

# Pottery Production at the Dillard Site: An Early Basketmaker III Community Center in the Central Mesa Verde Region

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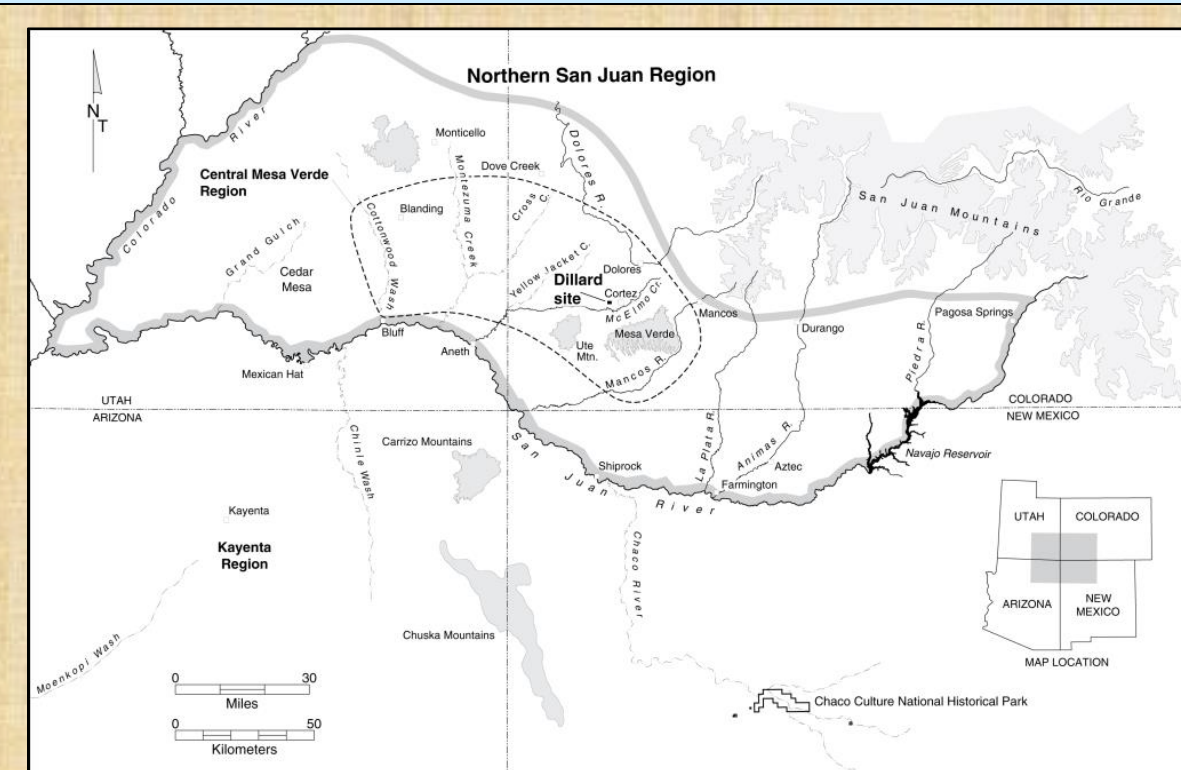
View of Mesa Verde and the Sleeping Ute Mountain from the Dillard Site

## Introduction

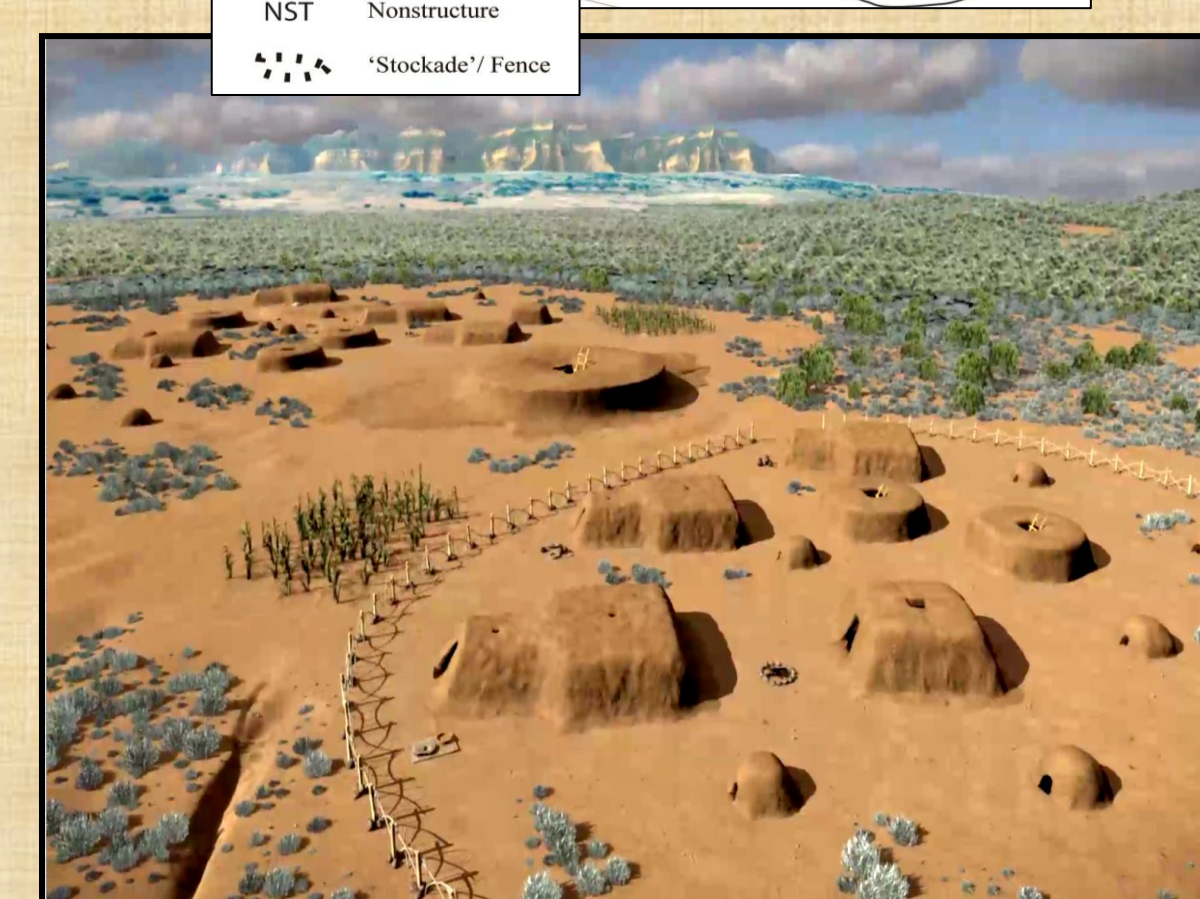
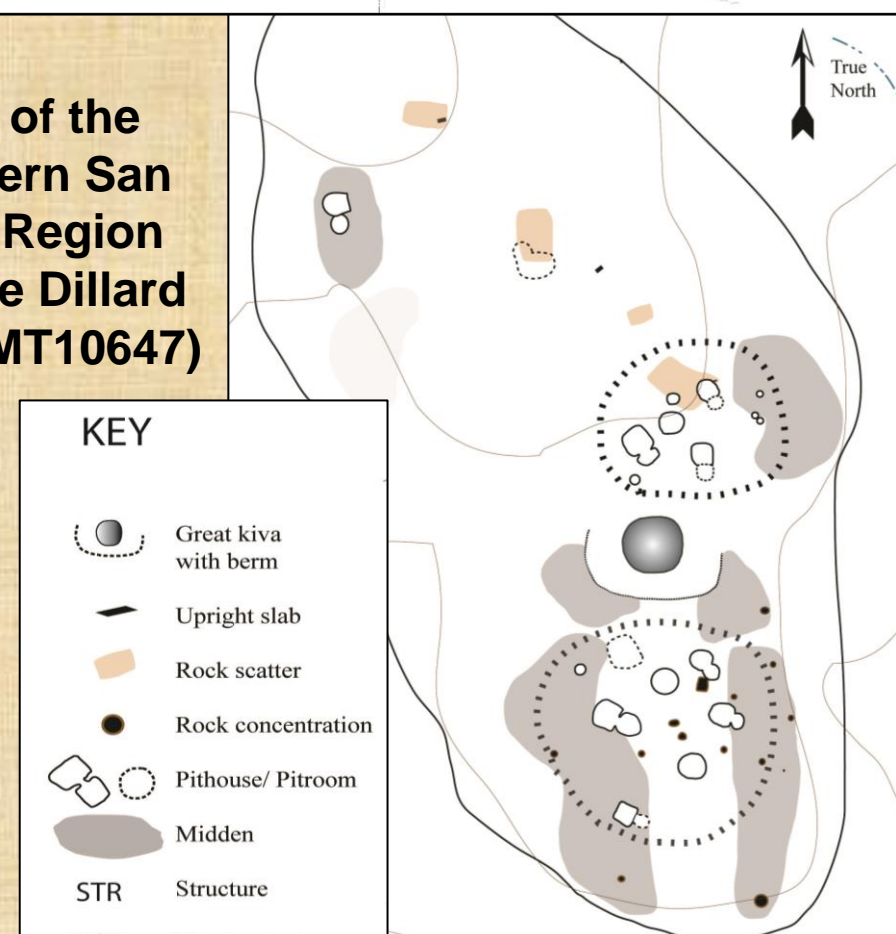
The Dillard site (5MT10647), possibly the earliest community center in the Mesa Verde region, contains some of the oldest examples of multi-household pottery production (A.D. 500–725) among ancestral Pueblo people. Excavation at Dillard recovered 18,797 sherds. Of these, 1,267 are white, gray, and brown ware rim sherds that are the basis of the following analyses.

Pottery production at Dillard was examined using three lines of evidence: (1) temper as determined by binocular and petrographic qualitative analyses, (2) paste variation as detected by refiring, and (3) chemical composition using neutron activation analysis. These methods allowed us to examine intrasite spatial patterns in pottery production and distribution. Evidence of exchange and evidence of technological differences in sherds associated with different pitstructures at the site show variation in the organization of production and the extent of interaction with the broader community.

To assess the viability of using refiring as an inexpensive method for sourcing Basketmaker III pottery, we compare the correspondence between compositional and refire color groups associated with the amount of Iron (Fe) present.



Map of the Northern San Juan Region and the Dillard Site (5MT10647)



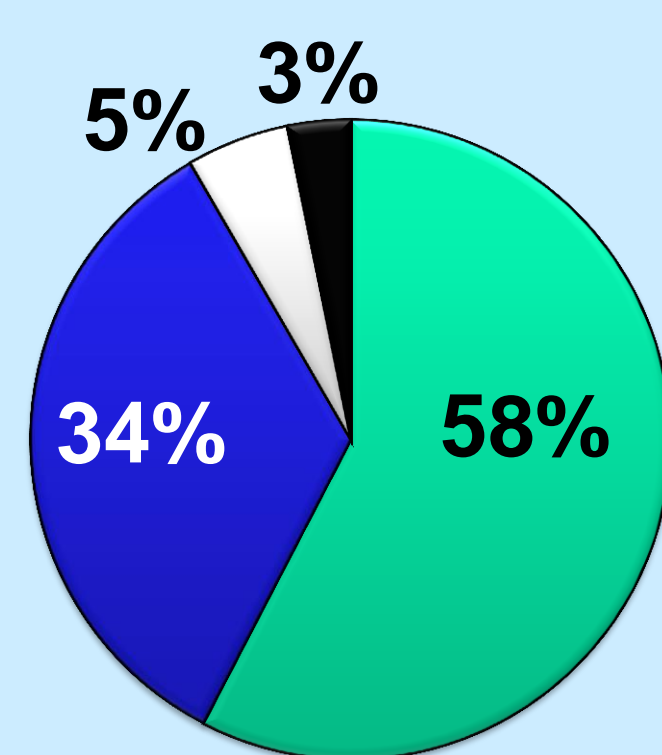
Reconstruction of the Dillard site © 2014 Oregon Public Broadcasting

## Temper Analyses

### Pottery Temper in Rim Sherds

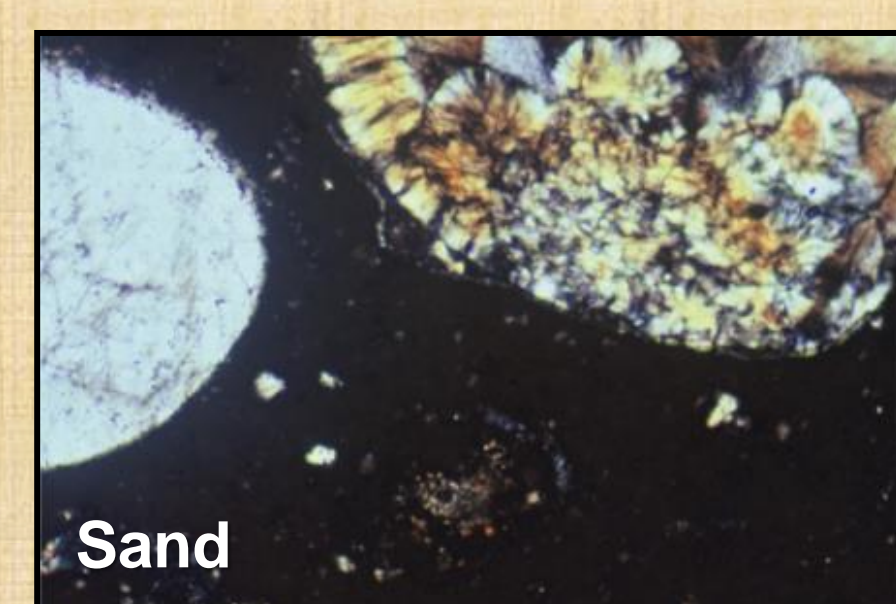
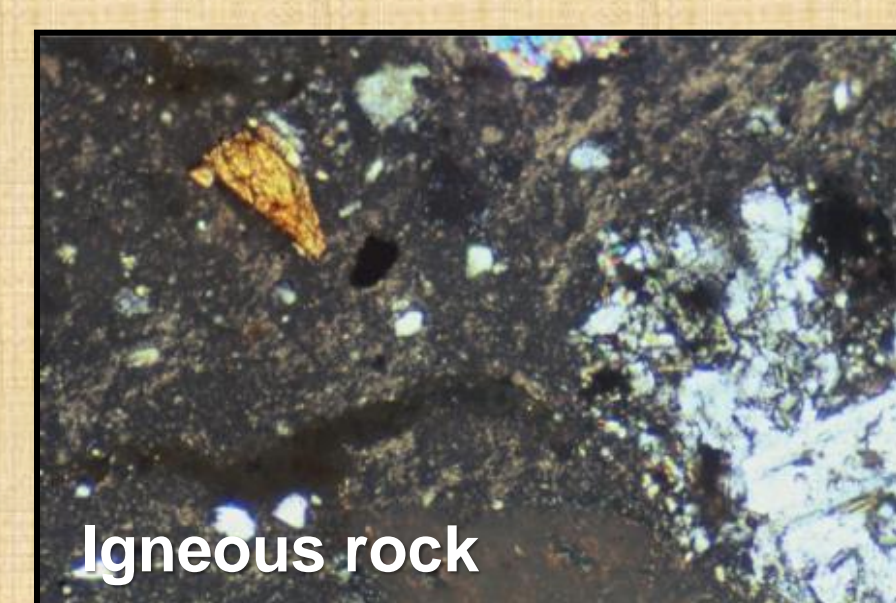
N = 1,267

- Igneous Rock
- Sand (Mixed lithic or quartz)
- Clay pellets/shale
- Other



Binocular examination of sherds (N = 1,267) identified two major temper types: crushed igneous rock (55%) and mixed lithic sand (35%). A petrographic analysis of 58 rim sherds corroborated these findings (Britton 2014, 2016). These temper preferences differed from those of later vessels produced in the region, more of which were tempered with sherd and crushed igneous rock (Wilson and Blinman 1995). Temper types identified in the Dillard assemblage were found in relatively similar proportions across the site regardless of context.

Petrographic analysis identified two igneous rock types used as temper: augite diorite and diorite porphyry (Britton 2014, 2016). Both of these rock types are available in outcrops 7–8 km west of the Dillard site at Sleeping Ute Mountain and in drainages originating there (Eckren and Houser 1965). Thus, potters at Dillard were probably using relatively local sources for tempering materials.



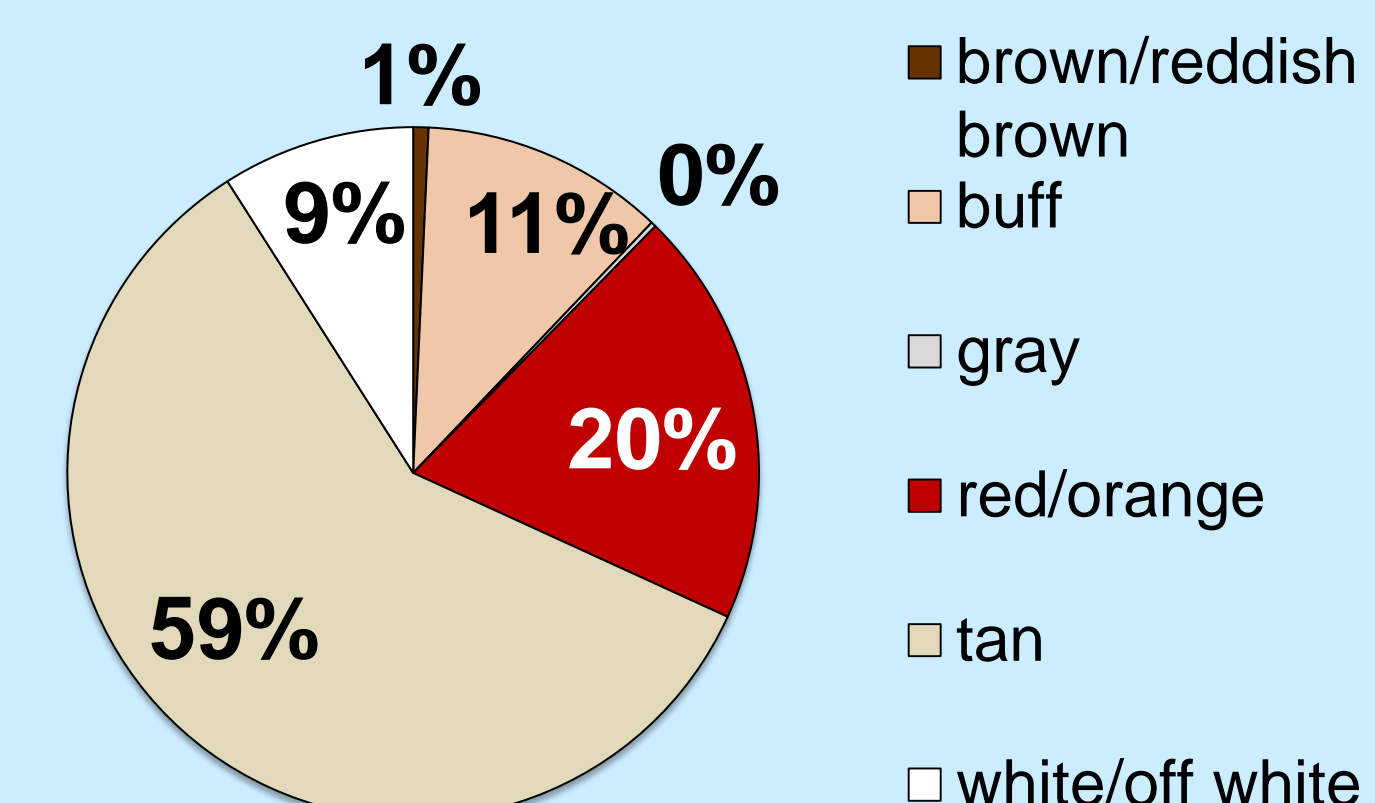
Both images are crossed polars, 100x magnification

## Refiring Analysis

A refiring pilot project of 34 sherds and 64 locally collected clay samples showed variation in oxidized refire color ranging from white to brick red (Schleher et al. 2013). These differences point to variation in paste recipes that could be related to variable amounts of iron in the clay. This initial sample was expanded by refiring all rim sherds  $\geq 5$  grams (N = 421). Four main groups of refired paste colors were identified: red/orange, white/off-white, tan, and buff. Both types of temper are associated with all four color groups, but sand is most common in red/orange pastes, and igneous rock is most common in white/off-white pastes. As with the temper types, all four refire colors are present in similar proportions in sherds associated with all pitstructures tested as well as with the great kiva at the site.

### Refire Color of Rim Sherds

N = 421



Examples of Basketmaker III period pottery (Chapin Gray and Chapin Black-on-white) from the Mesa Verde Region



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## Conclusions and Future Goals

The data suggest that there was widespread similarity in pottery production at the Dillard site, although some intrasite variation is evident:

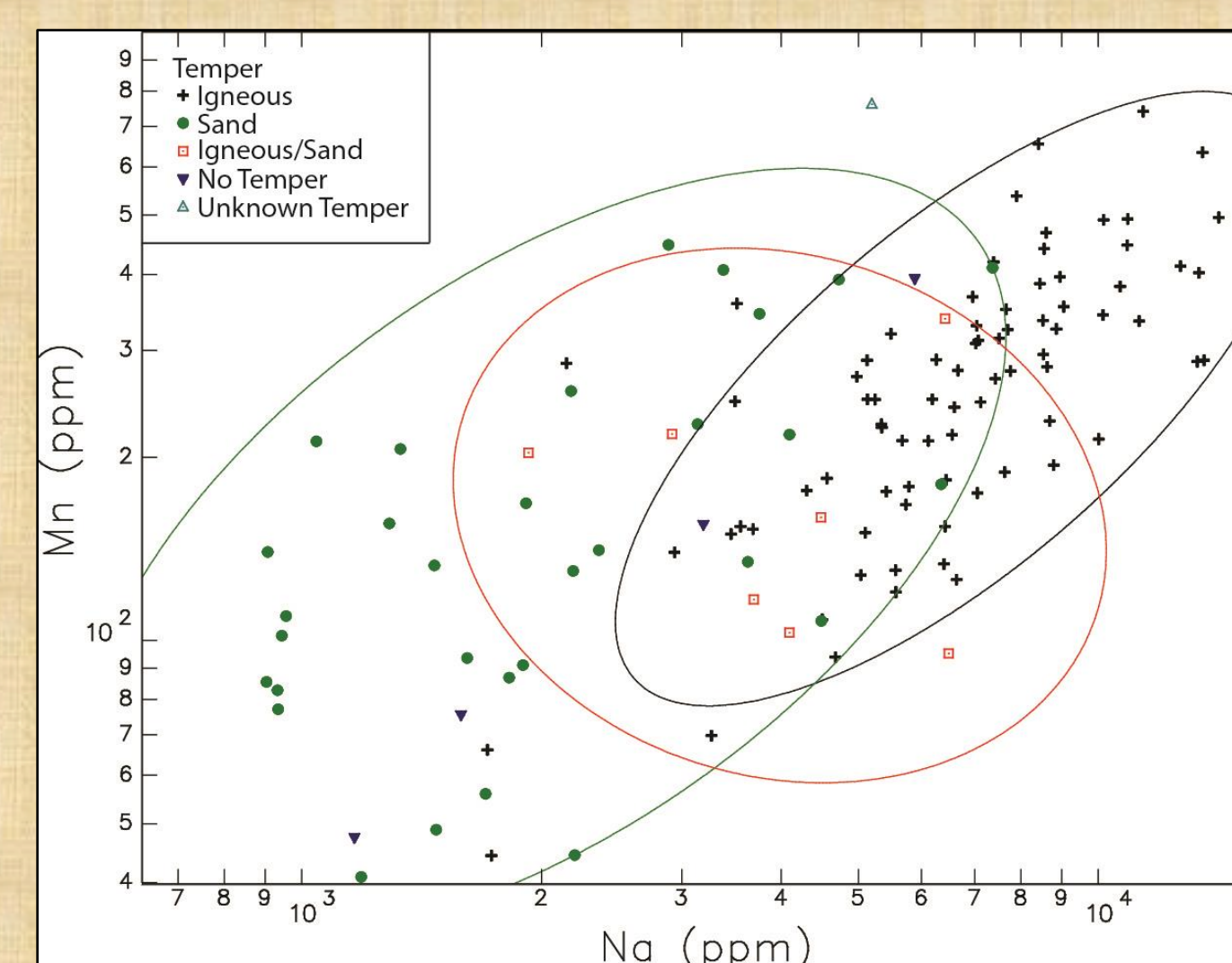
- Spatial patterns indicate similarity in pottery from all pitstructures, including the great kiva, at Dillard. This suggests that either a single pottery-production group experimented with multiple pottery recipes or that there was extensive exchange of vessels within pottery-production groups in the village.
- Pottery associated with the great kiva is more tightly clustered compositionally, which suggests a narrower range of paste recipes in pottery deposited there.

Only slight compositional separation exists in the four refire color groups. The greatest separation is between red/orange and white refire color groups, with tan and buff groups being virtually identical compositionally. We recommend use of just three color groups (red/orange, buff/tan, and white) and stress that multiple lines of evidence, rather than just refiring, are needed to separate pottery-production groups in the Basketmaker III period.

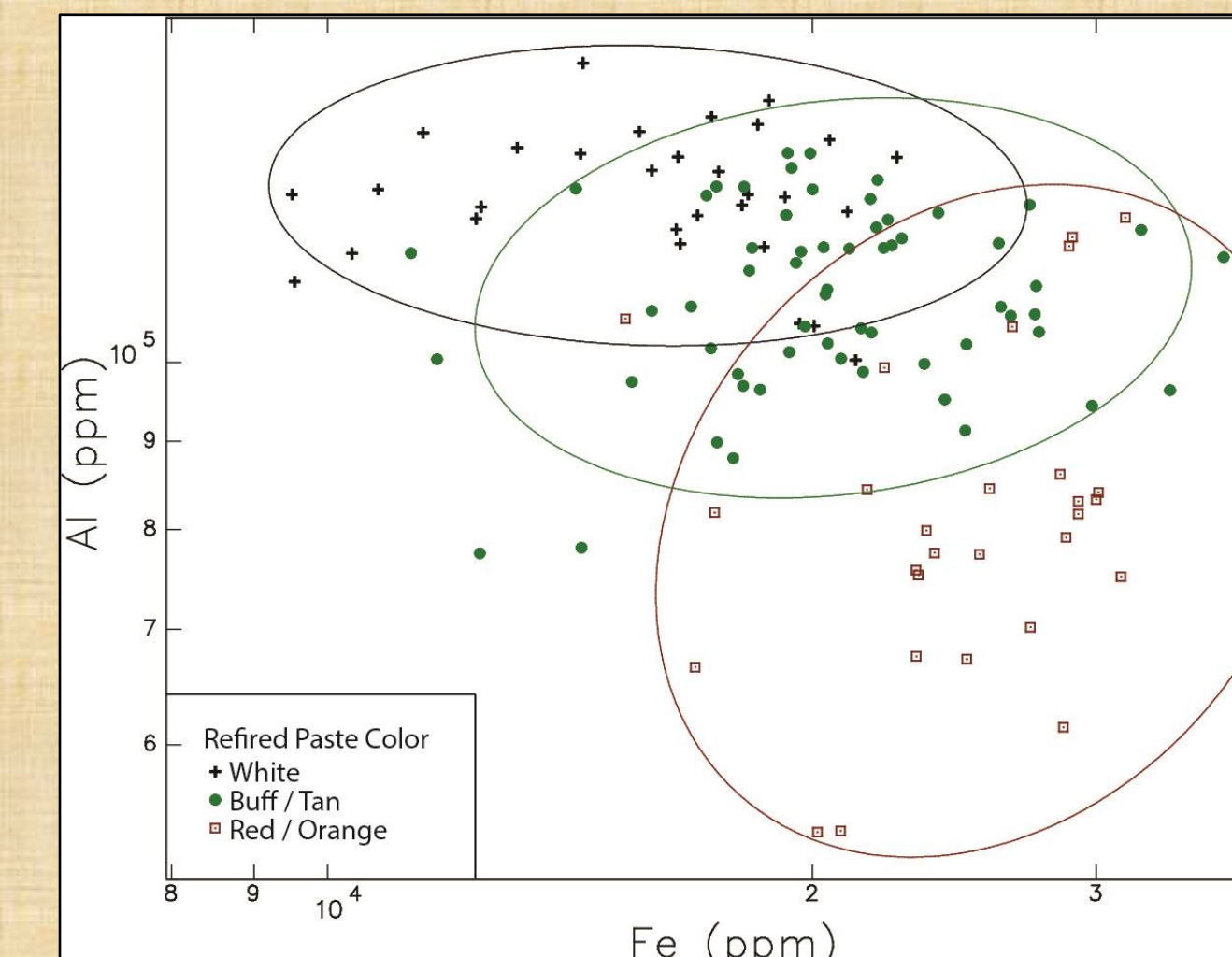
These results are preliminary, and more work is needed to determine the extent of influence of the inhabitants of the Dillard site on the broader community.

## Neutron Activation Analysis

Neutron activation analysis (NAA) was performed on 90 gray ware (Chapin and Indeterminate), 28 white ware (Chapin and Early White), and five brown ware rim sherds (N = 123). Results show broad compositional similarities among all the samples regardless of ware, which suggests that potters generally used similar raw materials whether procured from the same source locale or from compositionally similar geologies (Ferguson and Glascock 2017). Yet, subtle intrasite variation is evident.



NAA concentrations reflect the composition of both the clay and temper. Overall, there is little separation due to temper, though sherds tempered with igneous rock have higher Sodium (Na) concentrations than do sand-tempered sherds.

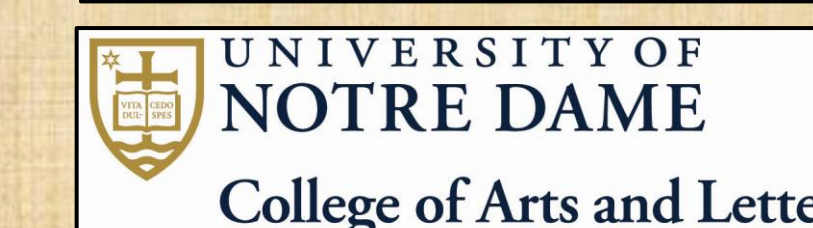


Elemental concentrations compared with refire color show the most variation, largely because of Iron (Fe) content, between the red-orange and white color groups. The compositions of sherds classified as buff or tan were indistinguishable, and these refire color groups have been combined.

## Sherd Sample

The rim sherd sample used for NAA, with pottery ware, paste color and temper type.

Pottery Ware	Paste Color	Igneous Rock	Sand	Total Count	Fe average ppm
Brown ware (N = 5) (Fe ppm 18,238)	Red/Orange	2	0	2	15889
	Buff	1	0	1	11692
	Tan	1	0	1	22009
Grey ware (N = 90) (Fe ppm 22,365)	Unknown	0	1	1	19590
	Red/Orange	13	13	26	26514
	Buff	17	9	26	21714
	Tan	15	4	19	21792
	White	14	3	17	17310
White ware (N = 28) (Fe ppm 18,015)	Unknown	0	2	2	25270
	Red/Orange	1	1	2	23962
	Buff	3	0	3	22428
	Tan	7	3	10	19593
	White	10	3	13	14868



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## Acknowledgments