growth and vine health. The distribution and availability of macro- and micronutrients stored in the soil's pore space will determine the vigour of the vine and, in turn, the density of the leaf canopy. However, the distribution of available nutrients is dependent upon soil moisture (Fayolle et al., 2019; Goode, 2014; Keller, 2015; Leibar et al., 2017). Dry soils may have little or no beneficial mineral nutrients available for plant life and vine reproductive growth because nutrients are not in solution and available for root uptake by hydraulic lift (Brady & Weil, 2010; Keller, 2015). Soil moisture is dependent upon soil hydrology and soil texture (Evarts et al., 2009; Goode, 2014; Keller, 2015; van Leeuwen & Seguin, 2006; Wilson, 1999). Simply put, soil texture has an indirect effect on the density of the vine canopy and vigour.

Remote sensing and aerial imagery provide a quick and easy method for determining spatial differences in vine health and vigour (Hakimi-Rezaei, 2009; Hall, 2018; Priori et al., 2013). The Normalized Difference Vegetation Index (NDVI) is calculated using the red and near-infrared (NIR) bands in remotely sensed images. NDVI values are measured on a scale between 0 and 1.0; an NDVI value of 0 signifies no plant life, while higher NDVI values (0.8-1.0) are associated with greener, lush, dense biomass (Cifre et al., 2005; Hall, 2018; Turner & Gardner, 2015). As previously stated, soil moisture, as controlled by soil texture, effects the vegetative and reproductive growth of a vine. It can then be hypothesized that plant vigour (measured by NDVI) is a proxy for changes in soil texture.

4.1.2 Soil Pit Locations Determined Using ArcMap 10.6 and NDVI images

Pit locations were selected using a stratified random approach. This selection method allows for control over placement of pits to observe different soil conditions, allow for vineyard owner input, and ensure pit locations were not clustered (Metzger et al., 2005; Turner & Gardner, 2015; Zhou et al., 2018). Using this approach, I created categories or blocks of data that share similar NDVI values and randomize the location of the soil pit data points within each block.

Aerial images were collected from ArcGIS Online through the National Agriculture Imagery Program (NAIP) (Figure 4.1). Idaho 2017 1-meter resolution imagery was imported into ArcMap 10.6 and saved as a new map layer. NDVI was calculated from the NAIP imagery. As stated in section 4.1.1, differences in NDVI values may indicate changes in soil texture. In order to ensure the soil pits of a single vineyard were dispersed rather than clustered in a central location, four to five hand-delineated polygons were created for each vineyard based on visual differences in NDVI, and two randomly selected points were placed at least 10 m apart within each polygon (Figure 4.2). Soil pit location maps were created for each vineyard in a true color and NDVI version (see Appendix A). In the case of younger vineyards like RS, FM, and KD, NAIP imagery was not up-to-date, and the stratified random pit placement was not feasible. Instead, soil pits were positioned at the upper, middle, and lower slopes of the vineyard (Figure 4.3). In the unique case of ES, which is located in Adrian, OR, NAIP imagery was not available for 2017 and soil pits were placed in low and high elevations of the vineyard slopes. The number of pits in this case were dictated by the area of the vineyard.

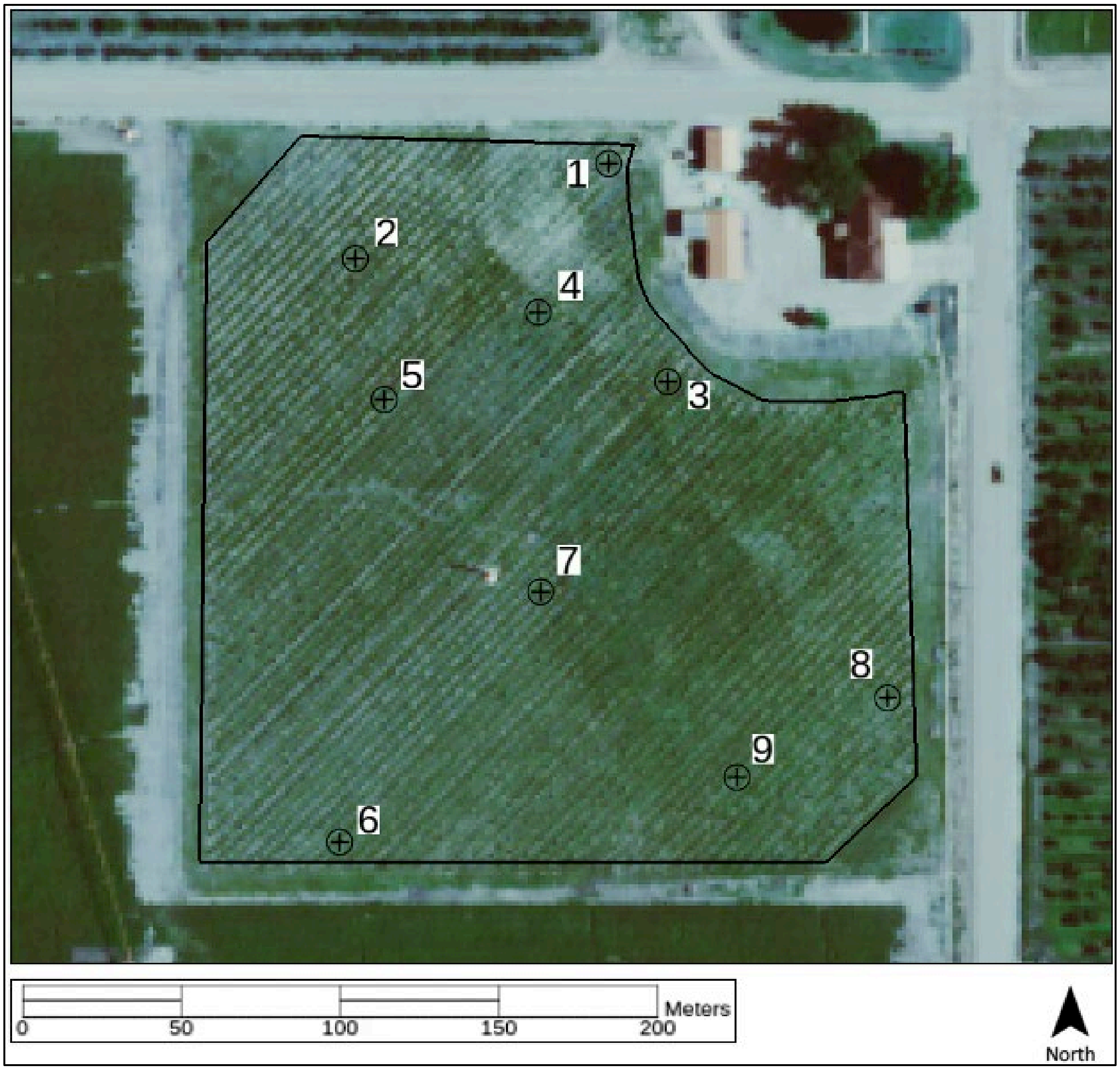


Figure 4.1 HR soil pit location map shown overlayed on NAIP imagery in true color.

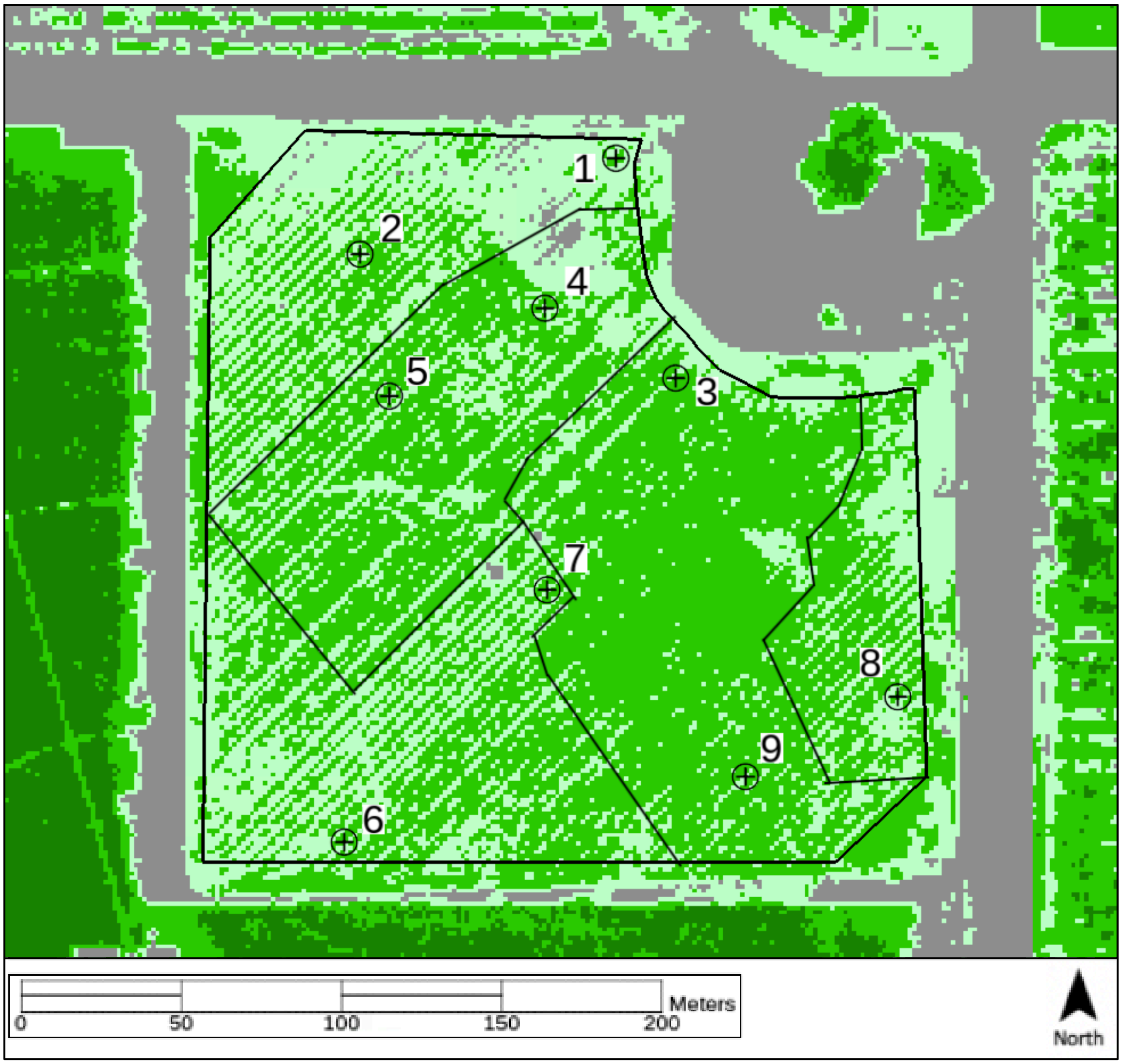


Figure 4.2 NDVI determined soil pit locations with hand-delineated polygons. NDVI value increases from light to dark green with gray representing a value of -1.0 to 0.

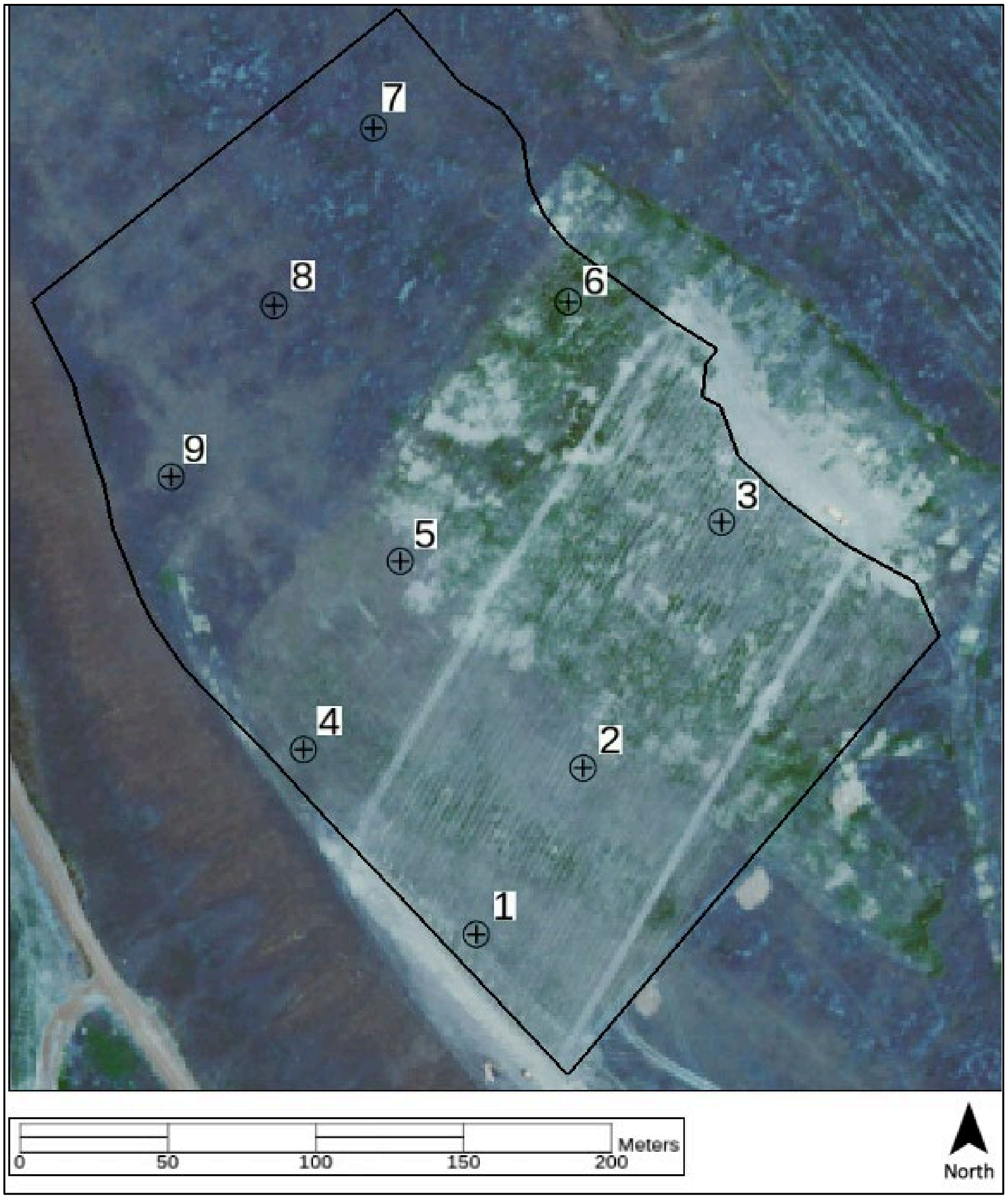


Figure 4.3 Soil pit locations of RS shown in true color image.

4.1.2 Sampling Methods

Pit placement in the field was recorded using georeferencing. Personal GPS units were used in the field to save the NAD 1983 Idaho UTM coordinates for each point. Pits were excavated parallel to the orientation of the vine rows, and with a goal depth of 1 m (Figure 4.4). The depth of the pit was primarily dictated by ability to dig. The goal depth was not attainable in all cases due to dry, hardpacked soil or the presence of a $CaCO_3$ duripan.

A soil knife was used to collect samples in 10 cm segments starting at the surface (0 cm) continuing down the soil profile and key physical features were noted in the field. Samples are labeled and bagged in quart-sized sealable plastic bags. Samples were returned to the lab where texture and chemical analysis took place.

Two vineyards provided especially unique conditions for pit excavation. At our initial vineyard, HR, we were given access to a tractor-mounted backhoe used for pits 3, 6, 7, 8, and 9. This explains the repeated maximum depths of greater than 1 m. Conversely, at RS, a 1 m depth was repeatedly not achieved as loose basalt gravels caused soil pit walls to collapse with depth (Figure 4.5).

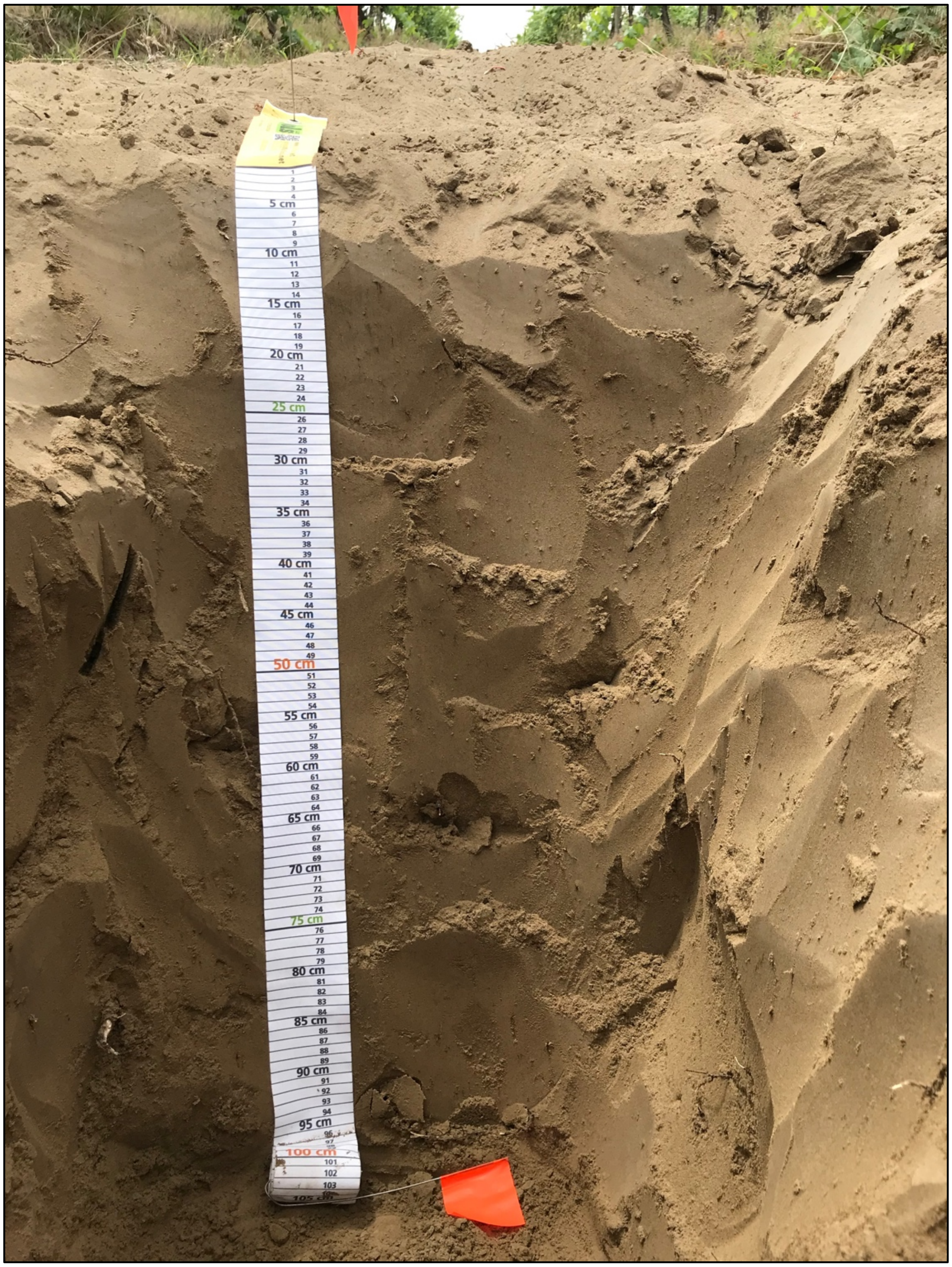


Figure 4.4 A typical meter deep excavated sampling pit from PC.

Figure 4.5 Loose gravels fill in the bottom of a 60 cm soil pit at RS.

4.2 Laboratory Methods

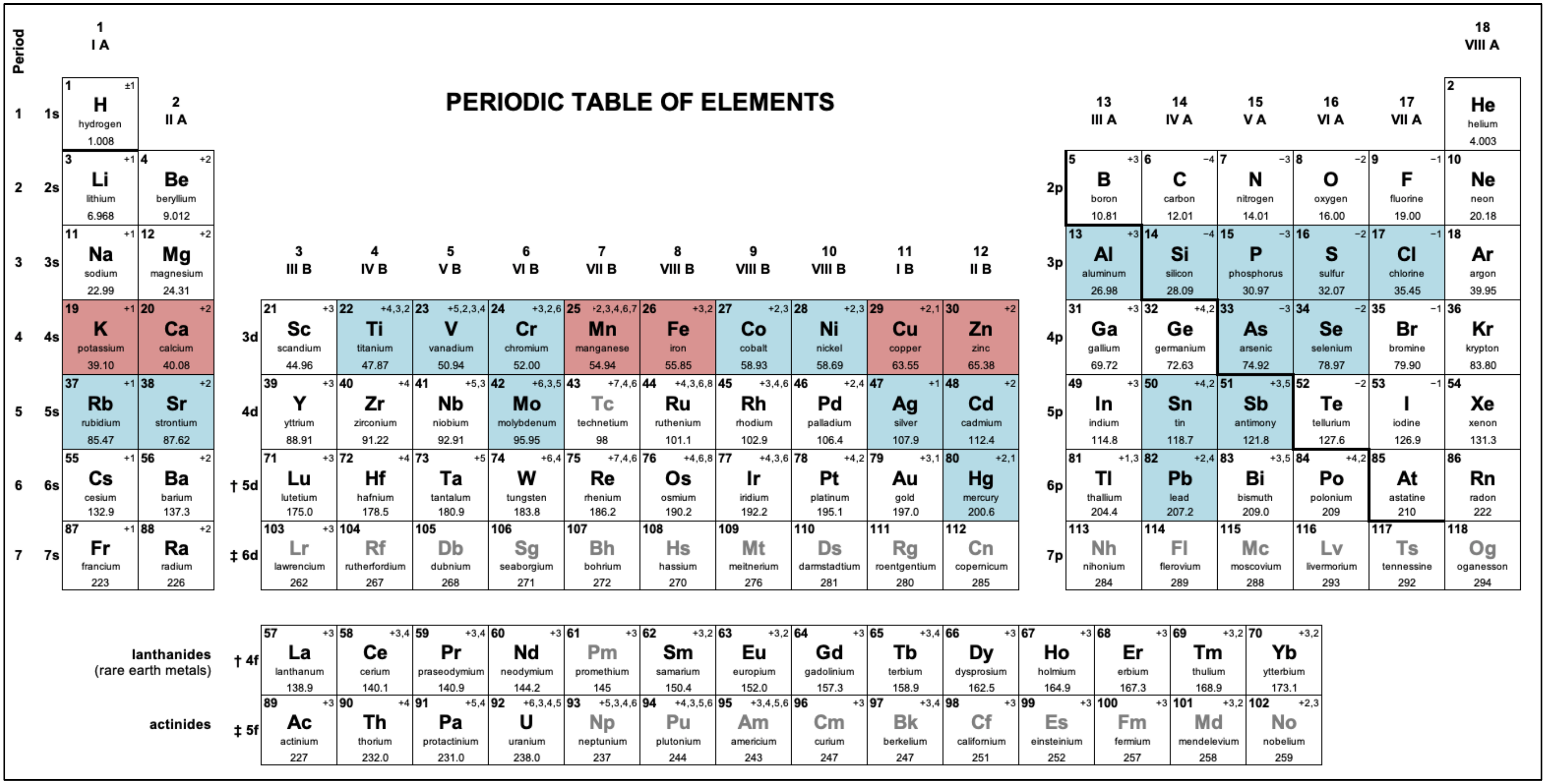
In the lab additional soil characteristics were identified and recorded using protocols outlined in (Birkeland et al., 1991). Hand texture, ped formation and fragility, gravel content, and color were determined, and results were recorded in a spreadsheet. All samples were dried in the oven for at least 10 hours at 100°C and sieved through a 2 mm mesh to sort out coarse gravels and organic material such as root hairs. In the case of RS, a 1 mm mesh was used to separate out very coarse sands and fine gravels that could potentially cause problems during laser diffraction analysis. Two pits from each vineyard were randomly selected for Mastersizer 2000 (MS2000) laser diffraction (texture) analysis and portable x-ray fluorescence (pXRF) (chemical) analysis. These pits will be referred to as pit A (pA) and pit B (pB) from each vineyard and are assigned the designation based on their pit number in ascending order (see Appendix A).

4.2.1 Geochemical Analysis using pXRF

The abundance of plant nutrients and trace elements from soil parent material can be analyzed using machines such as x-ray fluorescence (XRF), pXRF, and inductively couple plasma mass spectrometry (ICP-MS) (Craig et al., 2007; Rouillon et al., 2017). pXRF is a handheld and cost-effective tool to use in the analysis of soil geochemistry and was chosen for this study based on accessibility, speed, and cost (Craig et al., 2007; Duda et al., 2017; Mejía-Piña et al., 2016; Pitcavage, 2011). With little sample preparation necessary, the pXRF can reliably analyze up to 27 different elements per sample without sample destruction in an unconventional laboratory setting. An important limitation associated with the pXRF is a result of sample storage – samples stored in and analyzed through sealed plastic bags, such as I did in this study, decreases the number of detectable elements from 27 to 21 (Mejía-Piña et al., 2016). Of the 21 detectable elements, only notable soil macronutrients and micronutrients detected above the pXRF level of detection (LOD) were considered for the purposes of this study (Figure 4.6) (Barlow, 2017; Brady & Weil, 2010; Goode, 2014; Wilson, 1999); this group included Ca, Cu, Fe, K, Mn and Zn.

pXRF analysis measures elemental abundance in parts per million (ppm). For this study, the analyses were conducted using an Olympus Handheld Spectrometer Model

4000. Analysis parameters and protocol followed Cogswell (2020) used the proprietary Olympus soil sampling mode with an added precious metals package. The instrument was calibrated daily using standards provided by the manufacturer. Individual sample analysis took 90 seconds, and triplicates were conducted on the 50 cm sample from each pit to ensure data accuracy and provide a standard data point for multi-vineyard comparisons (see Appendix C). This 50 cm sample depth was chosen as the mid-depth of the one-meter pits and a depth reached and sampled in all soil pits. It is also considered below the depth of surface vineyard practices such as disking.



PERIODIC TABLE OF ELEMENTS

Period		1 I A	2 II A		3 III B	4 IV B	5 V B	6 VI B	7 VII B	8 VIII B	9 VIII B	10 VIII B	11 I B	12 II B		13 III A	14 IV A	15 V A	16 VI A	17 VII A	18 VIII A
1	1s	1 ±1 **H** hydrogen 1.008																			2 **He** helium 4.003
2	2s	3 +1 **Li** lithium 6.968	4 +2 **Be** beryllium 9.012												2p	5 +3 **B** boron 10.81	6 −4 **C** carbon 12.01	7 −3 **N** nitrogen 14.01	8 −2 **O** oxygen 16.00	9 −1 **F** fluorine 19.00	10 **Ne** neon 20.18
3	3s	11 +1 **Na** sodium 22.99	12 +2 **Mg** magnesium 24.31												3p	🟦 13 +3 **Al** aluminum 26.98	🟦 14 −4 **Si** silicon 28.09	🟦 15 −3 **P** phosphorus 30.97	🟦 16 −2 **S** sulfur 32.07	🟦 17 −1 **Cl** chlorine 35.45	18 **Ar** argon 39.95
4	4s	🟥 19 +1 **K** potassium 39.10	🟥 20 +2 **Ca** calcium 40.08	3d	21 +3 **Sc** scandium 44.96	🟦 22 +4,3,2 **Ti** titanium 47.87	🟦 23 +5,2,3,4 **V** vanadium 50.94	🟦 24 +3,2,6 **Cr** chromium 52.00	🟥 25 +2,3,4,6,7 **Mn** manganese 54.94	🟥 26 +3,2 **Fe** iron 55.85	🟦 27 +2,3 **Co** cobalt 58.93	🟦 28 +2,3 **Ni** nickel 58.69	🟥 29 +2,1 **Cu** copper 63.55	🟥 30 +2 **Zn** zinc 65.38	4p	31 +3 **Ga** gallium 69.72	32 +4,2 **Ge** germanium 72.63	🟦 33 −3 **As** arsenic 74.92	🟦 34 −2 **Se** selenium 78.97	35 −1 **Br** bromine 79.90	36 **Kr** krypton 83.80
5	5s	🟦 37 +1 **Rb** rubidium 85.47	🟦 38 +2 **Sr** strontium 87.62	4d	39 +3 **Y** yttrium 88.91	40 +4 **Zr** zirconium 91.22	41 +5,3 **Nb** niobium 92.91	🟦 42 +6,3,5 **Mo** molybdenum 95.95	43 +7,4,6 **Tc** technetium 98	44 +4,3,6,8 **Ru** ruthenium 101.1	45 +3,4,6 **Rh** rhodium 102.9	46 +2,4 **Pd** palladium 106.4	🟦 47 +1 **Ag** silver 107.9	🟦 48 +2 **Cd** cadmium 112.4	5p	49 +3 **In** indium 114.8	🟦 50 +4,2 **Sn** tin 118.7	🟦 51 +3,5 **Sb** antimony 121.8	52 −2 **Te** tellurium 127.6	53 −1 **I** iodine 126.9	54 **Xe** xenon 131.3
6	6s	55 +1 **Cs** cesium 132.9	56 +2 **Ba** barium 137.3	† 5d	71 +3 **Lu** lutetium 175.0	72 +4 **Hf** hafnium 178.5	73 +5 **Ta** tantalum 180.9	74 +6,4 **W** tungsten 183.8	75 +7,4,6 **Re** rhenium 186.2	76 +4,6,8 **Os** osmium 190.2	77 +4,3,6 **Ir** iridium 192.2	78 +4,2 **Pt** platinum 195.1	79 +3,1 **Au** gold 197.0	🟦 80 +2,1 **Hg** mercury 200.6	6p	81 +1,3 **Tl** thallium 204.4	🟦 82 +2,4 **Pb** lead 207.2	83 +3,5 **Bi** bismuth 209.0	84 +4,2 **Po** polonium 209	85 **At** astatine 210	86 **Rn** radon 222
7	7s	87 +1 **Fr** francium 223	88 +2 **Ra** radium 226	‡ 6d	103 +3 **Lr** lawrencium 262	104 **Rf** rutherfordium 267	105 **Db** dubnium 268	106 **Sg** seaborgium 271	107 **Bh** bohrium 272	108 **Hs** hassium 270	109 **Mt** meitnerium 276	110 **Ds** darmstadtium 281	111 **Rg** roentgentium 280	112 **Cn** copernicum 285	7p	113 **Nh** nihonium 284	114 **Fl** flerovium 289	115 **Mc** moscovium 288	116 **Lv** livermorium 293	117 **Ts** tennessine 292	118 **Og** oganesson 294

lanthanides (rare earth metals)	† 4f	57 +3 **La** lanthanum 138.9	58 +3,4 **Ce** cerium 140.1	59 +3,4 **Pr** praseodymium 140.9	60 +3 **Nd** neodymium 144.2	61 +3 **Pm** promethium 145	62 +3,2 **Sm** samarium 150.4	63 +3,2 **Eu** europium 152.0	64 +3 **Gd** gadolinium 157.3	65 +3,4 **Tb** terbium 158.9	66 +3 **Dy** dysprosium 162.5	67 +3 **Ho** holmium 164.9	68 +3 **Er** erbium 167.3	69 +3,2 **Tm** thulium 168.9	70 +3,2 **Yb** ytterbium 173.1
actinides	‡ 5f	89 +3 **Ac** actinium 227	90 +4 **Th** thorium 232.0	91 +5,4 **Pa** protactinium 231.0	92 +6,3,4,5 **U** uranium 238.0	93 +5,3,4,6 **Np** neptunium 237	94 +4,3,5,6 **Pu** plutonium 244	95 +3,4,5,6 **Am** americium 243	96 +3 **Cm** curium 247	97 +3,4 **Bk** berkelium 247	98 +3 **Cf** californium 251	99 +3 **Es** einsteinium 252	100 +3 **Fm** fermium 257	101 +3,2 **Md** mendelevium 258	102 +2,3 **No** nobelium 259

Figure 4.6 pXRF reliably measures 27 elements (blue); 6 were chosen for this study (red). Adapted from Bigler (2021).

4.2.2 Texture Analysis using MS2000

While hand texture analysis provides an estimation of grain size distribution and texture classification, laser diffraction using the MS2000 provides an objective and precise method of measuring grain size distribution and soil texture. The MS2000 uses static light scattering to determine the size of sediment particles and generate a grain size distribution curve (Chen et al., 2018), and the data obtained can be used to objectively determine soil textures for comparisons with other samples.

Results from the MS2000 analysis are skewed as two of the detectors became inoperable prior to analysis. The missing detectors cause the program to underestimate the portion of larger grain sizes and affects the fit of the data which is used by the MS2000 to create grain size distribution curves. However, all samples were analyzed using the same protocols, and the detectors were consistent through all runs, so comparisons within and between vineyards can still be made. Percent error in machine-estimated sample concentration versus actual sample concentration is used as a metric for machine accuracy.

MS2000 analysis was conducted according to protocol and parameters set by Sperazza et al. (2004). Triplicates were conducted every 30 samples to analyze the machine accuracy (see Appendix D). To ensure the MS2000 measured the actual textures present in the vineyards, $CaCO_3$ was not dissolved prior to analysis. The goal of MS2000 is to understand soil textures currently present in vineyards, and I did not want to alter the appearance or textures of particles by dissolving $CaCO_3$ nodules or cemented particle aggregates. During analysis, the sample is added to 1000 milliliters (mL) of deionized water until the desired laser obscuration, a measure of suspended sample concentration, set by Sperazza et al. (2004) is achieved in the MS200. The goal obscuration range of this study is between 10-15%. MS2000 ultrasonic is then used for 1 minute to separate aggregates. Samples are read three consecutive times by the MS2000 for bouts of 30 seconds. An average of the three readings is used to estimate volumetric percentages of sand, silt, and clay for the sample.

CHAPTER FIVE: RESULTS

5.1 Hand Texture Results

Soil hand textures in the Sunnyslope District include sand, loamy sand, sandy loam, sandy clay loam, loam, silt loam, and silty clay loam (Figure 5.1 and Appendix B). Sandy loam is the most prevalent texture in SC, HR, FM, PC, WI. Silt loam is the second most abundant texture and can be found in RS, ES, and BT. Loam is the most common texture in a single vineyard, KD. Hydrochloric acid (HCl) reacted with the pedogenic $CaCO_3$ in all vineyards, but hardpans, nodules, and grain coatings were found in BT, KD, and RS.

Fine sands and silts are common in all vineyards, however there are two distinct outliers. The first, ES, is located furthest downstream and contained layered, lithic sand lenses at its lowest elevation soil pits closer to the current water level of the Snake River (Figure 5.2). The second, RS, is located the furthest upstream and its soil pits all contain fine to coarse basaltic gravels. RS soils pits are also capped by a 20 to 50 cm thick layer of loess (Figure 5.3).

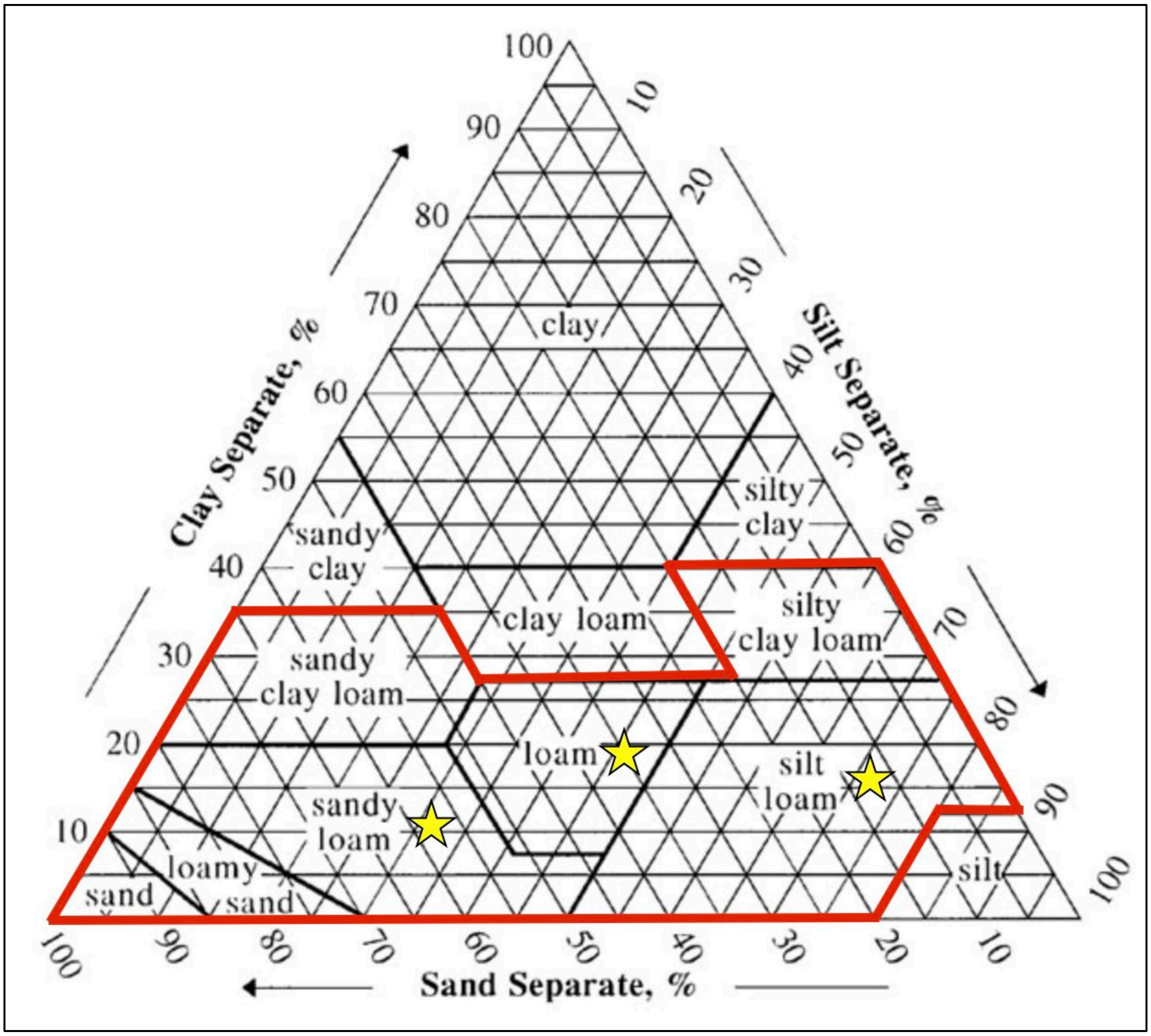


Figure 5.1 Ternary diagram of the common soil hand textures (outlined in red) present among the vineyards, and the top three most common textures (starred) (Natural Resources Conservation Service, 2021).

Figure 5.2 Layered sand sample pulled from the soil profile face (top) and the coarse lithic sands of the profile at 50 cm depth (bottom).

Figure 5.3 Basalt sands to boulders are visible in the soil profiles of RS. An example of a gravel dominated profile (left) and a loess-rich profile (right).

5.2 pXRF Results – Individual Vineyards

As stated previously, only six elements were chosen for further comparison – Ca, Cu, Fe, K, Mn, and Zn (see Appendix C). Individual vineyard results average all sample abundances per pit to compare the pA and pB within a single vineyard (Figure 5.2). Of the six elements chosen for pXRF review, Ca and Fe are present in all vineyards at the highest abundance levels upwards of 60,000 ppm. As noted by the standard deviation error bars, Ca shows the lowest confidence in data precision. Cu is the least abundant element overall, though the greatest value is observed in RS pits with maximum values between 30-40 ppm. Of all vineyards, Cu is least abundant in PC pB at 2.6 ppm. Variation exists amongst all elements in all pits. The least variation between pits is in K levels – both PC pits show identical K averages. The greatest difference between pits is in Ca levels of the two PC pits with nearly 40,000 ppm difference. Mn levels ranges from 290 ppm to 500 ppm with the highest Mn levels present in both RS pits – 508 ppm and 443 ppm in pA and pB, respectively. Zn averages are present most commonly between 40-60 ppm. The greatest difference in abundance present in ES between 45 ppm and 85 ppm in pA and pB, respectively.

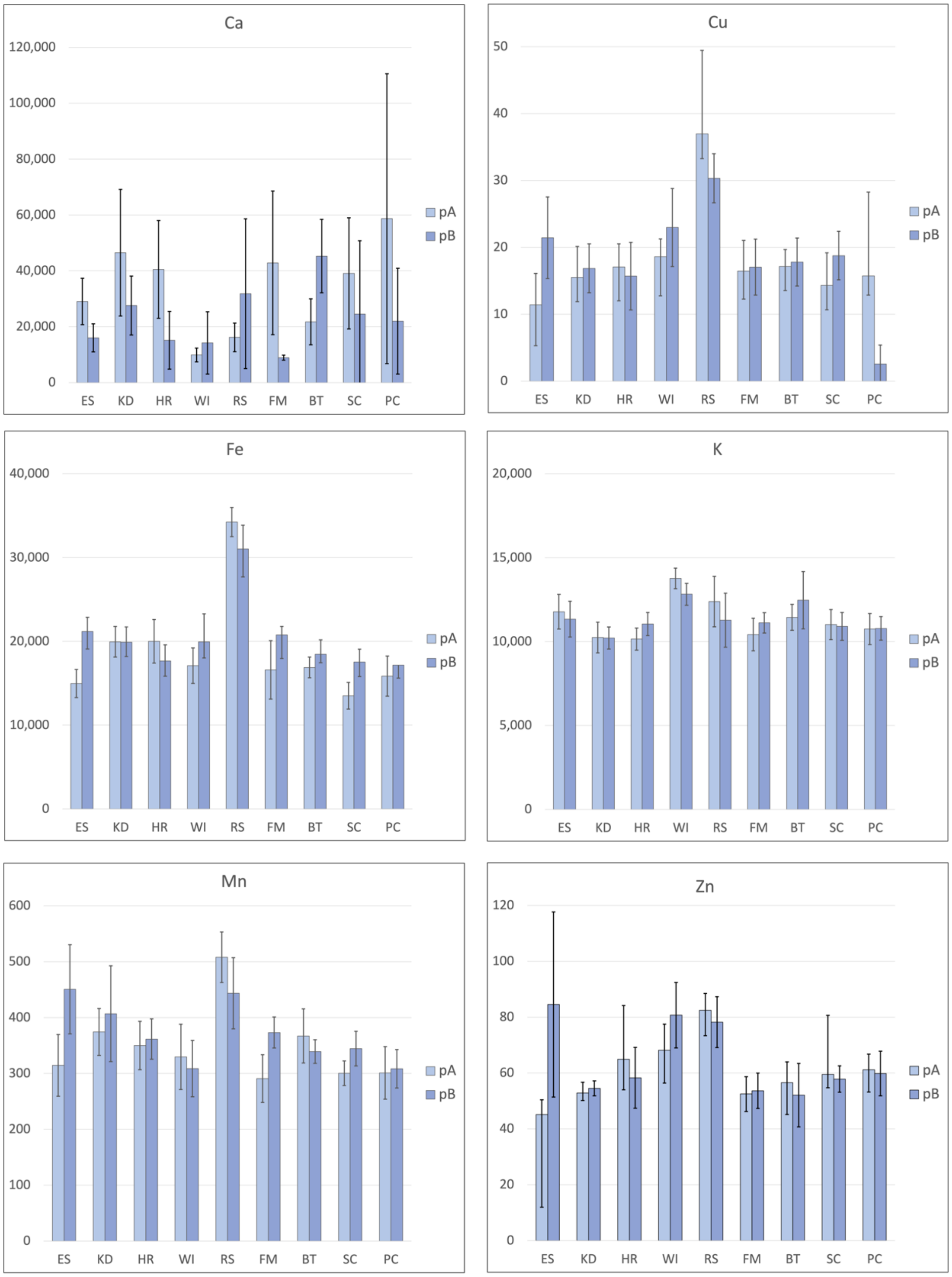


Figure 5.2 Clustered column bar graphs created using the average elemental abundances per pit, noted as pA for Pit A and pB for Pit B, with a standard deviation error bar. Abundance (ppm) is shown on the vertical axis. Vineyard shown on the horizontal axis arranged by elevation from low to high (left to right on the axes).

5.3 pXRF Results - Multi-vineyard Comparison

A comparison from one vineyard to the next allows me to observe elemental abundance as vineyard topography, geologic history, and elevation change. To observe these intra-vineyard trends, the average elemental abundance of the 50 cm sample is considered. As stated in 4.2.1, three data points are collected from each 50 cm sample, which provides more data for our multi-vineyard comparison. Elements at this depth vary in average abundance from 13 ppm to 65,000 ppm.

Ca is the most abundant in PC with 65,921 ppm and demonstrates the widest variability and greatest range of values of all the elements (Figure 5.3). Cu showed the most consistent elemental abundance with vineyard averages between 10 and 20 ppm; again, RS is an outlier with 36 ppm. Fe and Mn, similar to the observations observed in Cu, display consistent values between 15,000 and 20,000 ppm and 300 to 500 ppm, respectively. RS appears as an outlier again in Fe with 29,478 ppm. KD also appears as an outlier here in Mn with 506 ppm. The highest confidence of result consistency is displayed in K, and values all range from 9,900 and 13,000 ppm with low standard deviations between 316 and 1,635. Zn, for the most part, follows this trend with all values between 47 and 75 ppm. HR, WI and RS all share the highest Zn values all between 73 and 74.5 ppm.

Observing differences in elemental abundance as vineyard elevation increases or decreases can help our understanding of vineyard history and factors that influence soil formation. The 50 cm average abundance from pA and that of pB are plotted against their corresponding soil pit elevations to observe trends that exist as a result of elevation. From this analysis, Cu displays a weak positive relationship with elevation while Fe and Zn have a weak inverse relationship with elevation. K demonstrates no increase or decrease in abundance with elevation. Ca and Mn both display stronger relationships with increasing elevations. Ca demonstrates a relatively strong positive relationship while Mn displays a strong negative relationship with increasing elevation (Figure 5.4).

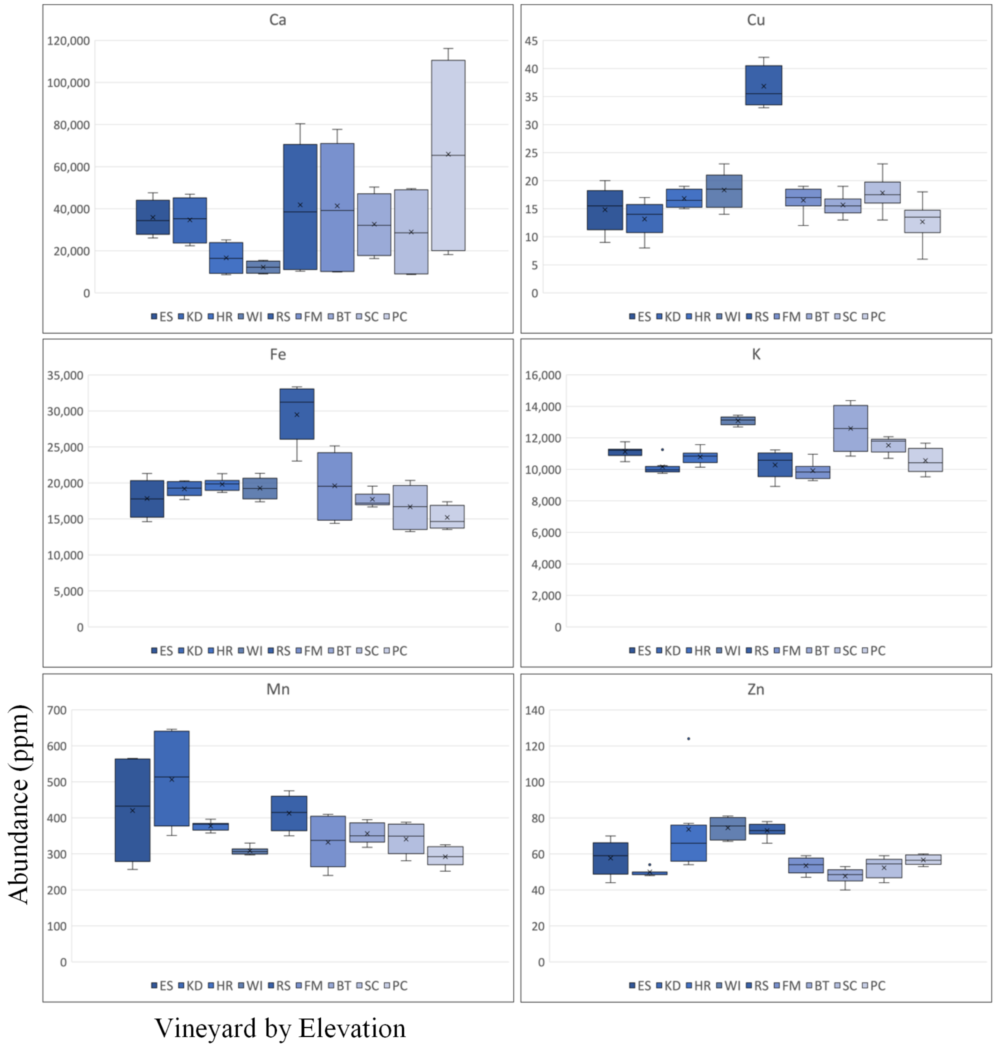


Figure 5.3 **Box and whisker plots created using 50 cm triplicate readings for both pits in a single vineyard. Abundance (ppm) is shown on the vertical axis and vineyards are listed by increasing order of elevation (m) on the horizontal axis.**

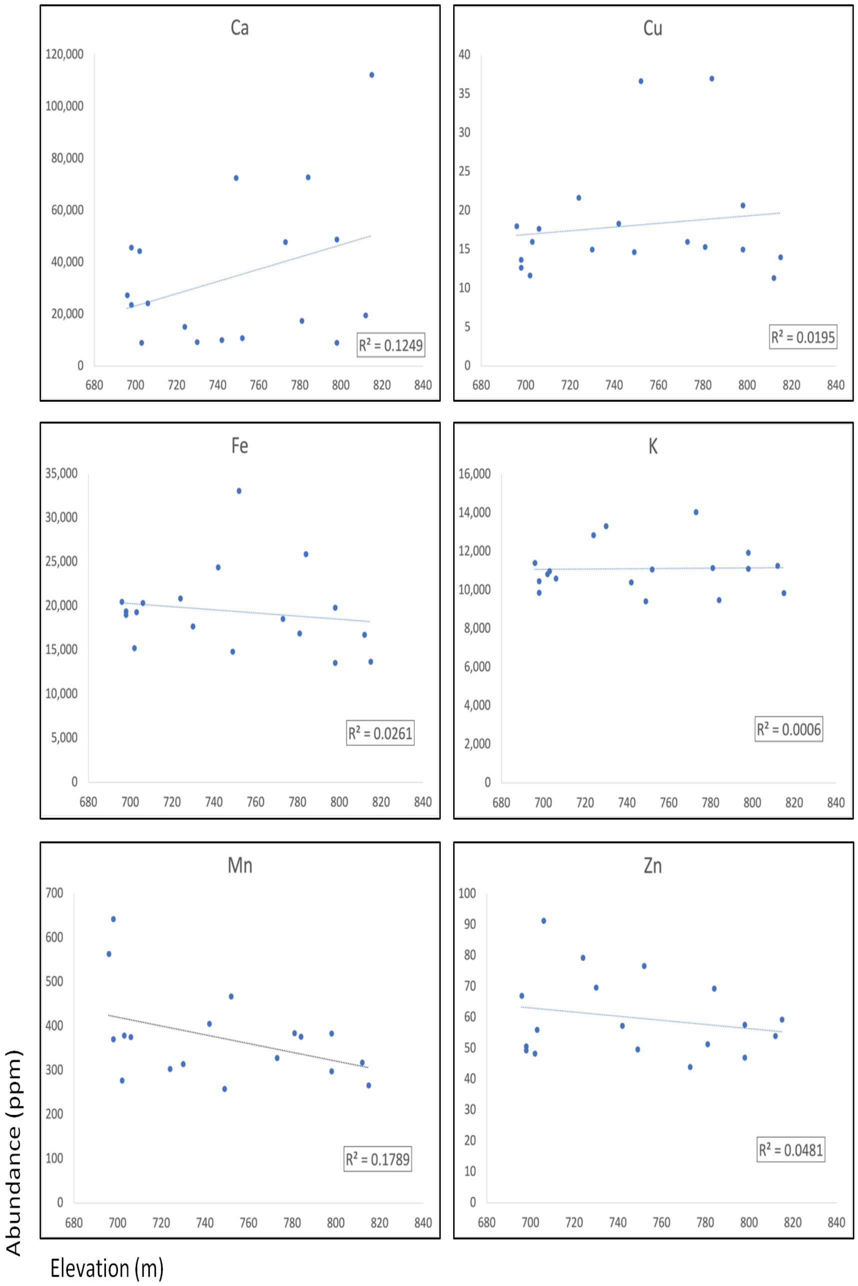


Figure 5.4 Scatterplots created using pA and pB 50 cm average readings and corresponding pit elevation above the Snake River. Abundance (ppm) is shown on the vertical axis, and elevation (m) on the horizontal axis.

5.3 MS2000 Results – Individual Vineyards

As stated in section 4.2, the two pits randomly selected for MS2000 analysis were designated pit A (pA) and pit B (pB) based on their numerical order. The MS2000 results of pA and pB were organized by sample depth. Grain size distribution charts were created for individual pits and display the percentage of particles that pass through a sieve of a specified diameter (see Appendix D). A single distribution chart was created for each pit – this allows me to observe grain size changes with depth. Traditionally, grain size distribution charts display smooth, bell-shaped curves with a single hump or inflection point. The unique shape of my grain size distribution charts is the result of skewed data caused by the two nonfunctional detectors, and the horizontal axis of my charts terminates at 2 mm diameter because samples were sieved prior to MS2000 analysis (Figure 5.5). Grain size distribution charts are helpful tools for complex data visualization, but ternary diagrams - like that shown in Figure 5.1 – are best for communicating general findings. pA and pB commonalities and differences are briefly discussed in the following sections organized by vineyard.

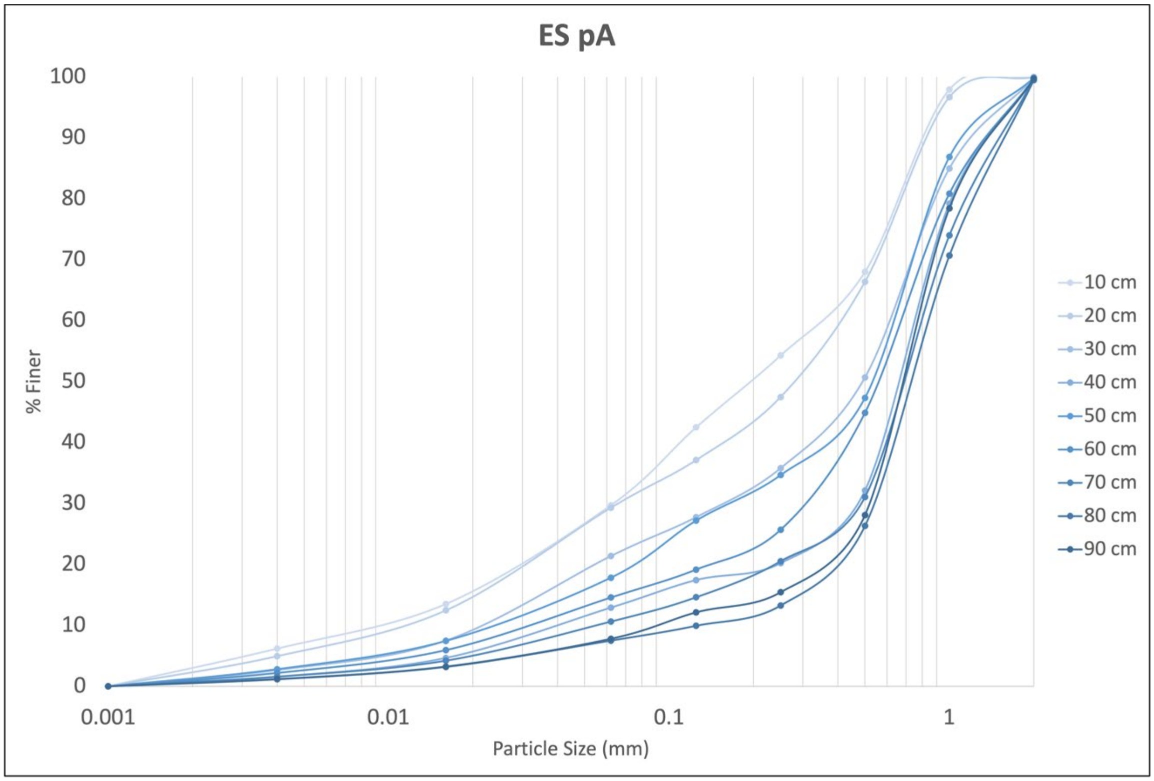


Figure 5.5 Example grain size distribution chart from ES pA. Percent finer (%) is displayed on the vertical axis and grain size (mm) is shown on the horizontal axis. This chart shows a decrease in the fine fraction as depth increases (light blue to dark blue).

5.3.1 Emerald Slope Vineyard

The average texture ES pA is classified as a loamy sand. The soil texture coarsens with depth and the sand fraction reaches its maximum in the last 20 cm of the profile. ES pB also coarsens with depth; however, it contains more silts and clays than ES pA. The texture of ES pB borders on loam and silt loam (Figure 5.6).

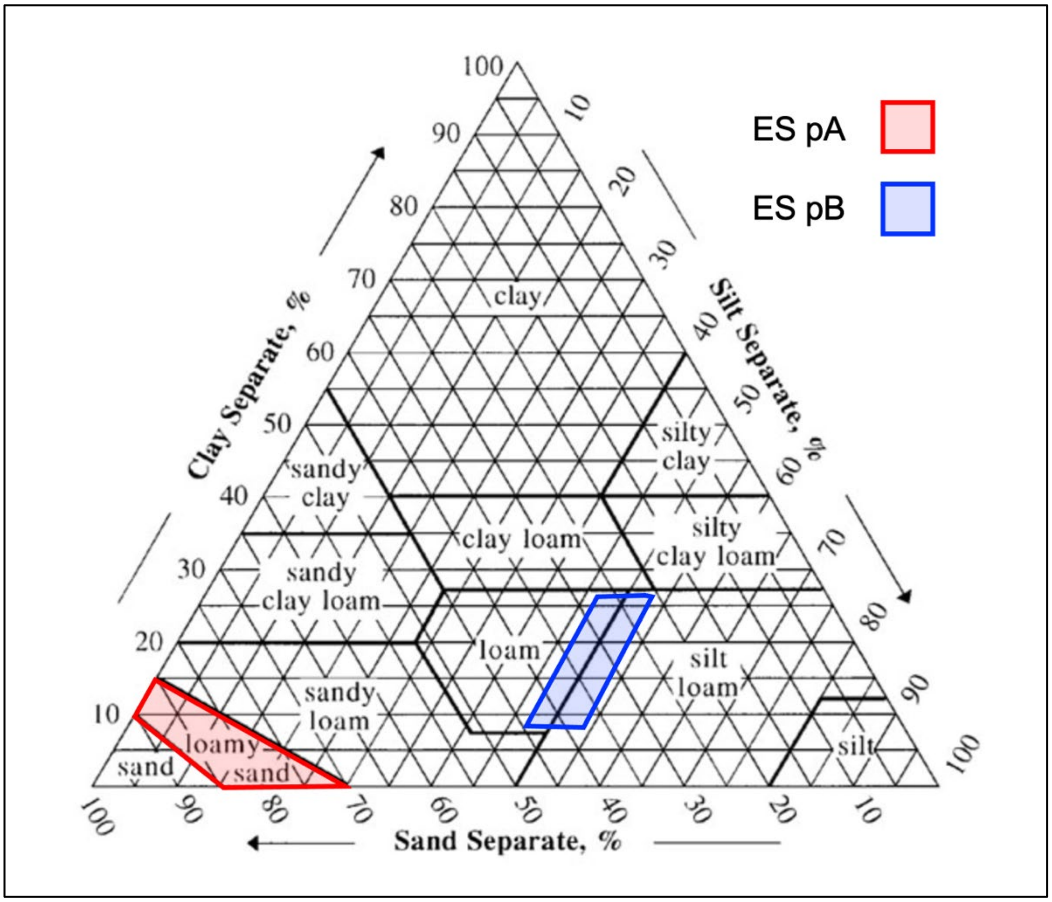


Figure 5.6 `Average soil classifications of ES pA and pB calculated from MS2000 data. ES pA is a loamy sand and pB borders a loam and silt loam. Adapted from Natural Resources Conservation Service (2021).

5.3.2 Kindred Vineyard

KD pA is classified as a loam and its texture coarsens with depth. Clay abundance is greatest in the 60 cm sample. KD pB displays a similar pattern of coarsening downward, but it shows an increase in very fine and fine sands past 40 cm. KD pB contains more sand than pB and for that reason it is classified as a sandy loam (Figure 5.7).

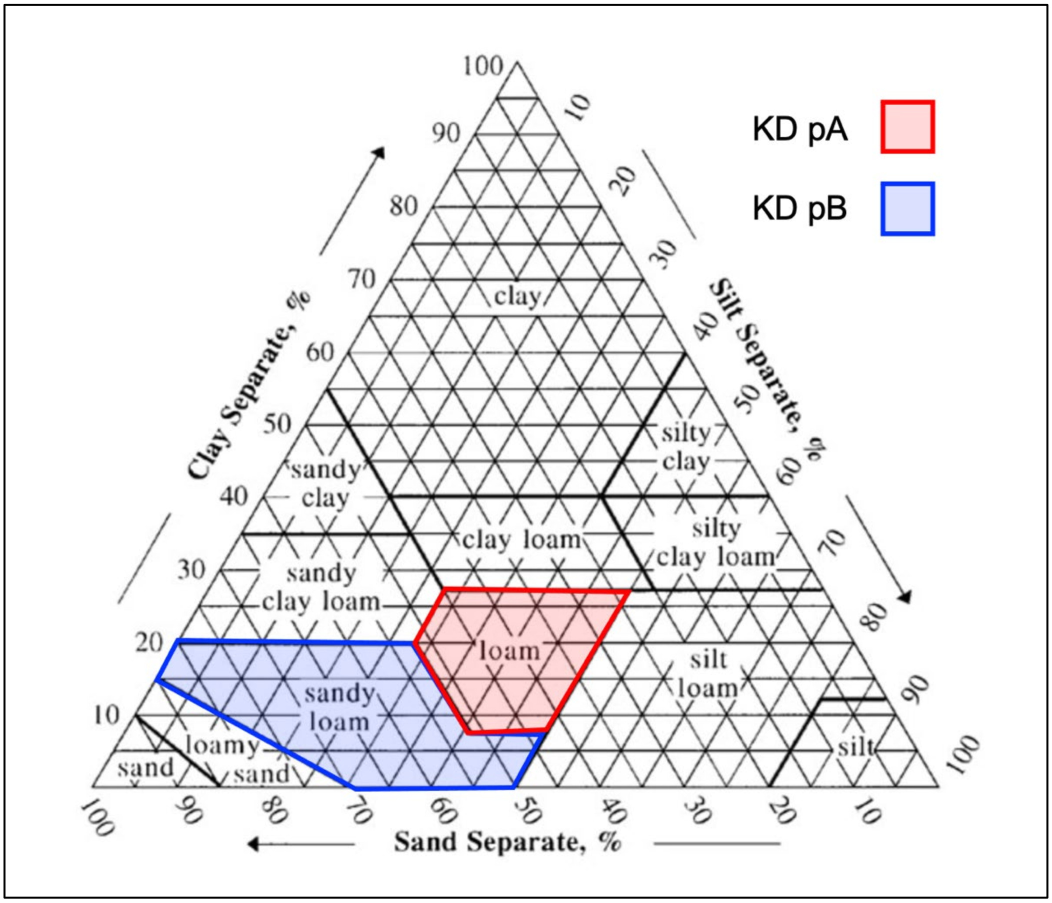


Figure 5.7 Average soil classifications of KD pA and pB calculated from MS2000 data. KD pA is considered a loam while pB is a sandy loam. Adapted from Natural Resources Conservation Service (2021).

5.3.3 Hat Ranch Vineyard

HR pA shows a general coarsening with depth, but the abundance of sand begins to decrease at 90 cm. The texture of HR pA is consistent with a sandy loam. HR pB, which is situated downslope from pA, is also a sandy loam but displays a decrease in sand and an increase in fine sediments like silt and clay (Figure 5.8).

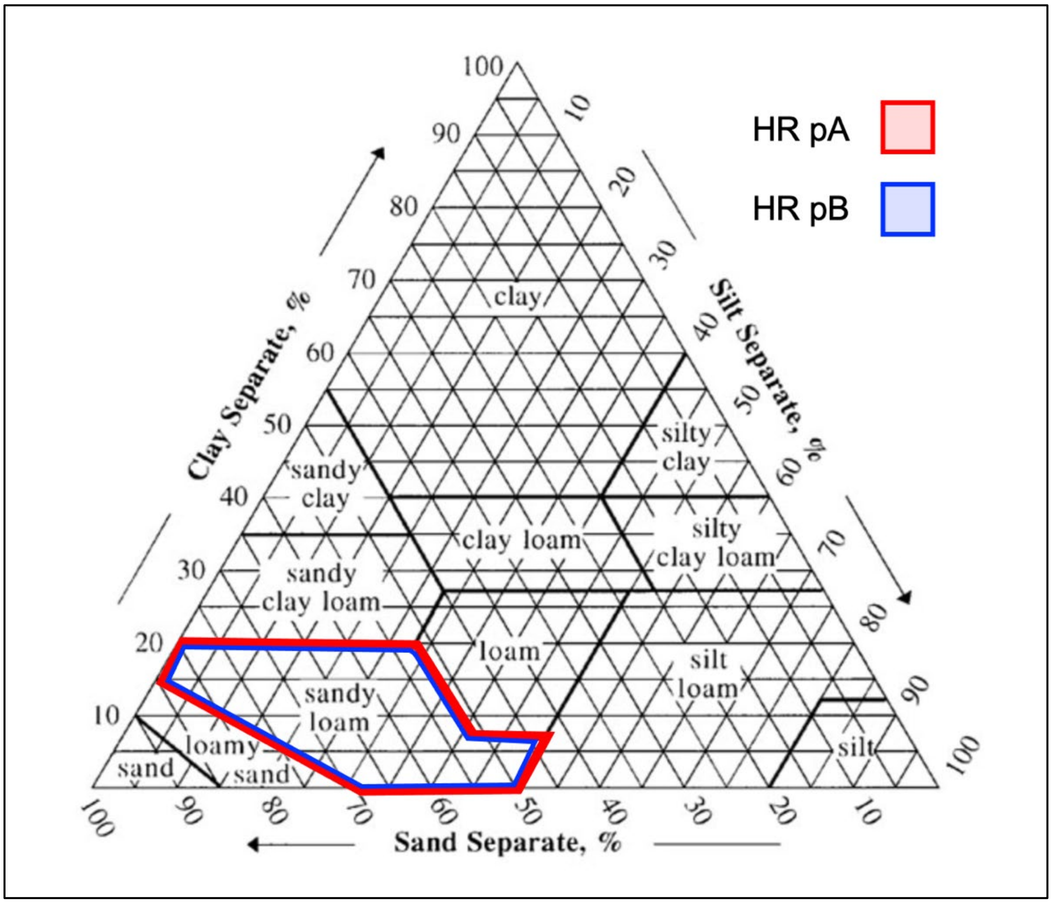


Figure 5.8 Average soil classifications of HR pA and pB calculated from MS2000 data. HR pA and pB are both broadly classified as a sandy loam. Adapted from Natural Resources Conservation Service (2021).

5.3.4 Williamson Vineyard

WI pA shows fluctuations in texture, but an overall increase in sand with depth. Abundance of sand is greatest in the 100 cm sample, and on average WI pA is considered a loam because of its nearly equal abundance of sand and fine sediments. WI pB is also classified as a loam, but borders on a silt loam because of a slight increase in silt sized sediment (Figure 5.9).

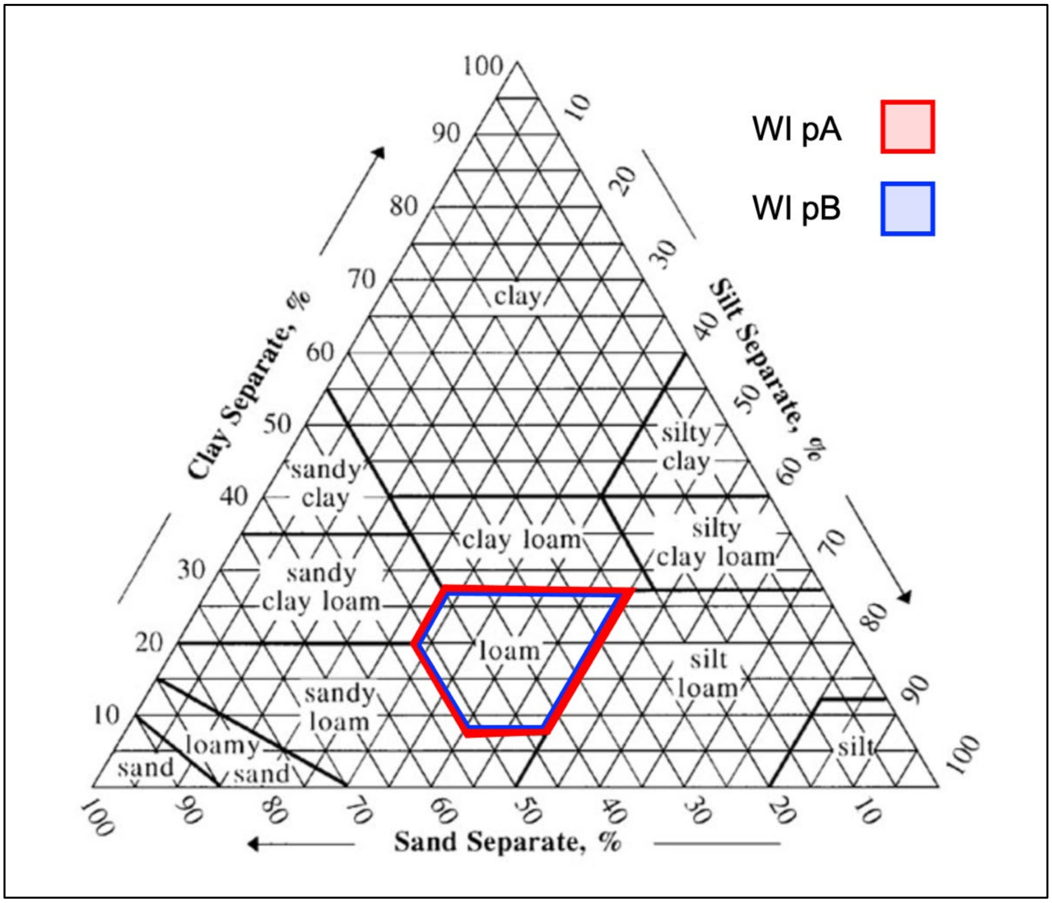


Figure 5.9 Average soil classifications of WI pA and pB calculated from MS2000 data; pA and pB are considered a loam. Adapted from Natural Resources Conservation Service (2021).

5.3.5 Rock Spur Vineyard

RS pA is classified as a loam with equal parts sand and fine sediments. RS pA shows a trend of decreasing sediment size from 10 to 30 cm followed by a coarsening of texture from 40 to 80 cm. Clay reaches a maximum abundance in the 20 cm sample before decreasing in the bottom of the soil profile. RS pB follows a similar trend as pA and is also considered a loam though it contains more sand than silt and clay. Both RS pA and pB textures listed above do not take into account the gravel fraction of the whole sample. If the gravel fraction were to be considered, pA and pB would be classified as a gravelly loam (Figure 5.10).

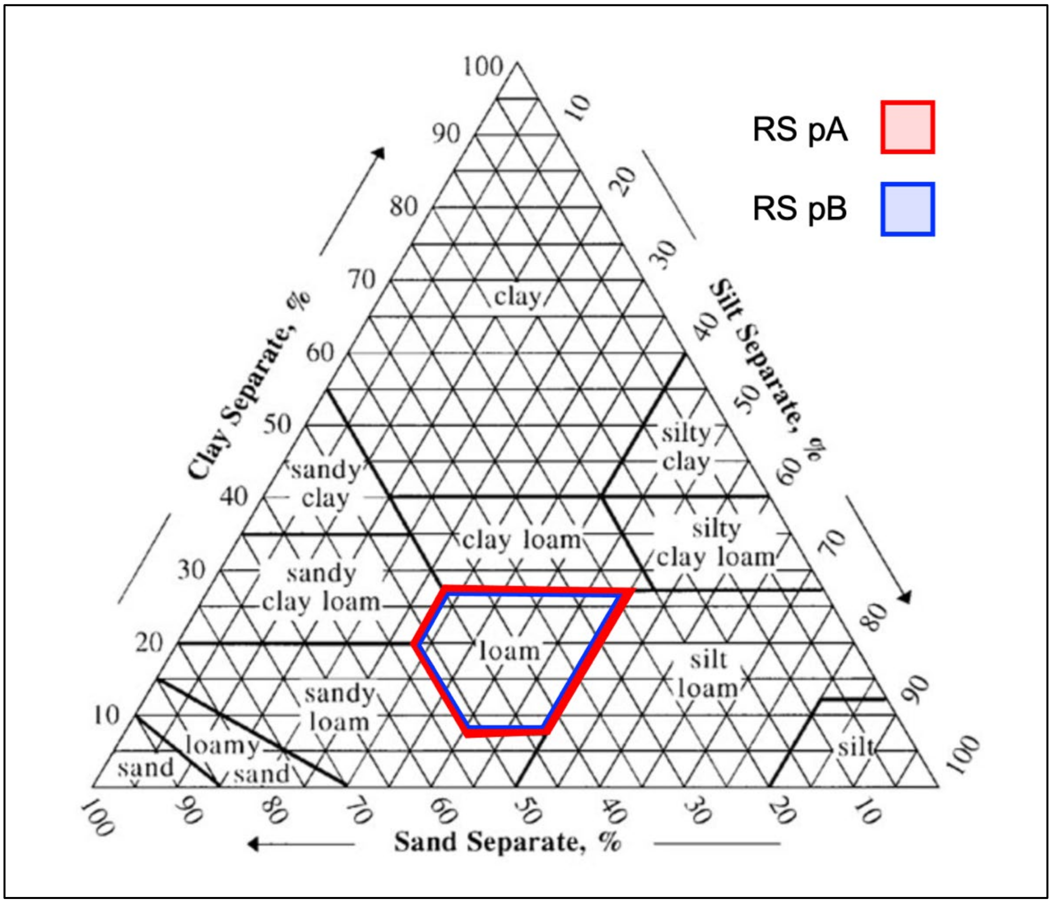


Figure 5.10 Average soil classifications of RS pA and pB calculated from MS2000 data; both considered a loam. Adapted from Natural Resources Conservation Service (2021).

5.3.6 Famici Vineyard

FM pA is classified as a sandy loam and shows an increase in silts and clays through 60 cm after which their abundances decrease from 70 to 100 cm. Silt and clay are most abundant in the 60 cm sample, and sand is most abundant in the 100 cm. FM pB is also considered a sandy loam though it contains more sand than FM pA. Unlike pA, pB demonstrates a clearer trend of fining with depth (Figure 5.11).

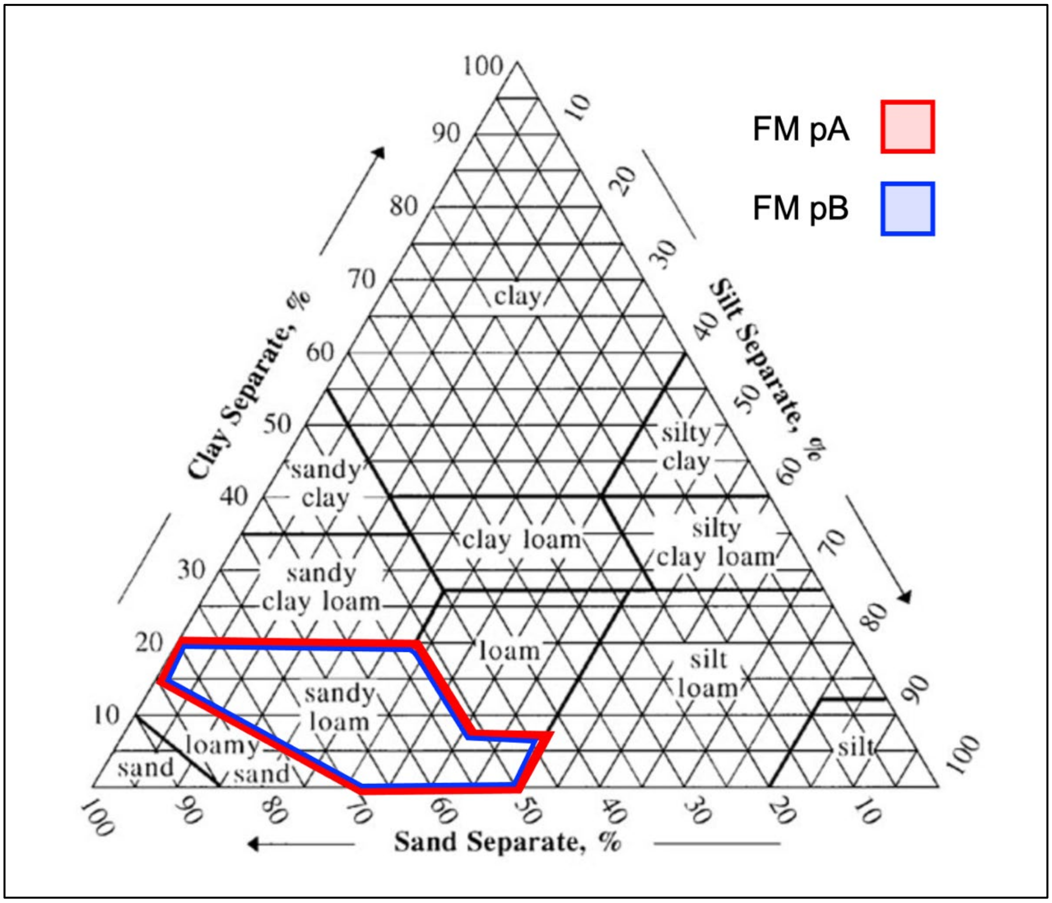


Figure 5.11 Average soil textures of FM pA and pB calculated from MS2000 data; both are considered a sandy loam. Adapted from Natural Resources Conservation Service (2021).

5.3.7 Bitner Vineyard

BT pA is classified as a sandy loam though it reaches a fraction of a percent of clay at 80 and 90 cm. Sand reaches its maximum abundance at 80 cm. BT pB shows no definitive pattern of fining or coarsening with depth. Instead, clay abundance is consistent in the 50, 80, and 90 cm samples. On average, pB is also classified as a sandy loam (Figure 5.12).

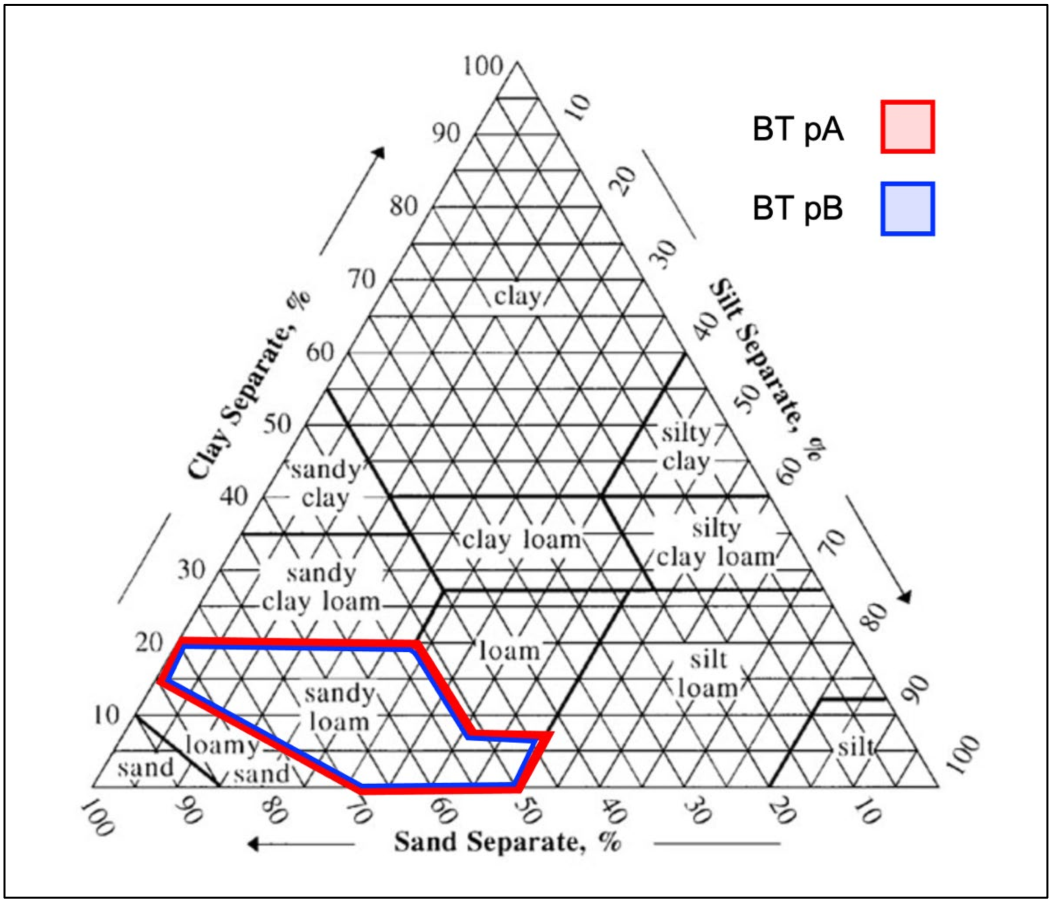


Figure 5.12 Average soil textures of BT pA and pB calculated from MS2000 data. Both pits are classified as a sandy loam. Adapted from Natural Resources Conservation Service (2021).

5.3.8 Scoria Vineyard

SC pA is classified as a sandy loam because it has near equal abundances of sand and fine sediments. Silt abundance in SC pA increases with depth from 10 cm to 90 cm, but sand increases in the last 10 cm of the soil profile. SC pB is also classified as a sandy loam. There is a similar increase in fine sediments, primarily silt, as depth increases. Similar to SC pA, sand increases at 90 cm in pB before dropping again at 100 cm (Figure 5.13).

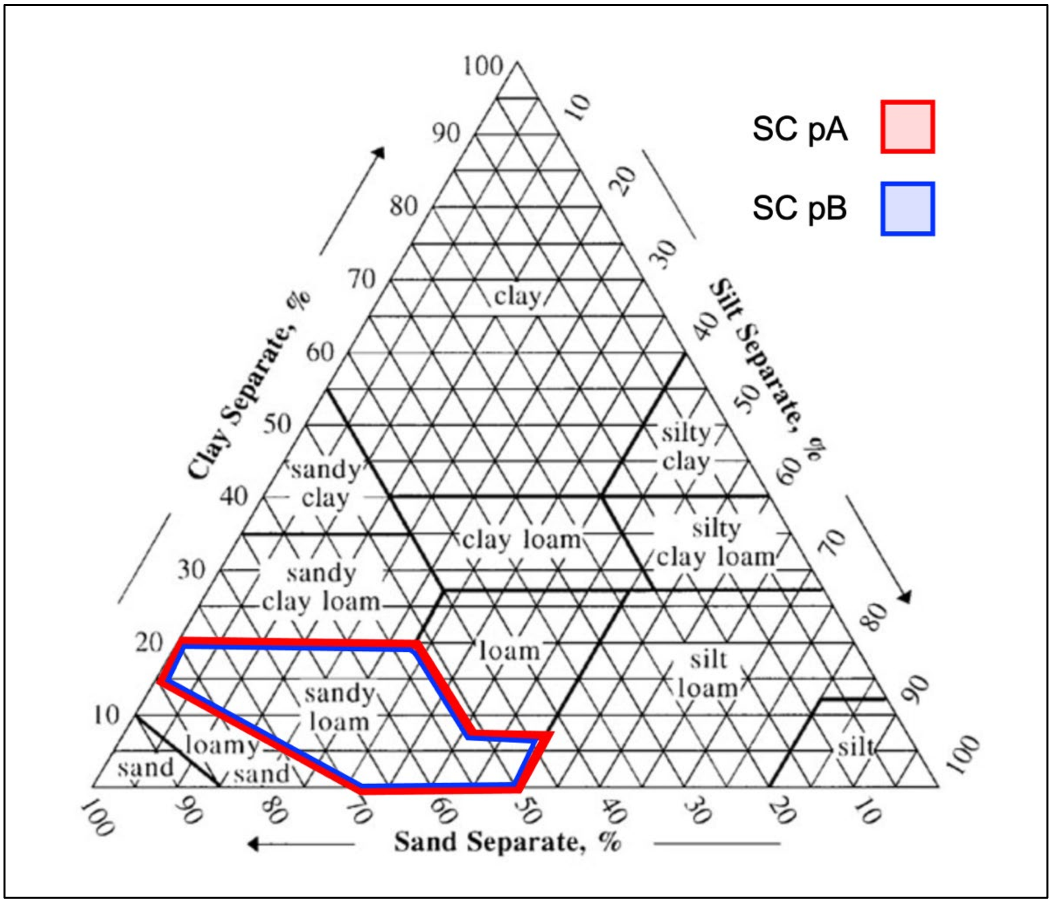


Figure 5.13 Average soil textures of SC pA and pB calculated from MS2000 data. Both pits are classified as a sandy loam. Adapted from Natural Resources Conservation Service (2021).

5.3.9 Polo Cove Vineyard

On average, PC pA is classified as a sandy loam bordering on loam as it contains near equal amounts of sand and fine sediments. PC pA shows two distinct texture grouping in the soil profile. The first 40 cm are predominantly composed of sand, while the last 30 cm are dominated by fine sediments. PC pB is also classified as a SL, but it contains greater than double the amount of sand than silt and clay. PC pB does not show texture groupings like those observed in pA. There is instead a fluctuation of decreasing and increasing sand abundance with depth (Figure 5.14).

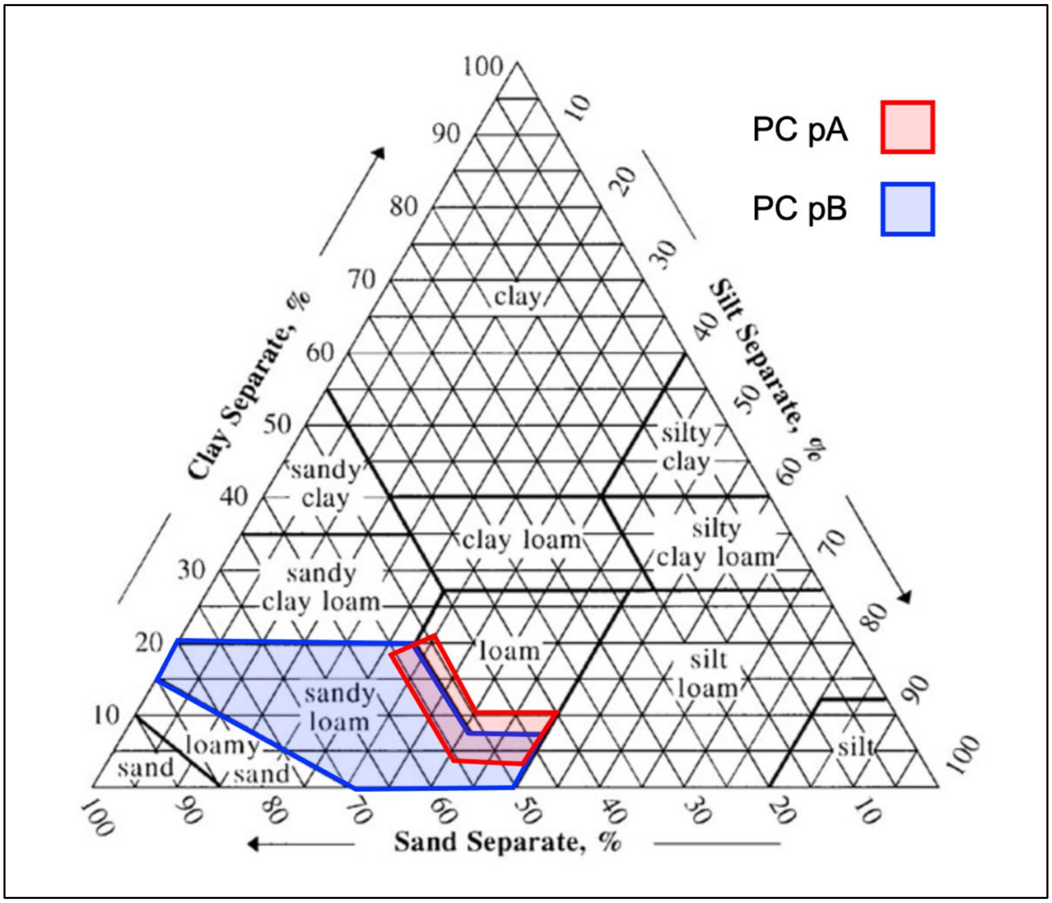


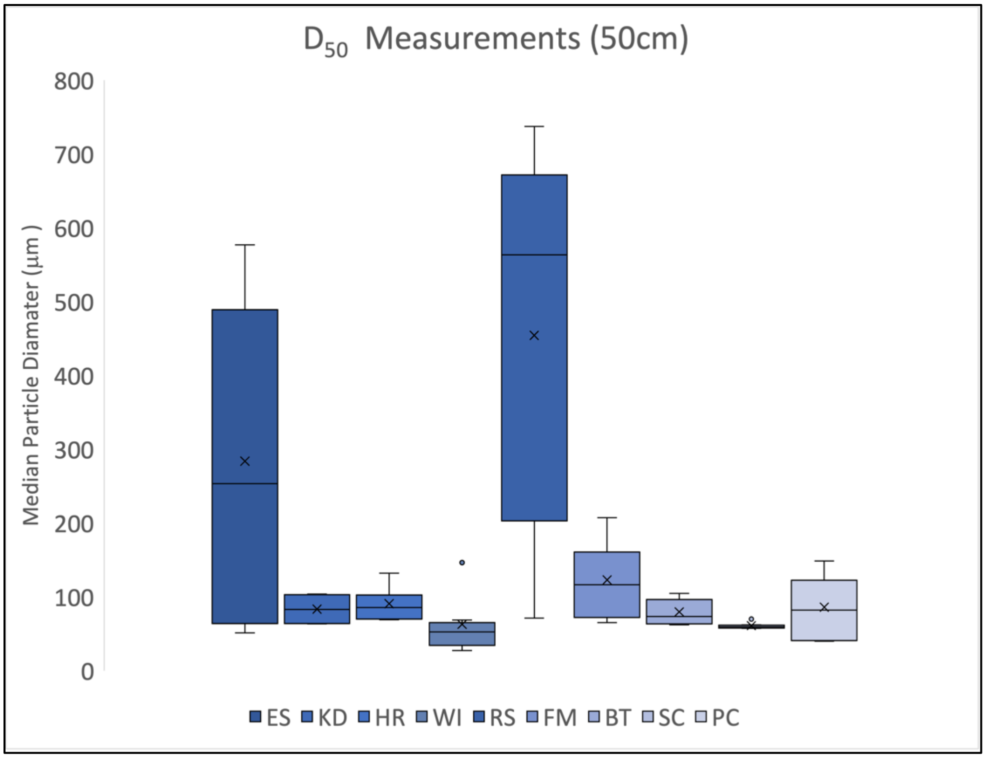
Figure 5.14 Average soil textures of PC pA and pB calculated from MS2000 data. PC pA boarders a sandy loam and loam, but pB is classified as a sandy loam. Adapted from Natural Resources Conservation Service (2021).

5.4 MS2000 Results - Multi-Vineyard Comparison of 50 cm D_{50}

The results presented support the assertion that soil heterogeneity exists within a vineyard landscape. To understand similarities and differences between all nine vineyards in this study, I compared the median grain size, D_{50}, from the 50 cm sample in the pA and pB of each vineyard. The 50 cm sample was selected to maintain a consistent depth for both pXRF and MS2000 multi-vineyard comparisons. As stated in 4.2.2, MS2000 analysis of a sample generates three separate readings and an average. Box and whisker plots were created using the pA and pB 50 cm MS2000 data to display the range and the average D_{50} value for each vineyard (Figure 5.15).

Among all vineyards, D_{50} particle sizes range from 27 µm to 737 µm, with the greatest range at ES and RS. SC shows the most consistency in D_{50} measurements with a range of only 12.70 µm and a standard deviation of 4.7 µm.

In addition to the box and whisker plots, I tested for any relationship between soil texture and vineyard elevation. I generated a scatterplot of vineyard average D_{50} values against elevation. Results show that average D_{50} has a weak inverse relationship with elevation (Figure 5.16). With the exception of ES and RS, the average D_{50} for all vineyards remains less than 150 µm – a very fine sand – for all vineyards. This is consistent with the soil hand textures taken for each vineyard.



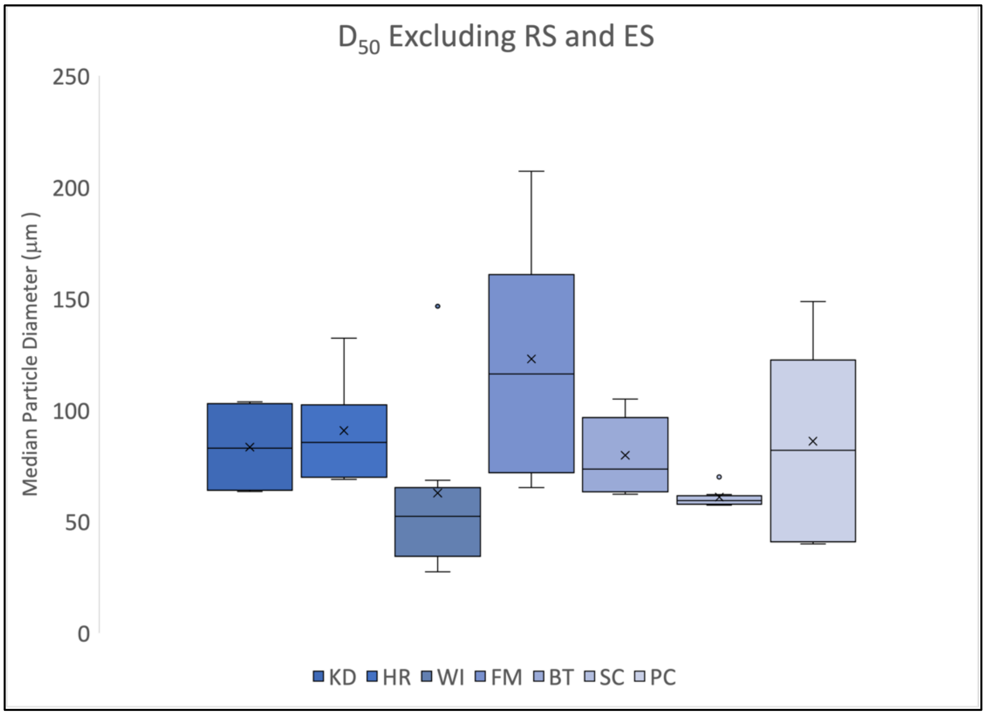


Figure 5.15 Box and whisker plots for D_{50} measurements from 50 cm samples of pA and pB from each vineyard. Due to their larger scale, RS and ES are removed from the bottom plot and the vertical axis is adjusted for a closer look at the remaining vineyards.

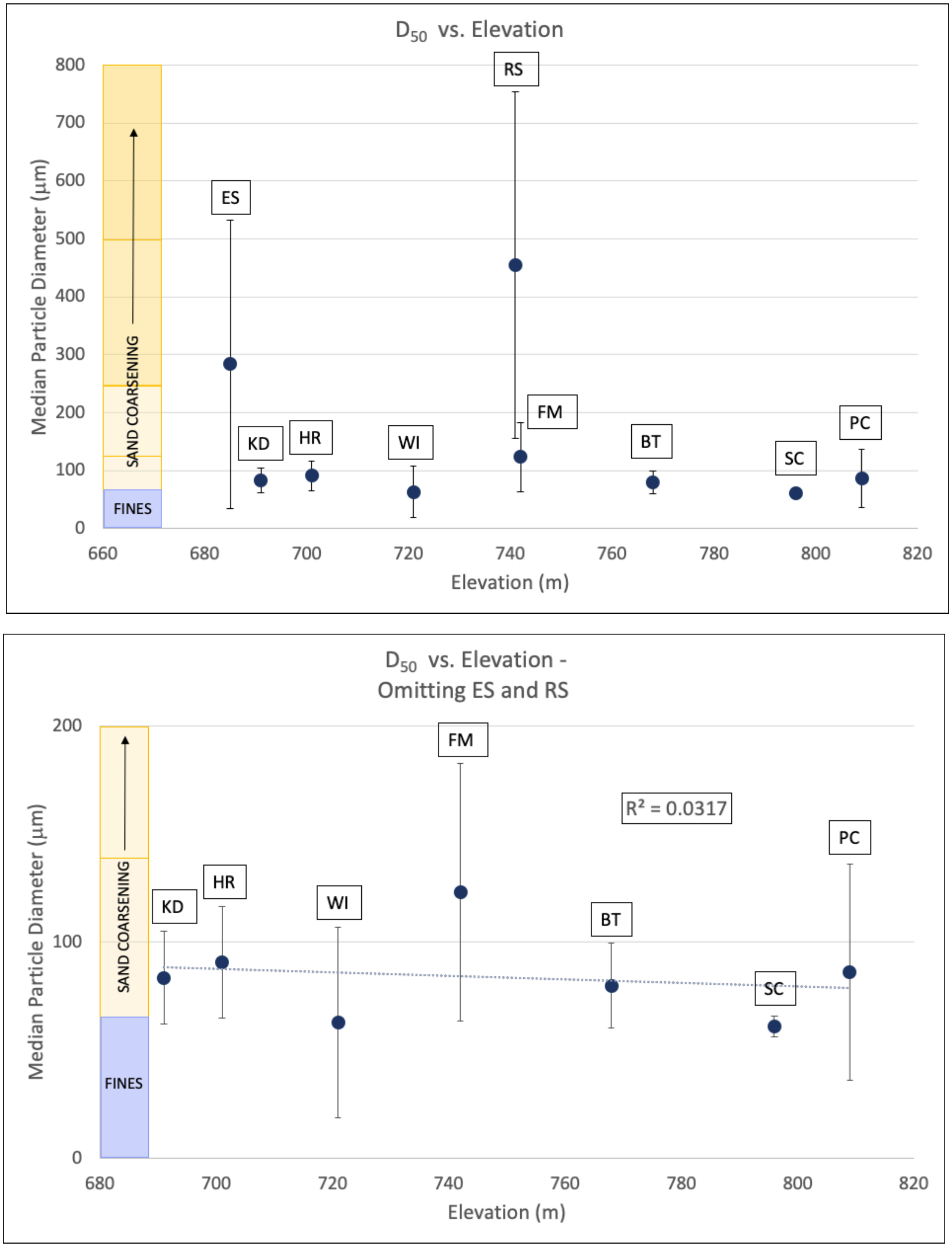


Figure 5.16 Scatterplot of vineyard D_{50} averages against elevation. Error bars show standard deviation. Particle size (µm) on the vertical axis and vineyard elevation on the horizontal axis. Grain size equivalents displayed within the chart along the vertical axis from fine sediments – silt and clay – through coarse sands.

CHAPTER SIX: DISCUSSION AND SUMMARY

6.1 Connecting Soil Textures and Regional Geologic History

The goal of this study is to identify and assess the similarities and differences of soil characteristics within and among vineyards in Sunnyslope. Field observations, hand texture, and MS2000 indicate the dominant grain size of the vineyard soils ranges from coarse silts to fine sands.

Two major outliers include the soils of the furthest downstream and upstream sites, ES and RS. These two vineyard sites are closest to the main channel of the Snake River and would have been in the direct flow path of the Bonneville Flood's maximum velocity at that site. The marked differences in soil characteristics at these two sites compared to those of sites farther away from the main flood path leads to an evaluation of the varied influences of the flood on soils in this study. (Figure 6.1)

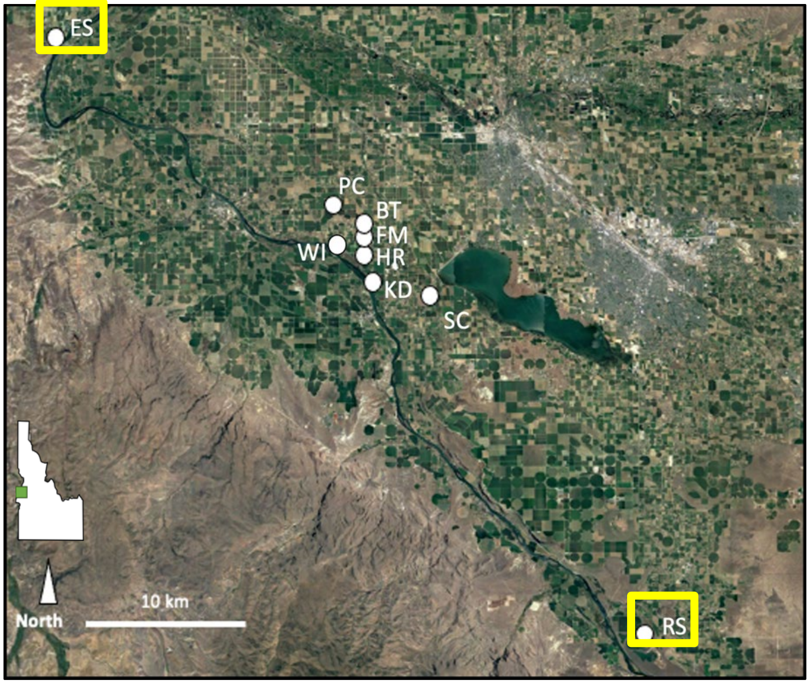


Figure 6.1 Location map of ES and RS in Sunnyslope shows the downstream location of ES in relationship to RS (Google Earth, 2021c)**.**

6.1.1 Reevaluating the influence of the Bonneville Flood on Sunnyslope soils

The Bonneville Flood, which originated in what is now modern northwestern Utah, burst through Red Rock Pass and flowed north into Idaho where it intercepted the Snake River at Pocatello. This Pleistocene megaflood, with a maximum discharge of 0.85 million m^3•sec^{-1}, eroded bedrock and transported clays, silts, sands, and boulders. The waters of the flood followed the path of the Snake River westward through southern Idaho and north into Hells Canyon. The stream power and transport-competence of the flood varied with channel constrictions along the canyon of the Snake River. Where the canyon was deep and narrow, the flow's power increased to erode and transport the larger, boulder-sized clasts. Where the canyon widened, the power diminished, and the flow was no longer able to carry the gravels, sands, and silts of its bedload and suspended load (O'Connor, 1993). Sediment size decreases with distance from the main channel and flow. Subsequent to the flood, sediment available for reworking and colluvial (i.e., downslope) and aeolian transport and deposition. These processes may explain the presence of Bonneville Flood sediment at elevations further away from the main channel.

Sunnyslope, both as a whole and in the selected vineyards, may help refine the influence of Bonneville Flood deposits on soil development. The maximum inundation elevation estimates set by Othberg (1992) and O'Connor (1993) (refer to Figure 3.1) and the presence of silts and fine sands suggest that ES, KD, HR, WI, RS, FM and BT are likely derived from either direct or reworked flood sediment identified at a few locations. Observations in this study show a distinct change in composition between sites near and distant from the channel.

The ES soil profile is comprised of fine to coarse lithic sands in locations of the vineyard nearest the Snake River. RS contains loose basalt sands, gravels, and boulders in nearly all of its soil profiles. The lithic sand lenses visible in ES can be explained by the vineyard's proximity to the Snake River and its location in the direct, high energy flow path of the Bonneville Flood. ES is located at the western distal edge of the Sunnyslope District in the Snake River Valley. The wide valley configuration at this site would have diminished the power of the flood, and the eventual calming of the waters would lead to the deposition of more silts and fine sands compared to RS, but the textures are still coarser than other vineyard sites farther away from the main flow.

Unlike ES, the presence of basaltic boulders, gravels, and sands at RS cannot be explained by channel widening. Instead, the unique profile is the direct result of the geographic location of vineyard. RS is located within a narrower, deeper reach of the flood's path on what is now referred to as *Walters Bar*. The waters in this reach were faster with more power to carry larger sediment such as coarse gravels, cobbles, and boulders eroded from upstream. Upon encountering a mid-channel obstruction, the volcanic neck remnant located southeast of vineyards current location, the flood waters lost power as they flowed around the obstruction and the larger sediment feel out of suspension or bedload. This mid-channel obstruction, a reminder of the regions' volcanic history, resulted in the formation of the Bonneville Flood-scale gravel bar that the vines are RS are rooted in (Figure 6.2 and 6.3).

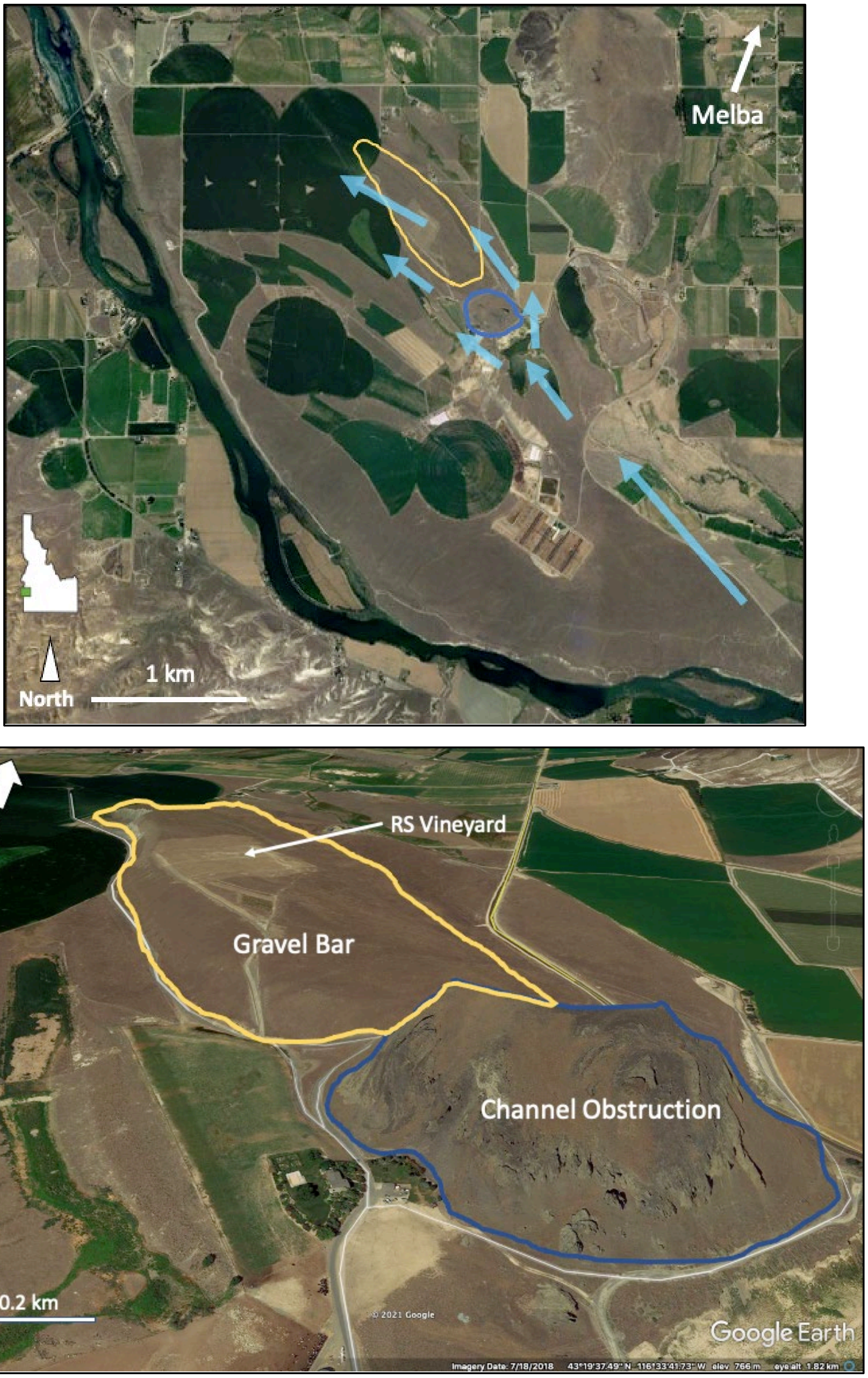


Figure 6.2 Aerial view of Walters Bar depicting the flow path of the flood (blue arrows), the channel obstruction, and the resulting gravel bar (top). Perspective view of the channel obstruction, gravel bar, and current vineyard location (bottom)(Google Earth, 2021).

Figure 6.3 **Foresets and rip up clasts are visible in this cross section view of the Rock Spur gravel bar.**

6.2 pXRF Trends Strengthen Connection Between Modern Vineyard Soils and Regional Geology and Geomorphic History

I selected Ca, Cu, Fe, K, Mn and Zn for focused examination and discussion because these nutrients are important to the development of the grapevine and maturation of the berries (Barlow, 2017; Goode, 2014; Hakimi-Rezaei, 2009; Sharma et al., 2015; White, 2015). In addition to their function as soil nutrients, these elements are also key components of a number of potential regional parent materials.

In all vineyards, Ca is the most abundant of the six elements. These high levels of Ca may be linked to Quaternary loess deposition in this arid terrain of the Western Snake River Valley. This silt-sized, windblown sediment is naturally rich in Ca and hand textures indicate the presence of this particle size in the vineyards' soil profiles (Pierce et al., 2011; Roehner, 2018). While elevated Ca levels can be attributed to the present loess, Ca abundances can also be tied to the pedogenic $CaCO_3$ encountered in a number of vineyards. The $CaCO_3$ found in these profiles is present in early and late stages of its formation.

Ca abundance is greatest at PC, the vineyard at the highest elevation, with a value of 65,921 ppm. With an elevation of 814 m, PC is located well above the bounds of the Bonneville Flood as reported by Othberg (1992). The vineyard is situated on a flat lying terrace surface which decreases the likelihood of erosion by seasonal flooding or colluvial transport. The average texture of the vineyard is a sandy loam which also indicates the presence of silt sized particles. Additionally, an impenetrable $CaCO_3$ layer was encountered in three soil pits of PC during field excavation. Therefore, the abundance of Ca at this site is consistent with undisrupted loess deposition and ongoing formation of pedogenic $CaCO_3$ as demonstrated by its geomorphic location and soil characteristics.

Fe is the second most abundant among all vineyards. The high levels of Fe are likely related to both the region's volcanic history and the Bonneville Flood. Basalt, an Fe-rich volcanic rock is present in two forms. The first form is seen in the soils of RS where profile faces are dominated by basaltic gravels. RS also has the greatest average abundance of Fe at 29,478 ppm. The second form is visible in the soils of SC where oxidized basaltic rock is strewn across the vineyard's surface and peppers select soil profile faces. The source of Fe in the remaining vineyards is less clear. One explanation is that the silts and sands of these remaining vineyards is composed of weathered basalt transported by fluvial or aeolian means.

Trends in elemental abundance with elevation can provide clues about parent material and soil development over time. Results suggest Ca has a positive correlation with elevation while Fe and Mn display a negative correlation with elevation. The increase of Ca with elevation may be attributed to the Bonneville Flood and post-Bonneville Flood reworking of sediment. The flood waters may have washed away older Ca-rich loess at lower elevations. Post-flood reworking of Bonneville Flood sediment and pre-Bonneville Flood loess are caused by regional winds and human land use. Particles that are too large to be carried by aeolian processes may instead be transported, generally downslope, as colluvium. Sediments on hillsides or locations upslope from vineyards can be transported downslope through surface flow and human activities such as tilling. Recent loess deposition may be washed away from surfaces where overland flow is more prevalent, as well as flooding occurring along the Snake River. In locations like PC, out of reach of the Flood and lying on a flat, terrace surface, pre-Bonneville Flood loess deposition may be better preserved. Therefore, as distance from the Snake River and elevation increase, Ca becomes more abundant.

While Ca abundance increases with elevation, Fe and Mn abundance generally decrease with elevation. As elevation and distance from the Snake River increase, the presence of this basaltic, flood deposited sediment becomes rapidly less pronounced. Regional basaltic volcanic activity and Bonneville Flood erosion and deposition have been overprinted by loess and modern agriculture. Therefore, as elevation and distance from the Snake River increase, loess and other sediment deposition (e.g., human reworking for agriculture) may hide traces of Fe and Mn abundance. For example, Fe-rich volcanic clasts produced by regional volcanism pepper the soil profiles of SC, but the deposition of silts and very fine sands has covered the volcanic bedrock below. Even in the case of RS, basaltic gravels are capped by at least 30 cm of loess deposition; it is only by observing the deeper soil profile that we see the increased Fe and Mn. Through our observations of vertical trends in pXRF data we can begin to tie together the modern chemical characteristics of the vineyards' soils with the previous and current geomorphology of the Snake River Valley.

6.3 MS2000 Comparisons Support Vineyard-Scale Heterogeneity and Role of Elevation in Grain Size Distribution

Multi-vineyard comparisons of D_{50} measurements help us understand the role of regional geomorphic events and elevation in textural differences. D_{50} averages (i.e., the average of D_{50} measurements in pits A and B) of ES and RS, which indicate the common particle size is consistent with a medium sand, are greater than the remaining seven vineyards. Bonneville Flood deposition of basalt gravels and lithic sands in RS and ES, respectively, is most likely responsible for the increase in medium and coarse sand-size particles in these two vineyards.

In the remaining seven vineyards, there is no discernible change in grain size with an increase or decrease in elevation. The D_{50} average grain sizes in these seven vineyards can be classified as either a coarse silt or very fine sand, and those textures can likely be explained by the recent regional deposition of loess. This is also consistent with pXRF Ca readings in these vineyards, a characteristic attributed to the prevalence of Ca-rich loess.

MS2000 texture analysis of individual vineyards provides a quantifiable assessment of sand, silt, and clay abundance of a sample; this objective measure makes comparing hand textures between and within vineyards less rigorous. Based on these results, we can conclude that soil profile textural heterogeneity is present within an individual vineyard as well as between vineyards, and can be exemplified by the results from ES and BT.

6.3.1 Emerald Slope

As noted earlier, ES pA is defined as a loamy sand while ES pB may be defined either as a loam or a silt loam. While both soil profiles coarsen with depth, pA contains

92% sand in the last 20 cm depth, while pB reaches a maximum of just 60% sand in its profile. pA is in the upstream block and only 285 m upslope from the Snake River, while pB is located in the downstream block, 375 m from the current surface of the Snake River.

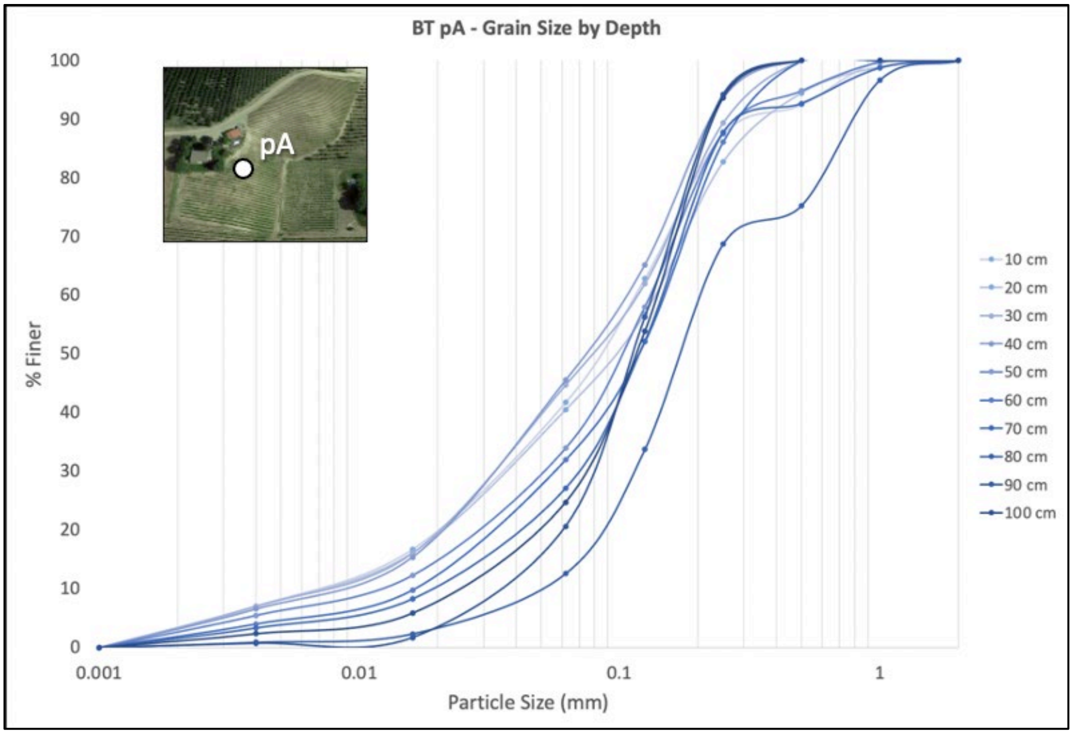
The downstream block of ES has a low-lying area resembling a drainage basin near its center that extends east to west with areas of higher elevation north and south, and pB lies north of this low elevation basin (Figure 6.4). Topography of the surrounding area suggests there is a connection between the downstream block and the drainage basin including the hillside located upslope from the vineyard. This drainage network has since been overprinted by more recent agricultural activity that has left an abandoned drainage channel in the downstream block. The upstream block slopes to the southeast toward the river.

With its proximity to the main channel of the Snake River (38 m away), the sites at ES would certainly have been in the direct flow of the Flood. The layered lithic sands visible in one of the five pits at the time of sample collection and the coarsening of texture with depth strengthen this assertion. Flood deposited sediment may have been washed away in the downstream block by the drainage that was once there.

Figure 6.4 Perspective view of ES downstream block displays the low-lying basin in the center of the vineyard and the flattened surface of the upslope agricultural field (Google Earth, 2021).

6.3.2 Bitner Vineyard

Soils of both pits at BT are classified as a sandy loam. BT pA shows a clear pattern of coarsening with depth and a declining trend in clay abundance approaching 0%, while BT pB remains consistent in size distribution at all depths (Figure 6.5). BT, unlike ES, is located on a single block of land with a southwest facing slope. Unlike pB, $CaCO_3$ nodules were observed in the top 50 cm of pA. The presence of $CaCO_3$ nodules, since not dissolved prior to MS2000 analysis (see section 4.2.2), could bias the texture and grain size of the sample, making sand-sized particles appear more abundant. This could explain the 12% difference in sand abundance between pA and pB. Additionally, pB is located at the bottom and confluence of two slope faces in the vineyard - through colluvial transport, material is likely being added to the soil profile of pB from upslope. With frequent to slow but continuous deposition, horizon development may be absent, and may also explain why pB maintains a consistent texture and exhibits no evidence of development from the surface to its maximum depth.



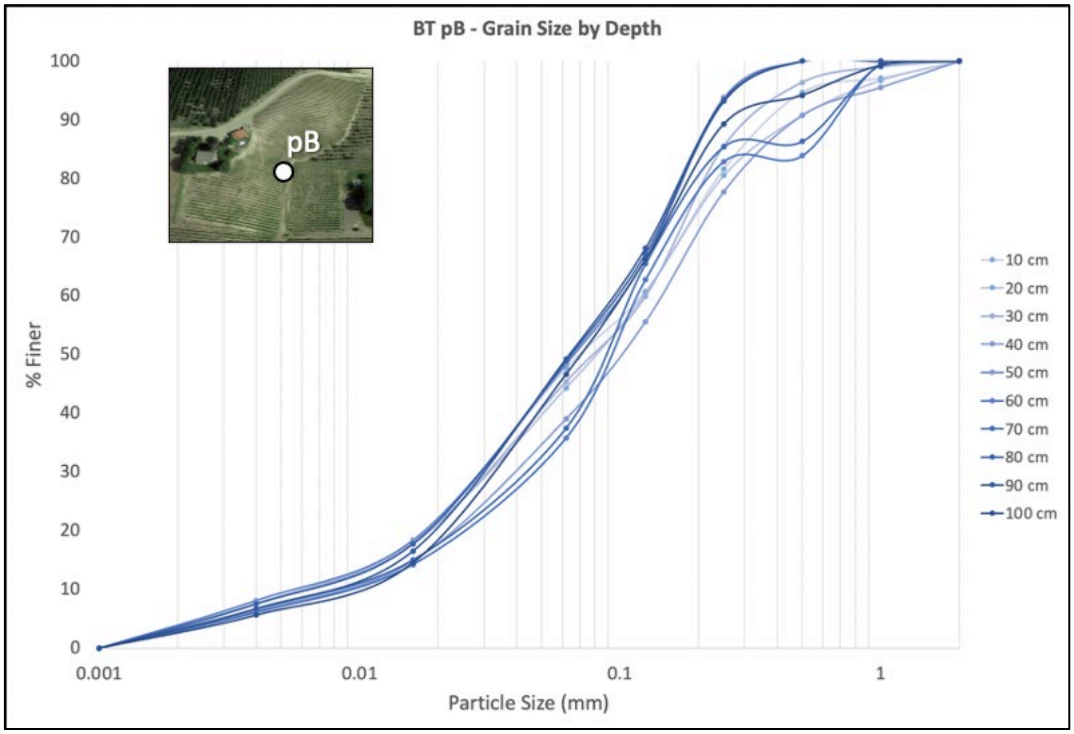


Figure 6.5 Grain size distribution charts for BT pA and pB and inset map displaying the upslope location of pA and the downslope location of pB.

6.4 Summary

The purpose of this study was to assess and summarize trends in soil chemistry and texture, expanding on the limited existing terroir research of vineyards in the Sunnyslope District in the SRVAVA. This study provides a more refined understanding of soil derivation and vineyard geologic history. Its relevance relies on the desire of current vineyard owners and potential vineyard developers to understand the geologic and historic contexts of their soil as part of the story of their vineyard and its unique terroir.

From the analyses, I show that the fingerprint of the Bonneville Flood is most visible in the chemical and textural data of ES and RS. I also show that post-flood sediment deposition and, most recently, agricultural reworking of the land has altered the soil profiles. The findings strengthen the assertion that heterogeneity exists in geochemical characteristics, soil parent and added material, and grain size distribution within and between vineyard landscapes. The knowledge of unique conditions that lie underfoot at each vineyard can be used in management practices and product promotion to help improve wine-grape quality and grow the region's recognition in the country's wine sphere.

Should terroir research continue in the Sunnyslope vineyards and greater SRVAVA, I suggest a finer resolution investigation of the soil's direct impact on vine water status and canopy density be considered. This could be coupled with research relating to vineyard soil organic chemistry, macronutrient availability, and irrigation practices that may be beneficial in the ongoing goal to produce the highest quality wine grapes.

REFERENCES

Abril-Hernández, J. M., Periáñez, R., O'Connor, J. E., & Garcia-Castellanos, D. (2018). Computational Fluid Dynamics simulations of the Late Pleistocene Lake Bonneville Flood. *Journal of Hydrology*, *561*(March), 1–15. https://doi.org/10.1016/j.jhydrol.2018.03.065

Barlow, M. L. (2017). *Soil-Grapevine Interactions: Insight from Verdicchio in the Marche wine region, Italy*. The University of Wisconsin-Milwaukee.

Becker, C. L. (2020). A 30-Year Agroclimatic Analysis of the Snake River Valley American Viticultural Area. *Boise State University Theses and Dissertations*, (August). Retrieved from http://scholarworks.boisestate.edu/td/1703/

Bierman, P., & Montgomery, D. (2014). Channels: Sediment Transport. In *Key Concepts in Geomorphology* (2nd ed., pp. 180–211). New York, NY: W.H. Freeman and Company.

Bigler, J. (2021). Periodic Table. Retrieved February 18, 2021, from https://www.mrbigler.com/misc/links.shtml

Birkeland, P. W., Machette, M. N., & Haller, K. M. (1991). Soils as a Tool for Applied Quaternary Geology. *Utah Geological and Mineral Survey*, 55–63.

Brady, N. C., & Weil, R. R. (2010). *Elements of the Nature and Properties of Soils*. (V. R. Anthony, Ed.) (Third). Upper Saddle River, New Jersey: Prentice Hall.

Burns, S. (2012). The Importance of Soil and Geology in Tasting Terroir with a Case History from the Willamette Valley, Oregon. https://doi.org/10.100/978-94-007-0464-0_6

Chen, Y., Zhang, Y., Tan, Z., & Zou, M. (2018). Comparison of particle-size results of sediments measured by the MS2000 and LS13320 laser diffraction particle-size analyzers. *Zhongshan Daxue Xuebao/Acta Scientiarum Natralium Universitatis Sunyatseni*, *57*(4), 48–55. https://doi.org/10.13471/j.cnki.acta.snus.2018.04.006

Cifre, J., Bota, J., Escalona, J. M., Medrano, H., & Flexas, J. (2005). Physiological tools for irrigation scheduling in grapevine (Vitis vinifera L.): An open gate to improve water-use efficiency? *Agriculture, Ecosystems and Environment*, *106*(2-3 SPEC. ISS.), 159–170. https://doi.org/10.1016/j.agee.2004.10.005

Cogswell, J. (2020). *pXRF Sample Analysis Protocol*.

Craig, N., Speakman, R. J., Popelka-Filcoff, R. S., Glascock, M. D., Robertson, J. D., Shackley, M. S., & Aldenderfer, M. S. (2007). Comparison of XRF and PXRF for analysis of archaeological obsidian from southern Perú. *Journal of Archaeological Science*, *34*(12), 2012–2024. https://doi.org/10.1016/j.jas.2007.01.015

Currey, D. R. (1982). *Lake Bonneville: Selected Features of Relevance to Neotectonic Analysis*.

Deloire, A., Vaudour, E., Carey, V., Bonnardot, V., & van Leeuwen, C. (2005). Grapevine Responses to Terroir: A Global Approach. *Journal International Des Sciences de La Vigne et Du Vin*, *39*(4), 149–162.

Duda, B. M., Weindorf, D. C., Chakraborty, S., Li, B., Man, T., Paulette, L., & Deb, S. (2017). Soil characterization across catenas via advanced proximal sensors. *Geoderma*, *298*, 78–91. Retrieved from http://dx.doi.org/10.1016/j.geoderma.2017.03.017

Evarts, R. C., Conrey, R. M., Fleck, R. J., & Hagstrum, J. T. (2009). Volcanoes to Vineyards: Geologic Field Trips through the Dynamic Landscape of the Pacific Northwest. *Volcanoes to Vineyards: Geologic Field Trips through the Dynamic Landscape of the Pacifi c Northwest: Geological Society of America Field Guide 15*, *015*(01), 253–270. https://doi.org/10.1130/2009.fl

Fayolle, E., Follain, S., Marchal, P., Chéry, P., & Colin, F. (2019). Identification of environmental factors controlling wine quality: A case study in Saint-Emilion Grand Cru appellation, France. *Science of the Total Environment*, *694*. https://doi.org/10.1016/j.scitotenv.2019.133718

Gavioli, A., de Souza, E. G., Bazzi, C. L., Schenatto, K., & Betzek, N. M. (2019). Identification of management zones in precision agriculture: An evaluation of alternative cluster analysis methods. *Biosystems Engineering*. https://doi.org/10.1016/j.biosystemseng.2019.02.019

Gilbert, G. K. (1890). *Lake Bonneville*. United States Geological Survey Monograph 1.

Gillerman, V. S., Wilkins, D., Shellie, K., & Bitner, R. (2006). Geology and wine 11. Terroir of the Western Snake River Plain, Idaho, USA. *Geoscience Canada*, *33*(1), 37–48.

Gladstones, J. (2011). *Wine, Terroir and Climate Change*. Kent Town, South Australia: Wakefield Press.

Goode, J. (2014). *The Science of Wine* (2nd ed.). London: Octopus Publishing.

Goode, J. (2020). *The Goode Guide to Wine: A Manifesto of Sorts*. University of California Press.

Google Earth. (2021a). Google Earth location of Emerald Slope Vineyard. Retrieved from https://www.google.com/maps/@43.7323135,-117.0767604,490m/data=!3m1!1e3

Google Earth. (2021b). Google Earth location of Rock Spur Vineyard. Retrieved from https://www.google.com/maps/@43.3267357,-116.5729428,2561m/data=!3m1!1e3

Google Earth. (2021c). Google Earth location of Sunnyslope District SW Idaho. Retrieved from https://www.google.com/maps/@43.5973753,-116.8335201,41198m/data=!3m1!1e3

Haddix, M. L., Gregorich, E. G., Helgason, B. L., Janzen, H., Ellert, B. H., & Francesca Cotrufo, M. (2020). Climate, carbon content, and soil texture control the independent formation and persistence of particulate and mineral-associated organic matter in soil. *Geoderma*, *363*(January). https://doi.org/10.1016/j.geoderma.2019.114160

Hakimi-Rezaei, J. (2009). *Delineation of within-site terroir effects using soil and vine water measurement. Investigation of Cabernet Franc*. Brock University. Retrieved from http://dr.library.brocku.ca/handle/10464/2886

Hall, A. (2018). Remote sensing applications for viticultural terroir analysis. *Elements*, *14*(3), 185–190. https://doi.org/10.2138/gselements.14.3.185

Haynes, S. J. (1999). Geology and Wine 1. Concept of Terroir and Role of Geology. *Geoscience Canada*, *30*(4), 190–194.

Irimia, L. M., Patriche, C. V., & Murariu, O. C. (2018). The impact of climate change on viticultural potential and wine grape varieties of a temperate wine growing region. *Applied Ecology and Environmental Research*, *16*(3), 2663–2680. https://doi.org/10.15666/aeer/1603_26632680

Jenny, H. (1941). *Factors of Soil Formation: A system of Quantative Pedology*. New York, NY: Dover Publications, Inc.

Jones, G. V. (2018). The Climate Component of Terroir. *Elements*, *14*(3), 167–172. https://doi.org/10.2138/gselements.14.3.167

Keller, M. (2015). *The Science of Grapevines: Anatomy and Physiology* (2nd ed.). London, England: Elsevier.

Klodd, A. E., Eissenstat, D. M., Wolf, T. K., & Centinari, M. (2016). Coping with cover crop competition in mature grapevines. *Plant and Soil*, *400*(1–2). https://doi.org/10.1007/s11104-015-2748-2

Koundouras, S., van Leeuwen, C., Seguin, G., & Glories, Y. (1999). Influence of water status on vine vegetative growth, berry ripening and wine characteristics in Mediterranean Zone (example of Nemea, Greece, variety Saint-George, 1997). *Journal International Des Sciences de La Vigne et Du Vin*, *33*(4), 149–160. https://doi.org/10.20870/oeno-one.1999.33.4.1020

Lanari, V., Palliotti, A., Sabbatini, P., Howell, G. S., & Silvestroni, O. (2014). Optimizing deficit irrigation strategies to manage vine performance and fruit composition of field-grown “Sangiovese” (Vitis vinifera L.) grapevines. *Scientia Horticulturae*, *179*, 239–247. https://doi.org/10.1016/j.scienta.2014.09.032

van Leeuwen, C., & Seguin, G. (2006). The Concept of Terroir in Viticulture. *Journal of Wine Research*, *17*(1), 1–10. https://doi.org/10.1080/09571260600633135

van Leeuwen, C., Friant, P., Choné, X., Tregoat, O., Koundouras, S., & Dubourdieu, D. (2004). Influence of Climate, Soil, and Cultivar on Terroir. *American Journal of Enology and Viticulture*, *55*(3), 207–217.

van Leeuwen, C., Tregoat, O., Choné, X., Bois, B., Pernet, D., & Gaudillére, J. P. (2009). Vine water status is a key factor in grape ripening and vintage quality for red bordeaux wine. How can it be assessed for vineyard management purposes? *Journal International Des Sciences de La Vigne et Du Vin*, *43*(3), 121–134.

Leibar, U., Pascual, I., Morales, F., Aizpurua, A., & Unamunzaga, O. (2017). Grape yield and quality responses to simulated year 2100 expected climatic conditions under different soil textures. *Journal of the Science of Food and Agriculture*, *97*(8). https://doi.org/10.1002/jsfa.8086

MacNeil, K. (2015). *The Wine Bible*. Workman Publishing.

Meinert, L. D. (2018). The Science of Terroir. *Elements*, *14*(3), 153–158. https://doi.org/10.2138/gselements.14.3.153

Mejía-Piña, K. G., Huerta-Diaz, M. A., & González-Yajimovich, O. (2016). Calibration of handheld X-ray fluorescence (XRF) equipment for optimum determination of elemental concentrations in sediment samples. *Talanta*, *161*, 359–367. https://doi.org/10.1016/j.talanta.2016.08.066

Metzger, M. J., Bunce, R. G. H., Jongman, R. H. G., Mücher, C. A., & Watkins, J. W. (2005). A climatic stratification of the environment of Europe. *Global Ecology and Biogeography*, *14*(6), 549–563. https://doi.org/10.1111/j.1466-822X.2005.00190.x

Mozell, M. R., & Thach, L. (2014). The impact of climate change on the global wine industry: Challenges & solutions. *Wine Economics and Policy*, *3*(2), 81–89. https://doi.org/10.1016/j.wep.2014.08.001

Natural Resources Conservation Service. (2021). Soil Texture Calculator.

O'Connor, J. E. (1993). Hydrology, Hydraulics, and Geomorphology of the Bonneville Flood. *Geological Society of America Special Paper*, (274).

O'Connor, J. E. (2016). The Bonneville Flood—A veritable débâcle: Chapter 6. In *Developments in earth surface processes, vol. 20* (pp. 105–126). Elsevier. https://doi.org/10.1016/B978-0-444-63590-7.00006-8

Othberg, K. L. (1992). *Geologic Map of the Boise Valley and Adjoining Area, Western Snake River Plain, Idaho.*

Othberg, K. L., & Gillerman, V. S. (1994). *Field Trip Guide to the Geology of the Boise Valley*. Moscow, Idaho: Idaho Geological Survey.

Pierce, K. L., Muhs, D. R., Fosberg, M. A., Mahan, S. A., Rosenbaum, J. G., Licciardi, J. M., & Pavich, M. J. (2011). A loess – paleosol record of climate and glacial history over the past two glacial – interglacial cycles (~ 150 ka), southern Jackson Hole , Wyoming. *Quaternary Research*, *76*(1), 119–141. https://doi.org/10.1016/j.yqres.2011.03.006

Pitcavage, E. M. (2011). Variations in the soil properties of the premier vineyards of the Columbia Basin : implications for terroir.

Priori, S., Martini, E., Andrenelli, M. C., Magini, S., Agnelli, A. E., Bucelli, P., et al. (2013). Improving Wine Quality through Harvest Zoning and Combined Use of Remote and Soil Proximal Sensing. *Soil Science Society of America Journal*, *77*(4), 1338. https://doi.org/10.2136/sssaj2012.0376

Puckette, M. (20215). *Wine Folly: The Essential Guide to Wine*. Avery.

Roehner, C. (2018). *Post-Fire Variation in Aeolian Deposition in the Northern Great Basin*. Boise State University. https://doi.org/10.18122/td/1506/boisestate

Rouillon, M., Taylor, M. P., & Dong, C. (2017). Reducing risk and increasing confidence of decision making at a lower cost: In-situ pXRF assessment of metal-contaminated sites. *Environmental Pollution*, *229*, 780–789. https://doi.org/10.1016/j.envpol.2017.06.020

Santillán, D., Iglesias, A., La Jeunesse, I., Garrote, L., & Sotes, V. (2019). Vineyards in transition : A global assessment of the adaptation needs of grape producing regions under climate change. *Science of the Total Environment*, *657*, 839–852. https://doi.org/10.1016/j.scitotenv.2018.12.079

Seguin, G. (1986). "Terroirs" and pedology of vine growing. *Experientia*, *42*, 861–873.

Sharma, A., Weindorf, D. C., Wang, D. D., & Chakraborty, S. (2015). Characterizing soils via portable X-ray fluorescence spectrometer: 4. Cation exchange capacity (CEC). *Geoderma*, *239*, 130–134. Retrieved from http://dx.doi.org/10.1016/j.geoderma.2014.10.001 0016-7061

Sperazza, M., Moore, J. N., & Hendrix, M. S. (2004). High-Resolution Particle Size Analysis of Naturally Occurring Very Fine-Grained Sediment Through Laser Diffractometry. *Journal of Sedimentary Research*, *74*(5), 736–743.

Turner, M. G., & Gardner, R. H. (2015). *Landscape Ecology in Theory and Practice*. New York: Springer-Verlag. https://doi.org/10.1007/978-1-4939-2794-4_2

United States Department of Agriculture Natural Resources Conservation Service. (2019). Web Soil Survey. Retrieved from https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm

University of California Davis, C. S. R. L., University of California, D. of A. and N. R., & Natural Resources Conservation Service. (2019). SoilWeb.

White, R. E. (2015). *Understanding Vineyard Soils* (2nd ed.). Oxford University Press.

Wilkins, D., Busacca, A., & Northrup, C. J. (2015). Investigation of Terroir Factors, Sunnyslope District, Snake River Valley AVA, 1–5.

Wilson, J. E. (1999). *Terroir: The Role of Geology, Climate, and Culture in the Making of French Wines*. Berkley, Califronia: University of California Press.

Zhou, L., Wang, Y., Li, L., Ji, W., Hou, X., Liu, D., et al. (2018). Application of stratified sampling method in core plug sampling. *Petroleum Geology & Experiment*, *40*(2), 274–279.

APPENDIX A

Soil Pit Location Maps

A.1 Emerald Slope

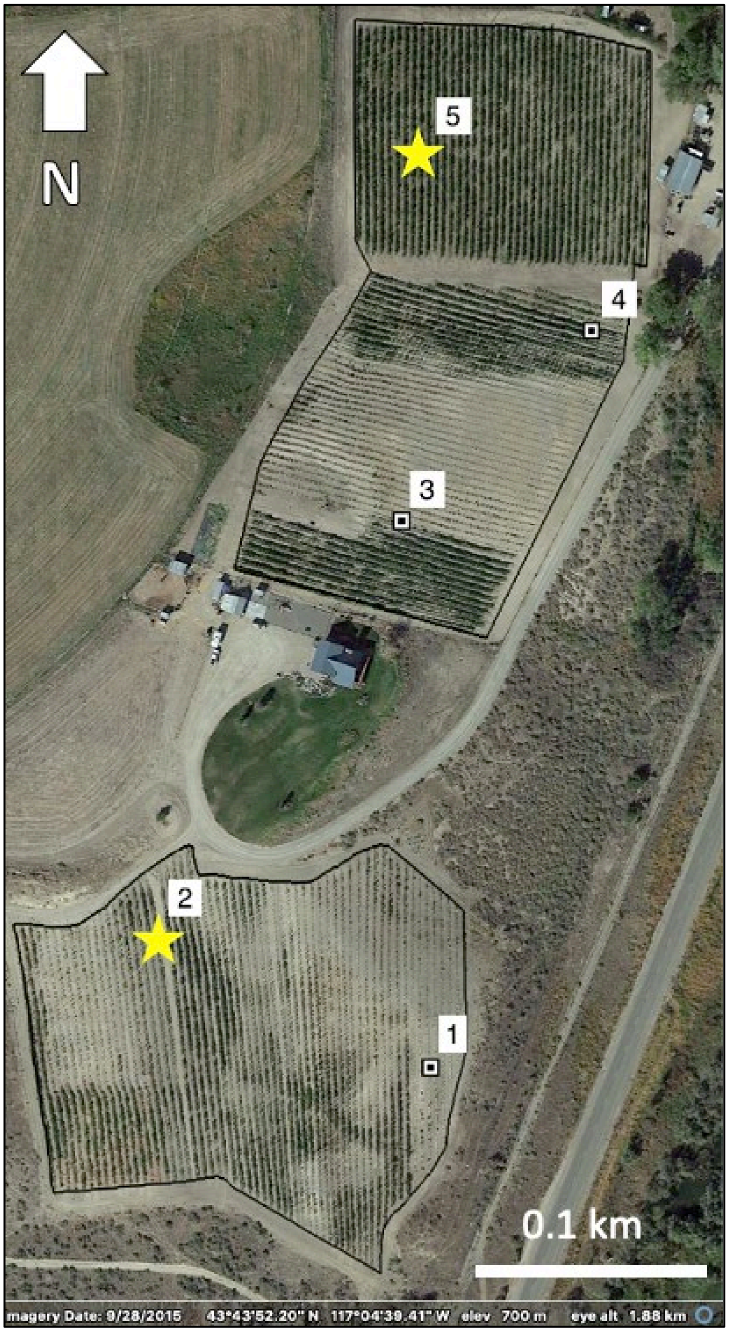


Figure A.1 True color site map of ES. Pits selected for pXRF and MS2000 analysis are designated (starred). Adapted from (Google Earth, 2021).

A.2 Kindred

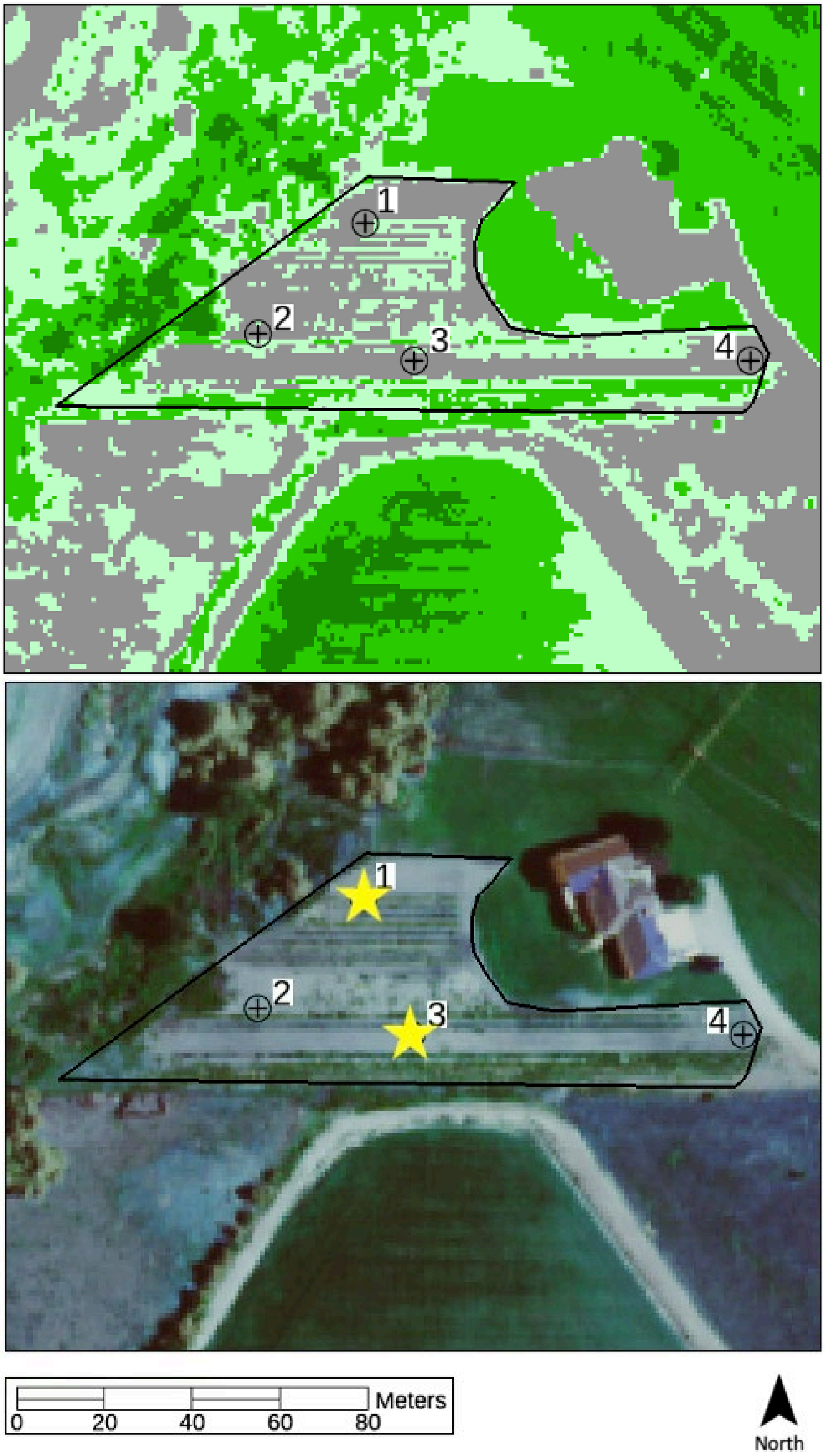


Figure A.2 NDVI (top) and true color (bottom) site maps of KD. Pits selected for pXRF and MS2000 analysis shown in true color (starred).

A.3 Hat Ranch

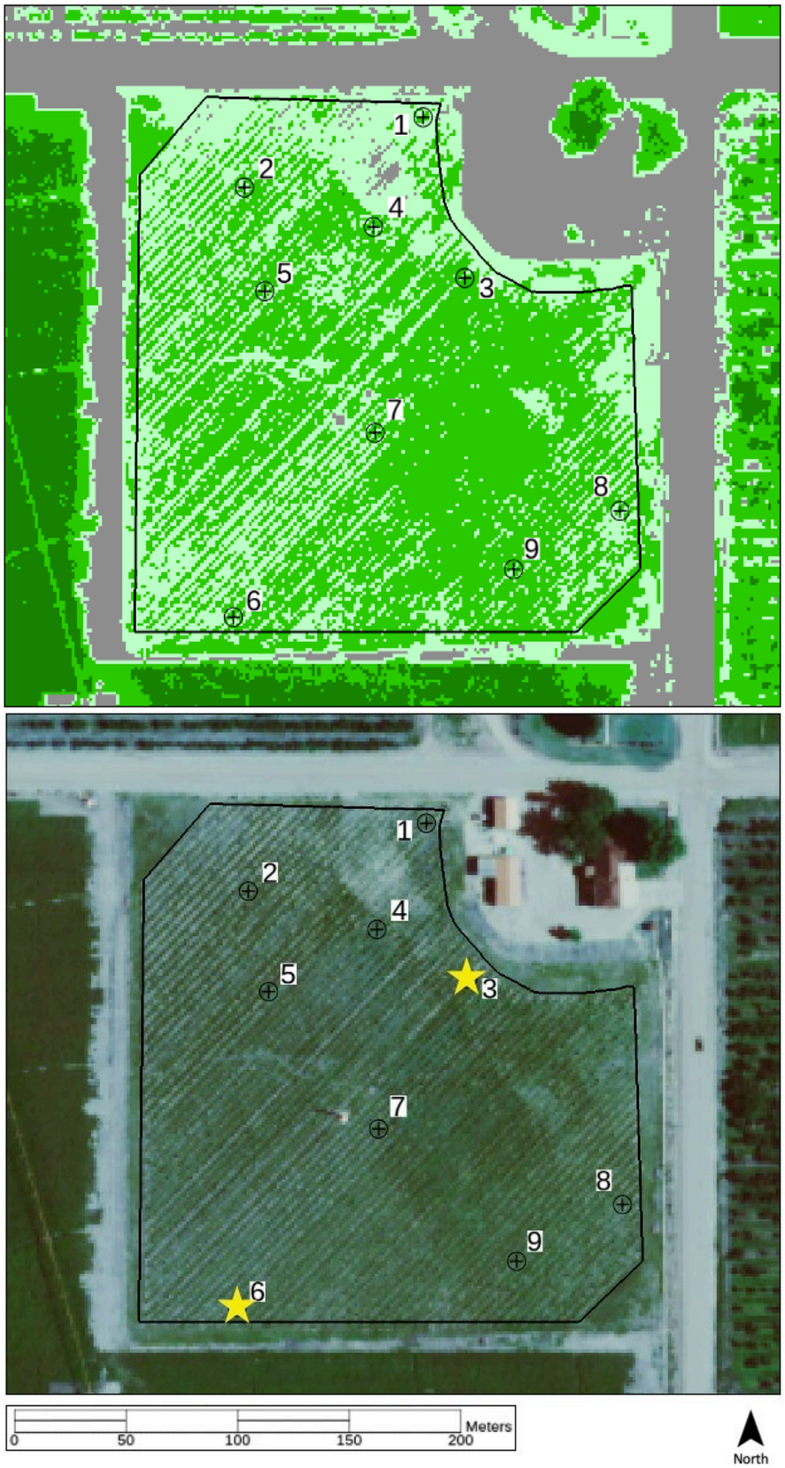


Figure A.3 NDVI (top) and true color (bottom) site maps of HR. Pits selected for pXRF and MS2000 analysis shown in true color (starred).

A.4 Williamson

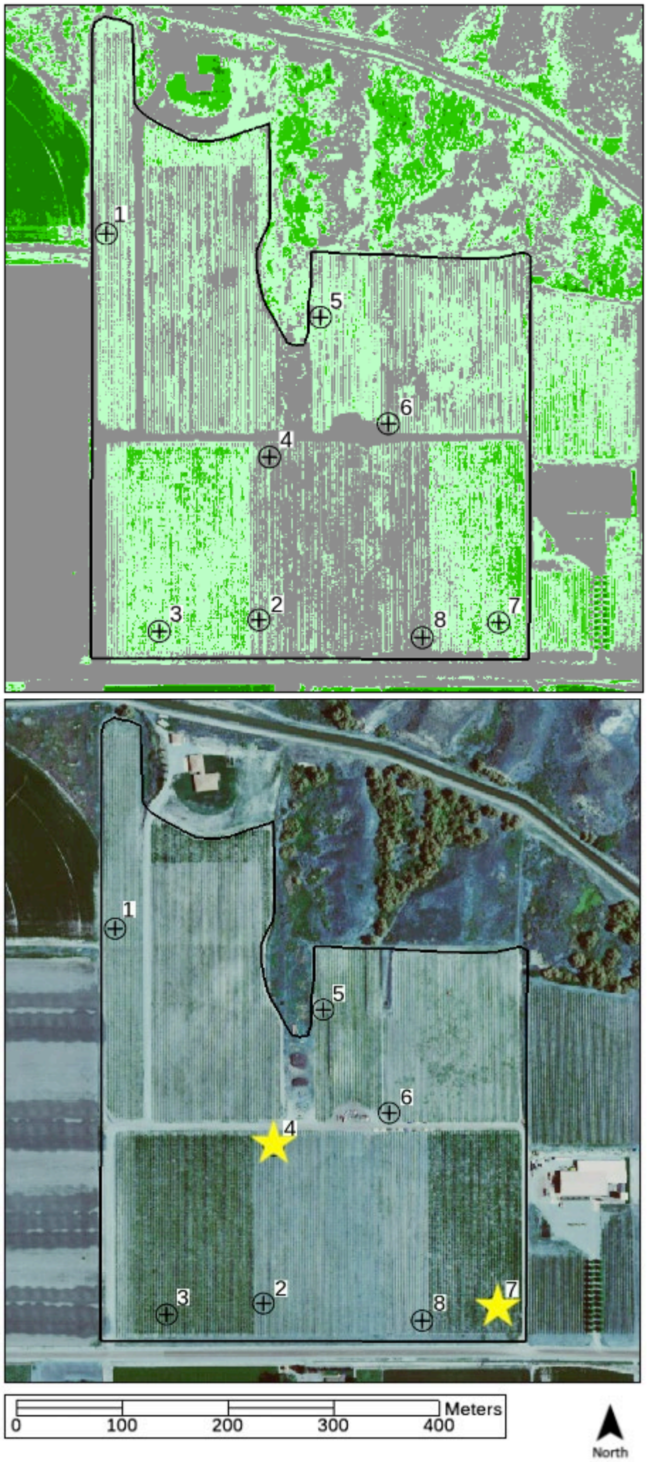


Figure A.4 NDVI (top) and true color (bottom) site maps of WI. Pits selected for pXRF and MS2000 analysis shown in true color (starred).

A.5 Rock Spur

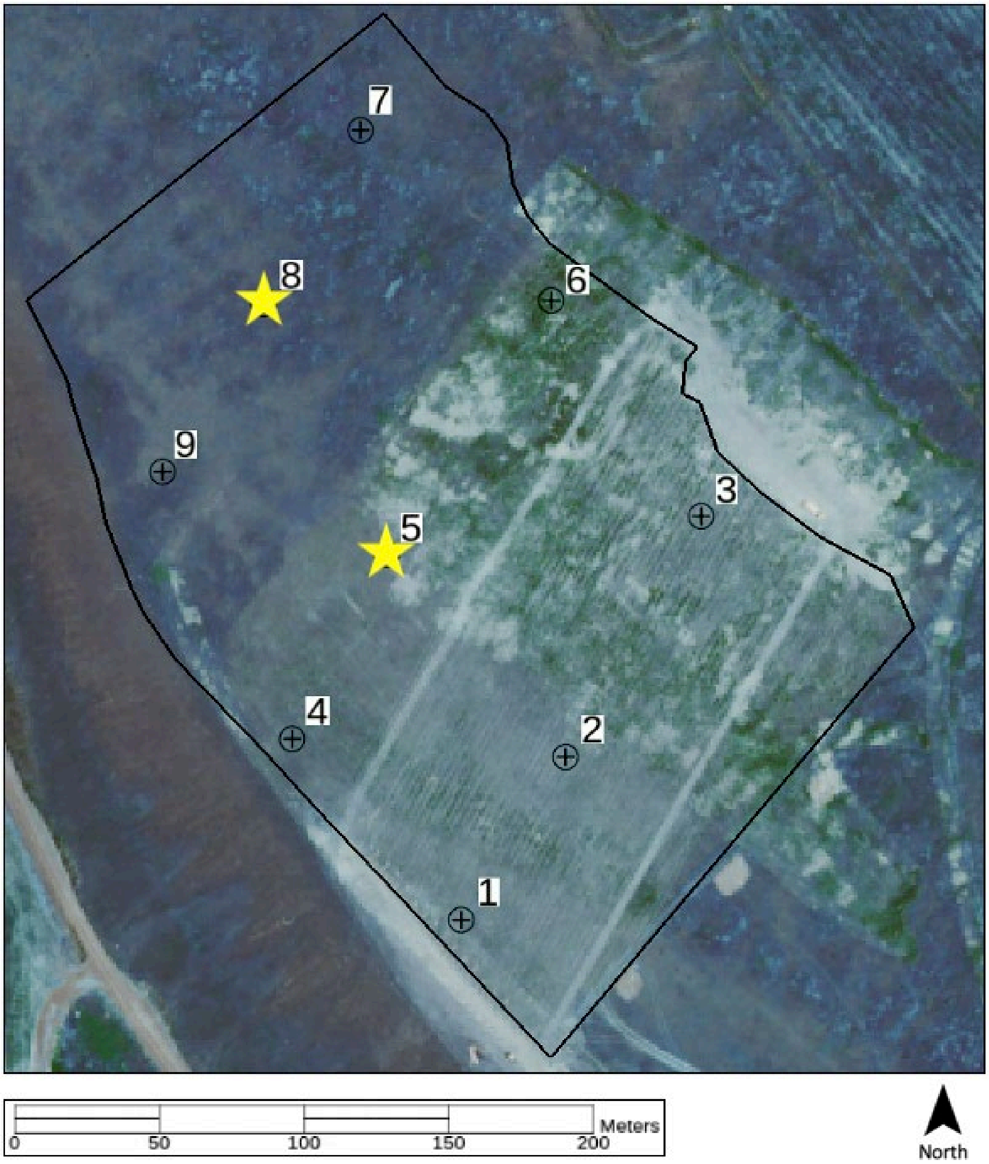


Figure A.5 True color site map of RS showing the pits selected for pXRF and MS2000 analysis (starred).

A.6 Famici

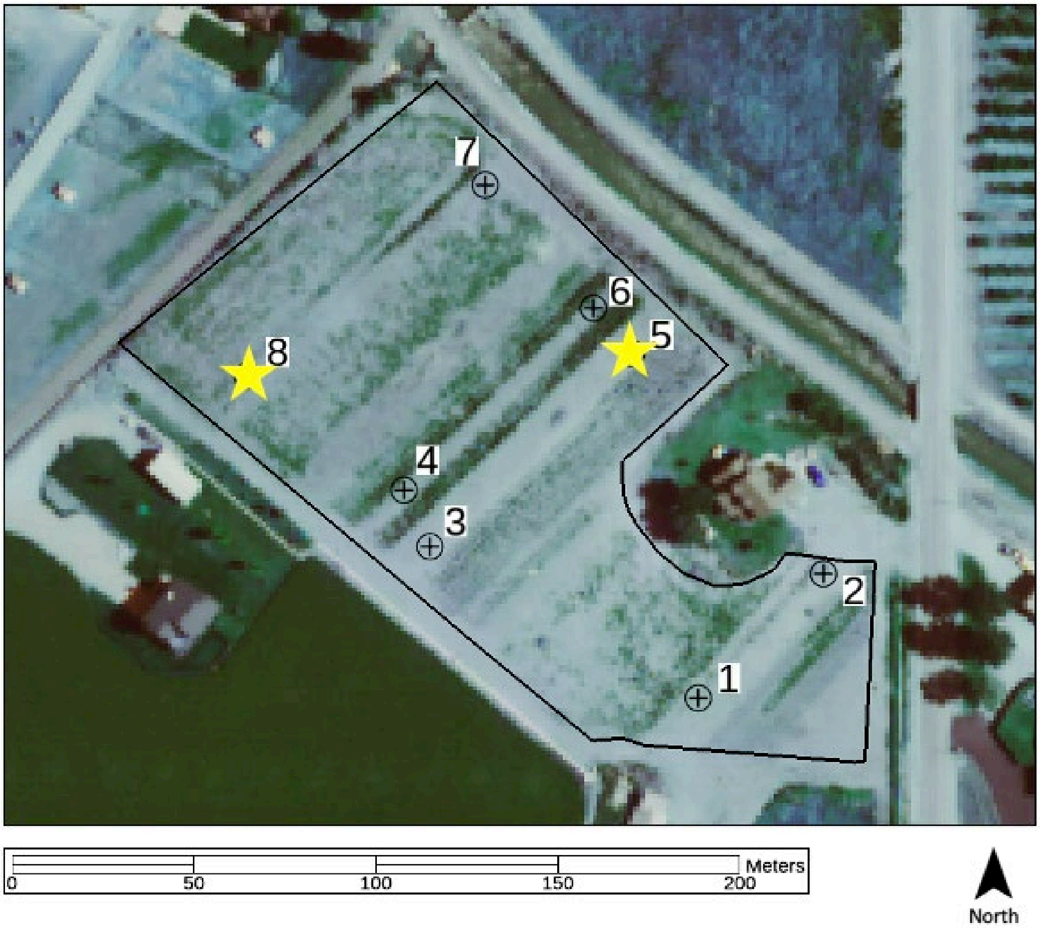


Figure A.6 True color site maps of FM showing the pits selected for pXRF and MS2000 analysis (starred).

A.7 Bitner

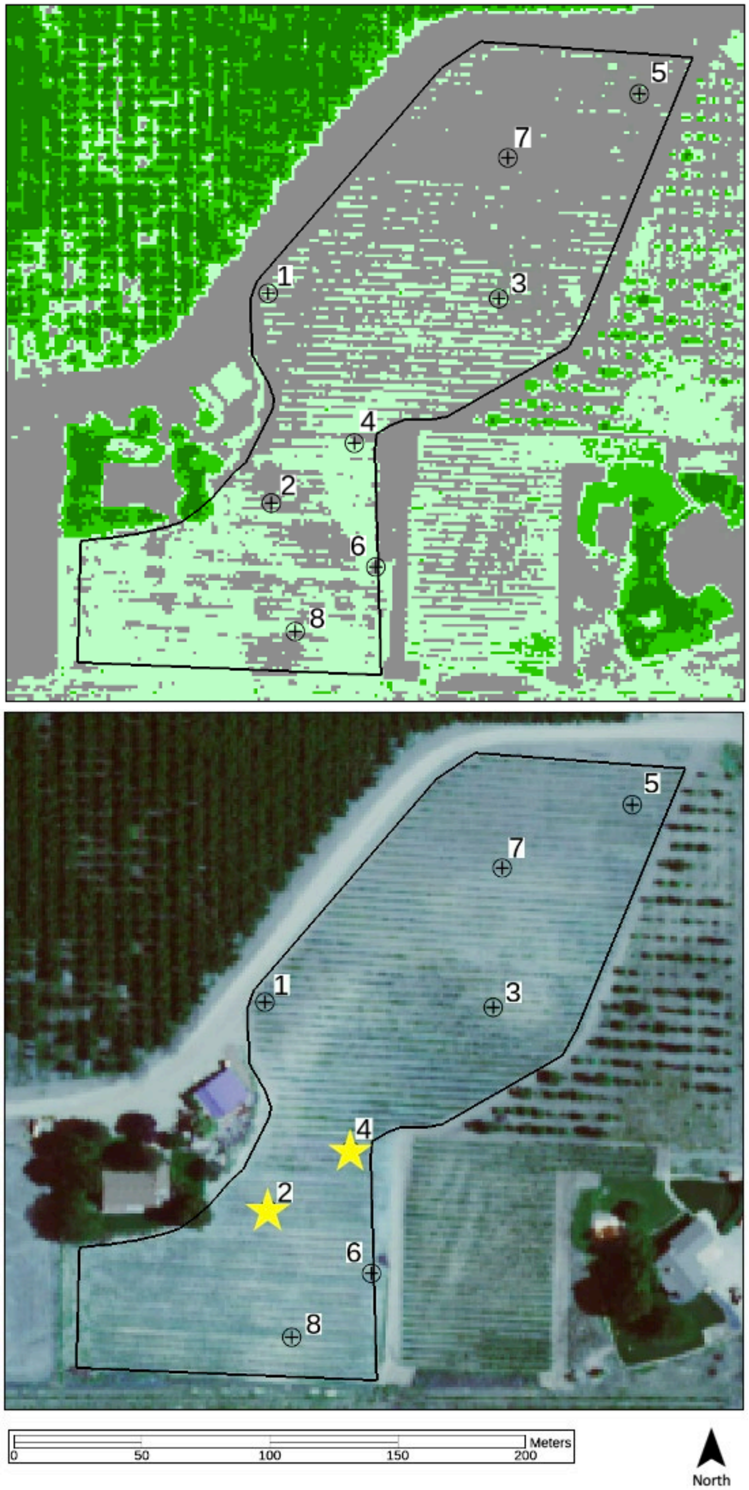


Figure A.7 NDVI (top) and true color (bottom) site maps of BT. Pits selected for pXRF and MS2000 analysis shown in true color (starred).

A.8 Scoria

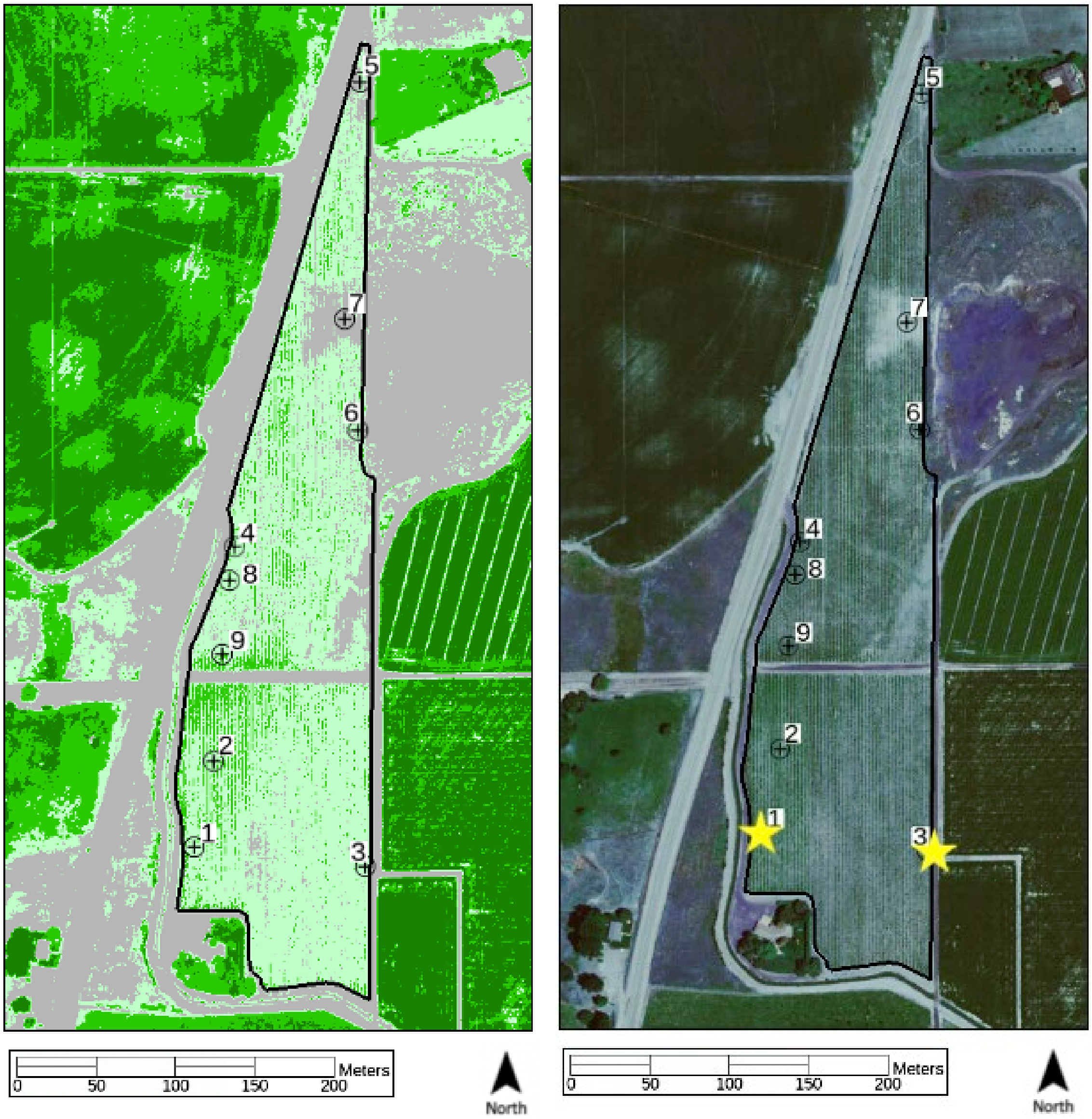


Figure A.8 NDVI (left) and true color (right) site maps of SC. Pits selected for pXRF and MS2000 analysis shown in true color (starred).

A.9 Polo Cove

Figure A.9 True color site map of PC full extent.

Figure A.10 NDVI (top) and true color (bottom) site maps of PC Block 1. Pits selected for pXRF and MS2000 analysis shown in true color (starred).

APPENDIX B

Hand Texture Data

The following USDA hand texture charts include soil sample pit number, depth, color measured before and after oven drying, soil ped structure, sample consistence when wet and before and after oven drying, and a final estimation of soil hand texture. An in-depth explanation of the USDA hand texture chart abbreviations and the protocol followed in this study can be found in Birkeland et al. (1991).

B.1 Emerald Slope

	Depth (cm)	Color		Structure			Consistence				Texture	
		Moist	Dry				Wet		Moist	Dry		
Pit 1	10	10YR4/3	10YR6/3	m	vf	gr	so	po	lo	lo	S	SiCL
				sg	f	pl	ss	ps	vfr	so	LS	SiL
				1	m	pr	s	p	fr	sh	SL	Si
				2	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
						sbk			efi	eh	CL	SC
	20	10YR4/3	10YR6/3	m	vf	gr	so	po	lo	lo	S	SiCL
				sg	f	pl	ss	ps	vfr	so	LS	SiL
				1	m	pr	s	p	fr	sh	SL	Si
				2	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
						sbk			efi	eh	CL	SC
	30	10YR4/3	10YR6/3	m	vf	gr	so	po	lo	lo	S	SiCL
				sg	f	pl	ss	ps	vfr	so	LS	SiL
				1	m	pr	s	p	fr	sh	SL	Si
				2	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
						sbk			efi	eh	CL	SC
	40	10YR4/3	10YR6/2	m	vf	gr	so	po	lo	lo	S	SiCL
				sg	f	pl	ss	ps	vfr	so	LS	SiL
				1	m	pr	s	p	fr	sh	SL	Si
				2	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
						sbk			efi	eh	CL	SC
	50	10YR4/3	10YR6/3	m	vf	gr	so	po	lo	lo	S	SiCL
				sg	f	pl	ss	ps	vfr	so	LS	SiL
				1	m	pr	s	p	fr	sh	SL	Si
				2	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
						sbk			efi	eh	CL	SC
	60	10YR4/3	10YR6/2	m	vf	gr	so	po	lo	lo	S	SiCL
				sg	f	pl	ss	ps	vfr	so	LS	SiL
				1	m	pr	s	p	fr	sh	SL	Si
				2	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
						sbk			efi	eh	CL	SC
	70	10YR4/3	10YR6/2	m	vf	gr	so	po	lo	lo	S	SiCL
				sg	f	pl	ss	ps	vfr	so	LS	SiL
				1	m	pr	s	p	fr	sh	SL	Si
				2	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
						sbk			efi	eh	CL	SC

Pit 2	10	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	[✓ lo]	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
			[✓ 1]	m	pr	s	p	fr	sh	[✓ SL]	Si
		10YR6/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	20	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
			[✓ 1]	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	30	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			[✓ 1]	m	pr	s	p	fr	sh	[✓ SL]	Si
		10YR6/3	2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	[✓ eh]	CL	SC
	40	10YR4/2	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			[✓ 1]	m	pr	s	p	fr	sh	[✓ SL]	Si
		10YR6/3	2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	[✓ eh]	CL	SC
	50	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	[✓ LS]	SiL
			[✓ 1]	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	60	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	[✓ LS]	SiL
			[✓ 1]	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
		10YR6/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	70	10YR4/2	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	[✓ LS]	SiL
			[✓ 1]	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
		10YR6/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	80	10YR4/2	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	[✓ LS]	SiL
			[✓ 1]	m	pr	s	p	fr	sh	[✓ SL]	Si
		10YR6/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	90	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	LS	SiL
			[✓ 1]	m	pr	s	p	fr	sh	[✓ SL]	Si
		10YR6/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC

Pit 3	**10**		m	vf	gr	so	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	ps	vfr	[✓ so]	LS	[✓ SiL]
		10YR4/2	[✓ 1]	m	pr	s	p	[✓ fr]	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	20		m	vf	gr	so	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	ps	vfr	so	LS	[✓ SiL]
		10YR4/2	[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	30		m	[✓ vf]	gr	so	po	lo	lo	S	[✓ SiCL]
			sg	f	pl	ss	[✓ ps]	vfr	so	LS	[✓ SiL]
		10YR4/3	1	m	pr	[✓ s]	p	[✓ fr]	[✓ sh]	SL	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR5/3			sbk			efi	eh	CL	SC
	40		m	[✓ vf]	gr	so	[✓ po]	lo	lo	S	SiCL
			sg	f	pl	[✓ ss]	ps	vfr	so	LS	[✓ SiL]
		10YR4/2	1	m	pr	s	p	[✓ fr]	sh	SL	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	[✓ eh]	CL	SC
	50		m	[✓ vf]	gr	so	po	lo	lo	S	[✓ SiCL]
			sg	f	pl	ss	[✓ ps]	vfr	so	LS	SiL
		10YR4/2	1	m	pr	[✓ s]	p	[✓ fr]	sh	SL	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR5/3			sbk			efi	[✓ eh]	[✓ CL]	SC
	60		m	[✓ vf]	gr	so	po	lo	lo	S	[✓ SiCL]
			sg	f	pl	ss	[✓ ps]	vfr	so	LS	SiL
		10YR4/2	1	m	pr	[✓ s]	p	[✓ fr]	sh	SL	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	[✓ vh]	L	C
		10YR5/3			sbk			efi	eh	[✓ CL]	SC
	70		m	[✓ vf]	gr	so	po	lo	lo	S	[✓ SiCL]
			sg	f	pl	ss	[✓ ps]	vfr	so	LS	SiL
		10YR4/2	1	m	pr	[✓ s]	p	[✓ fr]	sh	SL	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR6/3			sbk			[✓ efi]	[✓ eh]	[✓ CL]	SC
	80		m	[✓ vf]	gr	so	po	lo	lo	S	[✓ SiCL]
			sg	f	pl	ss	[✓ ps]	vfr	so	LS	SiL
		10YR4/2	1	m	pr	[✓ s]	p	[✓ fr]	sh	SL	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	[✓ vh]	L	C
		10YR6/3			sbk			[✓ efi]	eh	[✓ CL]	SC
	90		m	[✓ vf]	gr	so	po	lo	lo	S	[✓ SiCL]
			sg	f	pl	ss	[✓ ps]	vfr	so	LS	SiL
		10YR4/2	1	m	pr	[✓ s]	p	[✓ fr]	sh	SL	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	[✓ vh]	L	C
		10YR6/2			sbk			[✓ efi]	eh	[✓ CL]	SC

Pit 4	**10**	**10YR5/3**	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	[✓ LS]	SiL
			[✓ 1]	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
		10YR6/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	20	**10YR4/2**	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
			1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
		10YR6/3	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	30	**10YR4/2**	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
		10YR6/3	[✓ 2]	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	40	**10YR4/2**	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
			1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
		10YR6/3	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	50	**10YR4/2**	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
		10YR6/3	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	60	**10YR4/2**	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	[✓ LS]	SiL
			[✓ 1]	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	70	**10YR4/2**	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	[✓ LS]	SiL
			[✓ 1]	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	80	**10YR4/2**	m	vf	gr	so	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	ps	vfr	[✓ so]	LS	[✓ SiL]
			1	m	pr	s	p	[✓ fr]	sh	SL	Si
		10YR6/3	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	90	**10YR4/2**	m	vf	gr	so	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	ps	vfr	[✓ so]	LS	SiL
			[✓ 1]	m	pr	s	p	[✓ fr]	sh	SL	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	[✓ L]	C
					[✓ sbk]			efi	eh	CL	SC

Pit 5	10	10YR3/2	m	vf	gr	so	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	ps	[✓ vfr]	[✓ so]	LS	[✓ SiL]
			[✓ 1]	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	20	10YR4/2	m	[✓ vf]	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	f	pl	ss	[✓ ps]	[✓ vfr]	[✓ so]	LS	[✓ SiL]
			[✓ 1]	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	30	10YR4/2	m	[✓ vf]	gr	[✓ so]	po	lo	lo	S	[✓ SiCL]
			sg	f	pl	ss	[✓ ps]	[✓ vfr]	[✓ so]	LS	[✓ SiL]
			[✓ 1]	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	40	10YR4/3	m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	[✓ SiCL]
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	[✓ fr]	[✓ sh]	SL	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			[✓ vfi]	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	50	10YR4/3	m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	[✓ SiCL]
			sg	f	pl	ss	ps	vfr	so	LS	[✓ SiL]
			1	m	pr	s	p	[✓ fr]	[✓ sh]	SL	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			[✓ vfi]	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	60	10YR4/3	m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	[✓ SiCL]
			sg	f	pl	ss	ps	vfr	so	LS	[✓ SiL]
			1	m	pr	s	p	[✓ fr]	[✓ sh]	SL	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			[✓ vfi]	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	70	10YR4/3	m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	[✓ SiCL]
			sg	f	pl	ss	ps	vfr	so	LS	[✓ SiL]
			1	m	pr	s	p	[✓ fr]	[✓ sh]	SL	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			[✓ vfi]	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	80	10YR4/3	m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	[✓ SiCL]
			sg	f	pl	ss	ps	vfr	[✓ so]	LS	[✓ SiL]
			1	m	pr	s	p	[✓ fr]	sh	SL	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			[✓ vfi]	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	90	10YR4/3	m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	[✓ SiCL]
			sg	f	pl	ss	ps	vfr	[✓ so]	LS	[✓ SiL]
			1	m	pr	s	p	[✓ fr]	sh	SL	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			[✓ vfi]	vh	L	C
					[✓ sbk]			efi	eh	CL	SC

B.2 Kindred

	Depth (cm)	Color	Structure			Consistence				Texture	
		Moist Dry				Wet		Moist	Dry		
Pit 1	10	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
			[✓ 1]	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	[✓ L]	C
					[✓ sbk]			efi	eh	CL	SC
	20	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
			1	m	pr	s	p	[✓ fr]	sh	SL	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	[✓ L]	C
					sbk			efi	eh	CL	SC
	30	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
			1	m	pr	s	p	[✓ fr]	sh	SL	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	[✓ L]	C
					sbk			efi	eh	CL	SC
	40	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	[✓ fr]	[✓ sh]	SL	Si
		10YR6/3	[✓ 2]	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	[✓ L]	C
					sbk			efi	eh	CL	SC
	50	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	LS	SiL
			[✓ 1]	m	pr	s	p	fr	sh	SL	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	[✓ L]	C
					[✓ sbk]			efi	eh	CL	SC
	60	10YR5/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	[✓ LS]	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/3	[✓ 2]	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	70	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	[✓ pl]	ss	ps	vfr	[✓ so]	[✓ LS]	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/3	[✓ 2]	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	80	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	[✓ LS]	SiL
			[✓ 1]	[✓ m]	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	90	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	lo	[✓ lo]	S	SiCL
			sg	f	[✓ pl]	ss	ps	[✓ vfr]	so	[✓ LS]	SiL
			[✓ 1]	[✓ m]	pr	s	p	fr	sh	SL	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC

Pit 2	10		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR3/3	[✓ 1]	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	[✓ L]	C
		10YR4/3			[✓ sbk]			efi	eh	CL	SC
	20		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR3/3	[✓ 1]	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	[✓ L]	C
		10YR4/3			[✓ sbk]			efi	eh	CL	SC
	30		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR3/3	1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	[✓ L]	C
		10YR4/3			[✓ sbk]			efi	eh	CL	SC
	40		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR6/2			sbk			efi	eh	CL	SC
	50		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR4/3			sbk			efi	eh	CL	SC
	60		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR6/1			sbk			efi	eh	CL	SC
	70		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	[✓ 1]	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/2			[✓ sbk]			efi	eh	CL	SC
	80		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	[✓ 1]	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	90		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	[✓ 1]	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/2			[✓ sbk]			efi	eh	CL	SC
	100		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	[✓ 1]	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC

Pit 3	**10**	**10YR4/3**	m	vf	gr	[✓ so]	po	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	[✓ vfr]	[✓ so]	LS	SiL
			[✓ 1]	m	pr	s	p	[✓ fr]	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	[✓ L]	C
					[✓ sbk]			efi	eh	CL	SC
	20	**10YR4/3**	m	vf	gr	[✓ so]	po	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	vfr	[✓ so]	LS	SiL
			[✓ 1]	m	pr	s	p	[✓ fr]	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	[✓ L]	C
					[✓ sbk]			efi	eh	CL	SC
	30	**10YR4/3**	m	vf	gr	[✓ so]	po	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	vfr	so	LS	[✓ SiL]
			1	m	pr	s	p	[✓ fr]	sh	SL	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	[✓ fi]	[✓ h]	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	[✓ L]	C
					sbk			efi	eh	CL	SC
	40	**10YR4/3**	m	vf	gr	so	po	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	so	LS	[✓ SiL]
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	[✓ abk]			[✓ vfi]	[✓ vh]	[✓ L]	C
					sbk			efi	eh	CL	SC
	50	**10YR4/3**	m	vf	gr	so	po	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	so	LS	[✓ SiL]
			[✓ 1]	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			[✓ vfi]	[✓ vh]	L	C
					sbk			efi	eh	CL	SC
	60	**10YR4/3**	m	vf	gr	so	po	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	so	LS	[✓ SiL]
			[✓ 1]	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			[✓ vfi]	[✓ vh]	L	C
					sbk			efi	eh	CL	SC
	70	**10YR4/3**	m	vf	gr	so	po	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	so	LS	[✓ SiL]
			[✓ 1]	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			[✓ vfi]	[✓ vh]	L	C
					sbk			efi	eh	CL	SC
	80	**10YR4/3**	m	vf	gr	so	po	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	so	LS	[✓ SiL]
			[✓ 1]	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	[✓ abk]			[✓ vfi]	vh	L	C
					sbk			efi	eh	CL	SC
	90	**10YR4/3**	m	vf	gr	so	po	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	so	LS	[✓ SiL]
			[✓ 1]	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			[✓ vfi]	[✓ vh]	L	C
					sbk			efi	eh	CL	SC
	100	**10YR4/3**	m	vf	gr	so	po	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	so	LS	[✓ SiL]
			[✓ 1]	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			[✓ vfi]	[✓ vh]	L	C
					sbk			efi	eh	CL	SC

Pit 4	**10**	**10YR4/3**	m	vf	gr	so	po	lo	lo	S	[✓ SiCL]
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	[✓ SiL]
			1	m	pr	[✓ s]	[✓ p]	fr	sh	SL	Si
		10YR7/3	2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	20	**10YR4/3**	m	vf	gr	so	po	lo	lo	S	[✓ SiCL]
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	[✓ s]	[✓ p]	fr	sh	SL	Si
		10YR7/2	2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	30	**10YR4/3**	m	vf	gr	so	po	lo	lo	S	[✓ SiCL]
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	[✓ s]	[✓ p]	fr	sh	SL	Si
		10YR7/1	2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			[✓ vfi]	vh	L	C
					sbk			efi	eh	CL	SC
	40	**10YR4/3**	m	vf	gr	so	po	lo	lo	S	[✓ SiCL]
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	[✓ s]	[✓ p]	fr	sh	SL	Si
		10YR5/2	2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			[✓ vfi]	vh	L	C
					sbk			efi	eh	CL	SC
	50	**10YR4/3**	m	vf	gr	so	po	lo	lo	S	[✓ SiCL]
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	[✓ s]	[✓ p]	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			[✓ vfi]	vh	L	C
					sbk			efi	eh	CL	SC
	60	**10YR4/3**	m	vf	gr	so	po	lo	lo	S	[✓ SiCL]
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	[✓ s]	[✓ p]	fr	sh	SL	Si
		10YR4/3	2	c	cpr	[✓ vs]	vp	[✓ fi]	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			[✓ vfi]	vh	L	C
					sbk			efi	eh	CL	SC
	70	**10YR4/3**	m	vf	gr	so	po	lo	lo	S	[✓ SiCL]
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	[✓ s]	[✓ p]	fr	sh	SL	Si
		10YR6/1	2	c	cpr	[✓ vs]	vp	[✓ fi]	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			[✓ vfi]	vh	L	C
					sbk			efi	eh	CL	SC

B.3 Hat Ranch

	Depth (cm)	Color		Structure			Consistence				Texture	
		Moist	Dry				Wet		Moist	Dry		
Pit 1	10	10YR4/2	10YR5/2	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
				1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
				[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
				3	vc	abk			vfi	vh	L	C
						[✓ sbk]			efi	eh	CL	SC
	20	10YR4/4	10YR5/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	[✓ f]	pl	ss	ps	[✓ vfr]	so	LS	SiL
				[✓ 1]	m	pr	s	p	fr	sh	[✓ SL]	Si
				2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
				3	vc	abk			vfi	vh	L	C
						[✓ sbk]			efi	eh	CL	SC
	30	2.5Y4/4	2.5Y6/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	[✓ f]	pl	ss	ps	[✓ vfr]	so	LS	SiL
				1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
				[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	[✓ abk]			vfi	vh	L	C
						sbk			efi	eh	CL	SC
	40	2.5Y4/4	2.5Y6/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	[✓ f]	pl	ss	ps	[✓ vfr]	so	LS	SiL
				1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
				[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	[✓ abk]			vfi	vh	L	C
						sbk			efi	eh	CL	SC
	50	2.5Y4/4	2.5Y6/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
				1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
				[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	[✓ abk]			vfi	vh	L	C
						sbk			efi	eh	CL	SC
	60	2.5Y5/3	2.5Y6/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
				1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
				[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	[✓ abk]			vfi	vh	L	C
						sbk			efi	eh	CL	SC
	70	2.5Y4/3	2.5Y6/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
				1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
				[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	[✓ abk]			vfi	vh	L	C
						sbk			efi	eh	CL	SC
	80	2.5Y4/4	10YR7/1	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
				1	m	pr	s	p	fr	sh	[✓ SL]	Si
				[✓ 2]	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
				3	vc	[✓ abk]			vfi	vh	L	C
						sbk			efi	eh	CL	SC
	90	2.5Y4/4	2.5Y6/2	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
				1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
				[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	[✓ abk]			vfi	vh	L	C
						sbk			efi	eh	CL	SC
	100	2.5Y4/4	2.5Y7/2	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
				1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
				[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
						[✓ sbk]			efi	eh	CL	SC

Pit 2	10	10YR5/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	20	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	30	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	40	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	50	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	60	10YR5/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	70	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	80	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	90	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	100	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	110	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	115	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC

Pit 3	**10**	**2.5Y3/3**	m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	vfr	[✓ so]	LS	SiL
			[✓ 1]	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	20	**10YR4/2**	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
			1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	30	**10YR4/3**	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	LS	SiL
			[✓ 1]	m	pr	s	p	fr	sh	[✓ SL]	Si
		10YR5/3	2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	40	**10YR4/3**	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
			1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	50	**10YR4/3**	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	LS	SiL
			1	m	pr	s	p	fr	sh	[✓ SL]	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	60	**10YR4/3**	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	LS	SiL
			1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
		10YR6/3	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	70	**2.5Y4/2**	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	LS	SiL
			1	m	pr	s	p	fr	sh	[✓ SL]	Si
		10YR6/2	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	[✓ vh]	L	C
					sbk			efi	eh	CL	SC
	80	**2.5Y4/3**	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
			1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
		10YR6/2	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	90	**2.5Y4/3**	m	vf	gr	so	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	ps	vfr	[✓ so]	LS	SiL
			1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
		10YR6/2	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	100	**2.5Y4/3**	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
			1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
		10YR6/3	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	110	**2.5Y4/4**	m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	vfr	[✓ so]	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR7/2	2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			vfi	vh	[✓ L]	C
					sbk			efi	eh	CL	SC

Pit 4	10		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/5	1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR6/3			sbk			efi	eh	CL	SC
	20		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR6/3			sbk			efi	eh	CL	SC
	30		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	so	LS	SiL
		10YR4/2	1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR6/2			sbk			efi	eh	CL	SC
	40		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/2	1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR6/2			sbk			efi	eh	CL	SC
	50		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	so	LS	SiL
		10YR4/2	[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			[✓ vfi]	vh	L	C
		10YR6/2			sbk			efi	eh	CL	SC
	60		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	so	[✓ LS]	SiL
		10YR4/2	[✓ 1]	m	pr	s	p	fr	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR6/2			sbk			efi	eh	CL	SC
	70		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	[✓ LS]	SiL
		10YR4/2	[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR6/2			sbk			efi	eh	CL	SC
	80		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	[✓ LS]	SiL
		10YR4/2	[✓ 1]	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR6/2			sbk			efi	eh	CL	SC
	90		m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	vfr	so	[✓ LS]	SiL
		10YR4/2	[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR6/2			sbk			efi	eh	CL	SC
	100		m	vf	gr	so	po	lo	lo	S	[✓ SiCL]
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	[✓ so]	LS	SiL
		2.5Y4/3	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			vfi	vh	L	C
		10YR6/2			sbk			efi	eh	CL	SC

Pit 5	10	10YR3/2	m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	[✓ vfr]	so	LS	SiL
			1	m	pr	s	p	fr	sh	[✓ SL]	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	20	10YR3/2	m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	[✓ vfr]	so	LS	SiL
			[✓ 1]	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	[✓ vh]	L	C
					[✓ sbk]			efi	eh	CL	SC
	30	10YR3/2	m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	vfr	[✓ so]	LS	SiL
			[✓ 1]	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
		10YR5/3	2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	40	10YR4/2	m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	vfr	[✓ so]	LS	SiL
			1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	50	10YR4/3	m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	vfr	so	LS	SiL
			1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	[✓ vh]	L	C
					sbk			efi	eh	CL	SC
	60	10YR4/3	m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	vfr	so	LS	SiL
			1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	[✓ eh]	CL	SC
	70	10YR4/3	m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	vfr	so	LS	SiL
			1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	[✓ eh]	CL	SC
	80	10YR4/3	m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	vfr	[✓ so]	LS	SiL
			1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
		10YR6/3	[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	90	10YR4/3	m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	vfr	[✓ so]	LS	SiL
			1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
		10YR6/3	[✓ 2]	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	100	10YR4/3	m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	vfr	[✓ so]	LS	SiL
			1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
		10YR6/3	[✓ 2]	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	eh	CL	SC

Pit 6	10		m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	[✓ vfr]	so	LS	SiL
		10YR4/3	[✓ 1]	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	20		m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	vfr	[✓ so]	LS	SiL
		10YR4/3	[✓ 1]	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	30		m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	vfr	so	LS	SiL
		10YR4/3	[✓ 1]	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	40		m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	vfr	so	LS	[✓ SiL]
		10YR4/3	[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	[✓ vh]	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	50		m	vf	gr	so	po	lo	lo	S	[✓ SiCL]
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	so	LS	SiL
		10YR4/3	[✓ 1]	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	[✓ fi]	[✓ h]	SCL	SiC
			3	vc	[✓ abk]			vfi	[✓ vh]	L	C
		10YR6/3			sbk			efi	eh	CL	SC
	60		m	vf	gr	so	po	lo	lo	S	[✓ SiCL]
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	so	LS	SiL
		10YR4/3	[✓ 1]	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	[✓ fi]	[✓ h]	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR6/2			sbk			efi	eh	CL	SC
	70		m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	[✓ sh]	SL	Si
			[✓ 2]	c	cpr	vs	vp	[✓ fi]	h	[✓ SCL]	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/3			[✓ sbk]			efi	eh	CL	SC
	80		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	[✓ sh]	SL	Si
			[✓ 2]	c	cpr	vs	vp	[✓ fi]	[✓ h]	[✓ SCL]	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/3			[✓ sbk]			efi	eh	CL	SC
	90		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	[✓ sh]	SL	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	[✓ SCL]	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/2			[✓ sbk]			efi	eh	CL	SC
	100		m	vf	[✓ gr]	[✓ so]	[✓ po]	[✓ lo]	[✓ lo]	S	SiCL
			[✓ sg]	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/3			sbk			efi	eh	CL	SC

Pit 7	**10**		m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	[✓ vfr]	[✓ so]	LS	[✓ SiL]
		10YR4/2	[✓ 1]	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR4/3			[✓ sbk]			efi	eh	CL	SC
	20		m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	vfr	[✓ so]	LS	[✓ SiL]
		10YR4/3	[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR4/3			sbk			efi	eh	CL	SC
	30		m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	vfr	so	LS	SiL
		10YR4/3	[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR4/3			[✓ sbk]			efi	eh	CL	SC
	40		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
		10YR4/3	[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR5/3			sbk			efi	eh	CL	SC
	50		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	[✓ fi]	[✓ h]	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR6/3			sbk			efi	eh	CL	SC
	60		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	so	LS	SiL
		10YR4/3	[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR5/3			sbk			efi	eh	CL	SC
	70		m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	[✓ vfr]	so	LS	SiL
		10YR4/3	[✓ 1]	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/3			[✓ sbk]			efi	eh	CL	SC
	80		m	vf	gr	so	[✓ po]	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	ps	[✓ vfr]	so	LS	SiL
		10YR4/3	[✓ 1]	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/3			[✓ sbk]			efi	eh	CL	SC
	90		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	LS	SiL
		10YR4/3	[✓ 1]	m	pr	s	p	fr	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/3			[✓ sbk]			efi	eh	CL	SC
	100		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
		10YR4/3	[✓ 1]	m	pr	s	p	fr	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	[✓ fi]	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/3			[✓ sbk]			efi	eh	CL	SC

Pit 8			m	vf	gr	so	po	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	[✓ vfr]	[✓ so]	LS	SiL
	10	**10YR4/4**	[✓ 1]	m	pr	[✓ s]	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	[✓ SCL]	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
			m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	[✓ vfr]	so	LS	SiL
	20	**10YR4/3**	[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR5/4			sbk			efi	eh	CL	SC
			m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	[✓ vfr]	so	LS	SiL
	30	**10YR4/4**	[✓ 1]	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	[✓ vh]	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
			m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	[✓ vfr]	so	LS	SiL
	40	**10YR4/4**	[✓ 1]	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR5/3			sbk			efi	eh	CL	SC
			m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	[✓ SiCL]
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	so	LS	SiL
	50	**10YR4/3**	[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR6/3			sbk			efi	eh	CL	SC
			m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	[✓ SiL]
	60	**10YR4/3**	[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR6/3			sbk			efi	eh	CL	SC
			m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	[✓ SiL]
	70	**10YR4/3**	[✓ 1]	m	pr	s	p	[✓ fr]	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR6/3			sbk			efi	eh	CL	SC
			m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	[✓ SiL]
	80	**10YR4/3**	[✓ 1]	m	pr	s	p	[✓ fr]	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR6/3			sbk			efi	eh	CL	SC
			m	vf	gr	[✓ so]	[✓ po]	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	[✓ SiL]
	90	**10YR4/3**	[✓ 1]	m	pr	s	p	[✓ fr]	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR6/3			sbk			efi	eh	CL	SC
			m	vf	gr	[✓ so]	po	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	vfr	[✓ so]	LS	[✓ SiL]
	100	**10YR4/3**	[✓ 1]	m	pr	s	p	[✓ fr]	sh	SL	Si
			2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR6/3			sbk			efi	eh	CL	SC

Pit 9	10	2.5YR3/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	20	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	30	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	40	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	50	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	60	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	70	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	80	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	90	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	100	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC

B.4 Williamson

	Depth (cm)	Color		Structure			Consistence				Texture	
		Moist	Dry				Wet		Moist	Dry		
Pit 1	10			m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
				sg	[✓ f]	pl	ss	[✓ ps]	vfr	so	LS	SiL
		10YR4/3		[✓ 1.5]	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
				2	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
			10YR5/3			[✓ sbk]			efi	eh	CL	SC
	20			m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
				sg	[✓ f]	pl	ss	[✓ ps]	vfr	so	LS	SiL
		10YR4/3		1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
				[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
			10YR5/3			[✓ sbk]			efi	eh	CL	SC
	30			m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
				sg	[✓ f]	pl	ss	[✓ ps]	vfr	so	LS	SiL
		10YR4/3		1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
				[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
				3	vc	abk			vfi	vh	L	C
			10YR5/3			[✓ sbk]			efi	eh	CL	SC
	40			m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
				sg	[✓ f]	[✓ pl]	ss	[✓ ps]	vfr	so	LS	SiL
		10YR4/3		1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
				[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
				3	vc	[✓ abk]			vfi	vh	L	C
			10YR5/4			sbk			efi	eh	CL	SC
	50			m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3		1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
				[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
				3	vc	abk			vfi	vh	L	C
			10YR5/3			[✓ sbk]			efi	eh	CL	SC
	60			m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3		1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
				[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
				3	vc	abk			vfi	vh	L	C
			10YR5/4			[✓ sbk]			efi	eh	CL	SC
	70			m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3		[✓ 1.5]	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
				2	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
			10YR6/3			[✓ sbk]			efi	eh	CL	SC
	80			m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3		1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
				[✓ 2]	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
			10YR6/3			[✓ sbk]			efi	[✓ eh]	CL	SC
	90			m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3		[✓ 1.5]	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
				2	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
			10YR6/3			[✓ sbk]			efi	[✓ eh]	CL	SC
	100			m	[✓ vf]	[✓ gr]	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3		[✓ 1]	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
				2	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
			10YR7/2			sbk			[✓ efi]	eh	CL	SC

Pit 2	10		m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	[✓ pl]	ss	[✓ ps]	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			[✓ 3]	vc	[✓ abk]			[✓ vfi]	vh	L	C
		10YR5/2			sbk			efi	eh	CL	SC
	20		m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	[✓ pl]	ss	[✓ ps]	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	[✓ fi]	[✓ h]	SCL	SiC
			[✓ 3]	vc	[✓ abk]			vfi	vh	L	C
		10YR5/2			sbk			efi	[✓ eh]	CL	SC
	30		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	so	LS	[✓ SiL]
		10YR4/3	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			vfi	[✓ vh]	L	C
		10YR5/2			sbk			efi	[✓ eh]	CL	SC
	40		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			vfi	vh	[✓ L]	C
		10YR6/2			sbk			[✓ efi]	[✓ eh]	CL	SC
	50		m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	[✓ ss]	[✓ ps]	vfr	so	LS	SiL
		10YR5/3	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	[✓ fi]	[✓ h]	SCL	SiC
			[✓ 3]	vc	[✓ abk]			vfi	vh	[✓ L]	C
		10YR6/2			sbk			efi	[✓ eh]	CL	SC
	60		m	[✓ vf]	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	f	pl	ss	[✓ ps]	vfr	so	LS	SiL
		10YR5/3	1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR6/2			sbk			efi	eh	CL	SC
	70		m	[✓ vf]	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	f	pl	ss	[✓ ps]	vfr	so	LS	SiL
		10YR5/3	1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/2			[✓ sbk]			efi	eh	CL	SC
	80		m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR5/3	[✓ 1.5]	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/2			[✓ sbk]			efi	eh	CL	SC
	90		m	[✓ vf]	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	f	[✓ pl]	ss	[✓ ps]	[✓ vfr]	so	LS	SiL
		10YR5/3	1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/2			[✓ sbk]			efi	eh	CL	SC

Pit 3	10		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	ps	vfr	so	LS	[✓ SiL]
		10YR4/2	1	m	pr	s	[✓ p]	fr	sh	SL	Si
			[✓ 2]	c	cpr	vs	vp	[✓ fi]	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/2			[✓ sbk]			efi	[✓ eh]	CL	SC
	20		m	vf	gr	so	po	lo	lo	S	[✓ SiCL]
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	[✓ s]	[✓ p]	fr	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			vfi	vh	L	C
		10YR5/2			sbk			[✓ efi]	[✓ eh]	CL	SC
	30		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	[✓ pl]	ss	ps	vfr	so	LS	[✓ SiL]
		10YR4/3	1	m	pr	[✓ s]	[✓ p]	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			[✓ vfi]	vh	L	C
		10YR5/2			sbk			efi	[✓ eh]	CL	SC
	40		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	[✓ pl]	ss	ps	vfr	so	LS	[✓ SiL]
		10YR4/3	1	m	pr	[✓ s]	[✓ p]	fr	sh	SL	Si
			2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			vfi	vh	L	C
		10YR5/2			sbk			efi	[✓ eh]	CL	SC
	50		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	[✓ pl]	[✓ ss]	ps	vfr	so	LS	[✓ SiL]
		10YR4/3	1	m	pr	s	[✓ p]	[✓ fr]	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			vfi	[✓ vh]	L	C
		10YR6/1			sbk			efi	[✓ eh]	CL	SC
	60		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	[✓ pl]	[✓ ss]	ps	vfr	so	LS	[✓ SiL]
		10YR4/3	1	m	pr	s	[✓ p]	[✓ fr]	sh	SL	Si
			2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			[✓ 3]	vc	[✓ abk]			vfi	vh	L	C
		10YR6/1			sbk			efi	[✓ eh]	CL	SC
	70		m	vf	gr	so	po	lo	lo	S	[✓ SiCL]
			sg	[✓ f]	[✓ pl]	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	[✓ s]	[✓ p]	[✓ fr]	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			vfi	vh	L	C
		10YR6/2			sbk			efi	[✓ eh]	CL	SC

Pit 4	10		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR3/3	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			sbk			efi	eh	CL	SC
	20		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR3/3	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			sbk			efi	eh	CL	SC
	30		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			sbk			efi	eh	CL	SC
	40		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/2			sbk			efi	eh	CL	SC
	50		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/2			sbk			efi	eh	CL	SC
	60		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/2			sbk			efi	eh	CL	SC
	70		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/2			sbk			efi	eh	CL	SC
	80		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR5/4	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/1			sbk			efi	eh	CL	SC
	90		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR5/4	1	m	pr	s	p	fr	sh	SL	Si
			2.5	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/1			sbk			efi	eh	CL	SC
	100		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR5/4	1.5	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/2			sbk			efi	eh	CL	SC

Pit 5	10	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	20	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	[✓ pl]	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	30	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			[✓ 3]	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	40	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	50	10YR4/4	m	vf	[✓ gr]	[✓ so]	[✓ po]	[✓ lo]	lo	S	SiCL
			[✓ sg]	[✓ f]	pl	ss	ps	vfr	[✓ so]	[✓ LS]	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	60	10YR4/4	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
		10YR6/2	2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	70	10YR3/4	m	vf	[✓ gr]	[✓ so]	[✓ po]	[✓ lo]	[✓ lo]	S	SiCL
			[✓ sg]	[✓ f]	pl	ss	ps	vfr	[✓ so]	[✓ LS]	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	80	10YR3/4	m	vf	[✓ gr]	[✓ so]	[✓ po]	[✓ lo]	[✓ lo]	S	SiCL
			[✓ sg]	[✓ f]	pl	ss	ps	vfr	[✓ so]	[✓ LS]	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	90	10YR3/2	m	vf	[✓ gr]	[✓ so]	[✓ po]	[✓ lo]	[✓ lo]	[✓ S]	SiCL
			[✓ sg]	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	100	10YR3/2	m	vf	[✓ gr]	[✓ so]	[✓ po]	[✓ lo]	[✓ lo]	[✓ S]	SiCL
			[✓ sg]	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC

Pit 6	10	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	20	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	30	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	40	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	50	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	60	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1.5	m	pr	s	p	fr	sh	SL	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	70	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1.5	m	pr	s	p	fr	sh	SL	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	80	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	90	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	100	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1.5	m	pr	s	p	fr	sh	SL	Si
		10YR6/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC

Pit 7	10	10YR4/2	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/2	2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			[✓ 3]	vc	[✓ abk]			[✓ vfi]	vh	[✓ L]	C
					sbk			efi	[✓ eh]	CL	SC
	20	10YR4/2	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			[✓ vfi]	vh	[✓ L]	C
					sbk			[✓ efi]	[✓ eh]	CL	SC
	30	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			vfi	vh	[✓ L]	C
					sbk			[✓ efi]	[✓ eh]	CL	SC
	40	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	[✓ pl]	[✓ ss]	[✓ ps]	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR7/2	2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			vfi	[✓ vh]	[✓ L]	C
					sbk			efi	[✓ eh]	CL	SC
	50	10YR5/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	[✓ pl]	ss	[✓ ps]	vfr	so	LS	SiL
			4	m	pr	[✓ s]	p	[✓ fr]	[✓ sh]	SL	Si
		10YR7/2	5	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			[✓ 6]	vc	[✓ abk]			vfi	vh	[✓ L]	C
					sbk			efi	eh	CL	SC
	60	10YR5/3	m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	[✓ pl]	ss	[✓ ps]	vfr	so	LS	SiL
			1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
		10YR7/2	[✓ 2.5]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	70	10YR5/3	m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	vfr	so	LS	SiL
			1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
		10YR7/2	[✓ 2.5]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	80	10YR5/3	m	[✓ vf]	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	f	pl	ss	[✓ ps]	vfr	so	LS	SiL
			1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
		10YR7/2	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	90	10YR5/3	m	[✓ vf]	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	f	pl	ss	[✓ ps]	vfr	so	LS	SiL
			1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
		10YR7/2	[✓ 2.5]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	100	10YR4/3	m	[✓ vf]	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	f	pl	ss	[✓ ps]	vfr	so	LS	SiL
			1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
		10YR7/2	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC

Pit 8	10	10YR3/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/2	2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			[✓ 3]	vc	[✓ abk]			[✓ vfi]	vh	[✓ L]	C
					sbk			efi	[✓ eh]	CL	SC
	20	10YR4/2	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	ps	vfr	so	LS	[✓ SiL]
			1	m	pr	s	[✓ p]	fr	sh	SL	Si
		10YR5/2	2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			[✓ 3]	vc	[✓ abk]			[✓ vfi]	vh	L	C
					sbk			efi	[✓ eh]	CL	SC
	30	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	ps	vfr	so	LS	[✓ SiL]
			1	m	pr	s	[✓ p]	fr	sh	SL	Si
		10YR5/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			[✓ vfi]	[✓ vh]	L	C
					sbk			efi	[✓ eh]	CL	SC
	40	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	ps	vfr	so	LS	[✓ SiL]
			1	m	pr	s	[✓ p]	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			[✓ vfi]	vh	L	C
					sbk			[✓ efi]	[✓ eh]	CL	SC
	50	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	ps	vfr	so	LS	[✓ SiL]
			1	m	pr	s	[✓ p]	fr	sh	SL	Si
		10YR6/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			[✓ vfi]	vh	L	C
					sbk			efi	[✓ eh]	CL	SC
	60	10YR4/2	m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	[✓ pl]	[✓ ss]	ps	vfr	so	LS	[✓ SiL]
			1	m	pr	s	[✓ p]	fr	sh	SL	Si
		10YR6/2	2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			[✓ 3]	vc	[✓ abk]			[✓ vfi]	vh	L	C
					sbk			efi	[✓ eh]	CL	SC
	70	10YR5/3	m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	[✓ pl]	[✓ ss]	[✓ ps]	vfr	so	LS	[✓ SiL]
			1	m	pr	s	p	fr	sh	SL	Si
		10YR7/2	2	c	cpr	vs	vp	[✓ fi]	[✓ h]	SCL	SiC
			[✓ 3]	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	[✓ eh]	CL	SC
	80	10YR4/3	m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	[✓ pl]	[✓ ss]	ps	vfr	so	LS	[✓ SiL]
			1	m	pr	s	[✓ p]	fr	[✓ sh]	SL	Si
		10YR7/2	2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	[✓ eh]	CL	SC
	90	10YR4/3	m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	[✓ pl]	[✓ ss]	ps	vfr	so	LS	[✓ SiL]
			1	m	pr	s	[✓ p]	[✓ fr]	[✓ sh]	SL	Si
		10YR7/2	[✓ 2.5]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	100	10YR4/3	m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	[✓ ss]	ps	[✓ vfr]	so	LS	[✓ SiL]
			1	m	pr	s	[✓ p]	[✓ fr]	[✓ sh]	SL	Si
		10YR6/3	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC

B.5 Rock Spur

	Depth (cm)	Color		Structure			Consistence				Texture	
		Moist	Dry				Wet		Moist	Dry		
Pit 1	10	2.5Y4/3	10YR7/2	m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	f	pl	ss	ps	vfr	[✓ so]	LS	[✓ SiL]
				[✓ 1]	m	pr	s	p	[✓ fr]	sh	SL	Si
				2	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
						[✓ sbk]			efi	eh	CL	SC
	20	2.5Y4/3	10YR7/2	m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
				sg	f	pl	[✓ ss]	ps	vfr	so	LS	[✓ SiL]
				[✓ 1]	m	pr	s	[✓ p]	[✓ fr]	sh	SL	Si
				2	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
						[✓ sbk]			efi	eh	CL	SC
	30	10YR4/3	10YR7/2	m	[✓ vf]	[✓ gr]	so	po	[✓ lo]	[✓ lo]	S	SiCL
				[✓ sg]	f	pl	[✓ ss]	ps	vfr	so	LS	[✓ SiL]
				1	m	pr	s	[✓ p]	fr	sh	SL	Si
				2	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
						sbk			efi	eh	CL	SC
	40	10YR4/3	10YR7/2	m	[✓ vf]	[✓ gr]	[✓ so]	po	[✓ lo]	[✓ lo]	S	SiCL
				[✓ sg]	f	pl	ss	[✓ ps]	vfr	so	LS	SiL
				1	m	pr	s	p	fr	sh	[✓ SL]	Si
				2	[✓ c]	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
						sbk			efi	eh	CL	SC
	50	2.5Y2.5/1	10YR7/2	m	[✓ vf]	[✓ gr]	[✓ so]	[✓ po]	[✓ lo]	[✓ lo]	[✓ S]	SiCL
				[✓ sg]	f	pl	ss	ps	vfr	so	LS	SiL
				1	m	pr	s	p	fr	sh	SL	Si
				2	[✓ c]	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
						sbk			efi	eh	CL	SC
	60	10YR4/3	10YR7/2	m	[✓ vf]	[✓ gr]	[✓ so]	[✓ po]	[✓ lo]	[✓ lo]	S	SiCL
				[✓ sg]	f	pl	ss	ps	vfr	so	[✓ LS]	SiL
				1	m	pr	s	p	fr	sh	SL	Si
				2	[✓ c]	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
						sbk			efi	eh	CL	SC
	70	2.5Y2.5/1	10YR7/2	m	[✓ vf]	[✓ gr]	[✓ so]	[✓ po]	[✓ lo]	[✓ lo]	[✓ S]	SiCL
				[✓ sg]	f	pl	ss	ps	vfr	so	LS	SiL
				1	m	pr	s	p	fr	sh	SL	Si
				2	[✓ c]	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
						sbk			efi	eh	CL	SC
	80	2.5Y2.5/1	10YR7/2	m	[✓ vf]	[✓ gr]	[✓ so]	[✓ po]	[✓ lo]	[✓ lo]	[✓ S]	SiCL
				[✓ sg]	f	pl	ss	ps	vfr	so	LS	SiL
				1	m	pr	s	p	fr	sh	SL	Si
				2	[✓ c]	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
						sbk			efi	eh	CL	SC
	90	2.5Y2.5/1	10YR7/2	m	[✓ vf]	[✓ gr]	[✓ so]	[✓ po]	[✓ lo]	[✓ lo]	[✓ S]	SiCL
				[✓ sg]	f	pl	ss	ps	vfr	so	LS	SiL
				1	m	pr	s	p	fr	sh	SL	Si
				2	[✓ c]	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
						sbk			efi	eh	CL	SC

Pit 2	**10**	**10YR4/4**	m	vf	gr	so	[✓ po]	[✓ lo]	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	ps	[✓ vfr]	so	LS	[✓ SiL]
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/2	[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	20	**10YR4/4**	m	[✓ vf]	gr	so	po	[✓ lo]	lo	S	SiCL
			sg	f	pl	[✓ ss]	[✓ ps]	[✓ vfr]	[✓ so]	LS	[✓ SiL]
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/2	[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	30	**10YR4/4**	m	[✓ vf]	[✓ gr]	so	po	[✓ lo]	[✓ lo]	S	SiCL
			[✓ sg]	f	pl	[✓ ss]	[✓ ps]	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR7/2	2	[✓ c]	cpr	vs	vp	fi	h	[✓ SCL]	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	40	**10YR4/4**	m	[✓ vf]	[✓ gr]	so	po	[✓ lo]	[✓ lo]	S	SiCL
			[✓ sg]	f	pl	[✓ ss]	[✓ ps]	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR7/2	2	[✓ c]	cpr	vs	vp	fi	h	[✓ SCL]	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	50	**10YR4/4**	m	[✓ vf]	[✓ gr]	so	po	[✓ lo]	[✓ lo]	S	SiCL
			[✓ sg]	f	pl	[✓ ss]	[✓ ps]	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR7/2	2	[✓ c]	cpr	vs	vp	fi	h	[✓ SCL]	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	60	**10YR4/3**	m	[✓ vf]	[✓ gr]	so	[✓ po]	[✓ lo]	[✓ lo]	S	SiCL
			[✓ sg]	f	pl	[✓ ss]	ps	vfr	so	[✓ LS]	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR7/2	2	[✓ c]	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	70	**10YR4/3**	m	[✓ vf]	[✓ gr]	[✓ so]	[✓ po]	[✓ lo]	[✓ lo]	[✓ S]	SiCL
			[✓ sg]	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR7/2	2	[✓ c]	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	80	**10YR4/3**	m	[✓ vf]	[✓ gr]	[✓ so]	[✓ po]	[✓ lo]	[✓ lo]	[✓ S]	SiCL
			[✓ sg]	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR7/2	2	[✓ c]	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	90	**10YR4/3**	m	[✓ vf]	[✓ gr]	[✓ so]	[✓ po]	[✓ lo]	[✓ lo]	[✓ S]	SiCL
			[✓ sg]	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR7/2	2	[✓ c]	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC

Pit 3	**10**		m	[✓ vf]	gr	so	[✓ po]	lo	lo	S	SiCL
			sg	f	pl	[✓ ss]	ps	vfr	[✓ so]	LS	[✓ SiL]
		2.5Y5/3	[✓ 1]	m	pr	s	p	[✓ fr]	sh	SL	Si
			2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/1			[✓ sbk]			efi	eh	CL	SC
	20		m	[✓ vf]	gr	so	[✓ po]	lo	lo	S	SiCL
			sg	f	pl	[✓ ss]	ps	vfr	[✓ so]	LS	[✓ SiL]
		2.5Y5/3	[✓ 1]	m	pr	s	p	[✓ fr]	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/1			[✓ sbk]			efi	eh	CL	SC
	30		m	[✓ vf]	gr	so	[✓ po]	lo	lo	S	SiCL
			sg	f	pl	[✓ ss]	ps	vfr	so	LS	[✓ SiL]
		2.5Y5/3	[✓ 1]	m	pr	s	p	[✓ fr]	sh	SL	Si
			2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/1			[✓ sbk]			efi	eh	CL	SC
	40		m	[✓ vf]	gr	so	[✓ po]	lo	lo	S	SiCL
			sg	f	pl	[✓ ss]	ps	vfr	so	LS	[✓ SiL]
		2.5Y5/3	1	m	pr	s	p	fr	sh	SL	Si
			[✓ 2]	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	abk			vfi	[✓ vh]	L	C
		10YR7/1			[✓ sbk]			efi	eh	CL	SC
	50		m	[✓ vf]	gr	so	[✓ po]	lo	lo	S	SiCL
			sg	f	pl	[✓ ss]	ps	vfr	so	LS	[✓ SiL]
		2.5Y5/3	1	m	pr	s	p	[✓ fr]	[✓ sh]	SL	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/1			[✓ sbk]			efi	eh	CL	SC
	60		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	[✓ so]	LS	[✓ SiL]
		2.5Y5/3	1	m	pr	s	p	[✓ fr]	sh	SL	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR7/2			sbk			efi	eh	CL	SC
	70		m	vf	gr	so	po	lo	lo	S	[✓ SiCL]
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	[✓ so]	LS	SiL
		10YR6/5	1	m	pr	s	p	[✓ fr]	sh	SL	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR7/1			sbk			efi	eh	CL	SC
	80		m	[✓ vf]	gr	so	[✓ po]	lo	lo	S	SiCL
			sg	f	pl	[✓ ss]	ps	vfr	[✓ so]	LS	[✓ SiL]
		10YR6/3	[✓ 1]	m	pr	s	p	[✓ fr]	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/2			[✓ sbk]			efi	eh	CL	SC
	90		m	[✓ vf]	gr	so	[✓ po]	lo	lo	S	SiCL
			sg	f	pl	[✓ ss]	ps	[✓ vfr]	so	LS	[✓ SiL]
		10YR6/3	[✓ 1]	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/1			[✓ sbk]			efi	eh	CL	SC

Pit 4	**10**		m	[✓ vf]	gr	so	[✓ po]	lo	lo	S	SiCL
			sg	f	pl	[✓ ss]	ps	[✓ vfr]	[✓ so]	LS	[✓ SiL]
		2.5Y5/3	[✓ 1]	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/3			[✓ sbk]			efi	eh	CL	SC
	20		m	[✓ vf]	gr	so	[✓ po]	lo	lo	S	SiCL
			sg	f	pl	[✓ ss]	ps	[✓ vfr]	[✓ so]	LS	[✓ SiL]
		2.5Y5/3	[✓ 1]	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/2			[✓ sbk]			efi	eh	CL	SC
	30		m	[✓ vf]	[✓ gr]	so	[✓ po]	[✓ lo]	[✓ lo]	S	SiCL
			[✓ sg]	f	pl	[✓ ss]	ps	vfr	so	LS	SiL
		2.5Y4/4	1	m	pr	s	p	fr	sh	[✓ SL]	Si
			2	[✓ c]	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/3			sbk			efi	eh	CL	SC
	40		m	[✓ vf]	[✓ gr]	so	[✓ po]	[✓ lo]	[✓ lo]	S	SiCL
			[✓ sg]	f	pl	[✓ ss]	ps	vfr	so	LS	SiL
		2.5Y4/4	4	m	pr	s	p	fr	sh	[✓ SL]	Si
			5	[✓ c]	cpr	vs	vp	fi	h	SCL	SiC
			6	vc	abk			vfi	vh	L	C
		10YR6/3			sbk			efi	eh	CL	SC
	50		m	[✓ vf]	[✓ gr]	so	[✓ po]	[✓ lo]	[✓ lo]	S	SiCL
			[✓ sg]	f	pl	[✓ ss]	ps	vfr	so	LS	SiL
		10YR4/3	7	m	pr	s	p	fr	sh	[✓ SL]	Si
			8	[✓ c]	cpr	vs	vp	fi	h	SCL	SiC
			9	vc	abk			vfi	vh	L	C
		10YR6/3			sbk			efi	eh	CL	SC
	60		m	[✓ vf]	[✓ gr]	so	[✓ po]	[✓ lo]	[✓ lo]	S	SiCL
			[✓ sg]	f	pl	[✓ ss]	ps	vfr	so	LS	SiL
		10YR4/3	10	m	pr	s	p	fr	sh	[✓ SL]	Si
			11	[✓ c]	cpr	vs	vp	fi	h	SCL	SiC
			12	vc	abk			vfi	vh	L	C
		10YR6/3			sbk			efi	eh	CL	SC
	70		m	[✓ vf]	[✓ gr]	so	[✓ po]	[✓ lo]	[✓ lo]	S	SiCL
			[✓ sg]	f	pl	[✓ ss]	ps	vfr	so	LS	SiL
		10YR4/3	13	m	pr	s	p	fr	sh	[✓ SL]	Si
			14	[✓ c]	cpr	vs	vp	fi	h	SCL	SiC
			15	vc	abk			vfi	vh	L	C
		10YR6/3			sbk			efi	eh	CL	SC
	80		m	[✓ vf]	[✓ gr]	so	[✓ po]	[✓ lo]	[✓ lo]	S	SiCL
			[✓ sg]	f	pl	[✓ ss]	ps	vfr	so	LS	SiL
		10YR4/3	16	m	pr	s	p	fr	sh	[✓ SL]	Si
			17	[✓ c]	cpr	vs	vp	fi	h	SCL	SiC
			18	vc	abk			vfi	vh	L	C
		10YR6/3			sbk			efi	eh	CL	SC
	90		m	[✓ vf]	[✓ gr]	so	[✓ po]	[✓ lo]	[✓ lo]	S	SiCL
			[✓ sg]	f	pl	[✓ ss]	ps	vfr	so	LS	SiL
		10YR4/3	19	m	pr	s	p	fr	sh	[✓ SL]	Si
			20	[✓ c]	cpr	vs	vp	fi	h	SCL	SiC
			21	vc	abk			vfi	vh	L	C
		10YR6/3			sbk			efi	eh	CL	SC
	100		m	[✓ vf]	[✓ gr]	so	[✓ po]	[✓ lo]	[✓ lo]	S	SiCL
			[✓ sg]	f	pl	[✓ ss]	ps	vfr	so	LS	SiL
		10YR4/3	22	m	pr	s	p	fr	sh	[✓ SL]	Si
			23	[✓ c]	cpr	vs	vp	fi	h	SCL	SiC
			24	vc	abk			vfi	vh	L	C
		10YR6/3			sbk			efi	eh	CL	SC

Pit 5	10	10YR5/3	m	[✓ vf]	gr	so	[✓ po]	[✓ lo]	lo	S	SiCL
			sg	f	pl	[✓ ss]	ps	vfr	so	LS	[✓ SiL]
			[✓ 1]	m	pr	s	p	fr	sh	SL	Si
		10YR6/1	2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	20	2.5Y4/4	m	[✓ vf]	gr	so	[✓ po]	lo	lo	S	SiCL
			sg	f	pl	[✓ ss]	ps	vfr	so	LS	[✓ SiL]
			[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	SL	Si
		2.5Y5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	30	2.5Y4/4	m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	[✓ ss]	[✓ ps]	vfr	so	LS	[✓ SiL]
			[✓ 1]	m	pr	s	p	[✓ fr]	sh	SL	Si
		10YR6/3	2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	[✓ abk]			vfi	[✓ vh]	L	C
					sbk			efi	eh	CL	SC
	40	2.5Y4/4	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	[✓ so]	LS	[✓ SiL]
			[✓ 1]	m	pr	s	p	[✓ fr]	sh	SL	Si
		10YR7/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	50	10YR3/3	m	[✓ vf]	[✓ gr]	[✓ so]	[✓ po]	[✓ lo]	lo	S	SiCL
			[✓ sg]	f	pl	ss	ps	vfr	[✓ so]	[✓ LS]	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR7/2	2	[✓ c]	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	60	10YR2/2	m	[✓ vf]	[✓ gr]	[✓ so]	[✓ po]	[✓ lo]	[✓ lo]	S	SiCL
			[✓ sg]	f	pl	ss	ps	vfr	so	[✓ LS]	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR7/2	2	[✓ c]	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	70	10YR3/4	m	[✓ vf]	[✓ gr]	[✓ so]	[✓ po]	[✓ lo]	lo	S	SiCL
			[✓ sg]	f	pl	ss	ps	vfr	[✓ so]	[✓ LS]	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR7/2	2	[✓ c]	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	80	10YR2/2	m	[✓ vf]	[✓ gr]	[✓ so]	[✓ po]	[✓ lo]	lo	S	SiCL
			[✓ sg]	f	pl	ss	ps	vfr	so	[✓ LS]	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR7/2	2	[✓ c]	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC

Pit 6	**10**	**10YR4/3**	m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	[✓ ss]	[✓ ps]	vfr	so	LS	SiL
			1	m	pr	s	p	fr	[✓ sh]	SL	Si
		10YR5/4	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	[✓ L]	C
					[✓ sbk]			efi	eh	CL	SC
	20	**10YR4/3**	m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	[✓ ss]	[✓ ps]	vfr	so	LS	SiL
			1	m	pr	s	p	fr	[✓ sh]	SL	Si
		10YR6/4	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	[✓ L]	C
					[✓ sbk]			efi	eh	CL	SC
	30	**10YR5/3**	m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	[✓ SiL]
			1	m	pr	[✓ s]	[✓ p]	fr	[✓ sh]	SL	Si
		10YR6/4	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	40	**10YR5/3**	m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	[✓ ss]	[✓ ps]	vfr	so	LS	[✓ SiL]
			[✓ 1]	m	pr	s	p	fr	[✓ sh]	SL	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	50	**10YR4/3**	m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	[✓ ss]	[✓ ps]	vfr	[✓ so]	LS	[✓ SiL]
			[✓ 1]	m	pr	s	p	fr	sh	SL	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	60	**10YR4/3**	m	[✓ vf]	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	f	pl	ss	[✓ ps]	vfr	so	LS	[✓ SiL]
			1	m	pr	s	p	fr	[✓ sh]	SL	Si
		10YR6/4	[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	70	**10YR4/3**	m	[✓ vf]	[✓ gr]	[✓ so]	po	[✓ lo]	lo	S	SiCL
			[✓ sg]	f	pl	ss	[✓ ps]	vfr	so	LS	[✓ SiL]
			1	m	pr	s	p	fr	sh	SL	Si
		10YR7/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	[✓ vh]	L	C
					sbk			efi	[✓ eh]	CL	SC
	80	**10YR4/3**	m	[✓ vf]	[✓ gr]	[✓ so]	po	[✓ lo]	lo	S	SiCL
			[✓ sg]	f	pl	ss	[✓ ps]	vfr	so	LS	[✓ SiL]
			1	m	pr	s	p	fr	sh	SL	Si
		10YR7/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	[✓ vh]	L	C
					sbk			efi	[✓ eh]	CL	SC

Pit 7	10	10YR4/3	m	[✓ vf]	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	f	pl	ss	[✓ ps]	vfr	so	LS	[✓ SiL]
			1	m	pr	s	p	[✓ fr]	sh	SL	Si
		10YR6/3	[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	20	10YR4/3	m	[✓ vf]	gr	so	[✓ po]	lo	lo	S	SiCL
			sg	f	pl	[✓ ss]	ps	vfr	so	LS	[✓ SiL]
			1	m	pr	s	p	[✓ fr]	sh	SL	Si
		10YR6/3	[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	30	10YR5/3	m	[✓ vf]	gr	so	po	lo	lo	S	[✓ SiCL]
			sg	f	pl	ss	[✓ ps]	vfr	so	LS	SiL
			1	m	pr	[✓ s]	p	[✓ fr]	sh	SL	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			vfi	[✓ vh]	L	C
					sbk			efi	eh	CL	SC
	40	10YR4/3	m	[✓ vf]	gr	so	po	lo	lo	S	[✓ SiCL]
			sg	f	pl	[✓ ss]	ps	[✓ vfr]	so	LS	SiL
			1	m	pr	s	[✓ p]	fr	sh	SL	Si
		10YR6/3	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	[✓ vh]	L	C
					[✓ sbk]			efi	eh	CL	SC
	50	10YR3/3	m	[✓ vf]	[✓ gr]	[✓ so]	po	[✓ lo]	[✓ lo]	S	SiCL
			[✓ sg]	f	pl	ss	[✓ ps]	vfr	so	LS	[✓ SiL]
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/4	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	60	10YR4/4	m	[✓ vf]	[✓ gr]	[✓ so]	[✓ po]	[✓ lo]	[✓ lo]	S	SiCL
			[✓ sg]	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	[✓ SCL]	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	70	10YR3/4	m	[✓ vf]	[✓ gr]	[✓ so]	po	[✓ lo]	[✓ lo]	S	SiCL
			[✓ sg]	f	pl	ss	[✓ ps]	vfr	so	[✓ LS]	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	80	10YR3/4	m	[✓ vf]	[✓ gr]	[✓ so]	po	[✓ lo]	[✓ lo]	S	SiCL
			[✓ sg]	f	pl	ss	[✓ ps]	vfr	so	[✓ LS]	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	90	10YR4/4	m	[✓ vf]	[✓ gr]	so	po	[✓ lo]	[✓ lo]	S	SiCL
			[✓ sg]	f	pl	ss	ps	vfr	so	[✓ LS]	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/4	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC

Pit 8	**10**	**10YR4/3**	m	[✓ vf]	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	f	pl	ss	[✓ ps]	vfr	so	LS	[✓ SiL]
			1	m	pr	s	p	[✓ fr]	sh	SL	Si
		10YR6/3	[✓ 2]	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	20	**10YR4/3**	m	[✓ vf]	[✓ gr]	so	po	lo	lo	S	SiCL
			[✓ sg]	f	pl	ss	ps	vfr	so	LS	[✓ SiL]
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/3	2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	30	**10YR4/3**	m	[✓ vf]	[✓ gr]	so	po	[✓ lo]	lo	S	SiCL
			[✓ sg]	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	[✓ L]	C
					[✓ sbk]			efi	eh	CL	SC
	40	**10YR4/3**	m	[✓ vf]	[✓ gr]	so	po	lo	lo	S	SiCL
			[✓ sg]	f	pl	ss	ps	vfr	[✓ so]	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/2	2	[✓ c]	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	[✓ L]	C
					[✓ sbk]			efi	eh	CL	SC
	50	**10YR4/3**	m	[✓ vf]	[✓ gr]	so	po	lo	lo	S	SiCL
			[✓ sg]	f	pl	ss	ps	vfr	[✓ so]	[✓ LS]	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR7/1	2	[✓ c]	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	60	**10YR4/3**	m	[✓ vf]	[✓ gr]	so	po	lo	lo	S	SiCL
			[✓ sg]	f	pl	ss	ps	vfr	[✓ so]	[✓ LS]	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/2	2	[✓ c]	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC

Pit 9	**10**	**10YR4/4**	m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	[✓ ss]	ps	vfr	so	LS	SiL
			1	m	pr	s	[✓ p]	[✓ fr]	sh	SL	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	[✓ L]	C
					[✓ sbk]			efi	eh	CL	SC
	20	**10YR4/4**	m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	[✓ ss]	ps	vfr	so	LS	[✓ SiL]
			1	m	pr	s	[✓ p]	fr	sh	SL	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	30	**10YR4/4**	m	[✓ vf]	[✓ gr]	[✓ so]	[✓ po]	[✓ lo]	[✓ lo]	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			[✓ 1]	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	[✓ c]	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	[✓ L]	C
					sbk			efi	eh	CL	SC
	40	**10YR4/4**	m	[✓ vf]	[✓ gr]	[✓ so]	[✓ po]	[✓ lo]	[✓ lo]	S	SiCL
			[✓ sg]	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	[✓ c]	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	[✓ L]	C
					sbk			efi	eh	CL	SC
	50	**10YR4/4**	m	[✓ vf]	[✓ gr]	[✓ so]	[✓ po]	[✓ lo]	[✓ lo]	S	SiCL
			[✓ sg]	f	pl	ss	ps	vfr	so	[✓ LS]	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/3	2	[✓ c]	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	60	**10YR4/4**	m	[✓ vf]	[✓ gr]	[✓ so]	[✓ po]	[✓ lo]	[✓ lo]	S	SiCL
			[✓ sg]	f	pl	ss	ps	vfr	so	[✓ LS]	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/3	2	[✓ c]	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	70	**10YR4/4**	m	[✓ vf]	[✓ gr]	[✓ so]	[✓ po]	[✓ lo]	[✓ lo]	S	SiCL
			[✓ sg]	f	pl	ss	ps	vfr	so	[✓ LS]	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/3	2	[✓ c]	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC

B.6 Famici

	Depth (cm)	Color		Structure			Consistence				Texture	
		moist	dry				Wet		Moist	Dry		
Pit 1	10			m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
		10YR3/3		[✓ 1]	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
				2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
			10YR5/3			[✓ sbk]			efi	eh	CL	SC
	20			m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
		10YR3/3		[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
				2	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
			10YR5/3			[✓ sbk]			efi	eh	CL	SC
	30			m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
		10YR3/3		[✓ 1]	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
				2	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
			10YR5/3			[✓ sbk]			efi	eh	CL	SC
	40			m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR3/3		[✓ 1]	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
				2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
				3	vc	abk			vfi	vh	L	C
			10YR5/3			[✓ sbk]			efi	eh	CL	SC
	50			m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	f	pl	ss	ps	vfr	[✓ so]	LS	SiL
		10YR3/3		[✓ 1]	m	pr	s	p	fr	sh	[✓ SL]	Si
				2	c	cpr	vs	vp	[✓ fi]	[✓ h]	SCL	SiC
				3	vc	abk			vfi	vh	L	C
			10YR5/3			[✓ sbk]			efi	eh	CL	SC
	60			m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
				sg	f	pl	[✓ ss]	[✓ ps]	vfr	so	LS	SiL
		10YR3/3		1	m	pr	s	p	[✓ fr]	[✓ sh]	SL	Si
				[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	vh	[✓ L]	C
			10YR5/3			[✓ sbk]			efi	eh	CL	SC
	70			m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3		1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
				[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
				3	vc	abk			vfi	vh	L	C
			10YR6/3			[✓ sbk]			efi	eh	CL	SC
	80			m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3		1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
				[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
				3	vc	abk			vfi	vh	L	C
			10YR6/3			[✓ sbk]			efi	eh	CL	SC
	90			m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
				sg	f	pl	[✓ ss]	[✓ ps]	vfr	so	LS	SiL
		10YR4/3		1	m	pr	s	p	[✓ fr]	[✓ sh]	SL	Si
				[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	[✓ vh]	[✓ L]	C
			10YR6/3			[✓ sbk]			efi	eh	CL	SC
	100			m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3		1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
				[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	[✓ vh]	L	C
			10YR6/2			[✓ sbk]			efi	eh	CL	SC

Pit 2	10	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	20	10YR5/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR7/1	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	30	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	40	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	50	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	60	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	70	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	80	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	90	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	100	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/4	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC

Pit 3	10		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
		10YR3/3	[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR4/3			[✓ sbk]			efi	eh	CL	SC
	20		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
		10YR4/3	1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR4/4			[✓ sbk]			efi	eh	CL	SC
	30		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	[✓ pl]	ss	ps	vfr	[✓ so]	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR4/3			[✓ sbk]			efi	eh	CL	SC
	40		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	[✓ pl]	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	[✓ fi]	[✓ h]	SCL	SiC
			3	vc	abk			vfi	[✓ vh]	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	50		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	[✓ pl]	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	[✓ fi]	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	60		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	[✓ fi]	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	70		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	[✓ fi]	[✓ h]	SCL	SiC
			3	vc	abk			vfi	[✓ vh]	L	C
		10YR5/4			[✓ sbk]			efi	eh	CL	SC
	80		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
		10YR4/3	1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/4			[✓ sbk]			efi	eh	CL	SC
	90		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
		10YR4/3	1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/4			[✓ sbk]			efi	eh	CL	SC
	100		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
		10YR4/3	1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/3			[✓ sbk]			efi	eh	CL	SC

Pit 4	10		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	[✓ pl]	ss	ps	vfr	so	LS	SiL
		10YR3/3	1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR4/3			[✓ sbk]			efi	eh	CL	SC
	20		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
		10YR3/3	1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR4/3			[✓ sbk]			efi	eh	CL	SC
	30		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR3/3	1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	40		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
		10YR4/4	1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	50		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/4	1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	60		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/4	1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	[✓ vh]	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	70		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/4	1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	[✓ vh]	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	80		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/4	1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	[✓ vh]	L	C
		10YR6/3			[✓ sbk]			efi	[✓ eh]	CL	SC
	90		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/4	1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	[✓ vh]	L	C
		10YR6/3			[✓ sbk]			efi	eh	CL	SC
	100		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR5/4	1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/2			[✓ sbk]			efi	eh	CL	SC

Pit 5	**10**	**10YR2/2**	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			[✓ 1]	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
		10YR4/2	2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	20	**10YR3/3**	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
		10YR4/2	[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	30	**10YR3/3**	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
		10YR4/2	[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	40	**10YR4/4**	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
		10YR5/2	[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	[✓ vh]	L	C
					[✓ sbk]			efi	eh	CL	SC
	50	**10YR5/4**	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	so	LS	SiL
			1	m	pr	s	p	[✓ fr]	[✓ sh]	SL	Si
		10YR7/2	[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	[✓ L]	C
					[✓ sbk]			efi	eh	CL	SC
	60	**10YR5/3**	m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	[✓ ss]	[✓ ps]	[✓ vfr]	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR7/2	[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	[✓ L]	C
					sbk			efi	eh	CL	SC
	70	**10YR5/4**	m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	[✓ ss]	[✓ ps]	[✓ vfr]	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR7/2	[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	[✓ L]	C
					[✓ sbk]			efi	[✓ eh]	CL	SC
	80	**10YR5/4**	m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	[✓ ss]	[✓ ps]	vfr	so	LS	SiL
			1	m	pr	s	p	[✓ fr]	sh	SL	Si
		10YR7/2	[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	[✓ L]	C
					[✓ sbk]			efi	eh	CL	SC
	90	**10YR5/4**	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	so	LS	SiL
			1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
		10YR7/2	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	100	**10YR5/4**	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	LS	SiL
			1	m	pr	s	p	fr	sh	[✓ SL]	Si
		10YR7/2	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC

Pit 6	10	10YR3/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	20	10YR3/2	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	30	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	40	10YR4/3	m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	[✓ vfr]	so	LS	SiL
			1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
		10YR6/3	[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	50	10YR4/3	m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	[✓ vfr]	so	LS	SiL
			1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
		10YR7/2	[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	60	10YR5/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	LS	SiL
			1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
		10YR6/2	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	70	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	so	LS	SiL
			1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	[✓ vh]	L	C
					[✓ sbk]			efi	eh	CL	SC
	80	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	so	LS	SiL
			1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	90	10YR5/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	so	LS	SiL
			1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
		10YR7/2	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	100	10YR5/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	so	LS	SiL
			1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
		10YR7/2	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC

Pit 7	10		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR3/3	[✓ 1.5]	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
			2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	abk			vfi	[✓ vh]	L	C
		10YR4/3			[✓ sbk]			efi	eh	CL	SC
	20		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	[✓ vh]	L	C
		10YR4/3			[✓ sbk]			efi	eh	CL	SC
	30		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
		10YR4/3	1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	40		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	[✓ vh]	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	50		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	[✓ eh]	CL	SC
	60		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR5/4	1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/2			[✓ sbk]			efi	eh	CL	SC
	70		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR6/3	1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/1			[✓ sbk]			efi	eh	CL	SC
	80		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	so	LS	SiL
		10YR6/3	1	m	pr	s	p	[✓ fr]	sh	SL	Si
			[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	[✓ L]	C
		10YR7/1			[✓ sbk]			efi	eh	CL	SC
	90		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	so	LS	SiL
		10YR5/4	1	m	pr	s	p	fr	sh	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	[✓ vh]	L	C
		10YR7/1			[✓ sbk]			efi	eh	CL	SC
	100		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR5/4	[✓ 1.5]	m	pr	s	p	fr	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	[✓ fi]	[✓ h]	SCL	SiC
			3	vc	abk			vfi	[✓ vh]	L	C
		10YR7/1			[✓ sbk]			efi	eh	CL	SC

Pit 8	10	10YR3/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
		10YR4/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	20	10YR3/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
		10YR4/3	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	30	10YR3/2	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
		10YR4/3	[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	[✓ vh]	L	C
					[✓ sbk]			efi	eh	CL	SC
	40	10YR3/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	[✓ SL]	Si
		10YR4/3	[✓ 2]	c	cpr	vs	vp	[✓ fi]	[✓ h]	SCL	SiC
			3	vc	abk			vfi	[✓ vh]	L	C
					[✓ sbk]			efi	eh	CL	SC
	50	10YR3/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	[✓ SL]	Si
		10YR4/3	[✓ 2]	c	cpr	vs	vp	[✓ fi]	[✓ h]	SCL	SiC
			3	vc	abk			vfi	[✓ vh]	L	C
					[✓ sbk]			efi	eh	CL	SC
	60	10YR3/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	[✓ SL]	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			[✓ vfi]	[✓ vh]	L	C
					[✓ sbk]			efi	eh	CL	SC
	70	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
		10YR6/3	[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			[✓ vfi]	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	80	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
		10YR6/3	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	[✓ vh]	L	C
					[✓ sbk]			efi	eh	CL	SC

B.7 Bitner

	Depth (cm)	Color		Structure			Consistence				Texture	
		Moist	Dry				Wet		Moist	Dry		
Pit 1	10	10YR4/3		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	[✓ LS]	SiL
				[✓ 1]	m	pr	s	p	[✓ fr]	sh	SL	Si
		10YR5/3		2	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
						[✓ sbk]			efi	eh	CL	SC
	20	10YR4/3		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	[✓ LS]	SiL
				[✓ 1]	m	pr	s	p	[✓ fr]	sh	SL	Si
		10YR5/3		2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
						[✓ sbk]			efi	eh	CL	SC
	30	10YR4/3		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	[✓ f]	pl	ss	ps	[✓ vfr]	so	[✓ LS]	SiL
				1	m	pr	s	p	fr	[✓ sh]	SL	Si
		10YR5/3		[✓ 2]	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
				3	vc	[✓ abk]			vfi	vh	L	C
						sbk			efi	eh	CL	SC
	40	10YR4/3		m	vf	gr	[✓ so]	[✓ po]	[✓ lo]	lo	S	SiCL
				sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	[✓ LS]	SiL
				1	m	pr	s	p	fr	[✓ sh]	SL	Si
		10YR5/3		[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
						[✓ sbk]			efi	eh	CL	SC
	50	10YR5/3		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	[✓ f]	pl	ss	ps	vfr	so	[✓ LS]	SiL
				1	m	pr	s	p	[✓ fr]	sh	SL	Si
		10YR6/3		[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
				3	vc	[✓ abk]			[✓ vfi]	[✓ vh]	L	C
						sbk			efi	eh	CL	SC
	60	10YR5/3		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	[✓ f]	pl	ss	ps	vfr	so	[✓ LS]	SiL
				1	m	pr	s	p	fr	sh	SL	Si
		10YR6/3		[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	[✓ abk]			[✓ vfi]	[✓ vh]	L	C
						sbk			efi	eh	CL	SC

Pit 2	10		m	vf	gr	so	[✓ po]	[✓ lo]	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	ps	vfr	[✓ so]	[✓ LS]	SiL
		10YR4/3	1	m	pr	s	p	[✓ fr]	sh	SL	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	20		m	vf	gr	so	po	[✓ lo]	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	[✓ so]	LS	SiL
		10YR5/3	1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/3			[✓ sbk]			efi	eh	CL	SC
	30		m	vf	gr	[✓ so]	po	[✓ lo]	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	vfr	[✓ so]	[✓ LS]	SiL
		10YR4/3	1	m	pr	s	p	[✓ fr]	sh	SL	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/3			[✓ sbk]			efi	eh	CL	SC
	40		m	vf	gr	[✓ so]	[✓ po]	[✓ lo]	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	[✓ LS]	SiL
		10YR4/3	1	m	pr	s	p	fr	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			[✓ 3]	vc	abk			vfi	vh	L	C
		10YR6/3			[✓ sbk]			efi	eh	CL	SC
	50		m	vf	gr	[✓ so]	[✓ po]	[✓ lo]	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	so	[✓ LS]	SiL
		10YR4/3	1	m	pr	s	p	fr	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			[✓ 3]	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	60		m	vf	gr	[✓ so]	[✓ po]	[✓ lo]	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	[✓ LS]	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	SL	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	70		m	vf	gr	[✓ so]	[✓ po]	[✓ lo]	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	[✓ LS]	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	SL	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	80		m	vf	gr	[✓ so]	[✓ po]	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	[✓ LS]	SiL
		10YR4/3	1	m	pr	s	p	[✓ fr]	sh	SL	Si
			[✓ 2]	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/3			[✓ sbk]			efi	eh	CL	SC
	90		m	vf	gr	[✓ so]	[✓ po]	[✓ lo]	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	[✓ LS]	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	SL	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/3			[✓ sbk]			efi	eh	CL	SC
	100		m	vf	gr	[✓ so]	[✓ po]	[✓ lo]	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	so	[✓ LS]	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	SL	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/3			[✓ sbk]			efi	eh	CL	SC

Pit 3	**10**		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	[✓ LS]	SiL
		10YR4/3	[✓ 1]	m	pr	s	p	[✓ fr]	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/3			[✓ sbk]			efi	eh	CL	SC
	20		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	[✓ LS]	SiL
		10YR4.5/3	1	m	pr	s	p	[✓ fr]	sh	SL	Si
			[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	[✓ vh]	L	C
		10YR6/3			[✓ sbk]			[✓ efi]	eh	CL	SC
	30		m	vf	gr	[✓ so]	[✓ po]	[✓ lo]	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	[✓ LS]	SiL
		10YR4.5/3	[✓ 1]	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	[✓ vh]	L	C
		10YR6/3			[✓ sbk]			[✓ efi]	eh	CL	SC
	40		m	vf	gr	[✓ so]	[✓ po]	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	[✓ LS]	SiL
		10YR4/3	[✓ 1]	m	pr	s	p	[✓ fr]	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	[✓ vh]	L	C
		10YR7/2			[✓ sbk]			efi	eh	CL	SC
	50		m	vf	gr	[✓ so]	[✓ po]	[✓ lo]	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	[✓ LS]	SiL
		10YR4/3	[✓ 1]	m	pr	s	p	[✓ fr]	sh	SL	Si
			2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/2			[✓ sbk]			efi	eh	CL	SC
	60		m	vf	gr	[✓ so]	[✓ po]	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	[✓ LS]	SiL
		10YR4.5/3	[✓ 1]	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	[✓ fi]	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/2			[✓ sbk]			efi	eh	CL	SC
	70		m	vf	gr	[✓ so]	[✓ po]	[✓ lo]	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	[✓ LS]	SiL
		10YR4.5/3	[✓ 1]	m	pr	s	p	[✓ fr]	sh	SL	Si
		10YR7/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	80		m	vf	gr	[✓ so]	[✓ po]	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	[✓ LS]	SiL
		10YR4.5/3	[✓ 1]	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/2			[✓ sbk]			efi	eh	CL	SC
	90		m	vf	gr	[✓ so]	[✓ po]	[✓ lo]	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	[✓ LS]	SiL
		10YR4.5/3	[✓ 1]	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/2			[✓ sbk]			efi	eh	CL	SC
	100		m	vf	gr	[✓ so]	[✓ po]	[✓ lo]	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	[✓ LS]	SiL
		10YR4.5/3	[✓ 1]	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/2			[✓ sbk]			efi	eh	CL	SC

Pit 4	10	10YR4/3	m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	[✓ vfr]	[✓ so]	LS	SiL
			1	m	pr	s	p	fr	sh	[✓ SL]	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	20	10YR4/3	m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	vfr	[✓ so]	LS	SiL
			1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			[✓ 3]	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	30	10YR4/3	m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	[✓ vfr]	[✓ so]	LS	SiL
			1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
		10YR6/3	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			[✓ 3]	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	40	10YR4/3	m	vf	gr	[✓ so]	po	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	[✓ vfr]	[✓ so]	LS	SiL
			1	m	pr	s	p	fr	sh	[✓ SL]	Si
		10YR6/3	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	50	10YR4/3	m	vf	gr	[✓ so]	po	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	[✓ vfr]	[✓ so]	LS	SiL
			1	m	pr	s	p	fr	sh	[✓ SL]	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	60	10YR5/3	m	vf	gr	so	po	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	[✓ vfr]	[✓ so]	LS	SiL
			1	m	pr	s	p	fr	sh	[✓ SL]	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			[✓ 3]	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	70	10YR5/3	m	[✓ vf]	gr	so	po	lo	[✓ lo]	S	SiCL
			sg	f	pl	[✓ ss]	[✓ ps]	vfr	[✓ so]	LS	SiL
			1	m	pr	s	p	fr	sh	[✓ SL]	Si
		10YR6/3	2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	80	10YR5/3	m	vf	gr	so	po	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	[✓ vfr]	[✓ so]	LS	SiL
			1	m	pr	s	p	fr	sh	[✓ SL]	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			vfi	vh	L	C
					sbk			[✓ efi]	eh	CL	SC
	90	10YR5/3	m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	[✓ vfr]	[✓ so]	LS	SiL
			1	m	pr	s	p	fr	sh	[✓ SL]	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			[✓ vfi]	vh	L	C
					sbk			efi	eh	CL	SC
	100	10YR5/3	m	vf	gr	[✓ so]	[✓ po]	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	[✓ LS]	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			[✓ vfi]	vh	L	C
					sbk			efi	eh	CL	SC

Pit 5			m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	f	pl	ss	ps	[✓ vfr]	[✓ so]	LS	[✓ SiL]
	10	10YR3/3	[✓ 1]	m	pr	s	p	fr	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/2			[✓ sbk]			efi	eh	CL	SC
			m	[✓ vf]	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	f	pl	ss	[✓ ps]	[✓ vfr]	[✓ so]	LS	[✓ SiL]
	20	10YR3/3	[✓ 1]	m	pr	s	p	fr	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/2			[✓ sbk]			efi	eh	CL	SC
			m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	LS	[✓ SiL]
	30	10YR3/2	[✓ 1]	m	pr	s	p	[✓ fr]	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/2			[✓ sbk]			efi	eh	CL	SC
			m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	LS	[✓ SiL]
	40	10YR3/2	[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/2			[✓ sbk]			efi	eh	CL	SC
			m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	[✓ SiL]
	50	10YR3/3	[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/2			[✓ sbk]			efi	eh	CL	SC
			m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	vfr	so	LS	[✓ SiL]
	60	10YR3/3	[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/2			[✓ sbk]			efi	eh	CL	SC
			m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	[✓ SiL]
	70	10YR3/2	[✓ 1]	m	pr	s	[✓ p]	fr	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/2			[✓ sbk]			efi	eh	CL	SC
			m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	ps	vfr	[✓ so]	LS	[✓ SiL]
	80	10YR3/2	[✓ 1]	m	pr	s	[✓ p]	fr	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/2			[✓ sbk]			efi	eh	CL	SC
			m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	ps	vfr	[✓ so]	LS	[✓ SiL]
	90	10YR3/2	[✓ 1]	m	pr	s	[✓ p]	fr	sh	SL	Si
			2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/2			[✓ sbk]			efi	eh	CL	SC
			m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	ps	vfr	[✓ so]	LS	[✓ SiL]
	100	10YR3/2	[✓ 1]	m	pr	s	[✓ p]	fr	sh	SL	Si
			2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	abk			[✓ vfi]	vh	L	C
		10YR6/2			[✓ sbk]			efi	eh	CL	SC

Pit 6	10		m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	[✓ 1]	m	pr	s	[✓ p]	[✓ fr]	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	[✓ L]	C
		10YR5/2			[✓ sbk]			efi	eh	CL	SC
	20		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	so	LS	[✓ SiL]
		10YR4/3	1	m	pr	s	p	[✓ fr]	[✓ sh]	SL	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/2			[✓ sbk]			efi	eh	CL	SC
	30		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	so	LS	[✓ SiL]
		10YR4/3	1	m	pr	s	p	[✓ fr]	[✓ sh]	SL	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR5/2			[✓ sbk]			efi	eh	CL	SC
	40		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	[✓ vfr]	[✓ so]	LS	[✓ SiL]
		10YR4/3	[✓ 1]	m	pr	s	p	fr	[✓ sh]	SL	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/2			[✓ sbk]			efi	eh	CL	SC
	50		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	ps	vfr	[✓ so]	LS	[✓ SiL]
		10YR4/3	1	m	pr	s	[✓ p]	[✓ fr]	[✓ sh]	SL	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/2			[✓ sbk]			efi	eh	CL	SC
	60		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	ps	[✓ vfr]	[✓ so]	LS	[✓ SiL]
		10YR4/3	[✓ 1]	m	pr	s	[✓ p]	fr	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/2			[✓ sbk]			efi	eh	CL	SC
	70		m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	[✓ ps]	vfr	[✓ so]	LS	SiL
		10YR4/3	[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	[✓ L]	C
		10YR6/2			[✓ sbk]			efi	eh	CL	SC
	80		m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	[✓ SiL]
		10YR4/3	1	m	pr	s	[✓ p]	[✓ fr]	[✓ sh]	SL	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/2			[✓ sbk]			efi	eh	CL	SC
	90		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	ps	vfr	so	LS	[✓ SiL]
		10YR4/3	1	m	pr	s	[✓ p]	[✓ fr]	[✓ sh]	SL	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR6/2			[✓ sbk]			efi	eh	CL	SC
	100		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	[✓ SiL]
		10YR4/3	1	m	pr	s	p	[✓ fr]	[✓ sh]	SL	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR6/2			[✓ sbk]			efi	eh	CL	SC

Pit 7	10		m	[✓ vf]	gr	so	po	[✓ lo]	[✓ lo]	S	SiCL
			sg	f	pl	[✓ ss]	[✓ ps]	[✓ vfr]	so	LS	[✓ SiL]
		10YR3/2	[✓ 1]	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/3			[✓ sbk]			efi	eh	CL	SC
	20		m	[✓ vf]	gr	so	po	[✓ lo]	lo	S	SiCL
			sg	f	pl	[✓ ss]	ps	[✓ vfr]	so	LS	[✓ SiL]
		10YR4/2	[✓ 1]	m	pr	s	[✓ p]	fr	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/3			[✓ sbk]			efi	eh	CL	SC
	30		m	[✓ vf]	gr	so	po	[✓ lo]	[✓ lo]	S	SiCL
			sg	f	pl	[✓ ss]	ps	[✓ vfr]	so	LS	[✓ SiL]
		10YR4/2	[✓ 1]	m	pr	s	[✓ p]	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/2			[✓ sbk]			efi	eh	CL	SC
	40		m	[✓ vf]	gr	so	po	[✓ lo]	[✓ lo]	S	SiCL
			sg	f	pl	[✓ ss]	ps	[✓ vfr]	so	LS	[✓ SiL]
		10YR4/2	[✓ 1]	m	pr	s	[✓ p]	fr	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/2			[✓ sbk]			efi	eh	CL	SC
	50		m	vf	gr	so	po	[✓ lo]	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	ps	[✓ vfr]	[✓ so]	LS	[✓ SiL]
		10YR4/2	[✓ 1]	m	pr	s	[✓ p]	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/2			[✓ sbk]			efi	eh	CL	SC
	60		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	ps	[✓ vfr]	[✓ so]	LS	[✓ SiL]
		10YR4/2	[✓ 1]	m	pr	s	[✓ p]	[✓ fr]	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/2			[✓ sbk]			efi	eh	CL	SC
	70		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	[✓ LS]	SiL
		10YR5/3	[✓ 1]	m	pr	s	p	fr	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/2			[✓ sbk]			efi	eh	CL	SC
	80		m	vf	gr	[✓ so]	[✓ po]	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	so	LS	SiL
		10YR5/3	[✓ 1]	m	pr	s	p	fr	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/2			[✓ sbk]			efi	eh	CL	SC
	90		m	vf	gr	[✓ so]	[✓ po]	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	so	[✓ LS]	SiL
		10YR5/3	[✓ 1]	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/2			[✓ sbk]			efi	eh	CL	SC
	100		m	vf	gr	[✓ so]	[✓ po]	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	so	[✓ LS]	SiL
		10YR5/3	[✓ 1]	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/1			[✓ sbk]			efi	eh	CL	SC

Pit 8	10	10YR7/1	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR7/1	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	20	10YR7/2	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR7/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	30	10YR7/2	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR7/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	40	10YR7/2	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR7/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	50	10YR7/2	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR7/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	60	10YR7/2	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR7/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	70	10YR8/1	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR8/1	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	80	10YR8/1	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR8/1	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC

B.8 Scoria

	Depth (cm)	Color		Structure			Consistence				Texture	
		Moist	Dry				Wet		Moist	Dry		
Pit 1	10			m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	LS	SiL
		10YR4/3		[✓ 1]	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
				2	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
			10YR5/3			[✓ sbk]			efi	eh	CL	SC
	20			m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3		1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
				[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
			10YR5/3			[✓ sbk]			efi	eh	CL	SC
	30			m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3		1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
				[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
				3	vc	abk			vfi	vh	L	C
			10YR5/3			[✓ sbk]			efi	eh	CL	SC
	40			m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3		1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
				[✓ 2]	c	cpr	vs	vp	[✓ fi]	[✓ h]	SCL	SiC
				3	vc	abk			vfi	vh	L	C
			10YR5/3			[✓ sbk]			efi	eh	CL	SC
	50			m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR5/3		1	m	pr	s	p	fr	sh	[✓ SL]	Si
				2	c	cpr	vs	vp	[✓ fi]	[✓ h]	SCL	SiC
				[✓ 3]	vc	[✓ abk]			vfi	[✓ vh]	L	C
			10YR6/3			sbk			efi	eh	CL	SC
	60			m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
				sg	[✓ f]	pl	ss	[✓ ps]	vfr	so	LS	SiL
		10YR5/3		1	m	pr	s	p	fr	sh	[✓ SL]	Si
				2	c	cpr	vs	vp	[✓ fi]	[✓ h]	SCL	SiC
				[✓ 3]	vc	[✓ abk]			vfi	vh	L	C
			10YR6/3			sbk			efi	eh	CL	SC
	70			m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
				sg	[✓ f]	pl	ss	[✓ ps]	vfr	so	LS	SiL
		10YR5/3		1	m	pr	s	p	fr	[✓ sh]	SL	Si
				2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
				[✓ 3]	vc	[✓ abk]			vfi	vh	[✓ L]	C
			10YR6/3			sbk			efi	eh	CL	SC
	80			m	vf	gr	[✓ so]	po	lo	lo	S	SiCL
				sg	[✓ f]	[✓ pl]	ss	[✓ ps]	vfr	[✓ so]	LS	SiL
		10YR5/3		1	m	pr	s	p	fr	sh	SL	Si
				2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
				[✓ 3]	vc	[✓ abk]			vfi	vh	[✓ L]	C
			10YR6/3			sbk			efi	eh	CL	SC
	90			m	vf	gr	so	[✓ po]	lo	[✓ lo]	S	SiCL
				sg	[✓ f]	[✓ pl]	[✓ ss]	ps	vfr	[✓ so]	LS	SiL
		10YR5/3		1	m	pr	s	p	fr	sh	SL	Si
				2	c	cpr	vs	vp	fi	h	SCL	SiC
				[✓ 3]	vc	[✓ abk]			[✓ vfi]	vh	[✓ L]	C
			10YR6/3			sbk			efi	eh	CL	SC
	100			m	vf	gr	[✓ so]	[✓ po]	lo	[✓ lo]	S	SiCL
				sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3		1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
				2	c	cpr	vs	vp	fi	h	SCL	SiC
				[✓ 3]	vc	abk			vfi	vh	L	C
			10YR6/3			[✓ sbk]			efi	eh	CL	SC

Pit 2	**10**		m	vf	gr	[✓ so]	[✓ po]	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	LS	SiL
		10YR4/2	1	m	pr	s	p	fr	sh	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	20		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	LS	SiL
		10YR4/2.5	[✓ 1]	m	pr	s	p	fr	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	30		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/2.5	[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/2			[✓ sbk]			efi	eh	CL	SC
	40		m	vf	gr	[✓ so]	[✓ po]	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/2.5	1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	[✓ vh]	L	C
		10YR6/3			[✓ sbk]			efi	eh	CL	SC
	50		m	vf	gr	[✓ so]	[✓ po]	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
		10YR4/3	1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR6/3			sbk			efi	eh	CL	SC
	60		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	[✓ fi]	[✓ h]	SCL	SiC
			[✓ 3]	vc	[✓ abk]			[✓ vfi]	[✓ vh]	L	C
		10YR6/3			sbk			efi	eh	CL	SC
	70		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			[✓ vfi]	[✓ vh]	L	C
		10YR6/3			sbk			efi	eh	CL	SC
	80		m	vf	gr	so	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			[✓ vfi]	[✓ vh]	L	C
		10YR6/3			sbk			[✓ efi]	eh	CL	SC
	90		m	vf	gr	so	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			[✓ vfi]	[✓ vh]	L	C
		10YR6/3			sbk			[✓ efi]	eh	CL	SC
	100		m	vf	gr	so	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			vfi	[✓ vh]	L	C
		10YR6/3			sbk			[✓ efi]	eh	CL	SC

Pit 3	10	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	20	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR4/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	30	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	40	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	50	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	60	10YR4/3	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	70	10YR4/4	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	80	10YR4/4	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	90	10YR4/6	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR7/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	100	10YR4/6	m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR7/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					sbk			efi	eh	CL	SC

Pit 4	10		m	[✓ vf]	gr	so	po	lo	[✓ lo]	S	SiCL
			sg	f	pl	[✓ ss]	ps	[✓ vfr]	[✓ so]	LS	[✓ SiL]
		10YR4/3	[✓ 1]	m	pr	s	[✓ p]	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	20		m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	[✓ ss]	ps	vfr	so	LS	[✓ SiL]
		10YR4/3	[✓ 1]	m	pr	s	[✓ p]	[✓ fr]	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	30		m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	[✓ ss]	ps	[✓ vfr]	so	LS	[✓ SiL]
		10YR3/2	[✓ 1]	m	pr	s	[✓ p]	[✓ fr]	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	40		m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	[✓ ss]	ps	[✓ vfr]	so	LS	[✓ SiL]
		10YR3/2	[✓ 1]	m	pr	s	[✓ p]	[✓ fr]	sh	SL	Si
			2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	50		m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	[✓ ss]	ps	[✓ vfr]	[✓ so]	LS	[✓ SiL]
		10YR3/2	[✓ 1]	m	pr	s	[✓ p]	[✓ fr]	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	60		m	vf	gr	so	po	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	ps	[✓ vfr]	[✓ so]	LS	[✓ SiL]
		10YR3/2	[✓ 1]	m	pr	s	[✓ p]	[✓ fr]	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/3			[✓ sbk]			efi	eh	CL	SC
	70		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	so	LS	[✓ SiL]
		10YR4/3	[✓ 1]	m	pr	s	p	[✓ fr]	sh	SL	Si
			2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/3			[✓ sbk]			efi	eh	CL	SC
	80		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	so	LS	[✓ SiL]
		10YR4/3	[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/2			[✓ sbk]			efi	eh	CL	SC
	90		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	so	LS	[✓ SiL]
		10YR4/3	[✓ 1]	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	[✓ fi]	[✓ h]	SCL	SiC
			3	vc	abk			[✓ vfi]	vh	L	C
		10YR7/2			[✓ sbk]			efi	eh	CL	SC
	100		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	[✓ f]	pl	[✓ ss]	[✓ ps]	vfr	[✓ so]	LS	[✓ SiL]
		10YR4/3	[✓ 1]	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	abk			[✓ vfi]	[✓ vh]	L	C
		10YR7/2			[✓ sbk]			efi	eh	CL	SC

Pit 5	10		m	vf	[✓ gr]	[✓ so]	[✓ po]	[✓ lo]	[✓ lo]	S	SiCL
			[✓ sg]	[✓ f]	pl	ss	ps	vfr	so	[✓ LS]	SiL
		10YR5/3	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/3			sbk			efi	eh	CL	SC
	20		m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	[✓ pl]	ss	ps	vfr	so	LS	SiL
		10YR5/3	1	m	pr	[✓ s]	[✓ p]	[✓ fr]	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	fi	[✓ h]	[✓ SCL]	SiC
			[✓ 3]	vc	[✓ abk]			vfi	vh	L	C
		10YR6/3			sbk			efi	eh	CL	SC
	30		m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR5/3	1	m	pr	[✓ s]	[✓ p]	fr	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	[✓ fi]	h	[✓ SCL]	SiC
			[✓ 3]	vc	[✓ abk]			vfi	[✓ vh]	L	C
		10YR6/3			sbk			efi	eh	CL	SC
	40		m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	[✓ ps]	vfr	so	LS	SiL
		10YR5/3	1	m	pr	[✓ s]	p	fr	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			[✓ vfi]	vh	L	C
		10YR6/3			sbk			efi	[✓ eh]	[✓ CL]	SC
	50		m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR5/3	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			[✓ 3]	vc	[✓ abk]			[✓ vfi]	[✓ vh]	L	C
		10YR7/2			sbk			[✓ efi]	[✓ eh]	[✓ CL]	SC

Pit 6	10		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	[✓ pl]	ss	ps	vfr	so	LS	SiL
		10YR3/3	1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	20		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	[✓ pl]	ss	ps	vfr	so	LS	SiL
		10YR3/3	1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
			[✓ 2.5]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR5/3			sbk			efi	eh	CL	SC
	30		m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	f	[✓ pl]	ss	ps	vfr	[✓ so]	LS	SiL
		10YR4/3	1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR6/3			sbk			efi	eh	CL	SC
	40		m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	f	[✓ pl]	ss	ps	vfr	[✓ so]	LS	SiL
		10YR4/3	1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR6/3			sbk			efi	eh	CL	SC

Pit 7	**10**	**10YR4/3**	**m**	[✓ vf]	**gr**	**so**	[✓ po]	**lo**	**lo**	**S**	**SiCL**
			sg	**f**	**pl**	**ss**	**ps**	**vfr**	**so**	**LS**	**SiL**
			1	**m**	**pr**	[✓ s]	**p**	**fr**	**sh**	**SL**	**Si**
		10YR6/3	[✓ 2]	**c**	**cpr**	**vs**	**vp**	**fi**	[✓ h]	**SCL**	**SiC**
			3	**vc**	[✓ abk]			**vfi**	[✓ vh]	**L**	**C**
					sbk			[✓ efi]	**eh**	[✓ CL]	**SC**
	20	**10YR4/3**	**m**	[✓ vf]	**gr**	**so**	[✓ po]	**lo**	**lo**	**S**	**SiCL**
			sg	**f**	**pl**	**ss**	**ps**	**vfr**	**so**	**LS**	**SiL**
			1	**m**	**pr**	[✓ s]	**p**	**fr**	**sh**	**SL**	**Si**
		10YR6/3	[✓ 2]	**c**	**cpr**	**vs**	**vp**	**fi**	[✓ h]	**SCL**	**SiC**
			3	**vc**	[✓ abk]			**vfi**	[✓ vh]	**L**	**C**
					sbk			[✓ efi]	**eh**	[✓ CL]	**SC**
	30	**10YR4/3**	**m**	[✓ vf]	**gr**	**so**	[✓ po]	**lo**	**lo**	**S**	**SiCL**
			sg	**f**	**pl**	**ss**	**ps**	**vfr**	**so**	**LS**	**SiL**
			1	**m**	**pr**	[✓ s]	**p**	**fr**	**sh**	**SL**	**Si**
		10YR6/3	**2**	**c**	**cpr**	**vs**	**vp**	**fi**	**h**	**SCL**	**SiC**
			[✓ 3]	**vc**	[✓ abk]			**vfi**	[✓ vh]	**L**	**C**
					sbk			[✓ efi]	[✓ eh]	[✓ CL]	**SC**
	40	**10YR4/3**	[✓ m]	[✓ vf]	**gr**	**so**	[✓ po]	**lo**	**lo**	**S**	**SiCL**
			sg	**f**	[✓ pl]	**ss**	**ps**	**vfr**	**so**	**LS**	**SiL**
			1	**m**	**pr**	[✓ s]	**p**	**fr**	**sh**	**SL**	**Si**
		10YR6/3	**2**	**c**	**cpr**	**vs**	**vp**	**fi**	**h**	**SCL**	**SiC**
			3	**vc**	**abk**			**vfi**	[✓ vh]	**L**	**C**
					sbk			[✓ efi]	[✓ eh]	[✓ CL]	**SC**

Pit 8	10		m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR3/3	[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR4/3			[✓ sbk]			efi	eh	CL	SC
	20		m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	f	pl	ss	ps	[✓ vfr]	[✓ so]	LS	SiL
		10YR3/3	[✓ 1]	m	pr	s	p	fr	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR4/3			[✓ sbk]			efi	eh	CL	SC
	30		m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	f	pl	ss	ps	[✓ vfr]	[✓ so]	LS	SiL
		10YR4/3	[✓ 1]	m	pr	s	p	fr	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR4/3			[✓ sbk]			efi	eh	CL	SC
	40		m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	f	[✓ pl]	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR5/4			sbk			efi	eh	CL	SC
	50		m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	[✓ vh]	L	C
		10YR5/4			[✓ sbk]			efi	eh	CL	SC
	60		m	[✓ vf]	gr	[✓ so]	po	lo	lo	S	SiCL
			sg	f	[✓ pl]	ss	[✓ ps]	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	[✓ SL]	Si
			[✓ 2.5]	c	cpr	vs	vp	[✓ fi]	[✓ h]	SCL	SiC
			3	vc	[✓ abk]			vfi	[✓ vh]	L	C
		10YR5/4			sbk			efi	eh	CL	SC
	70		m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	[✓ pl]	[✓ ss]	[✓ ps]	vfr	so	LS	SiL
		10YR4/4	1	m	pr	s	p	fr	sh	SL	Si
			[✓ 2]	c	cpr	vs	vp	[✓ fi]	[✓ h]	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	[✓ L]	C
		10YR5/4			sbk			efi	eh	CL	SC
	80		m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	[✓ pl]	[✓ ss]	[✓ ps]	vfr	so	LS	[✓ SiL]
		10YR4/4	1	m	pr	s	p	[✓ fr]	[✓ sh]	SL	Si
			[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR6/4			sbk			efi	eh	CL	SC
	90		m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	[✓ pl]	[✓ ss]	[✓ ps]	vfr	so	LS	[✓ SiL]
		10YR4/4	[✓ 1.5]	m	pr	s	p	[✓ fr]	sh	SL	Si
			2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR6/4			sbk			efi	[✓ eh]	CL	SC
	100		m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	f	[✓ pl]	ss	ps	vfr	so	LS	[✓ SiL]
		10YR4/3	[✓ 1]	m	pr	s	p	fr	[✓ sh]	SL	Si
			2	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR6/3			sbk			efi	[✓ eh]	CL	SC

Pit 9	10		m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	f	pl	ss	ps	[✓ vfr]	[✓ so]	LS	SiL
		10YR3/3	[✓ 1]	m	pr	s	p	fr	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	20		m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	f	[✓ pl]	ss	ps	vfr	[✓ so]	LS	SiL
		10YR3/2	[✓ 1.5]	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
		10YR5/3			sbk			efi	eh	CL	SC
	30		m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	[✓ so]	LS	SiL
		10YR4/3	[✓ 1.5]	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/3			[✓ sbk]			efi	eh	CL	SC
	40		m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	f	pl	ss	ps	[✓ vfr]	[✓ so]	LS	SiL
		10YR4/3	[✓ 1]	m	pr	s	p	fr	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/3			[✓ sbk]			efi	eh	CL	SC
	50		m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	f	pl	ss	ps	[✓ vfr]	[✓ so]	LS	SiL
		10YR4/3	[✓ 1]	m	pr	s	p	fr	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/3			[✓ sbk]			efi	eh	CL	SC
	60		m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	f	pl	ss	ps	[✓ vfr]	[✓ so]	LS	SiL
		10YR4/3	[✓ 1]	m	pr	s	p	fr	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/3			[✓ sbk]			efi	eh	CL	SC
	70		m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	[✓ so]	LS	SiL
		10YR5/3	[✓ 1]	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/2			[✓ sbk]			efi	eh	CL	SC
	80		m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR5/3	[✓ 1.5]	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR7/2			[✓ sbk]			efi	eh	CL	SC
	90		m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/3			[✓ sbk]			efi	eh	CL	SC
	100		m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	f	pl	ss	ps	[✓ vfr]	[✓ so]	LS	SiL
		10YR4/3	[✓ 1]	m	pr	s	p	fr	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/3			[✓ sbk]			efi	eh	CL	SC

B.9 Polo Cove

	Depth (cm)	Color		Structure			Consistence				Texture	
		Moist	Dry				Wet		Moist	Dry		
Pit 1	10			m	[✓ vf]	gr	so	[✓ po]	lo	lo	S	SiCL
				sg	f	pl	[✓ ss]	ps	vfr	so	LS	SiL
		10YR4/3		1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
				[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	[✓ abk]			vfi	vh	L	C
			10YR6/3			sbk			efi	eh	CL	SC
	20			m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3		1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
				[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
			10YR6/3			[✓ sbk]			efi	eh	CL	SC
	30			m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
				sg	f	pl	ss	ps	[✓ vfr]	[✓ so]	LS	SiL
		10YR4/3		1	m	pr	s	p	fr	sh	[✓ SL]	Si
				[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	[✓ abk]			vfi	vh	L	C
			10YR5/3			sbk			efi	eh	CL	SC
	40			m	[✓ vf]	gr	[✓ so]	po	lo	lo	S	SiCL
				sg	f	pl	ss	[✓ ps]	[✓ vfr]	[✓ so]	LS	SiL
		10YR4/4		1	m	pr	s	p	fr	sh	[✓ SL]	Si
				[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	abk			vfi	vh	L	C
			10YR6/3			[✓ sbk]			efi	eh	CL	SC
	50			m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
				sg	f	pl	[✓ ss]	[✓ ps]	[✓ vfr]	[✓ so]	LS	SiL
		10YR6/3		1	m	pr	s	p	fr	sh	SL	Si
				[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
				3	vc	[✓ abk]			vfi	vh	[✓ L]	C
			10YR7/2			sbk			efi	eh	CL	SC
	60			m	vf	gr	so	po	lo	lo	S	SiCL
				sg	[✓ f]	pl	ss	ps	vfr	so	LS	[✓ SiL]
		10YR6/3		1	m	pr	[✓ s]	[✓ p]	[✓ fr]	[✓ sh]	SL	Si
				[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	[✓ abk]			vfi	[✓ vh]	L	C
			10YR7/2			sbk			efi	eh	CL	SC
	70			m	vf	gr	so	po	lo	lo	S	SiCL
				sg	[✓ f]	pl	[✓ ss]	[✓ ps]	[✓ vfr]	[✓ so]	LS	SiL
		10YR5/4		1	m	pr	s	p	fr	sh	SL	Si
				[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
				3	vc	[✓ abk]			vfi	vh	[✓ L]	C
			10YR7/2			sbk			efi	eh	CL	SC

Pit 2	10	10YR3/6	m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	[✓ L]	C
					sbk			efi	eh	CL	SC
	20	10YR3/4	m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	[✓ ps]	vfr	so	LS	SiL
			[✓ 1]	m	pr	[✓ s]	p	[✓ fr]	sh	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	eh	[✓ CL]	SC
	30	10YR3/4	m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	[✓ ps]	vfr	[✓ so]	LS	SiL
			[✓ 1]	m	pr	s	p	[✓ fr]	sh	SL	Si
		10YR5/3	2	c	cpr	[✓ vs]	vp	fi	[✓ h]	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	eh	[✓ CL]	SC
	40	10YR3/4	m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	[✓ ps]	vfr	so	LS	SiL
			[✓ 1]	m	pr	[✓ s]	p	[✓ fr]	[✓ sh]	SL	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	[✓ CL]	SC
	50	10YR4/4	m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	[✓ ps]	vfr	[✓ so]	LS	SiL
			[✓ 1]	m	pr	[✓ s]	p	[✓ fr]	sh	SL	Si
		10YR6/3	2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	[✓ CL]	SC
	60	10YR4/4	m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			[✓ 1]	m	pr	[✓ s]	[✓ p]	[✓ fr]	[✓ sh]	SL	Si
		10YR7/2	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	[✓ vh]	[✓ L]	C
					[✓ sbk]			efi	eh	CL	SC
	70	10YR4/4	m	[✓ vf]	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	[✓ ss]	[✓ ps]	vfr	so	LS	SiL
			1	m	pr	s	p	[✓ fr]	sh	SL	Si
		10YR7/2	[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	[✓ L]	C
					[✓ sbk]			efi	eh	CL	SC

Pit 3	**10**		m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	20		m	[✓ vf]	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	f	pl	ss	ps	[✓ vfr]	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	30		m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	so	LS	SiL
		10YR4/4	1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
	40		m	vf	gr	[✓ so]	[✓ po]	[✓ lo]	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
		10YR4/2	1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/3			[✓ sbk]			efi	eh	CL	SC
	50		m	vf	gr	[✓ so]	[✓ po]	[✓ lo]	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
		10YR4/2	1	m	pr	s	p	fr	sh	[✓ SL]	Si
			[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/3			[✓ sbk]			efi	eh	CL	SC

Pit 4	**10**	**10YR3/3**	m	[✓ vf]	gr	[✓ so]	[✓ po]	[✓ lo]	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
			[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
		10YR5/3	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	20	**10YR3/3**	m	[✓ vf]	gr	[✓ so]	[✓ po]	[✓ lo]	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	[✓ so]	LS	SiL
			[✓ 1]	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
		10YR5/4	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	30	**10YR3/3**	m	[✓ vf]	gr	[✓ so]	po	[✓ lo]	lo	S	SiCL
			sg	f	pl	ss	[✓ ps]	vfr	[✓ so]	[✓ LS]	SiL
			[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	SL	Si
		10YR5/4	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	40	**10YR3/2**	m	[✓ vf]	gr	so	po	[✓ lo]	lo	S	SiCL
			sg	f	pl	[✓ ss]	[✓ ps]	vfr	[✓ so]	[✓ LS]	SiL
			[✓ 1]	m	pr	s	p	[✓ fr]	[✓ sh]	SL	Si
		10YR5/4	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	50	**10YR3/2**	m	[✓ vf]	gr	so	po	[✓ lo]	lo	S	SiCL
			[✓ sg]	f	pl	[✓ ss]	[✓ ps]	vfr	[✓ so]	[✓ LS]	SiL
			1	m	pr	s	p	[✓ fr]	sh	SL	Si
		10YR5/4	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	60	**10YR3/5**	m	[✓ vf]	gr	[✓ so]	[✓ po]	[✓ lo]	lo	S	SiCL
			[✓ sg]	f	pl	ss	ps	vfr	[✓ so]	[✓ LS]	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/4	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	70	**10YR3/2**	m	[✓ vf]	gr	[✓ so]	[✓ po]	[✓ lo]	lo	S	SiCL
			[✓ sg]	f	pl	ss	ps	vfr	[✓ so]	[✓ LS]	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/4	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	80	**10YR3/2**	m	[✓ vf]	gr	[✓ so]	[✓ po]	[✓ lo]	lo	S	SiCL
			[✓ sg]	f	pl	ss	ps	vfr	[✓ so]	LS	SiL
			1	m	pr	s	p	fr	sh	[✓ SL]	Si
		10YR5/4	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	90	**10YR3/2**	m	[✓ vf]	gr	so	po	[✓ lo]	lo	S	SiCL
			[✓ sg]	f	pl	[✓ ss]	[✓ ps]	vfr	[✓ so]	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR5/4	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	[✓ L]	C
					[✓ sbk]			efi	eh	CL	SC
	100	**10YR3/2**	m	[✓ vf]	gr	so	po	[✓ lo]	[✓ lo]	S	SiCL
			[✓ sg]	f	pl	[✓ ss]	[✓ ps]	vfr	so	LS	SiL
			1	m	pr	s	p	fr	sh	SL	Si
		10YR6/4	2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	[✓ L]	C
					[✓ sbk]			efi	eh	CL	SC

Pit 5	10		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR3/3	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			sbk			efi	eh	CL	SC
	20		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR3/3	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			sbk			efi	eh	CL	SC
	30		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			sbk			efi	eh	CL	SC
	40		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			sbk			efi	eh	CL	SC
	50		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			sbk			efi	eh	CL	SC
	60		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			sbk			efi	eh	CL	SC
	70		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			sbk			efi	eh	CL	SC
	80		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			sbk			efi	eh	CL	SC
	90		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			sbk			efi	eh	CL	SC
	100		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			sbk			efi	eh	CL	SC

Pit 6	10		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR3/3	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR4/3			sbk			efi	eh	CL	SC
	20		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR3/3	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			sbk			efi	eh	CL	SC
	30		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			sbk			efi	eh	CL	SC
	40		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			sbk			efi	eh	CL	SC
	50		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			sbk			efi	eh	CL	SC
	60		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			sbk			efi	eh	CL	SC
	70		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			sbk			efi	eh	CL	SC
	80		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/3	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			sbk			efi	eh	CL	SC
	90		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/4	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			sbk			efi	eh	CL	SC
	100		m	vf	gr	so	po	lo	lo	S	SiCL
			sg	f	pl	ss	ps	vfr	so	LS	SiL
		10YR4/4	1	m	pr	s	p	fr	sh	SL	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR6/2			sbk			efi	eh	CL	SC

Pit 7			m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
	10	10YR4/4	[✓ 1]	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
			m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	LS	SiL
	20	10YR4/3	[✓ 1]	m	pr	s	p	fr	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
			m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	so	LS	SiL
	30	10YR4/3	[✓ 1]	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
			m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	LS	SiL
	40	10YR4/3	[✓ 1]	m	pr	s	p	fr	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
			m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	so	LS	SiL
	50	10YR4/3	[✓ 1]	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
			m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	so	LS	SiL
	60	10YR4/4	[✓ 1]	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
			m	vf	gr	[✓ so]	[✓ po]	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	so	LS	SiL
	70	10YR4/4	[✓ 1]	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
			m	vf	gr	[✓ so]	[✓ po]	lo	[✓ lo]	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	LS	SiL
	80	10YR4/4	[✓ 1]	m	pr	s	p	fr	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
			m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	LS	SiL
	90	10YR4/4	[✓ 1]	m	pr	s	p	fr	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC
			m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	LS	SiL
	100	10YR4/4	[✓ 1]	m	pr	s	p	fr	sh	[✓ SL]	Si
			2	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
		10YR5/3			[✓ sbk]			efi	eh	CL	SC

Pit 8	10	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
		10YR5/4	[✓ 2]	c	cpr	vs	vp	fi	[✓ h]	SCL	SiC
			3	vc	[✓ abk]			vfi	vh	L	C
					sbk			efi	eh	CL	SC
	20	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	so	LS	SiL
			1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
		10YR5/4	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	30	10YR4/4	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	so	LS	SiL
			1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
		10YR5/4	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	40	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	so	LS	SiL
			1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
		10YR5/4	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	50	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	LS	SiL
			1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
		10YR5/4	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	60	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	LS	SiL
			1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	70	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	LS	SiL
			1	m	pr	s	p	fr	sh	[✓ SL]	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	80	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
			1	m	pr	s	p	[✓ fr]	sh	[✓ SL]	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	[✓ fi]	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	90	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	vfr	[✓ so]	LS	SiL
			1	m	pr	s	p	[✓ fr]	[✓ sh]	[✓ SL]	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC
	100	10YR4/3	m	vf	gr	[✓ so]	[✓ po]	lo	lo	S	SiCL
			sg	[✓ f]	pl	ss	ps	[✓ vfr]	[✓ so]	LS	SiL
			1	m	pr	s	p	fr	[✓ sh]	[✓ SL]	Si
		10YR5/3	[✓ 2]	c	cpr	vs	vp	fi	h	SCL	SiC
			3	vc	abk			vfi	vh	L	C
					[✓ sbk]			efi	eh	CL	SC

APPENDIX C

pXRF Returned Data (in parts per million)

C.1 Emerald Slope

Pit	Depth	Sample	Ca	Cu	Fe	K	Mn	Zn
p2	10	#15	30672.0	22.0	16650.0	11965.0	432.0	55.0
	20	#16	25904.0	12.0	16941.0	12673.0	296.0	49.0
	30	#17	17583.0	14.0	16529.0	11218.0	360.0	48.0
	40	#18	31979.0	10.0	16030.0	10430.0	301.0	43.0
	50	#19avg	44377.7	11.7	15220.7	10830.0	277.3	48.3
	60	#20	37598.0	9.0	12567.0	12955.0	255.0	39.0
	70	#21	28630.0	7.0	14224.0	12547.0	343.0	43.0
	80	#22	23318.0	6.0	13751.0	10532.0	273.0	40.0
	90	#23	21380.0	11.0	12878.0	12878.0	293.0	41.0
Average			29049.1	11.4	14976.7	11780.9	314.5	45.1
Minimum			17583.0	6.0	12567.0	10430.0	255.0	39.0
Maximum			44377.7	22.0	16941.0	12955.0	432.0	55.0
Std. Dev.			8310.1	4.7	1677.7	1037.1	55.1	5.3
p5	10	#24	14716.0	26.0	22554.0	13257.0	362.0	141.0
	20	#25	11912.0	30.0	23441.0	12744.0	417.0	141.0
	30	#26	10201.0	26.0	23651.0	11204.0	420.0	87.0
	40	#27	13403.0	14.0	22501.0	10995.0	413.0	72.0
	50	#28a	27368.0	18.0	20475.3	11412.7	563.3	67.0
	60	#29	13953.0	22.0	21659.0	11075.0	480.0	71.0
	70	#30	19211.0	11.0	19301.0	9722.0	588.0	64.0
	80	#31	16175.0	22.0	19148.0	10865.0	447.0	63.0
	90	#32	17166.0	24.0	17805.0	10796.0	366.0	55.0
Average			16011.7	21.4	21170.6	11341.2	450.7	84.6
Minimum			10201.0	11.0	17805.0	9722.0	362.0	55.0
Maximum			27368.0	30.0	23651.0	13257.0	588.0	141.0
Std. Dev.			5047.9	6.1	2080.5	1060.6	79.8	33.1

Triplicates	Ca	Cu	Fe	K	Mn	Zn
#19a	47583.0	16.0	14627.0	10488.0	257.0	44.0
#19b	45251.0	9.0	14971.0	10780.0	270.0	47.0
#19c	40299.0	10.0	16064.0	11222.0	305.0	54.0
Average	44377.7	11.7	15220.7	10830.0	277.3	48.3
Minimum	40299.0	9.0	14627.0	10488.0	257.0	44.0
Maximum	47583.0	16.0	16064.0	11222.0	305.0	54.0
Std. Dev.	3719.7	3.8	750.3	369.5	24.8	5.1
#28a	26076.0	20.0	20605.0	11752.0	565.0	67.0
#28b	27618.0	15.0	19497.0	11295.0	565.0	64.0
#28c	28410.0	19.0	21324.0	11191.0	560.0	70.0
Average	27368.0	18.0	20475.3	11412.7	563.3	67.0
Minimum	26076.0	15.0	19497.0	11191.0	560.0	64.0
Maximum	28410.0	20.0	21324.0	11752.0	565.0	70.0
Std. Dev.	1186.9	2.6	920.4	298.4	2.9	3.0

C.2 Kindred

Pit	Depth	Sample	Ca	Cu	Fe	K	Mn	Zn
p1	10	#53	23215.0	26.0	19627.0	11767.0	426.0	60.0
	20	#54	23302.0	16.0	18665.0	10727.0	417.0	54.0
	30	#55	24862.0	17.0	18922.0	11059.0	376.0	54.0
	40	#56	46090.0	12.0	20171.0	10433.0	352.0	55.0
	50	#57avg	45703.3	13.7	19391.7	10461.3	370.7	50.7
	60	#58	87203.0	11.0	16905.0	8655.0	290.0	50.0
	70	#59	76666.0	16.0	22491.0	9729.0	346.0	55.0
	80	#60	43818.0	11.0	20781.0	9595.0	382.0	50.0
	90	#61	47651.0	17.0	22639.0	9800.0	409.0	47.0
Average			46501.1	15.5	19954.7	10247.4	374.3	52.9
Minimum			23215.0	11.0	16905.0	8655.0	290.0	47.0
Maximum			87203.0	26.0	22639.0	11767.0	426.0	60.0
Std. Dev.			22706.2	4.6	1831.1	915.7	42.1	3.8
p3	10	#62	21937.0	19.0	18732.0	11234.0	385.0	55.0
	20	#63	16403.0	14.0	18646.0	11081.0	371.0	54.0
	30	#64	10756.0	14.0	18107.0	9911.0	344.0	58.0
	40	#65	18066.0	17.0	18503.0	9716.0	359.0	56.0
	50	#66avg	23648.3	12.7	18993.7	9866.0	642.3	49.3
	60	#67	37335.0	24.0	19276.0	9298.0	405.0	56.0
	70	#68	35025.0	20.0	20362.0	9530.0	367.0	54.0
	80	#69	36865.0	19.0	21993.0	10273.0	423.0	53.0
	90	#70	37300.0	16.0	21401.0	10468.0	395.0	52.0
	100	#71	38592.0	13.0	23087.0	10764.0	378.0	58.0
Average			27592.7	16.9	19910.1	10214.1	406.9	54.5
Minimum			10756.0	12.7	18107.0	9298.0	344.0	49.3
Maximum			38592.0	24.0	23087.0	11234.0	642.3	58.0
Std. Dev.			10532.1	3.6	1710.0	660.8	85.8	2.7

Triplicates	Ca	Cu	Fe	K	Mn	Zn
#57a	45066.0	8.0	20154.0	9896.0	387.0	48.0
#57b	45187.0	16.0	20313.0	10240.0	374.0	54.0
#57c	46857.0	17.0	17708.0	11248.0	351.0	50.0
Average	45703.3	13.7	19391.7	10461.3	370.7	50.7
Minimum	45066.0	8.0	17708.0	9896.0	351.0	48.0
Maximum	46857.0	17.0	20313.0	11248.0	387.0	54.0
Std. Dev.	1000.9	4.9	1460.3	702.7	18.2	3.1
#66a	23075.0	10.0	18420.0	9747.0	641.0	48.0
#66b	22392.0	15.0	18920.0	9813.0	646.0	50.0
#66c	25478.0	13.0	19641.0	10038.0	640.0	50.0
Average	23648.3	12.7	18993.7	9866.0	642.3	49.3
Minimum	22392.0	10.0	18420.0	9747.0	640.0	48.0
Maximum	25478.0	15.0	19641.0	10038.0	646.0	50.0
Std. Dev.	1620.9	2.5	613.8	152.6	3.2	1.2

C.3 Hat Ranch

Pit	Depth	Sample	Ca	Cu	Fe	K	Mn	Zn
p3	10	#72	22590.0	19.0	21093.0	11227.0	373.0	85.0
	20	#73	21953.0	18.0	21832.0	10888.0	410.0	87.0
	30	#74	23995.0	16.0	21594.0	10326.0	400.0	80.0
	40	#75	22775.0	23.0	20716.0	10115.0	368.0	77.0
	50	#76a	24243.3	17.7	20344.3	10608.0	375.7	91.3
	60	#77	49964.0	11.0	21530.0	9374.0	339.0	59.0
	70	#78	60161.0	15.0	22617.0	9310.0	357.0	50.0
	80	#79	58573.0	20.0	20252.0	9198.0	327.0	52.0
	90	#80	50748.0	20.0	19311.0	9833.0	340.0	46.0
	100	#81	45352.0	13.0	17504.0	10386.0	302.0	48.0
	110	#82	65303.0	15.0	13360.0	10416.0	260.0	39.0
Average			40514.3	17.1	20013.9	10152.8	350.2	64.9
Minimum			21953.0	11.0	13360.0	9198.0	260.0	39.0
Maximum			65303.0	23.0	22617.0	11227.0	410.0	91.3
Std. Dev.			17499.0	3.5	2603.2	662.4	43.4	19.2
p6	10	#83	8877.0	21.0	18758.0	12386.0	411.0	70.0
	20	#84	9694.0	23.0	20754.0	11610.0	406.0	74.0
	30	#85	8702.0	19.0	18451.0	9980.0	378.0	69.0
	40	#86	9174.0	14.0	17410.0	10216.0	365.0	67.0
	50	#87a	9048.3	16.0	19296.0	10985.3	379.0	56.0
	60	#88	8708.0	19.0	18156.0	11255.0	342.0	53.0
	70	#89	9201.0	14.0	16954.0	11368.0	363.0	52.0
	80	#90	21843.0	7.0	16519.0	11163.0	323.0	52.0
	90	#91	30860.0	15.0	15810.0	10853.0	357.0	49.0
	100	#92	35473.0	9.0	14523.0	10678.0	292.0	41.0
Average			15158.0	15.7	17663.1	11049.4	361.6	58.3
Minimum			8702.0	7.0	14523.0	9980.0	292.0	41.0
Maximum			35473.0	23.0	20754.0	12386.0	411.0	74.0
Std. Dev.			10355.6	5.1	1809.0	689.3	36.1	10.9

Triplicates	Ca	Cu	Fe	K	Mn	Zn
#76a	24046.0	15.0	19505.0	10990.0	385.0	124.0
#76b	23520.0	19.0	20240.0	10694.0	358.0	77.0
#76c	25164.0	19.0	21288.0	10140.0	384.0	73.0
Average	24243.3	17.7	20344.3	10608.0	375.7	91.3
Minimum	23520.0	15.0	19505.0	10140.0	358.0	73.0
Maximum	25164.0	19.0	21288.0	10990.0	385.0	124.0
Std. Dev.	839.6	2.3	896.1	431.5	15.3	28.4
#87a	8656.0	17.0	18682.0	10338.0	361.0	54.0
#87b	9223.0	16.0	18802.0	11047.0	396.0	55.0
#87c	9266.0	15.0	20404.0	11571.0	380.0	59.0
Average	9048.3	16.0	19296.0	10985.3	379.0	56.0
Minimum	8656.0	15.0	18682.0	10338.0	361.0	54.0
Maximum	9266.0	17.0	20404.0	11571.0	396.0	59.0
Std. Dev.	340.5	1.0	961.4	618.8	17.5	2.6

C.4 Williamson

Pit	Depth	Sample	Ca	Cu	Fe	K	Mn	Zn
p4	10	#144	9088.0	23.0	20218.0	15277.0	388.0	86.0
	20	**#145**	**7312.0**	**18.0**	**17744.0**	**13281.0**	**341.0**	**76.0**
	30	#146	7825.0	18.0	18865.0	13742.0	372.0	70.0
	40	**#147**	**8103.0**	**17.0**	**17389.0**	**13900.0**	**402.0**	**66.0**
	50	#148avg	9293.3	15.0	17684.3	13317.7	314.3	69.7
	60	**#149**	**8899.0**	**18.0**	**17713.0**	**14096.0**	**349.0**	**71.0**
	70	#150	9548.0	20.0	18512.0	13754.0	340.0	72.0
	80	**#151**	**10263.0**	**20.0**	**13899.0**	**13599.0**	**236.0**	**58.0**
	90	#152	13492.0	15.0	14020.0	13623.0	226.0	55.0
	100	**#153**	**14951.0**	**22.0**	**14978.0**	**13075.0**	**329.0**	**58.0**
Average			**9877.4**	**18.6**	**17102.2**	**13766.5**	**329.7**	**68.2**
Minimum			**7312.0**	**15.0**	**13899.0**	**13075.0**	**226.0**	**55.0**
Maximum			**14951.0**	**23.0**	**20218.0**	**15277.0**	**402.0**	**86.0**
Std. Dev.			**2470.4**	**2.7**	**2115.6**	**612.2**	**58.5**	**9.4**
p7	10	#154	8216.0	24.0	20627.0	13747.0	361.0	93.0
	20	**#155**	**8179.0**	**21.0**	**21298.0**	**13655.0**	**331.0**	**98.0**
	30	#156	7862.0	31.0	21608.0	12259.0	402.0	92.0
	40	**#157**	**9886.0**	**35.0**	**23367.0**	**12991.0**	**348.0**	**88.0**
	50	#158avg	15149.7	21.7	20867.7	12851.3	303.3	79.3
	60	**#159**	**16014.0**	**21.0**	**19432.0**	**12118.0**	**259.0**	**75.0**
	70	#160	18254.0	19.0	17679.0	12461.0	298.0	60.0
	80	**#161**	**18318.0**	**17.0**	**17812.0**	**11904.0**	**256.0**	**75.0**
	90	#162	19826.0	17.0	19101.0	12759.0	261.0	76.0
	100	**#163**	**20341.0**	**23.0**	**17683.0**	**13512.0**	**267.0**	**71.0**
Average			**14204.6**	**23.0**	**19947.5**	**12825.7**	**308.6**	**80.7**
Minimum			**7862.0**	**17.0**	**17679.0**	**11904.0**	**256.0**	**60.0**
Maximum			**20341.0**	**35.0**	**23367.0**	**13747.0**	**402.0**	**98.0**
Std. Dev.			**5140.2**	**5.8**	**1926.4**	**653.6**	**50.4**	**11.8**

Triplicates	Ca	Cu	Fe	K	Mn	Zn
#148a	9680.0	15.0	17908.0	13391.0	330.0	74.0
#148b	**9006.0**	**14.0**	**17395.0**	**13129.0**	**310.0**	**68.0**
#148c	9194.0	16.0	17750.0	13433.0	303.0	67.0
Average	**9293.3**	**15.0**	**17684.3**	**13317.7**	**314.3**	**69.7**
Minimum	**9006.0**	**14.0**	**17395.0**	**13129.0**	**303.0**	**67.0**
Maximum	**9680.0**	**16.0**	**17908.0**	**13433.0**	**330.0**	**74.0**
Std. Dev.	**347.8**	**1.0**	**262.7**	**164.7**	**14.0**	**3.8**
#158a	14690.0	21.0	20571.0	13133.0	315.0	77.0
#158b	**15280.0**	**23.0**	**21335.0**	**12731.0**	**298.0**	**80.0**
#158c	15479.0	21.0	20697.0	12690.0	297.0	81.0
Average	**15149.7**	**21.7**	**20867.7**	**12851.3**	**303.3**	**79.3**
Minimum	**14690.0**	**21.0**	**20571.0**	**12690.0**	**297.0**	**77.0**
Maximum	**15479.0**	**23.0**	**21335.0**	**13133.0**	**315.0**	**81.0**
Std. Dev.	**410.3**	**1.2**	**409.6**	**244.8**	**10.1**	**2.1**

C.5 Rock Spur

Pit	Depth	Sample	Ca	Cu	Fe	K	Mn	Zn
p5	10	#1	11285.0	22.0	31303.0	13391.0	597.0	91.0
	20	#2	10339.0	31.0	35862.0	14752.0	499.0	83.0
	30	#3	10718.0	27.0	36312.0	14106.0	556.0	86.0
	40	#4	9839.0	28.0	35391.0	11588.0	474.0	87.0
	50	#5avg	10840.7	36.7	33069.7	11077.0	467.3	76.7
	60	#6	13627.0	42.0	32775.0	12114.0	500.0	80.0
	70	#7	20253.0	57.0	34089.0	10653.0	480.0	84.0
	80	#8	42547.0	52.0	35130.0	11432.0	491.0	72.0
Average			16181.1	37.0	34241.5	12389.1	508.0	82.5
Minimum			9839.0	22.0	31303.0	10653.0	467.3	72.0
Maximum			42547.0	57.0	36312.0	14752.0	597.0	91.0
Std. Dev.			11180.0	12.5	1740.5	1507.3	45.1	6.1
p8	10	#9	11071.0	31.0	34523.0	13953.0	519.0	95.0
	20	#10	11247.0	30.0	34869.0	12214.0	504.0	80.0
	30	#11	11256.0	26.0	30097.0	11283.0	461.0	75.0
	40	#12	27815.0	29.0	29733.0	10321.0	366.0	72.0
	50	#13avg	72792.3	37.0	25888.0	9485.0	376.3	69.3
	60	#14	56760.0	29.0	31127.0	10386.0	435.0	78.0
Average			31823.6	30.3	31039.5	11273.7	443.6	78.2
Minimum			11071.0	26.0	25888.0	9485.0	366.0	69.3
Maximum			72792.3	37.0	34869.0	13953.0	519.0	95.0
Std. Dev.			26808.3	3.7	3344.9	1609.8	63.6	9.1

Triplicates	Ca	Cu	Fe	K	Mn	Zn
#5a	11189.0	33.0	32666.0	10922.0	475.0	77.0
#5b	11024.0	42.0	33342.0	11234.0	460.0	75.0
#5c	10309.0	35.0	33201.0	11075.0	467.0	78.0
Average	10840.7	36.7	33069.7	11077.0	467.3	76.7
Minimum	10309.0	33.0	32666.0	10922.0	460.0	75.0
Maximum	11189.0	42.0	33342.0	11234.0	475.0	78.0
Std. Dev.	467.77	4.73	356.62	156.01	7.51	1.53
#13a	72187.0	33.0	24847.0	8915.0	350.0	66.0
#13b	80387.0	42.0	29770.0	10237.0	415.0	71.0
#13c	65803.0	36.0	23047.0	9303.0	364.0	71.0
Average	72792.3	37.0	25888.0	9485.0	376.3	69.3
Minimum	65803.0	33.0	23047.0	8915.0	350.0	66.0
Maximum	80387.0	42.0	29770.0	10237.0	415.0	71.0
Std. Dev.	7310.8	4.6	3480.3	679.5	34.2	2.9

C.6 Famici

Pit	Depth	Sample	Ca	Cu	Fe	K	Mn	Zn
p5	10	#93	9958.0	10.0	20043.0	12435.0	355.0	62.0
	20	#94	11800.0	14.0	18396.0	10862.0	267.0	53.0
	30	#95	11076.0	22.0	23363.0	11083.0	355.0	63.0
	40	#96	24282.0	14.0	19623.0	9931.0	336.0	56.0
	50	#97avg	72573.3	14.7	14826.3	9427.3	258.3	49.7
	60	#98	72831.0	24.0	13540.0	10480.0	293.0	49.0
	70	#99	56881.0	14.0	13699.0	9766.0	273.0	47.0
	80	#100	58430.0	22.0	14842.0	10850.0	275.0	53.0
	90	#101	53740.0	14.0	13919.0	9031.0	260.0	47.0
	100	#102	57252.0	16.0	13669.0	10376.0	236.0	46.0
Average			42882.3	16.5	16592.0	10424.1	290.8	52.6
Minimum			9958.0	10.0	13540.0	9031.0	236.0	46.0
Maximum			72831.0	24.0	23363.0	12435.0	355.0	63.0
Std. Dev.			25708.4	4.6	3492.1	969.9	42.7	6.1
p8	10	#103	9201.0	8.0	20410.0	11827.0	373.0	56.0
	20	#104	8636.0	19.0	19699.0	10835.0	347.0	58.0
	30	#105	9242.0	17.0	20063.0	11477.0	395.0	60.0
	40	#106	8010.0	21.0	18018.0	11172.0	369.0	44.0
	50	#107avg	10068.3	18.3	24394.7	10405.7	405.7	57.3
	60	#108	10029.0	21.0	25196.0	10576.0	406.0	59.0
	70	#109	8410.0	15.0	21284.0	10648.0	362.0	49.0
	80	#110	7640.0	17.0	17129.0	12039.0	329.0	46.0
Average			8904.5	17.0	20774.2	11122.5	373.3	53.7
Minimum			7640.0	8.0	17129.0	10405.7	329.0	44.0
Maximum			10068.3	21.0	25196.0	12039.0	406.0	60.0
Std. Dev.			889.3	4.2	2818.3	607.7	27.7	6.3

Triplicates	Ca	Cu	Fe	K	Mn	Zn
#97a	71985.0	12.0	14397.0	9288.0	274.0	47.0
#97b	77668.0	15.0	15467.0	9666.0	261.0	54.0
#97c	68067.0	17.0	14615.0	9328.0	240.0	48.0
Average	72573.3	14.7	14826.3	9427.3	258.3	49.7
Minimum	68067.0	12.0	14397.0	9288.0	240.0	47.0
Maximum	77668.0	17.0	15467.0	9666.0	274.0	54.0
Std. Dev.	4827.5	2.5	565.4	207.7	17.2	3.8
#107a	10218.0	17.0	24418.0	10962.0	401.0	54.0
#107b	10082.0	19.0	25153.0	10258.0	410.0	59.0
#107c	9905.0	19.0	23613.0	9997.0	406.0	59.0
Average	10068.3	18.3	24394.7	10405.7	405.7	57.3
Minimum	9905.0	17.0	23613.0	9997.0	401.0	54.0
Maximum	10218.0	19.0	25153.0	10962.0	410.0	59.0
Std. Dev.	156.9	1.2	770.3	499.2	4.5	2.9

C.7 Bitner

Pit	Depth	Sample	Ca	Cu	Fe	K	Mn	Zn
p2	10	#111	27113.0	16.0	18932.0	11214.0	344.0	72.0
	20	#112	29744.0	17.0	17300.0	11016.0	325.0	65.0
	30	#113	33078.0	13.0	17684.0	11582.0	304.0	60.0
	40	#114	30287.0	22.0	17244.0	10992.0	359.0	56.0
	50	#115avg	17451.7	15.3	16901.3	11151.0	384.3	51.3
	60	#116	24111.0	17.0	16599.0	11361.0	383.0	51.0
	70	#117	17719.0	15.0	17125.0	10434.0	343.0	55.0
	80	#118	8528.0	19.0	14095.0	13161.0	483.0	46.0
	90	#119	13781.0	19.0	16110.0	12330.0	365.0	54.0
	100	#120	15500.0	18.0	16909.0	11220.0	381.0	55.0
Average			21731.3	17.1	16889.9	11446.1	367.1	56.5
Minimum			8528.0	13.0	14095.0	10434.0	304.0	46.0
Maximum			33078.0	22.0	18932.0	13161.0	483.0	72.0
Std. Dev.			8243.2	2.5	1231.7	771.4	48.4	7.5
p4	10	#121	33189.0	20.0	19302.0	10811.0	341.0	74.0
	20	#122	34428.0	12.0	19340.0	10563.0	341.0	69.0
	30	#123	39343.0	24.0	16519.0	10417.0	344.0	56.0
	40	#124	34564.0	13.0	17697.0	10612.0	336.0	55.0
	50	#125avg	47842.0	16.0	18554.7	14047.3	328.3	44.0
	60	#126	48031.0	19.0	17957.0	14068.0	328.0	44.0
	70	#127	29810.0	21.0	19318.0	14424.0	381.0	47.0
	80	#128	55466.0	18.0	19618.0	12494.0	303.0	46.0
	90	#129	66400.0	17.0	17537.0	13062.0	327.0	41.0
	100	#130	63673.0	18.0	18866.0	14203.0	363.0	45.0
Average			45274.6	17.8	18470.9	12470.1	339.2	52.1
Minimum			29810.0	12.0	16519.0	10417.0	303.0	41.0
Maximum			66400.0	24.0	19618.0	14424.0	381.0	74.0
Std. Dev.			13147.0	3.6	1010.4	1708.5	21.2	11.3

Triplicates	Ca	Cu	Fe	K	Mn	Zn
#115a	17516.0	13.0	16934.0	10968.0	393.0	53.0
#115b	16337.0	17.0	17106.0	10835.0	365.0	49.0
#115c	18502.0	16.0	16664.0	11650.0	395.0	52.0
Average	17451.7	15.3	16901.3	11151.0	384.3	51.3
Minimum	16337.0	13.0	16664.0	10835.0	365.0	49.0
Maximum	18502.0	17.0	17106.0	11650.0	395.0	53.0
Std. Dev.	1083.9	2.1	222.8	437.2	16.8	2.1
#125a	50238.0	15.0	17295.0	13537.0	335.0	44.0
#125b	45629.0	14.0	19554.0	14234.0	318.0	48.0
#125c	47659.0	19.0	18815.0	14371.0	332.0	40.0
Average	47842.0	16.0	18554.7	14047.3	328.3	44.0
Minimum	45629.0	14.0	17295.0	13537.0	318.0	40.0
Maximum	50238.0	19.0	19554.0	14371.0	335.0	48.0
Std. Dev.	2309.9	2.6	1151.8	447.2	9.1	4.0

C.8 Scoria

Pit	Depth	Sample	Ca	Cu	Fe	K	Mn	Zn
p1	10	#33	14684.0	18.0	15599.0	11708.0	326.0	60.0
	20	#34	15761.0	12.0	14797.0	12266.0	325.0	61.0
	30	#35	23677.0	25.0	14760.0	11393.0	297.0	116.0
	40	#36	15431.0	11.0	13910.0	12117.0	321.0	65.0
	50	#37avg	48846.3	15.0	13558.3	11110.3	298.3	47.0
	60	#38	65060.0	18.0	12776.0	10584.0	289.0	48.0
	70	#39	62630.0	10.0	12577.0	11137.0	305.0	51.0
	80	#40	53224.0	14.0	13207.0	9924.0	295.0	55.0
	90	#41	47751.0	10.0	14083.0	9648.0	297.0	52.0
	100	#42	44027.0	10.0	9851.0	10276.0	251.0	40.0
Average			39109.1	14.3	13511.8	11016.3	300.4	59.5
Minimum			14684.0	10.0	9851.0	9648.0	251.0	40.0
Maximum			65060.0	25.0	15599.0	12266.0	326.0	116.0
Std. Dev.			19888.9	4.9	1597.3	895.5	21.9	21.2
p3	10	#43	9826.0	12.0	15064.0	11094.0	330.0	65.0
	20	#44	9786.0	20.0	15745.0	11130.0	341.0	62.0
	30	#45	9658.0	18.0	16001.0	11234.0	329.0	62.0
	40	#46	9777.0	17.0	17611.0	11267.0	348.0	57.0
	50	#47avg	9042.0	20.7	19822.7	11944.0	383.7	57.7
	60	#48	8914.0	22.0	19135.0	11322.0	385.0	55.0
	70	#49	17667.0	19.0	20131.0	10867.0	384.0	61.0
	80	#50	34007.0	25.0	17217.0	10730.0	327.0	52.0
	90	#51	48000.0	15.0	17592.0	10721.0	326.0	57.0
	100	#52	88878.0	19.0	16983.0	8776.0	292.0	50.0
Average			24555.5	18.8	17530.2	10908.5	344.6	57.9
Minimum			8914.0	12.0	15064.0	8776.0	292.0	50.0
Maximum			88878.0	25.0	20131.0	11944.0	385.0	65.0
Std. Dev.			26214.0	3.6	1719.5	828.5	30.9	4.7

Triplicates	Ca	Cu	Fe	K	Mn	Zn
#37a	49420.0	16.0	13247.0	11747.0	281.0	44.0
#37b	49532.0	13.0	13371.0	10701.0	294.0	52.0
#37c	47587.0	16.0	14057.0	10883.0	320.0	45.0
Average	48846.3	15.0	13558.3	11110.3	298.3	47.0
Minimum	47587.0	13.0	13247.0	10701.0	281.0	44.0
Maximum	49532.0	16.0	14057.0	11747.0	320.0	52.0
Std. Dev.	1092.1	1.7	436.3	558.8	19.9	4.4
#47a	9524.0	19.0	20357.0	12069.0	388.0	59.0
#47b	8875.0	23.0	19753.0	11934.0	379.0	57.0
#47c	8727.0	20.0	19358.0	11829.0	384.0	57.0
Average	9042.0	20.7	19822.7	11944.0	383.7	57.7
Minimum	8727.0	19.0	19358.0	11829.0	379.0	57.0
Maximum	9524.0	23.0	20357.0	12069.0	388.0	59.0
Std. Dev.	423.9	2.1	503.1	120.3	4.5	1.2

C.9 Polo Cove

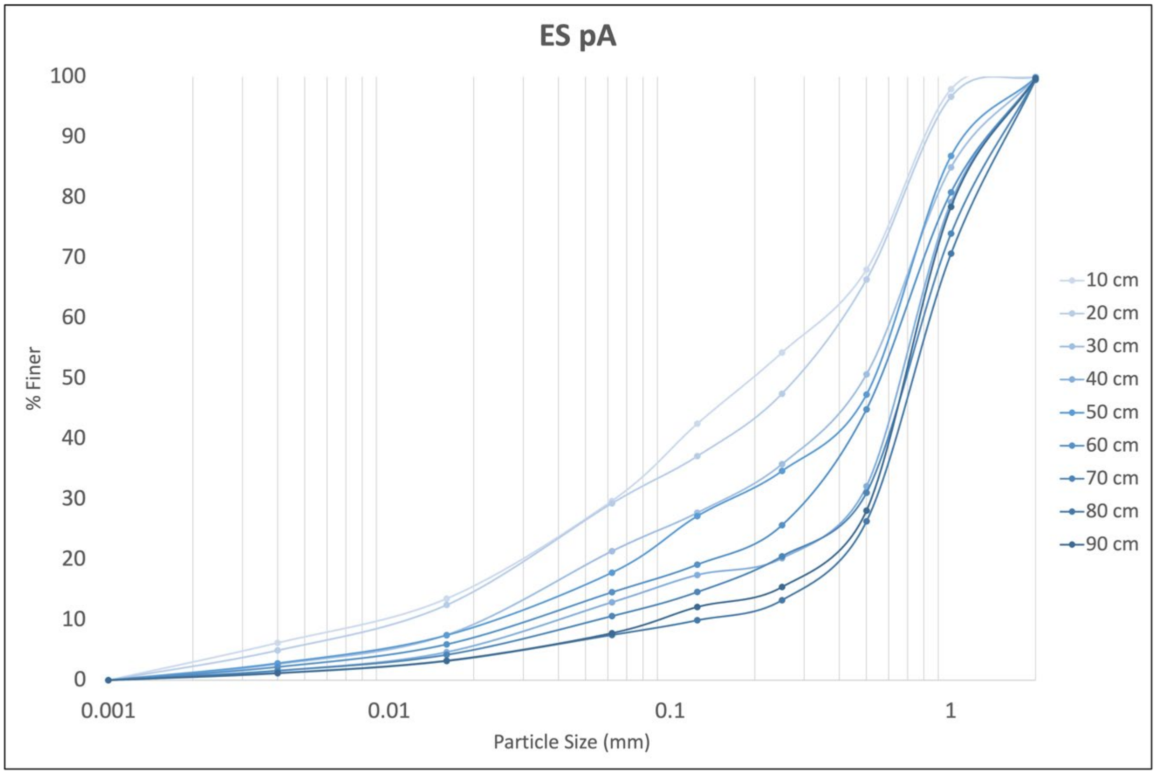
Pit	Depth	Sample	Ca	Cu	Fe	K	Mn	Zn
p2	10	#131	13271.0	21.0	17916.0	11539.0	332.0	72.0
	20	#132	15156.0	15.0	17464.0	11289.0	352.0	65.0
	30	#133	11430.0	16.0	18087.0	11602.0	327.0	56.0
	40	#134	29898.0	16.0	17543.0	11488.0	337.0	57.0
	50	#135avg	112269.7	14.0	13688.3	9849.7	266.3	59.3
	60	#136	119473.0	13.0	13378.0	9972.0	262.0	61.0
	70	#137	109332.0	15.0	12884.0	9494.0	230.0	58.0
Average			58690.0	15.7	15851.5	10747.7	300.9	61.2
Minimum			11430.0	13.0	12884.0	9494.0	230.0	56.0
Maximum			119473.0	21.0	18087.0	11602.0	352.0	72.0
Std. Dev.			51882.2	2.6	2391.8	928.9	47.1	5.6
p4	10	#138	13567.0	13.0	18388.0	11119.0	325.0	74.0
	20	#139	12711.0	15.0	17129.0	11404.0	305.0	62.0
	30	#140	13617.0	8.0	18154.0	10613.0	330.0	60.0
	40	#141	12133.0	16.0	18295.0	10845.0	332.0	58.0
	50	#142avg	19573.0	11.3	16740.0	11265.0	318.0	54.0
	60	#143	60217.0	12.0	14318.0	9479.0	241.0	51.0
Average			21969.7	12.6	17170.7	10787.5	308.5	59.8
Minimum			12133.0	8.0	14318.0	9479.0	241.0	51.0
Maximum			60217.0	16.0	18388.0	11404.0	332.0	74.0
Std. Dev.			18928.6	2.8	1551.6	702.0	34.5	8.0

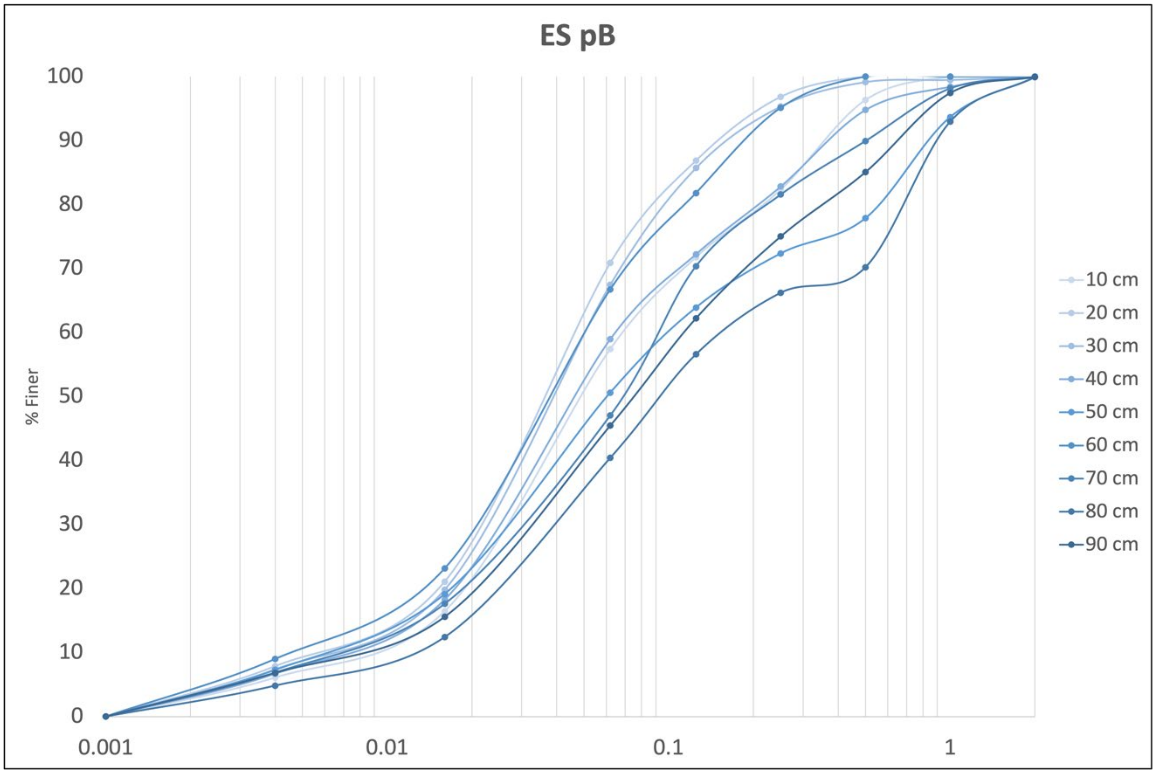
Triplicates	Ca	Cu	Fe	K	Mn	Zn
#135a	116158.0	14.0	13687.0	10294.0	266.0	60.0
#135b	110723.0	15.0	13837.0	9729.0	281.0	58.0
#135c	109928.0	13.0	13541.0	9526.0	252.0	60.0
Average	112269.7	14.0	13688.3	9849.7	266.3	59.3
Minimum	109928.0	13.0	13541.0	9526.0	252.0	58.0
Maximum	116158.0	15.0	13837.0	10294.0	281.0	60.0
Std. Dev.	3390.8	1.0	148.0	398.0	14.5	1.2
#142a	18171.0	18.0	15480.0	11592.0	304.0	54.0
#142b	19776.0	10.0	17346.0	10537.0	325.0	53.0
#142c	20772.0	6.0	17394.0	11666.0	325.0	55.0
Average	19573.0	11.3	16740.0	11265.0	318.0	54.0
Minimum	18171.0	6.0	15480.0	10537.0	304.0	53.0
Maximum	20772.0	18.0	17394.0	11666.0	325.0	55.0
Std. Dev.	1312.3	6.1	1091.5	631.6	12.1	1.0

APPENDIX D

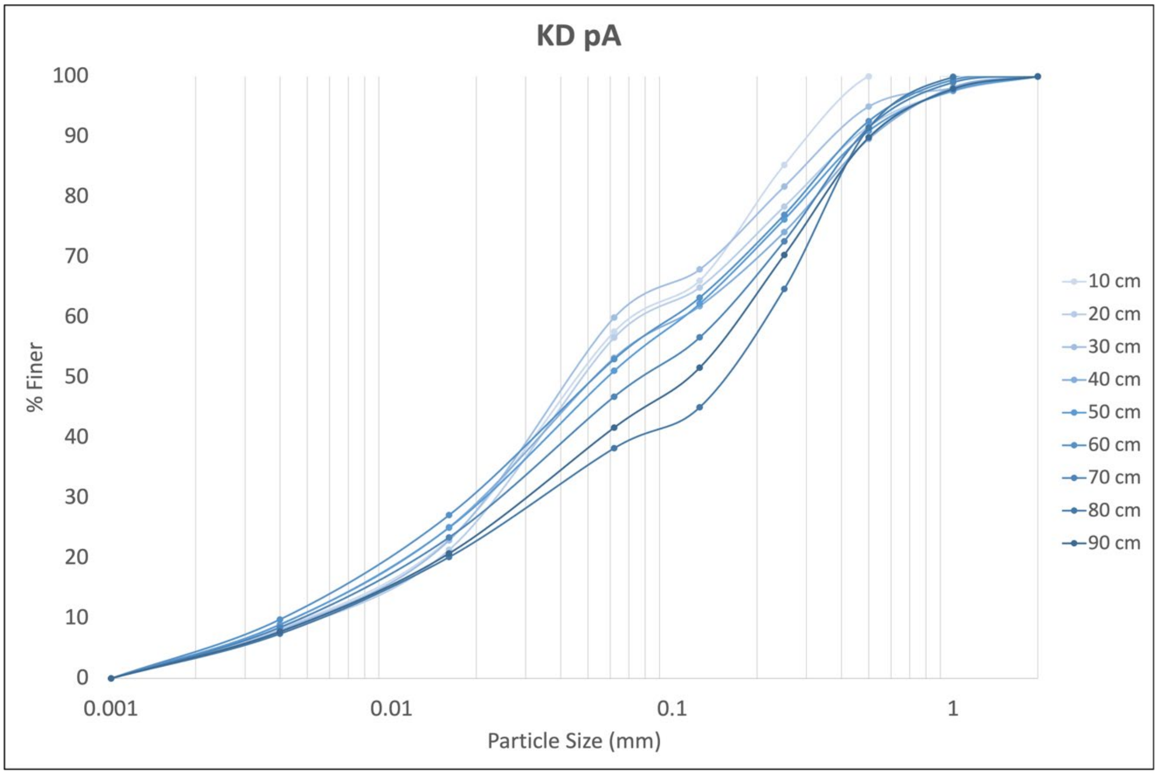
MS2000 Grain Size Distribution Charts & Triplicate Data

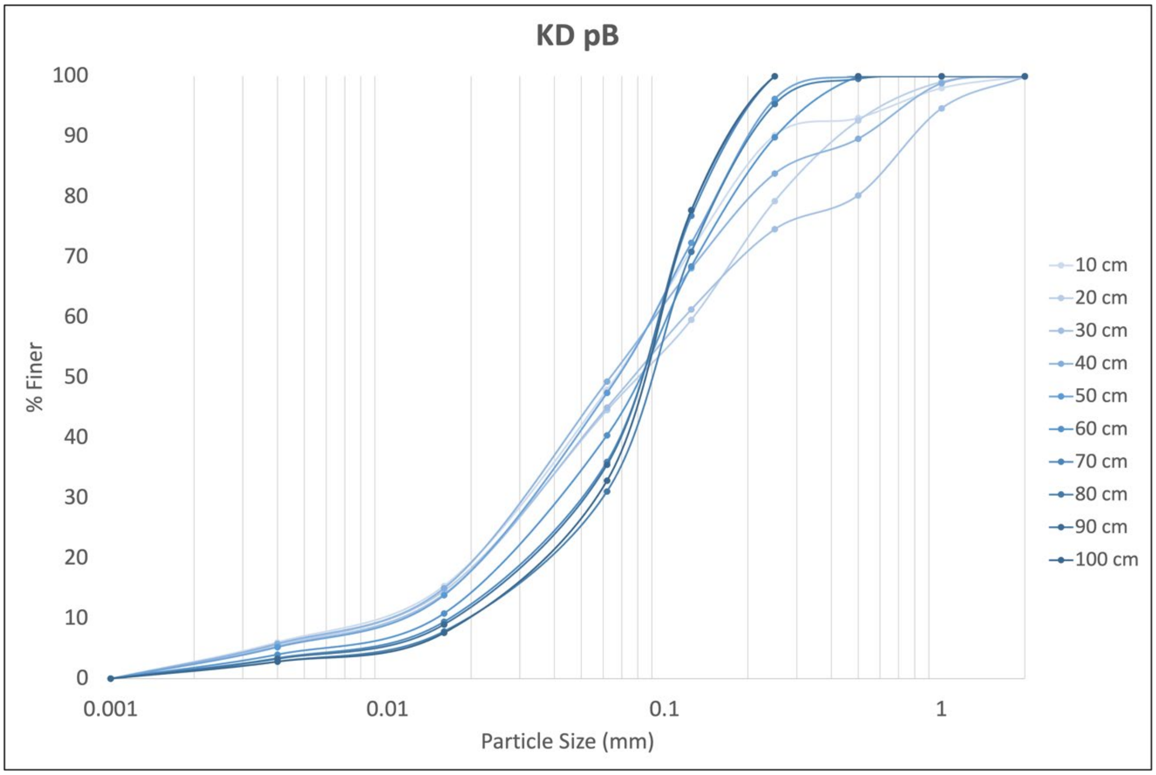
D.1 Emerald Slope



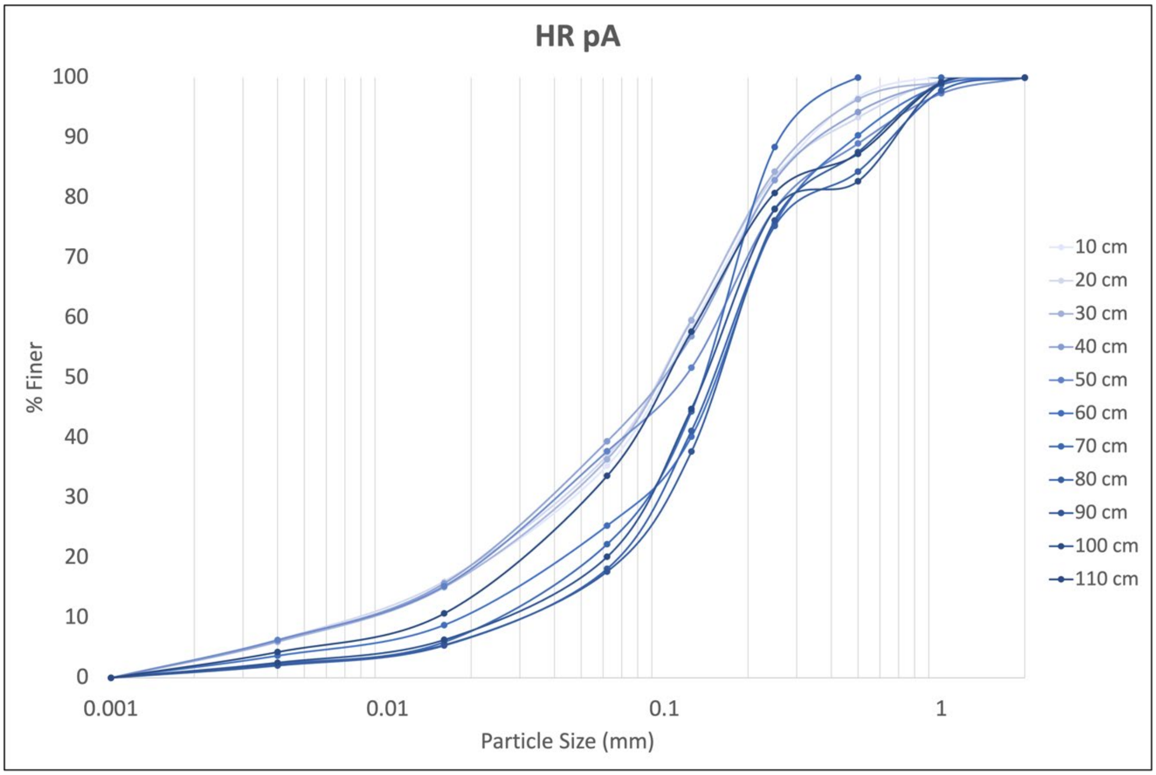


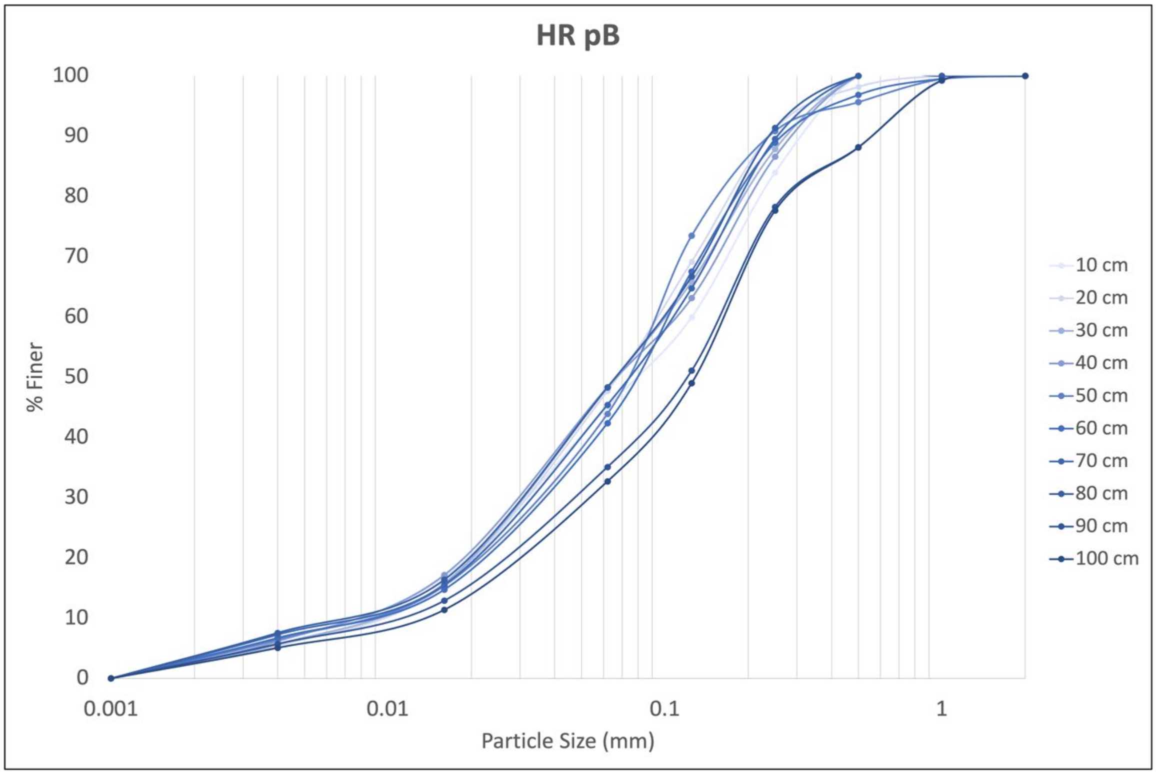
D.2 Kindred


KD pA
% Finer
0
10
20
30
40
50
60
70
80
90
100
0.001
0.01
0.1
1
Particle Size (mm)
10 cm
20 cm
30 cm
40 cm
50 cm
60 cm
70 cm
80 cm
90 cm

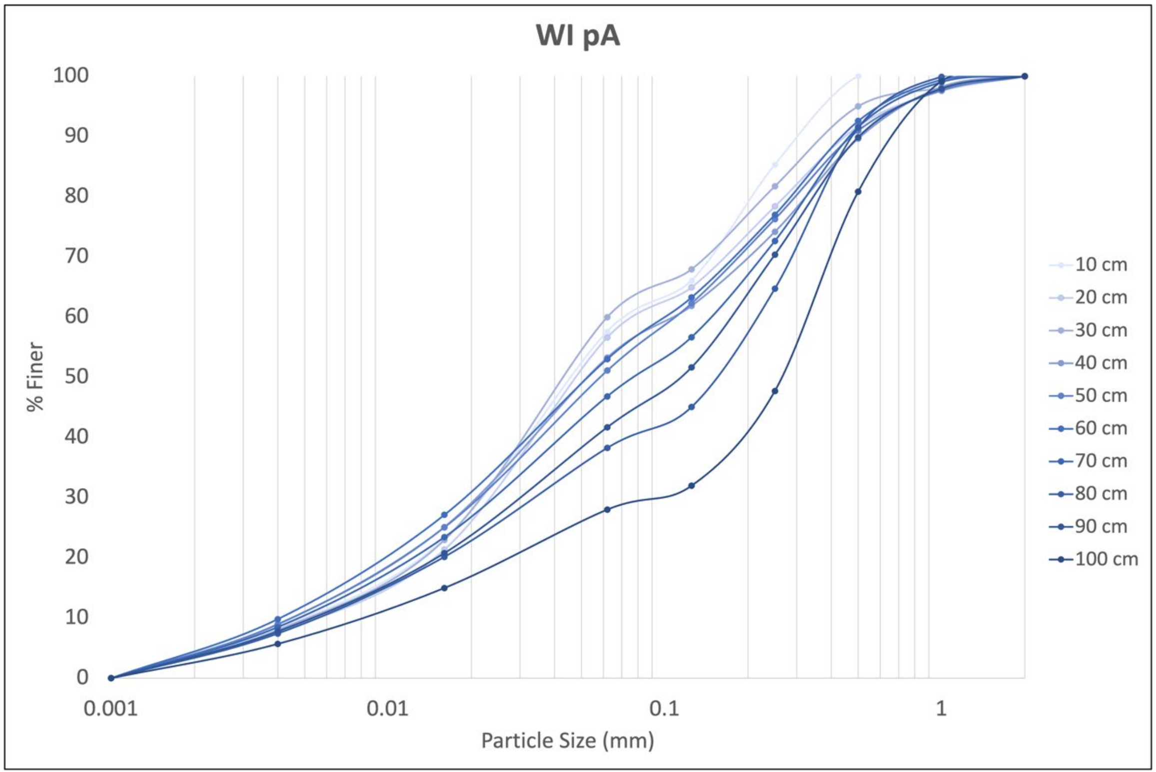

KD pB
% Finer
0
10
20
30
40
50
60
70
80
90
100
0.001
0.01
0.1
1
Particle Size (mm)
10 cm
20 cm
30 cm
40 cm
50 cm
60 cm
70 cm
80 cm
90 cm
100 cm

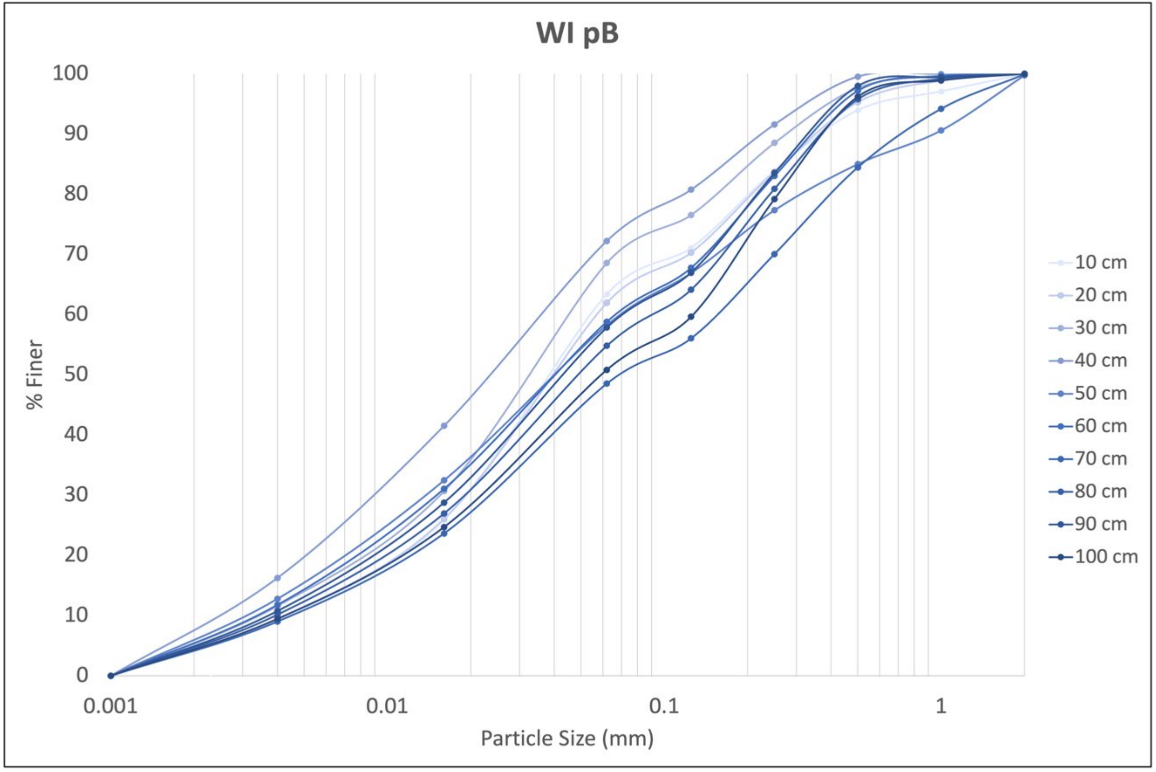
D.3 Hat Ranch


HR pA
100
90
80
70
60
50
40
30
20
10
0
% Finer
0.001
0.01
0.1
1
Particle Size (mm)
10 cm
20 cm
30 cm
40 cm
50 cm
60 cm
70 cm
80 cm
90 cm
100 cm
110 cm

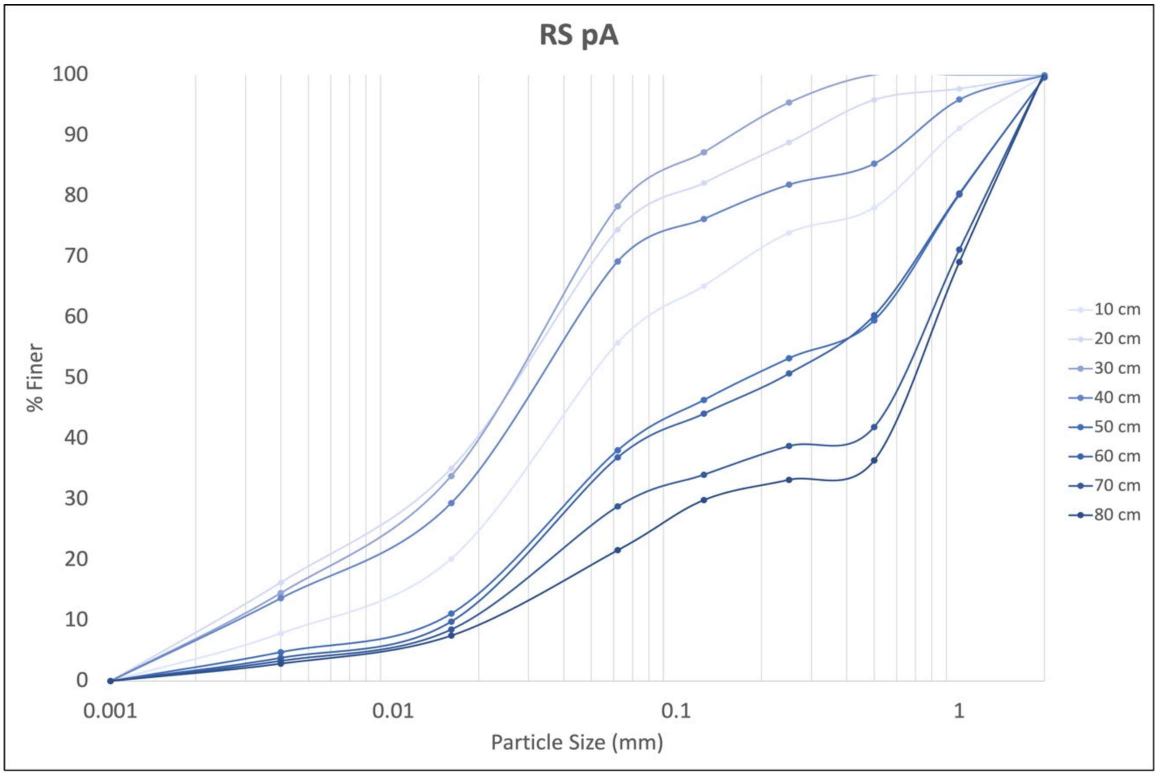

HR pB
100
90
80
70
60
50
40
30
20
10
0
% Finer
0.001
0.01
0.1
1
Particle Size (mm)
10 cm
20 cm
30 cm
40 cm
50 cm
60 cm
70 cm
80 cm
90 cm
100 cm

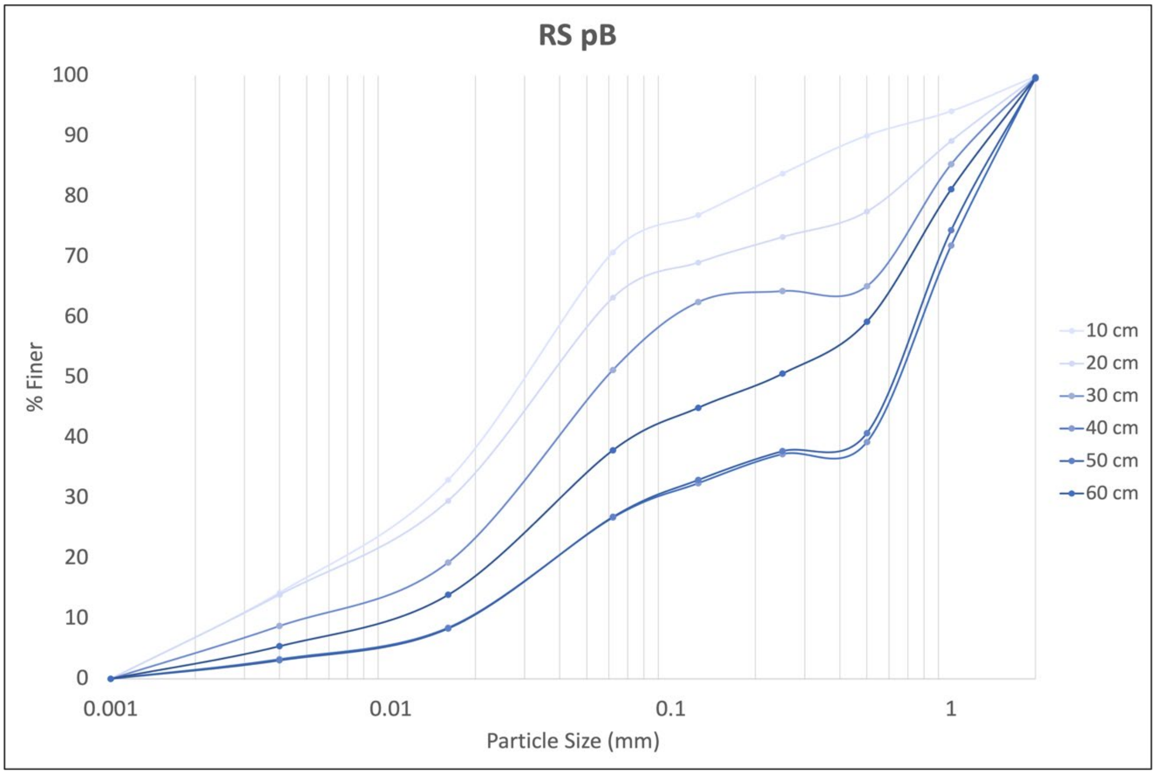
D.4 Williamson



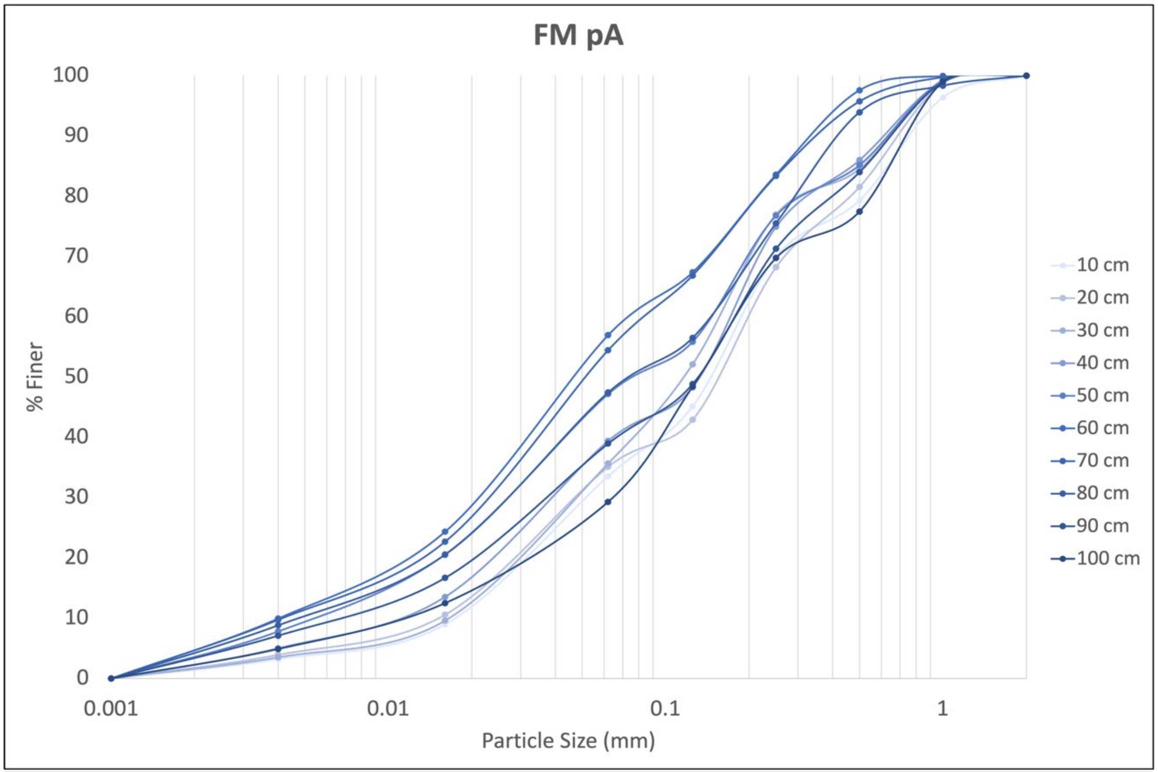


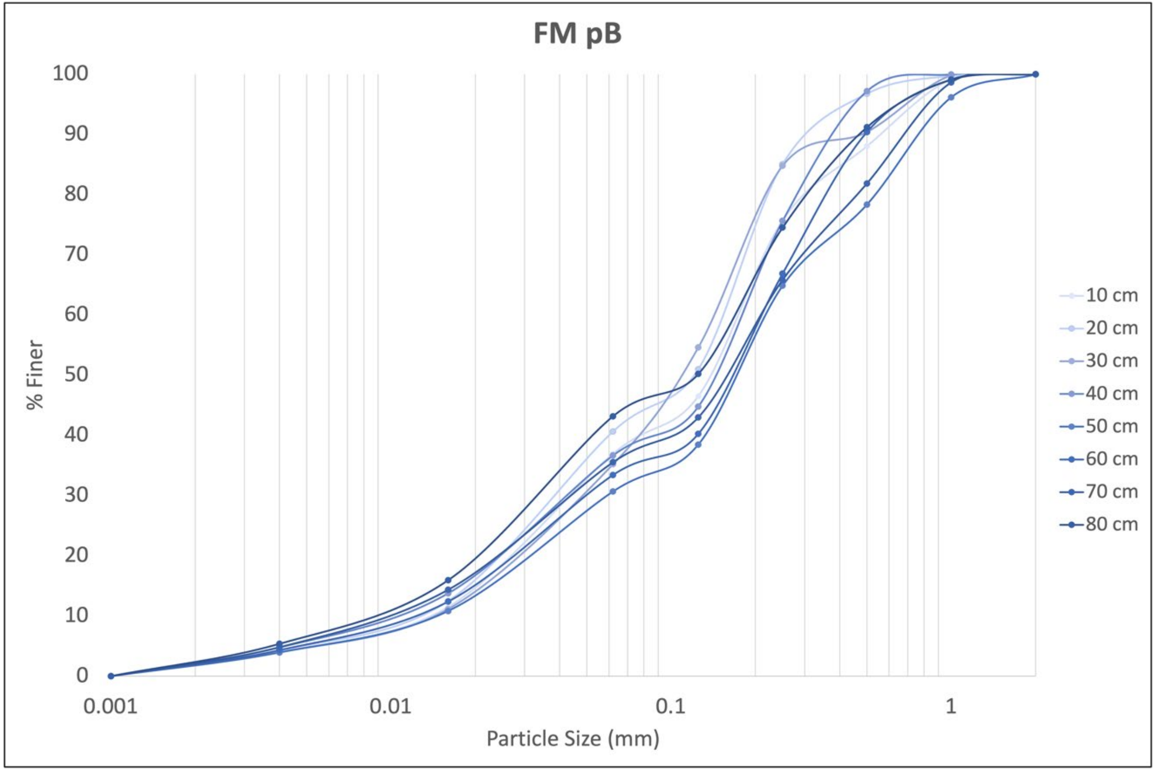
D.5 Rock Spur


RS pA
% Finer
0
10
20
30
40
50
60
70
80
90
100
0.001
0.01
0.1
1
Particle Size (mm)
10 cm
20 cm
30 cm
40 cm
50 cm
60 cm
70 cm
80 cm

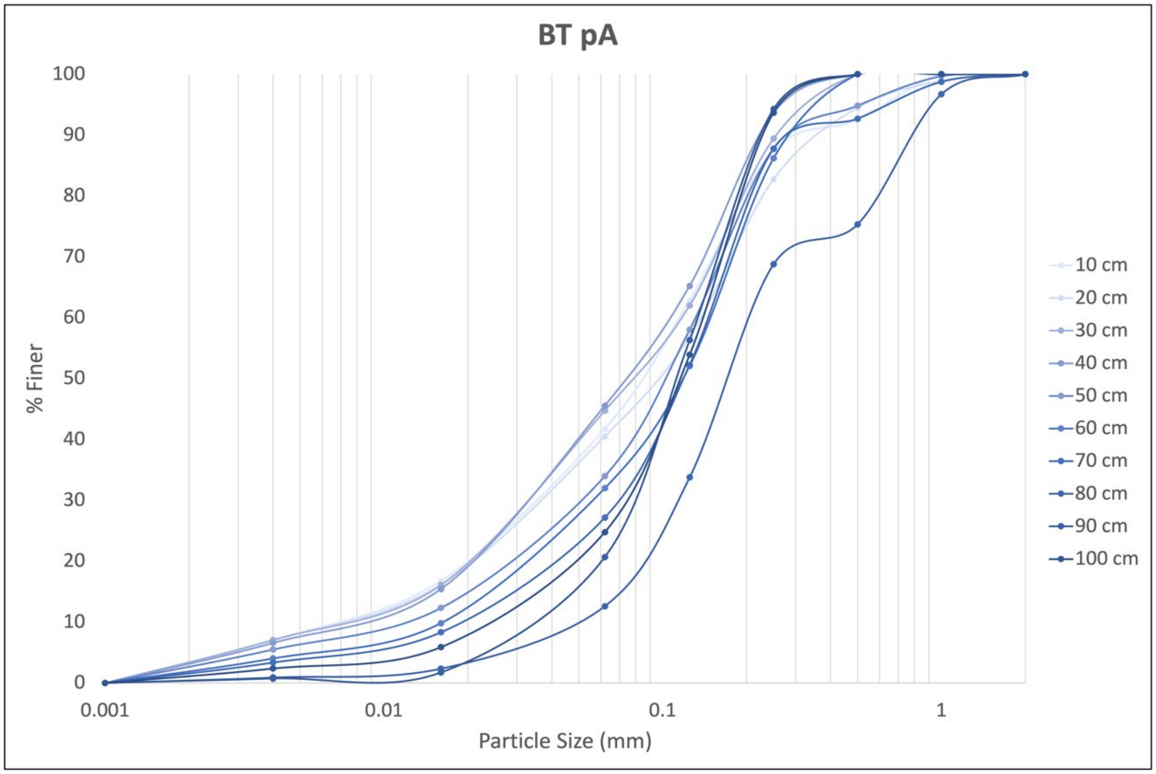

RS pB
% Finer
0
10
20
30
40
50
60
70
80
90
100
0.001
0.01
0.1
1
Particle Size (mm)
10 cm
20 cm
30 cm
40 cm
50 cm
60 cm

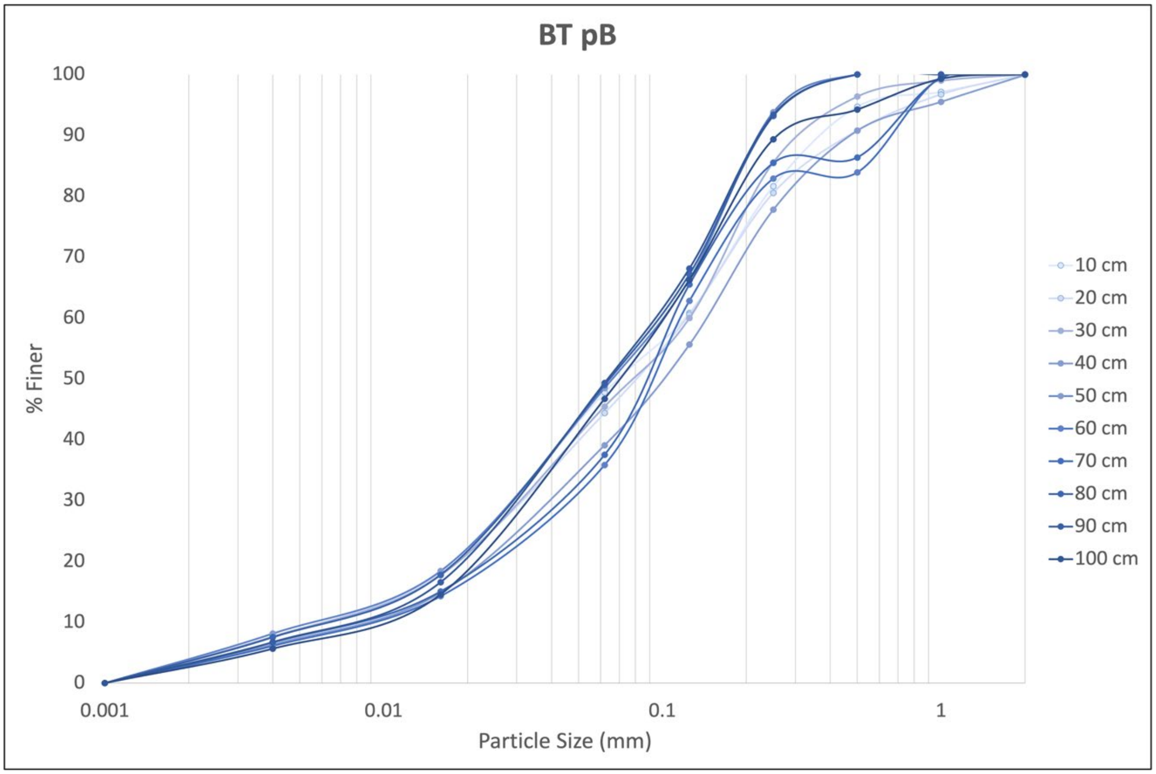
D.6 Famici


FM pA
100
90
80
70
60
50
40
30
20
10
0
% Finer
0.001
0.01
0.1
1
Particle Size (mm)
10 cm
20 cm
30 cm
40 cm
50 cm
60 cm
70 cm
80 cm
90 cm
100 cm

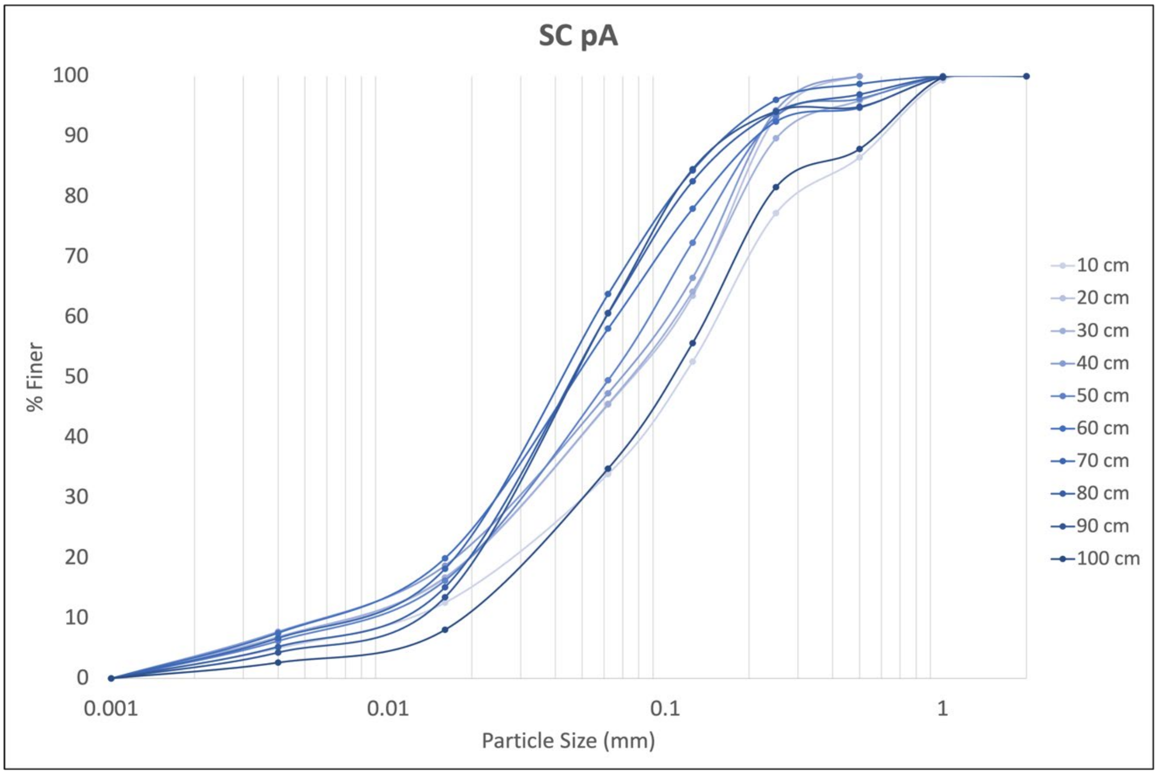

FM pB
100
90
80
70
60
50
40
30
20
10
0
% Finer
0.001
0.01
0.1
1
Particle Size (mm)
10 cm
20 cm
30 cm
40 cm
50 cm
60 cm
70 cm
80 cm

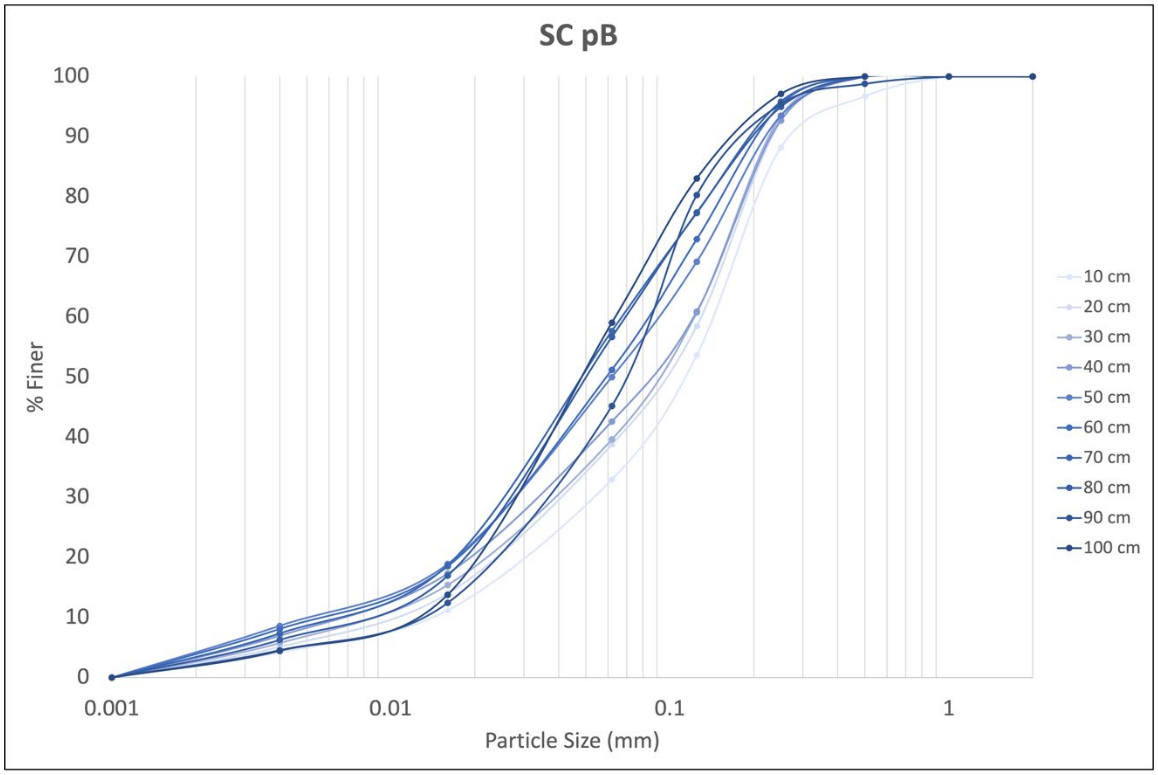
D.7 Bitner


BT pA
% Finer
0
10
20
30
40
50
60
70
80
90
100
0.001
0.01
0.1
1
Particle Size (mm)
10 cm
20 cm
30 cm
40 cm
50 cm
60 cm
70 cm
80 cm
90 cm
100 cm

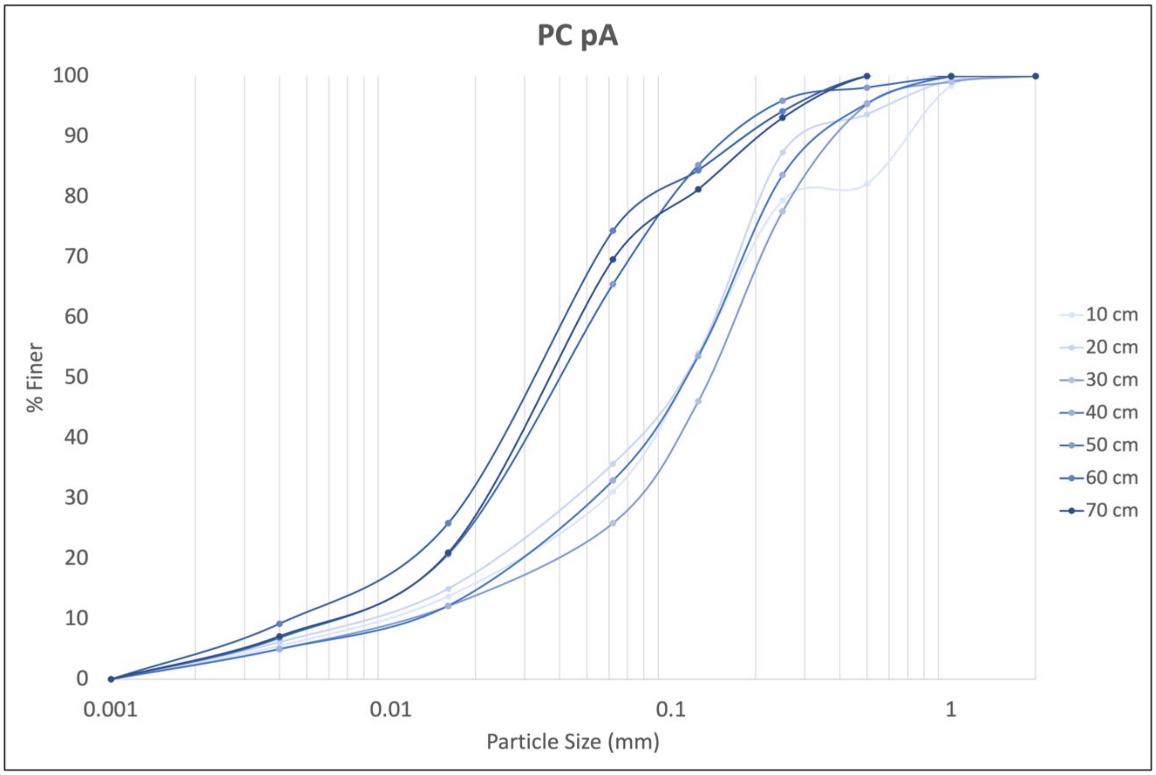

BT pB
% Finer
0
10
20
30
40
50
60
70
80
90
100
0.001
0.01
0.1
1
Particle Size (mm)
10 cm
20 cm
30 cm
40 cm
50 cm
60 cm
70 cm
80 cm
90 cm
100 cm

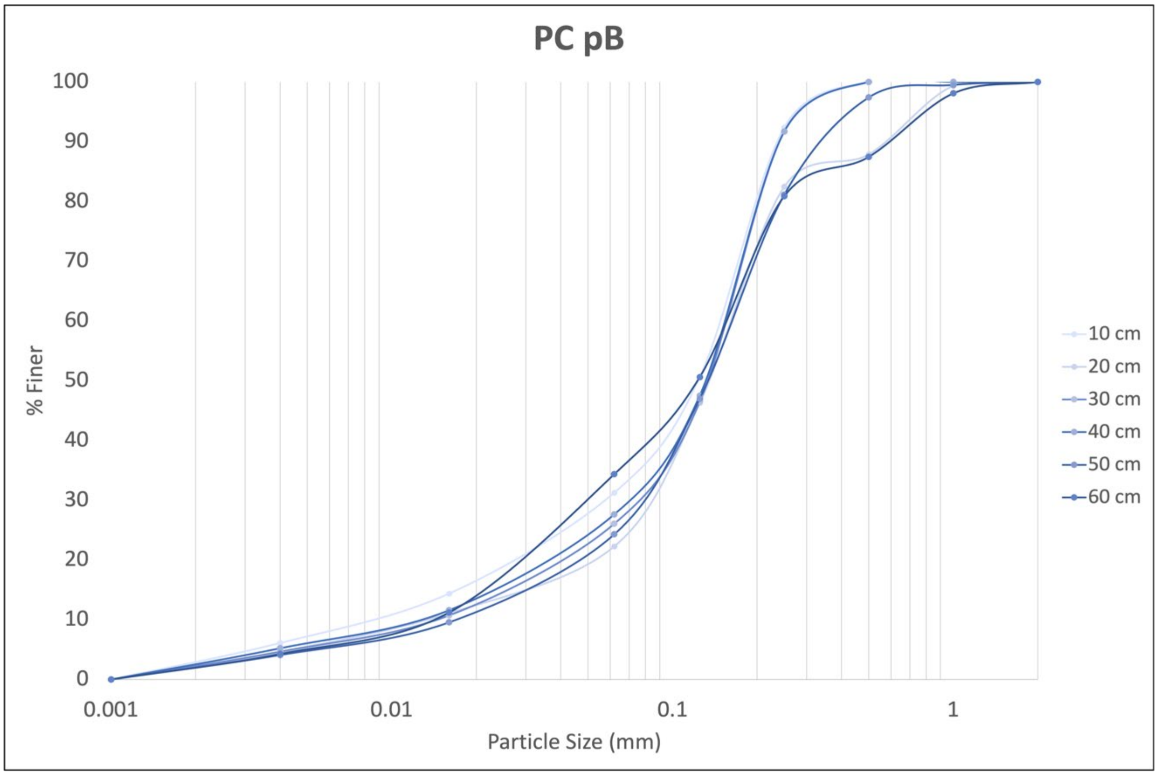
D.8 Scoria


SC pA
% Finer
0
10
20
30
40
50
60
70
80
90
100
0.001
0.01
0.1
1
Particle Size (mm)
10 cm
20 cm
30 cm
40 cm
50 cm
60 cm
70 cm
80 cm
90 cm
100 cm


SC pB
% Finer
0
10
20
30
40
50
60
70
80
90
100
0.001
0.01
0.1
1
Particle Size (mm)
10 cm
20 cm
30 cm
40 cm
50 cm
60 cm
70 cm
80 cm
90 cm
100 cm

<u>D.9 Polo Cove</u>


PC pA
% Finer
0
10
20
30
40
50
60
70
80
90
100
0.001
0.01
0.1
1
Particle Size (mm)
10 cm
20 cm
30 cm
40 cm
50 cm
60 cm
70 cm


PC pB
% Finer
0
10
20
30
40
50
60
70
80
90
100
0.001
0.01
0.1
1
Particle Size (mm)
10 cm
20 cm
30 cm
40 cm
50 cm
60 cm

D.10 Triplicates

Vineyard	Pit (Depth)	Triplicate #	Machine Reading	Machine Concentration	Actual Concentration	Error (%)
ES	2 (50 cm)	1	1	0.043	0.103	58.1
			2	0.048	0.103	53.7
			3	0.063	0.103	39.1
ES	2 (50 cm)	2	1	0.037	0.087	57.2
			2	0.039	0.087	54.7
			3	0.044	0.087	49.5
ES	2 (50 cm)	3	1	0.069	0.117	40.7
			2	0.067	0.117	43.2
			3	0.060	0.117	49.1
WI	7 (40 cm)	1	1	0.010	0.024	56.7
			2	0.011	0.024	56.3
			3	0.010	0.024	56.7
WI	7 (40 cm)	2	1	0.010	0.021	53.3
			2	0.010	0.021	54.8
			3	0.010	0.021	51.4
WI	7 (40 cm)	3	1	0.009	0.023	61.3
			2	0.010	0.023	57.4
			3	0.010	0.023	55.2
RS	8 (10 cm)	1	1	0.011	0.031	64.5
			2	0.012	0.031	60.0
			3	0.015	0.031	51.0
RS	8 (10 cm)	2	1	0.010	0.025	60.4
			2	0.012	0.025	51.2
			3	0.012	0.025	52.8
RS	8 (10 cm)	3	1	0.009	0.025	64.0
			2	0.010	0.025	60.4
			3	0.009	0.025	62.8
FM	5 (20 cm)	1	1	0.049	0.126	61.1
			2	0.052	0.126	58.6
			3	0.049	0.126	61.2
FM	5 (20 cm)	2	1	0.040	0.105	62.3
			2	0.041	0.105	61.1
			3	0.052	0.105	50.4
FM	5 (20 cm)	3	1	0.060	0.140	57.4
			2	0.055	0.140	61.1
			3	0.056	0.140	60.0
BT	2 (50 cm)	1	1	0.028	0.090	69.4
			2	0.036	0.090	60.6
			3	0.033	0.090	63.9
BT	2 (50 cm)	2	1	0.020	0.062	68.2
			2	0.026	0.062	58.7
			3	0.024	0.062	60.6
BT	2 (50 cm)	3	1	0.025	0.067	62.2
			2	0.025	0.067	62.7
			3	0.026	0.067	61.6