The Wadi Hasa Ancient Pastoralism Project

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PhD Proposal Defense

ASU, SHESC

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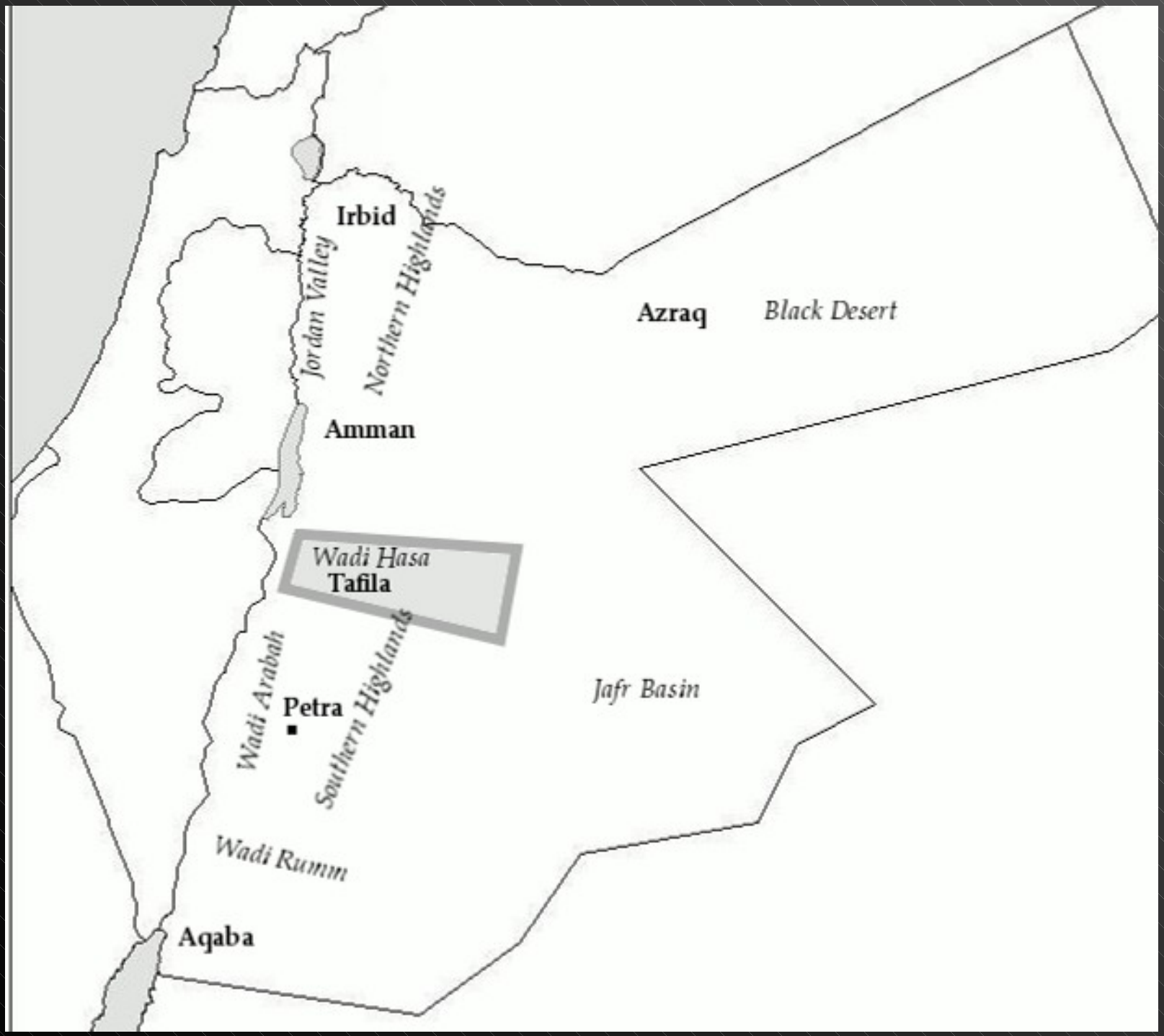
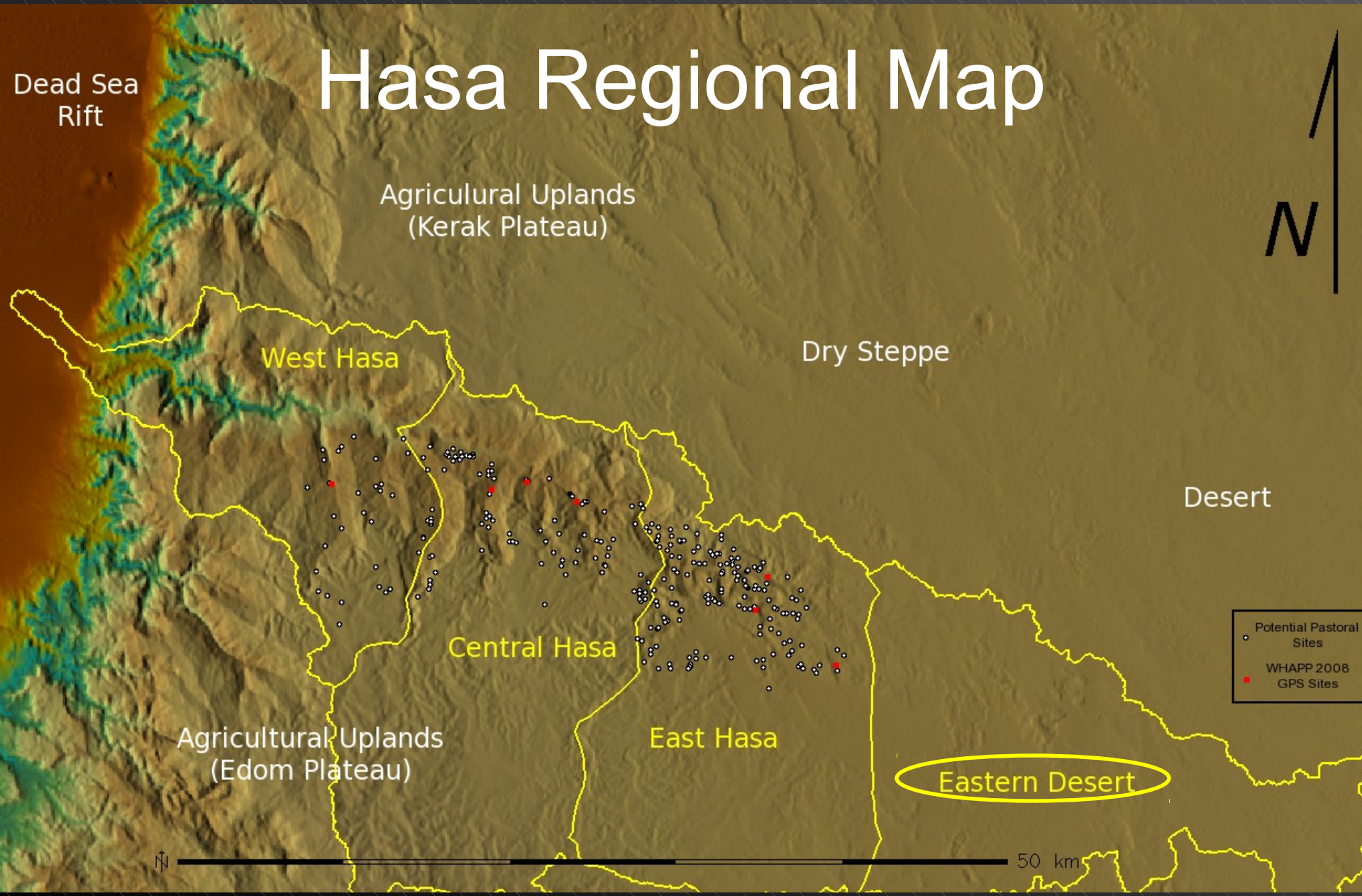
- **The research proposed here aims to develop new theoretical approaches and methods formulated specifically for the archaeology of ancient mobile pastoralism in dry lands.**
- **These techniques will be used to understand the early development of pastoral food production in the arid regions of southern Jordan, the nature of interaction between desert pastoralists and farmers on the highland plateaus, and the environmental impacts of early desert-adapted pastoralism.**

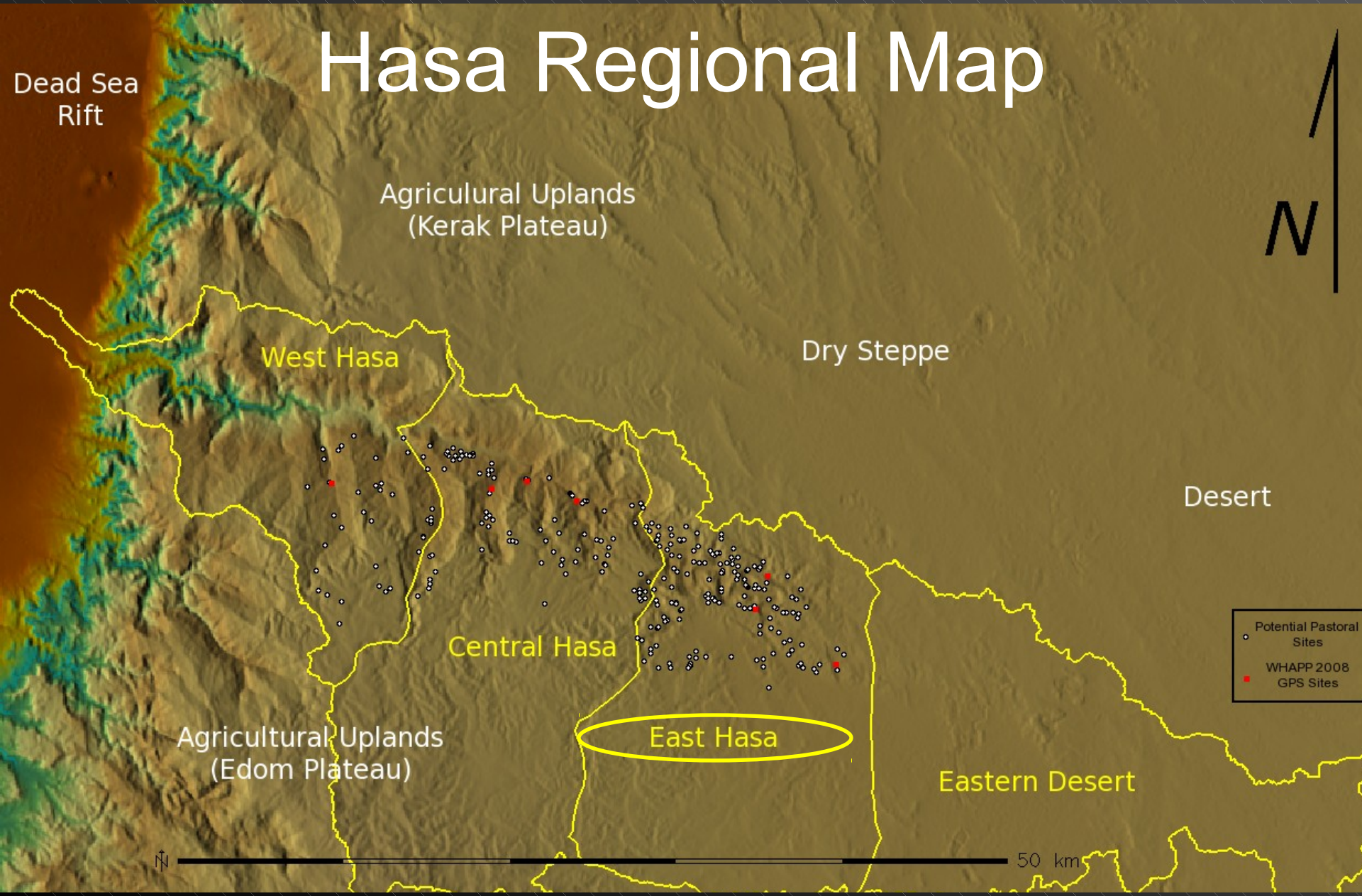
Project Area


Irbid
Jordan Valley
Northern Highlands
Azraq
Black Desert
Amman
Wadi Hasa
Tafila
Wadi Arabah
Petra
Southern Highlands
Jafr Basin
Wadi Rumm
Aqaba


Hasa Regional Map
Dead Sea Rift
Agricultural Uplands (Kerak Plateau)
N
West Hasa
Dry Steppe
Desert
Central Hasa
Potential Pastoral Sites
WHAPP 2008 GPS Sites
Agricultural Uplands (Edom Plateau)
East Hasa
Eastern Desert
N
50 km

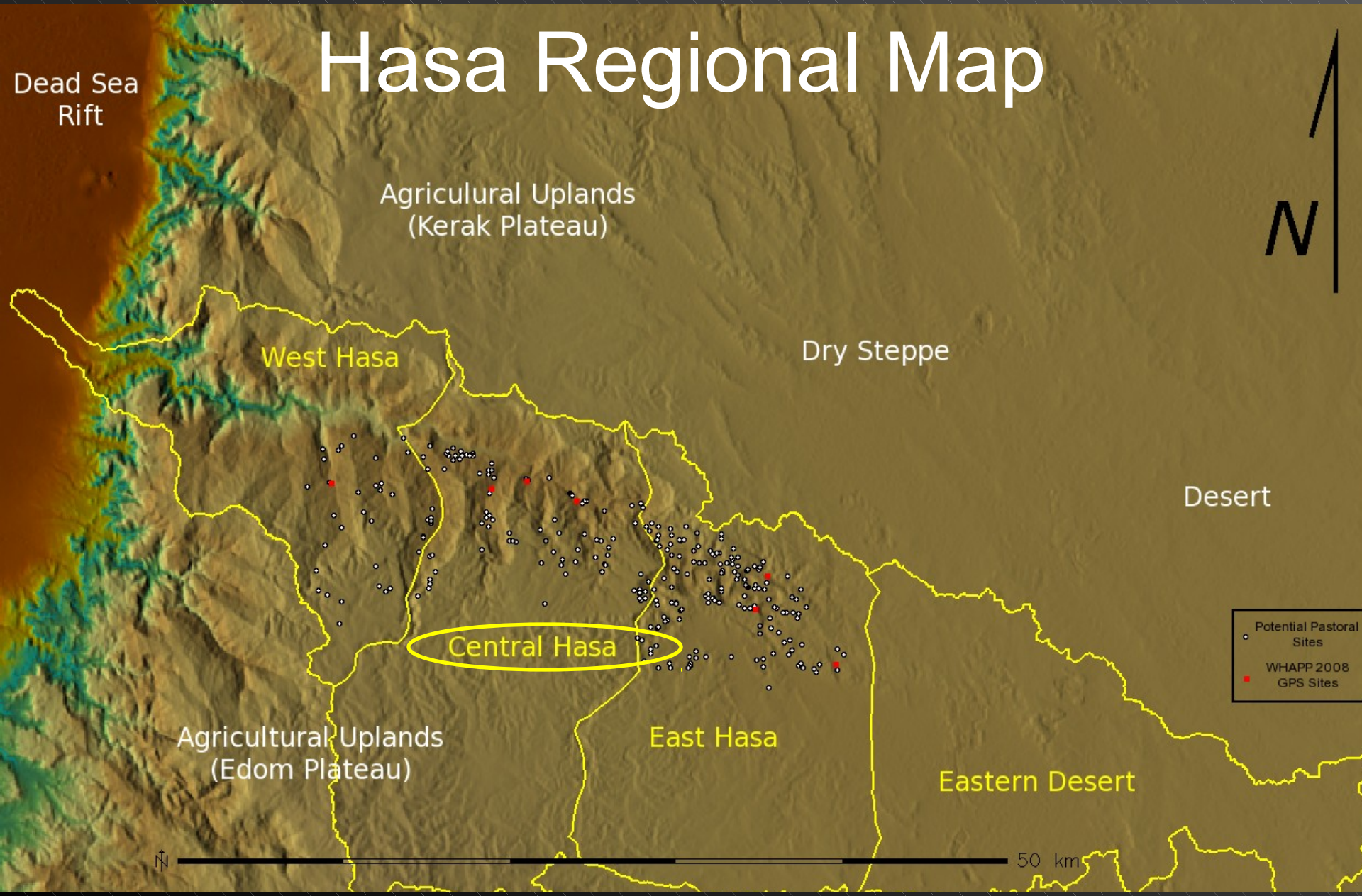
Desert Pavements

Hasa Regional Map



Broad Upper Catchment

Moderate Entrenchment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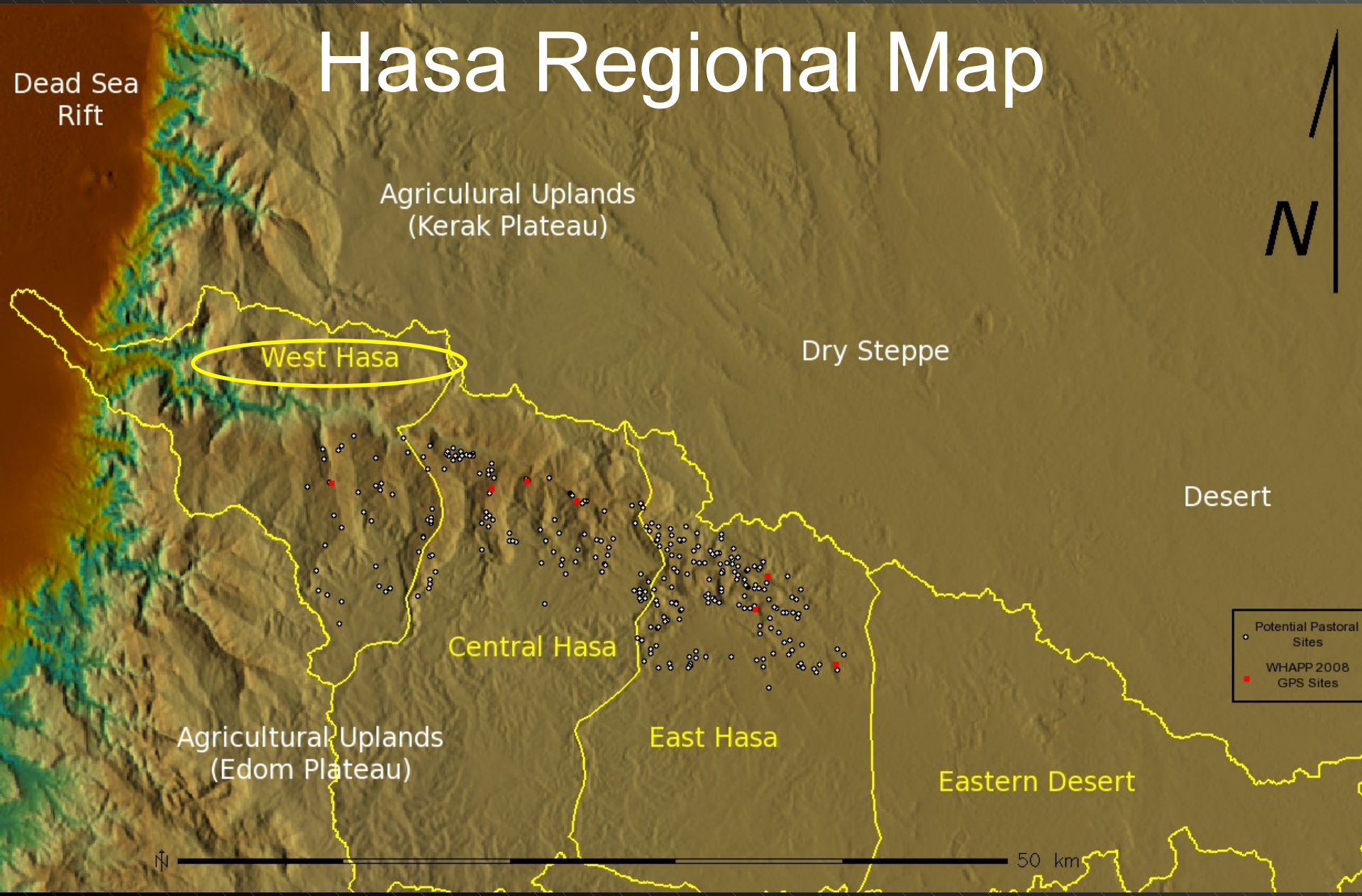
More Entrenched

Occasional Widening

Tributaries

Hasa Regional Map



Deeply Entrenched

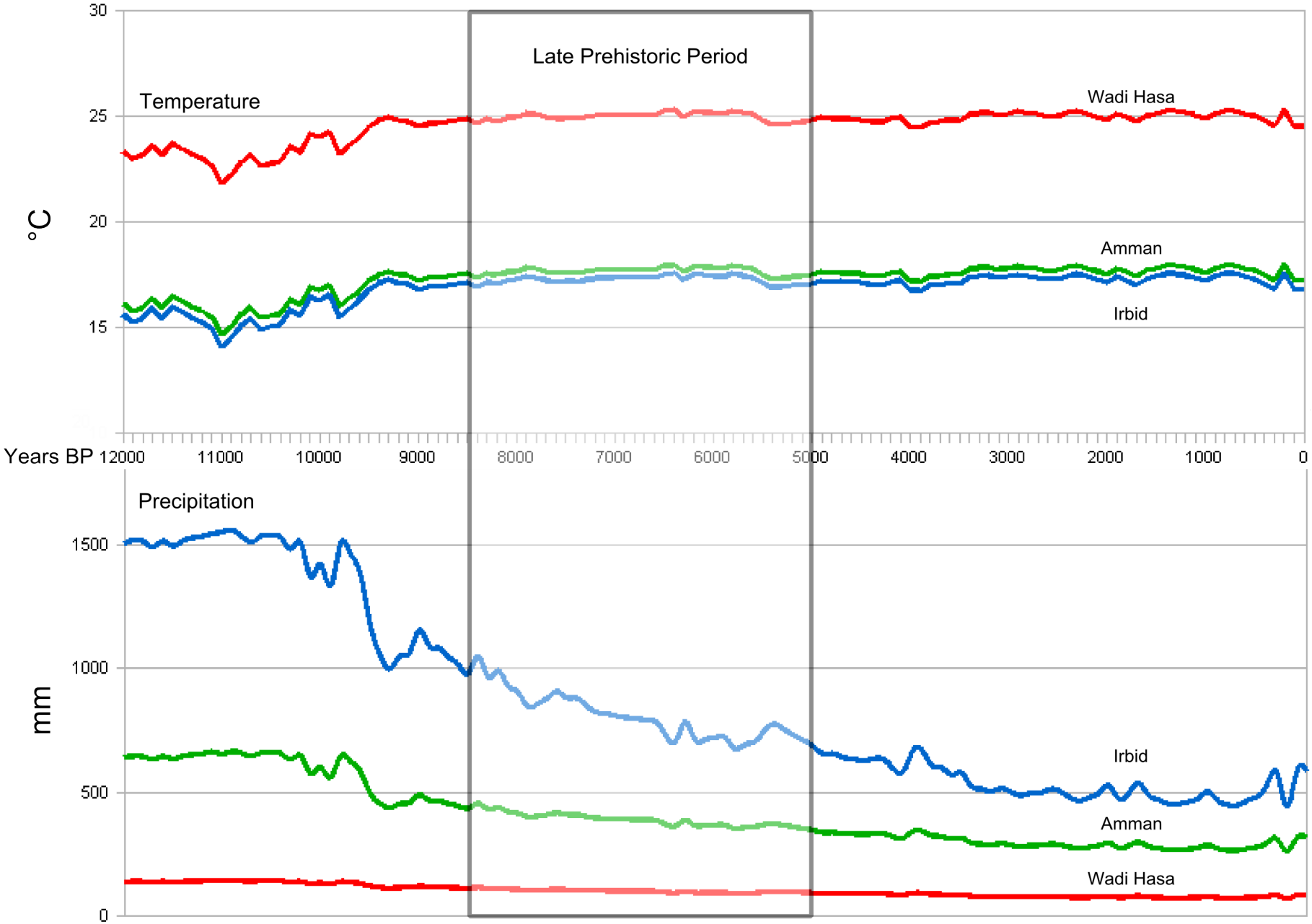
Moderately Entrenched Tributaries

Paleoenvironment

Time Period

- Late Prehistoric periods
  - Late Neolithic [8,250 – 7,800 cal B.P.]
  - Chalcolithic [7,800 – 5,500 cal B.P.]
  - Early Bronze Age I [5,500 – 5,050 cal B.P.]

Holocene Climate Model

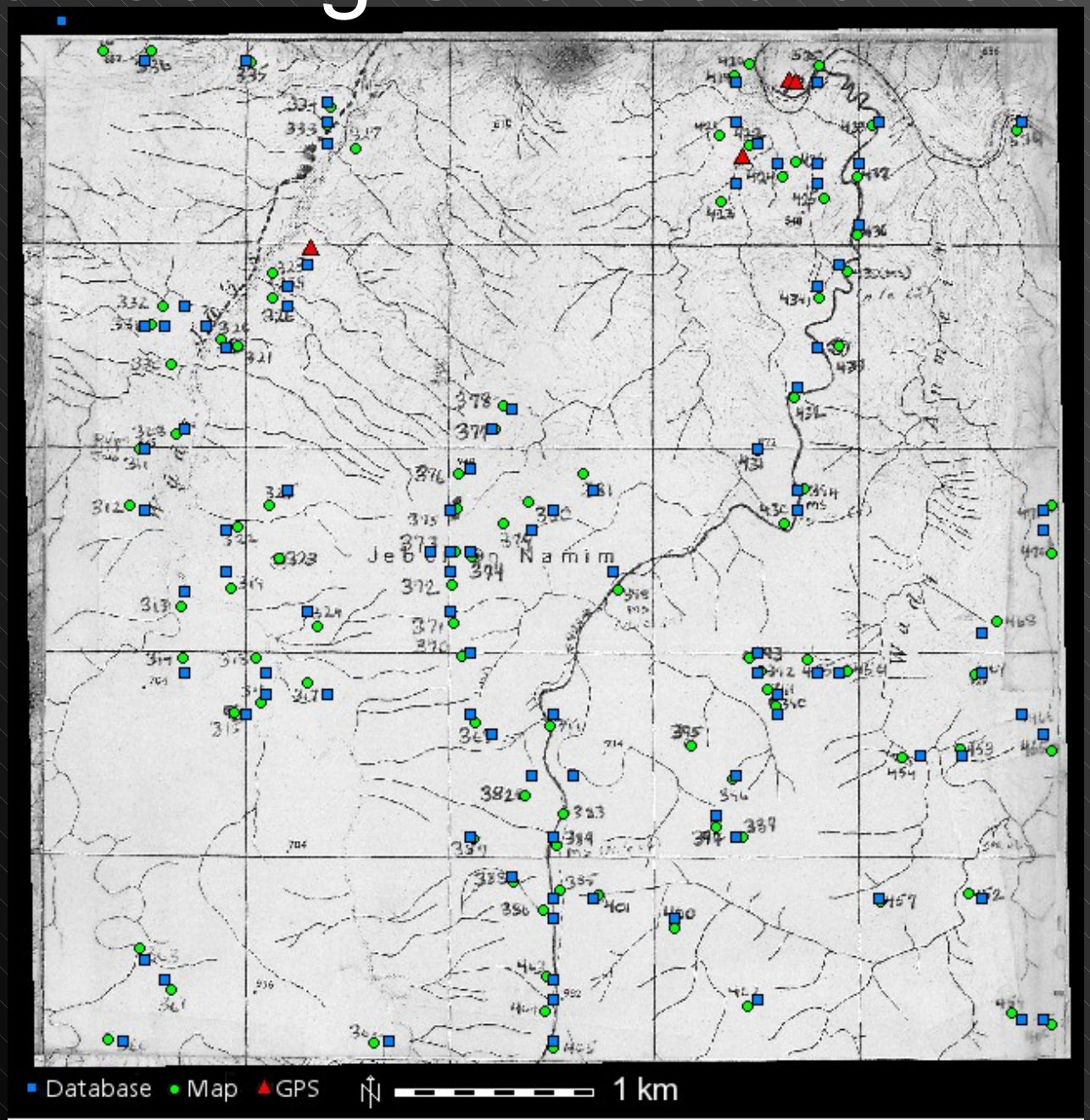


Preliminary Analysis

Research Questions

- How can we identify ancient pastoral campsites, and how can we distinguish them from those of horticulturalists or foragers?
- Which parts of the lithic technology of early mobile pastoralism can be used as identifying types?
- Can pastoral sites be identified in the existing survey data?
- Is the spatial record in these existing survey data accurate?

Correcting Site Coordinates

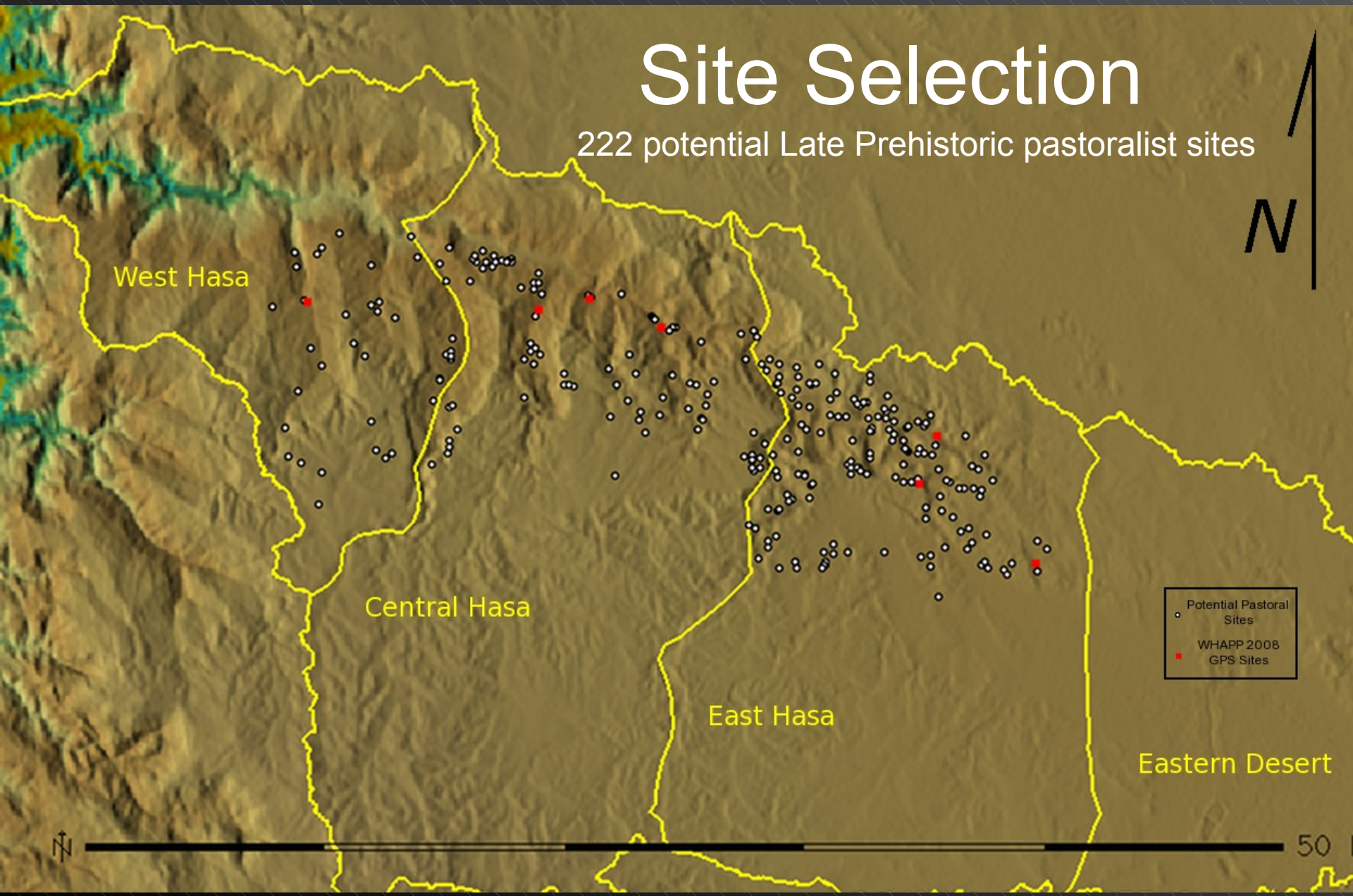


Site Selection

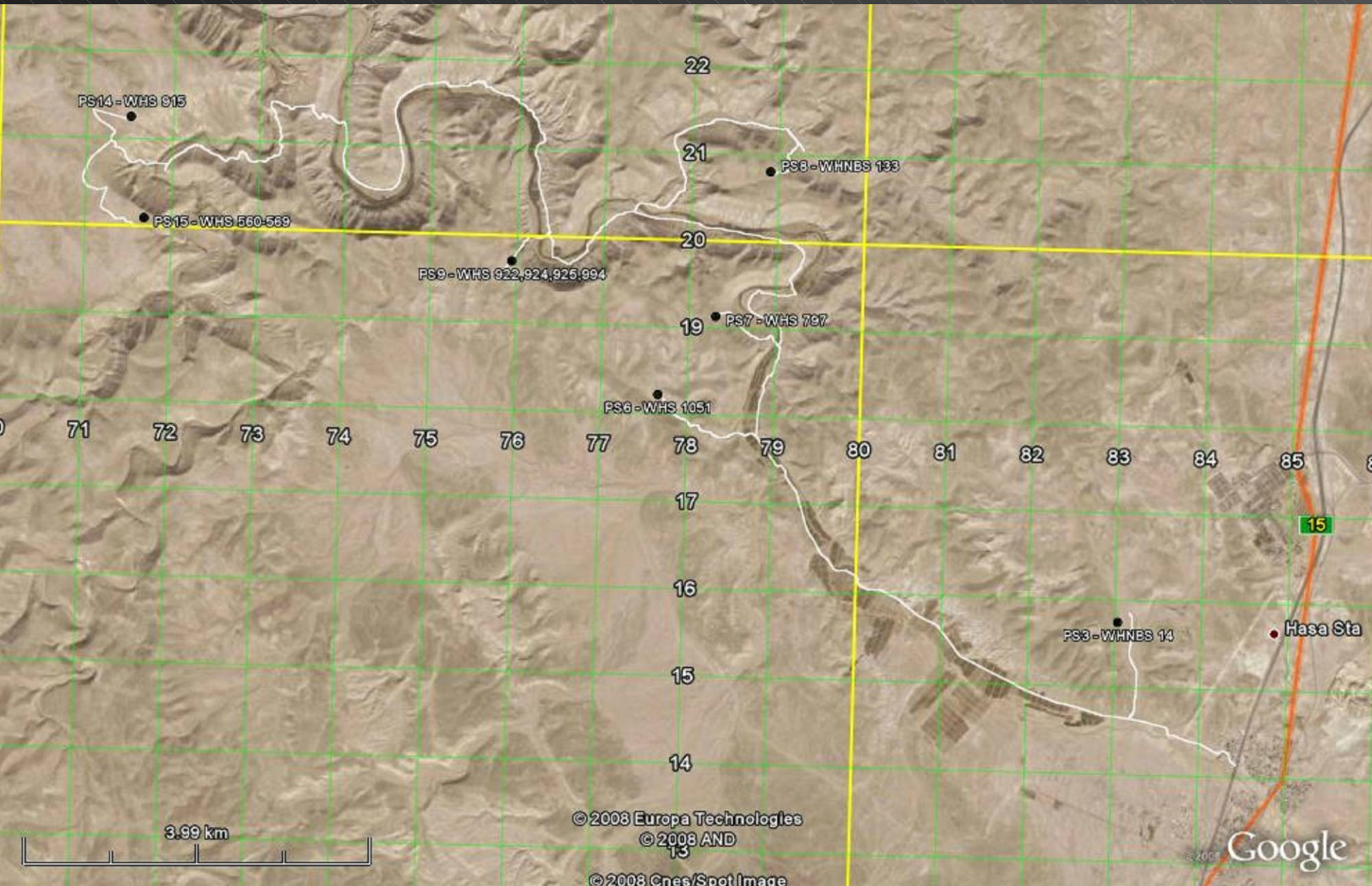
- Query WHS and WHNBS survey database
- Selection Criteria:
  - Architecture
    - Stone Circles, Enclosures, Stone Piles
  - Artifacts
    - Concave Truncation Burins, Tabular Scrapers
  - Time period
    - Late Neolithic, Chalcolithic, Early Bronze or “unknown”
- 222 Potential Sites

Site Selection

222 potential Late Prehistoric pastoralist sites



Field Work Planning



Field Work

Research Questions

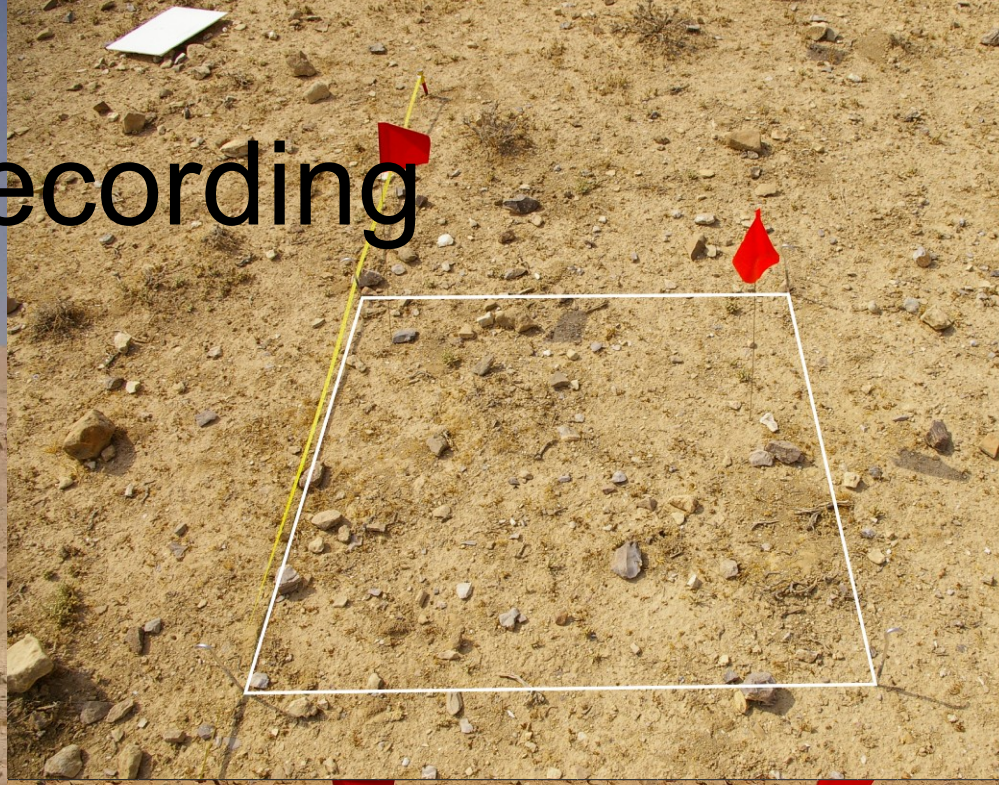
- What is the density and distribution of Neolithic/Chalcolithic pastoral sites in the area?
- What kinds of site formation processes affect pastoral sites, and how well do signatures of pastoralism preserve?
- How frequently were prehistoric pastoral sites reused?
- What types of activities took place at pastoral sites?
- What was the middle and late Holocene landscape in the region?
- On what types of landforms are pastoral sites located?

New Survey Blocks

- In old survey area
  - Closer surveyor spacing
  - GPS
  - Higher coverage
  - Better understand the accuracy of the older data
- In the eastern desert
  - Obtain a sample of sites from the true desert areas

Site Recording

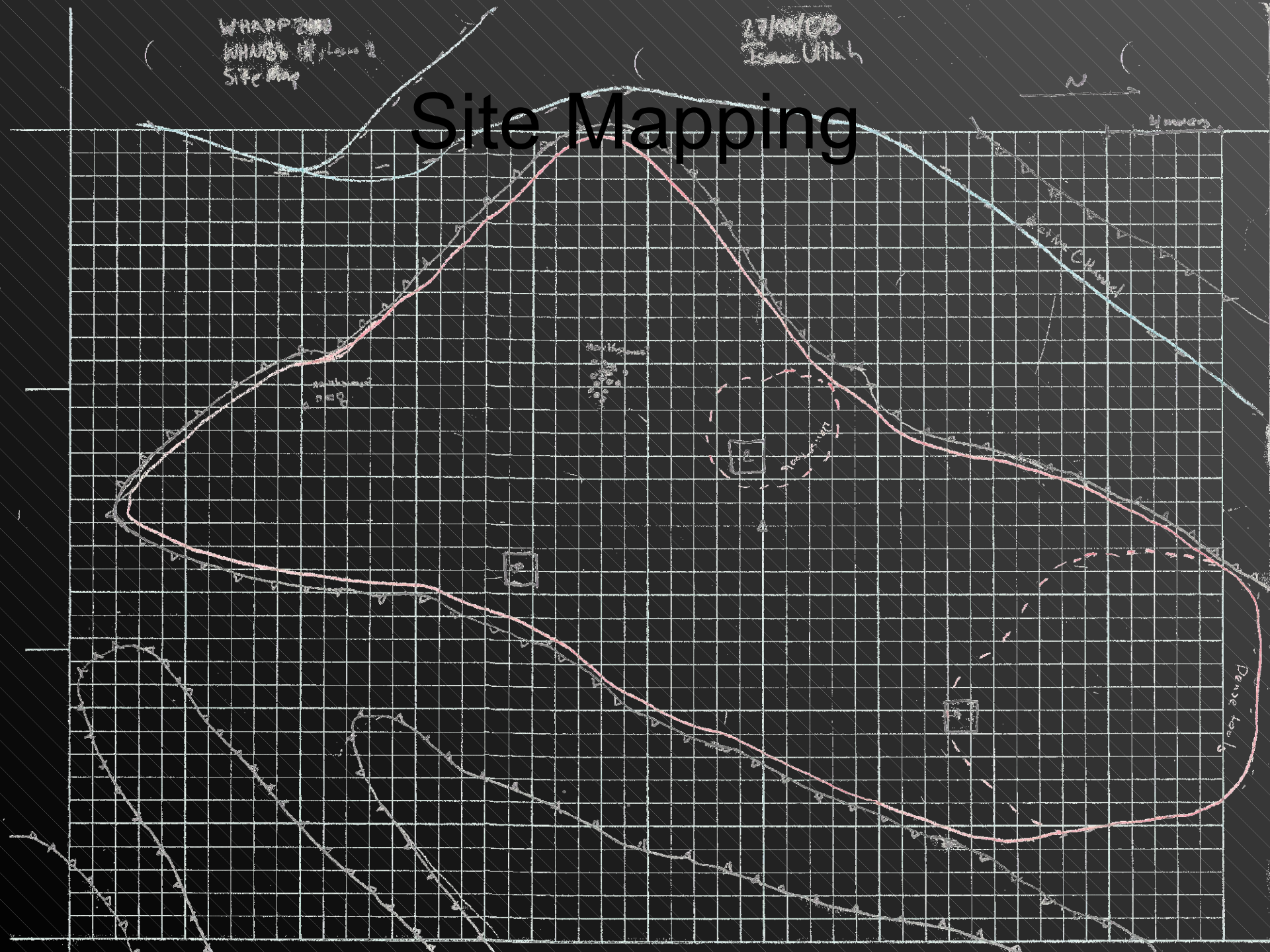
Site Recording



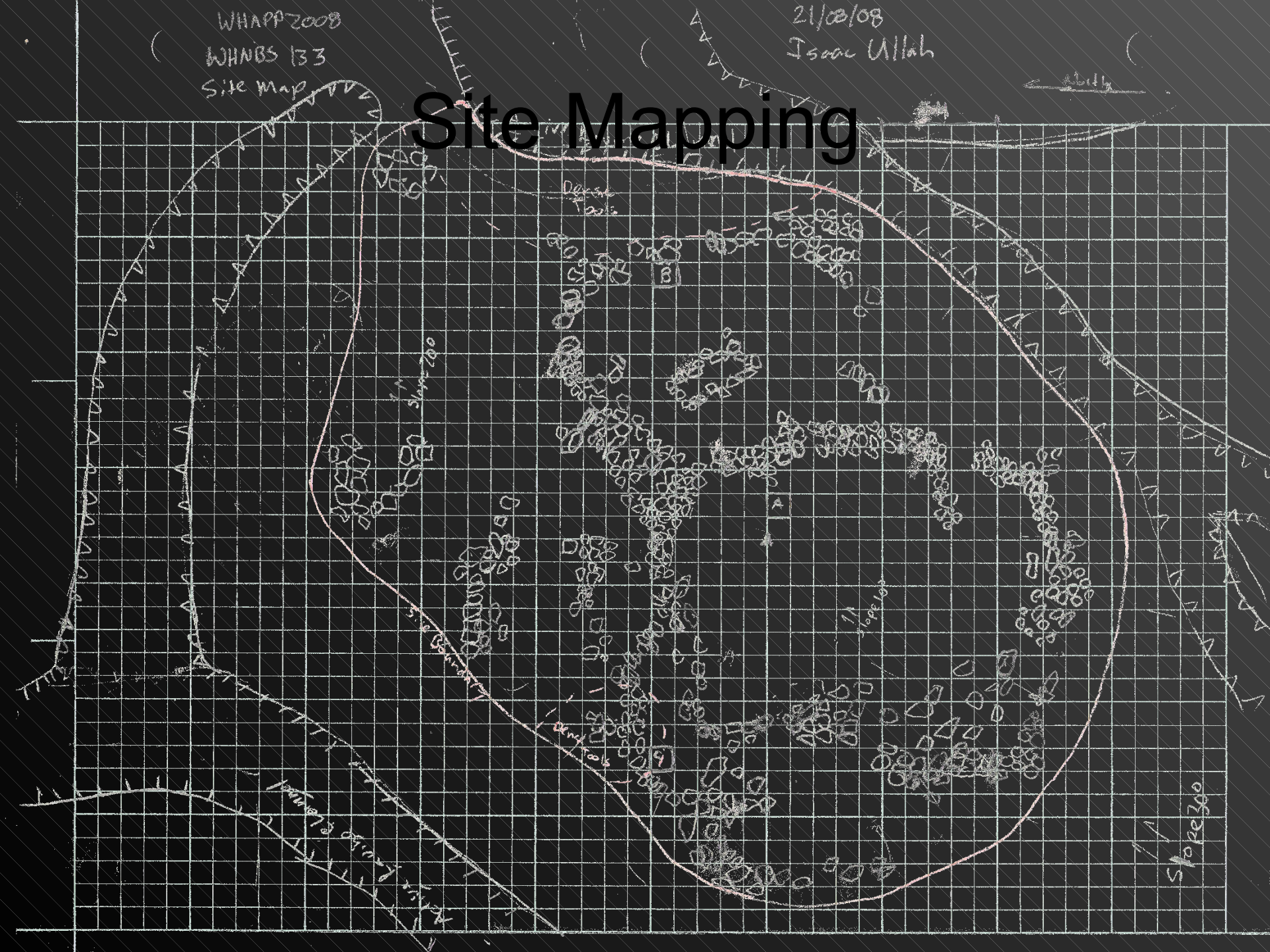
Artifact Photography


Site Mapping

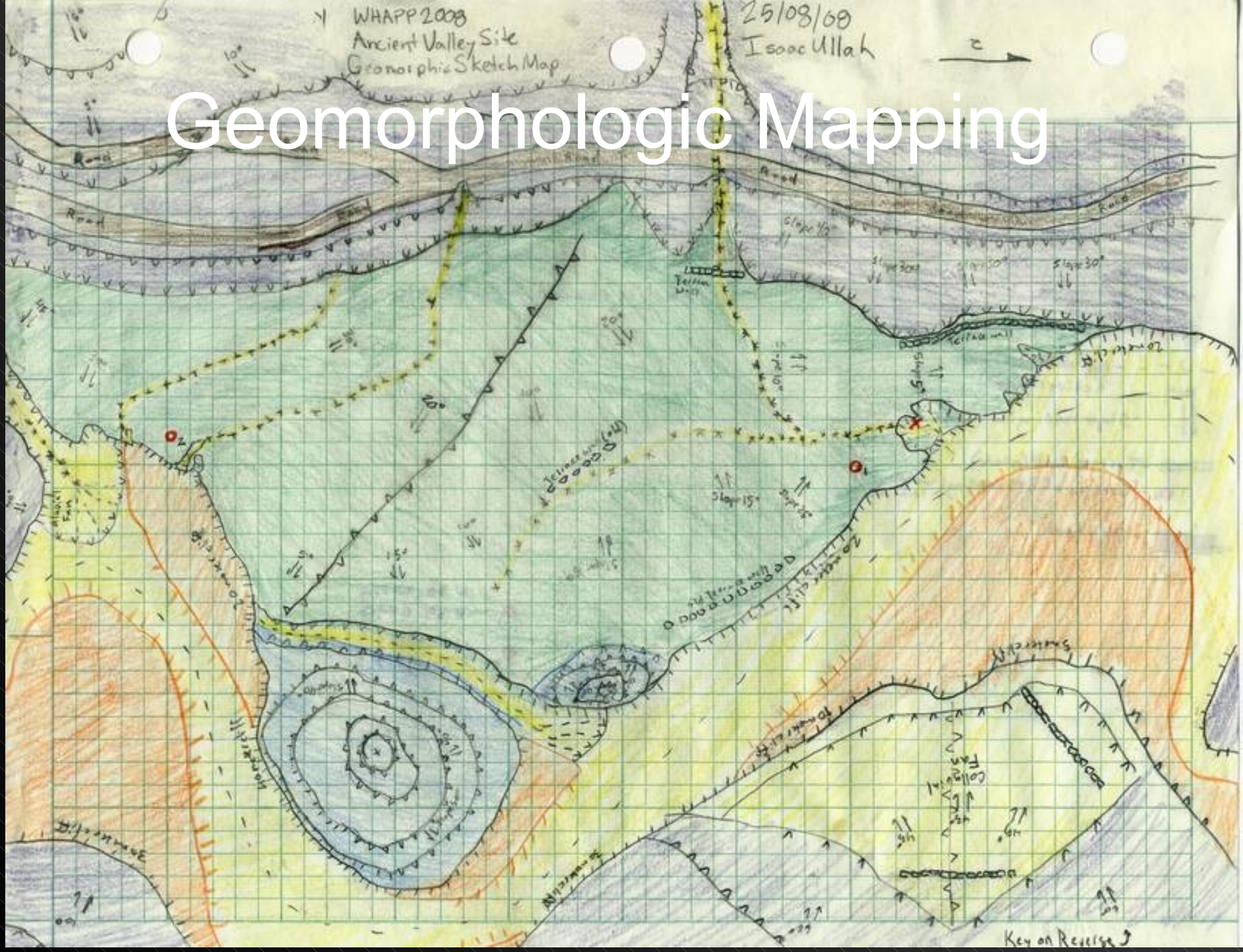
Site Mapping



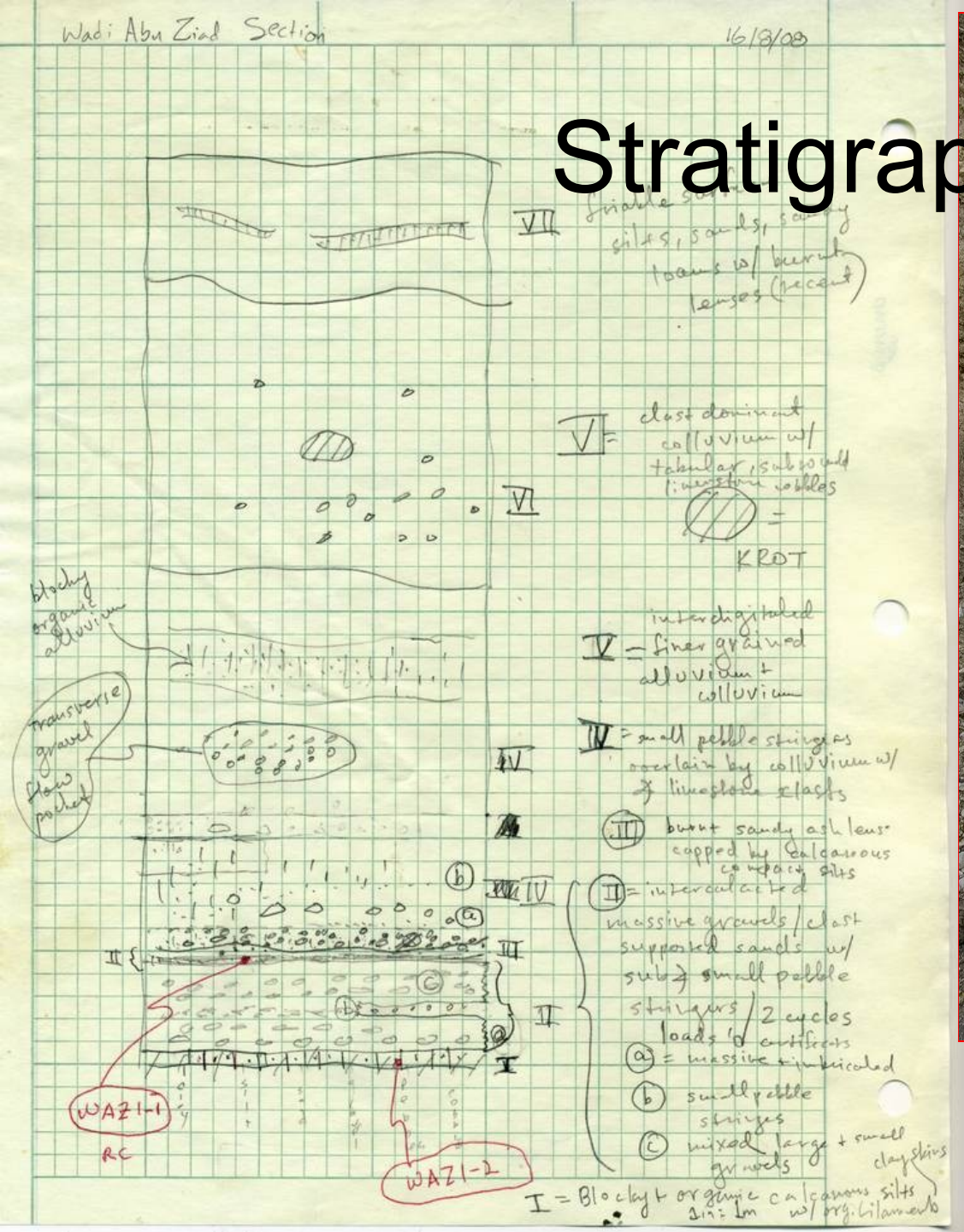
Site Mapping

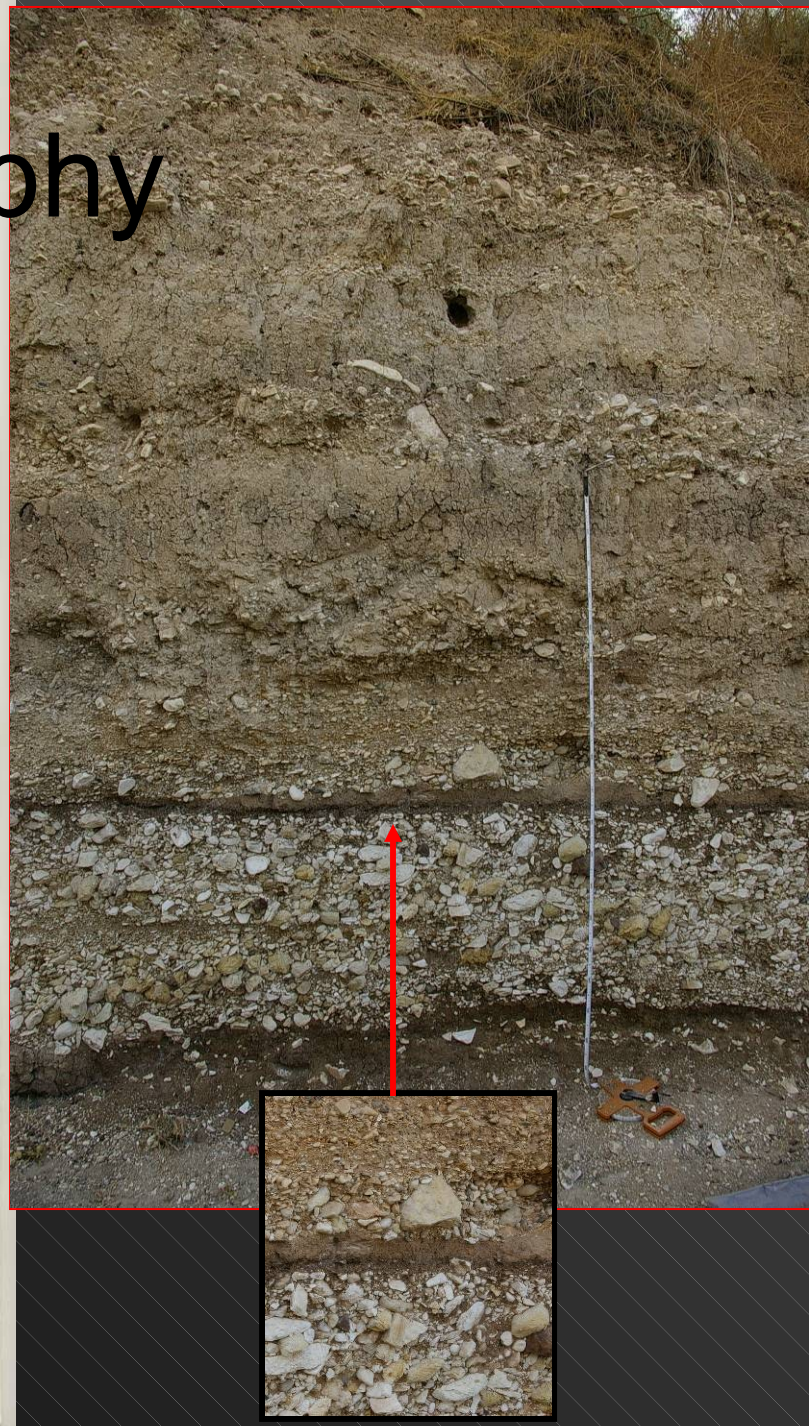


Geomorphologic Mapping



Stratigraphy





OSL Sampling Of Alluvial Terraces

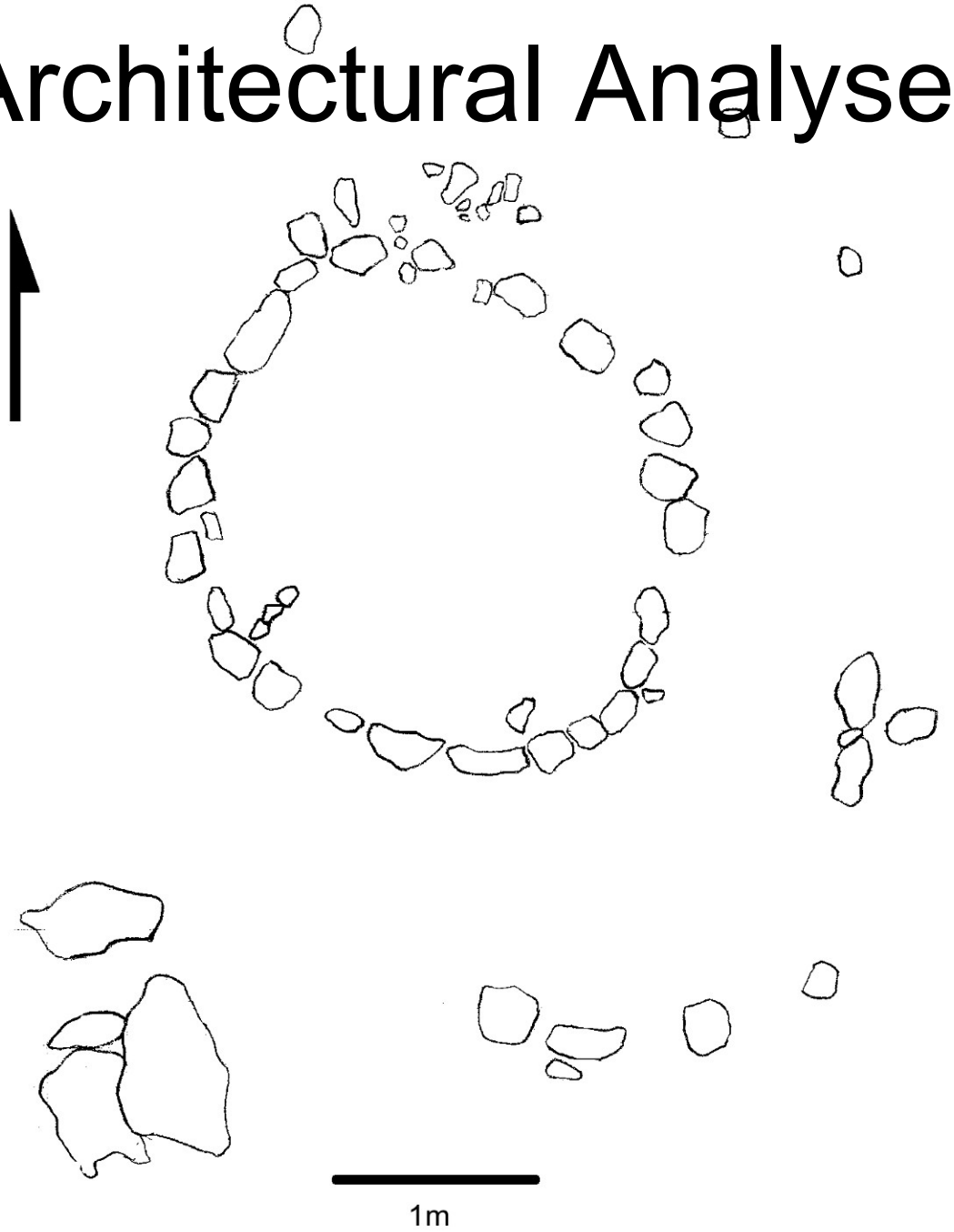
OSL Sampling at Archaeological Sites?

Post Field Work Analyses

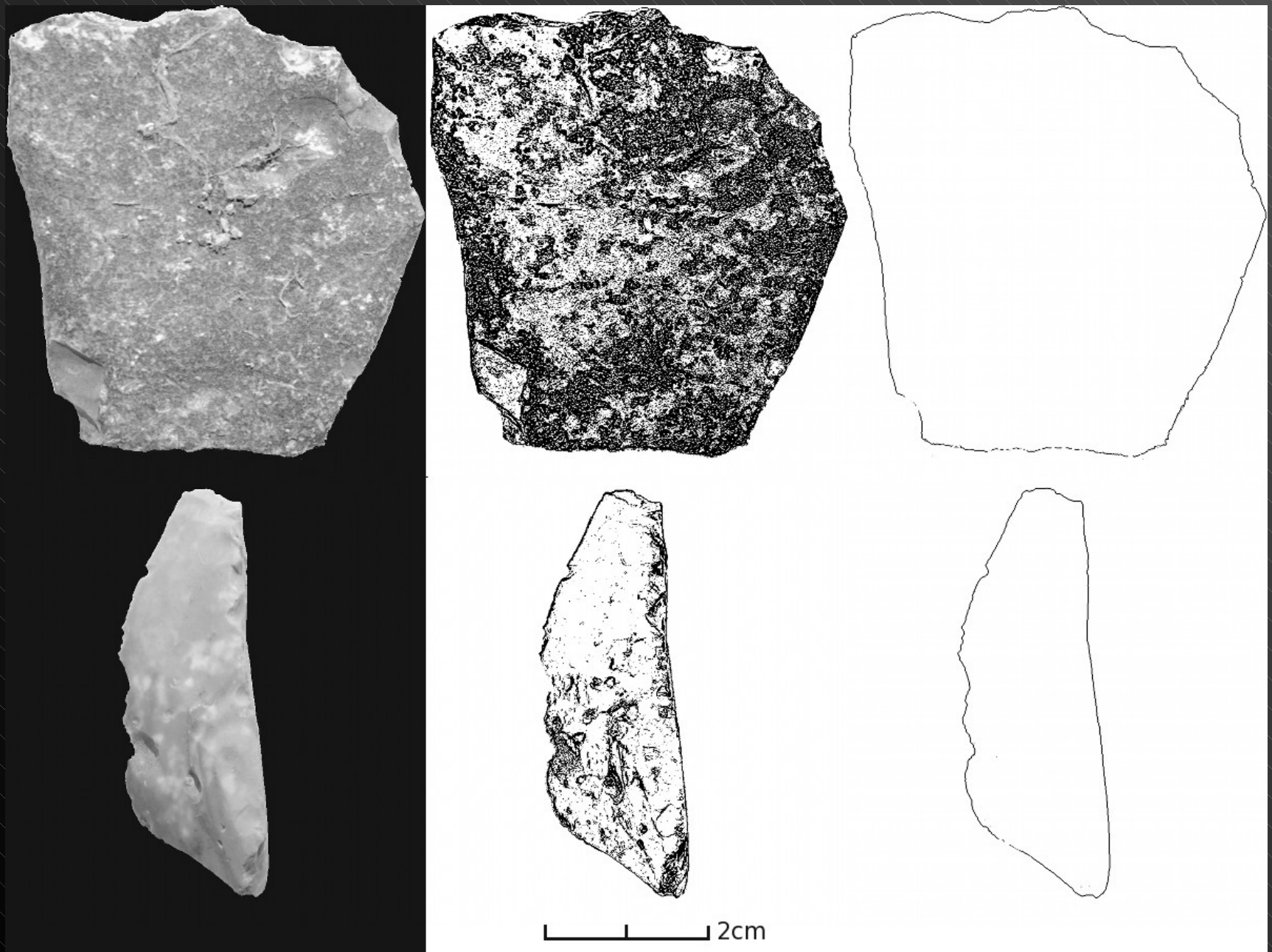
Research Questions

- How did mobile pastoralism arise as a unique production strategy?
- Did environmental differentiation affect the way pastoralism originated and developed?
- How do pastoral strategies impact the environment over long periods of time?
- Can mobile pastoralism be considered a viable response to localized environmental degradation?

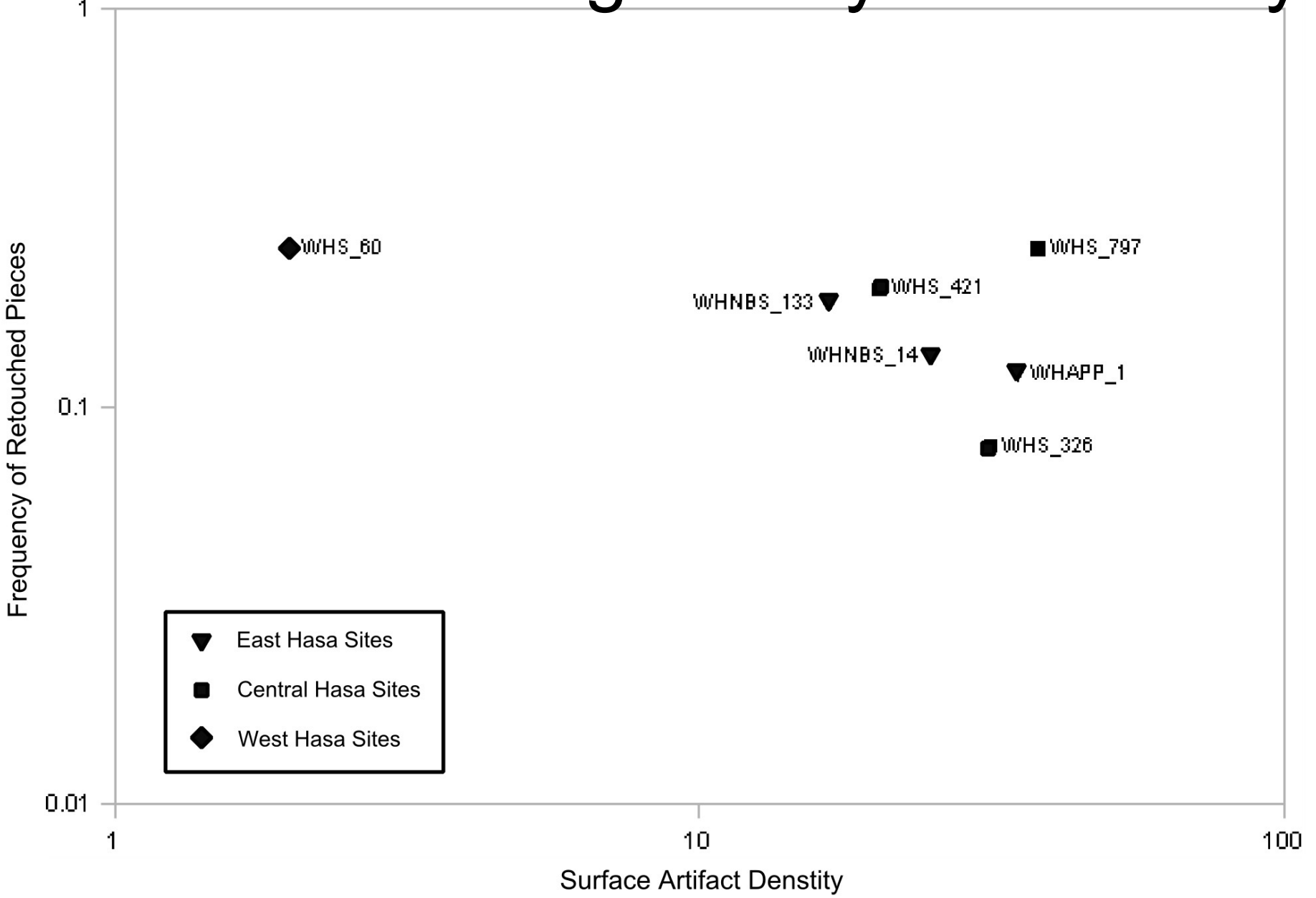
Architectural Analyses



Photographic Morphometry



Whole Assemblage Analyses: Mobility



Other Analyses

- Cortex ratio mobility studies
- OSL and 14C sample processing
- Terrace chronosequence to archaeological site correlation
- Site location and settlement pattern analyses
- MEDLANDS-style human landuse modeling

Models Of Early Pastoral Development

Research Questions

- How were early agriculture and early pastoralism related?
- How do the patterns of change in settlement, economy, technology, and social organization of early pastoralists compare with those of the sedentary farmers?
- What was the nature of interaction between agriculturalists and pastoralists in different parts of the Levant? Was it amicable or competitive, mutualistic or parasitic, one-way or reciprocal?

Agropastoral Split Model

- **Conditions**

- Interaction and exchange between the agricultural heartland and the pastoral margins is frequent and regular, resulting in many shared aspects of material culture in the two areas.
- Pastoral peoples rely on exchange of pastoral products for agricultural products from farmers for a significant portion of their subsistence base.
- Pastoralists most likely spend hot summer months amongst the agriculturalists of the highland plateaus, moving to desert areas in the fall and winter to take advantage of ephemeral pastures.
- Pastoralists will be semi-sedentary/logistically-mobile in summers but will have high residential mobility in the winters.

Agropastoral Split Model

- **Test Implications**

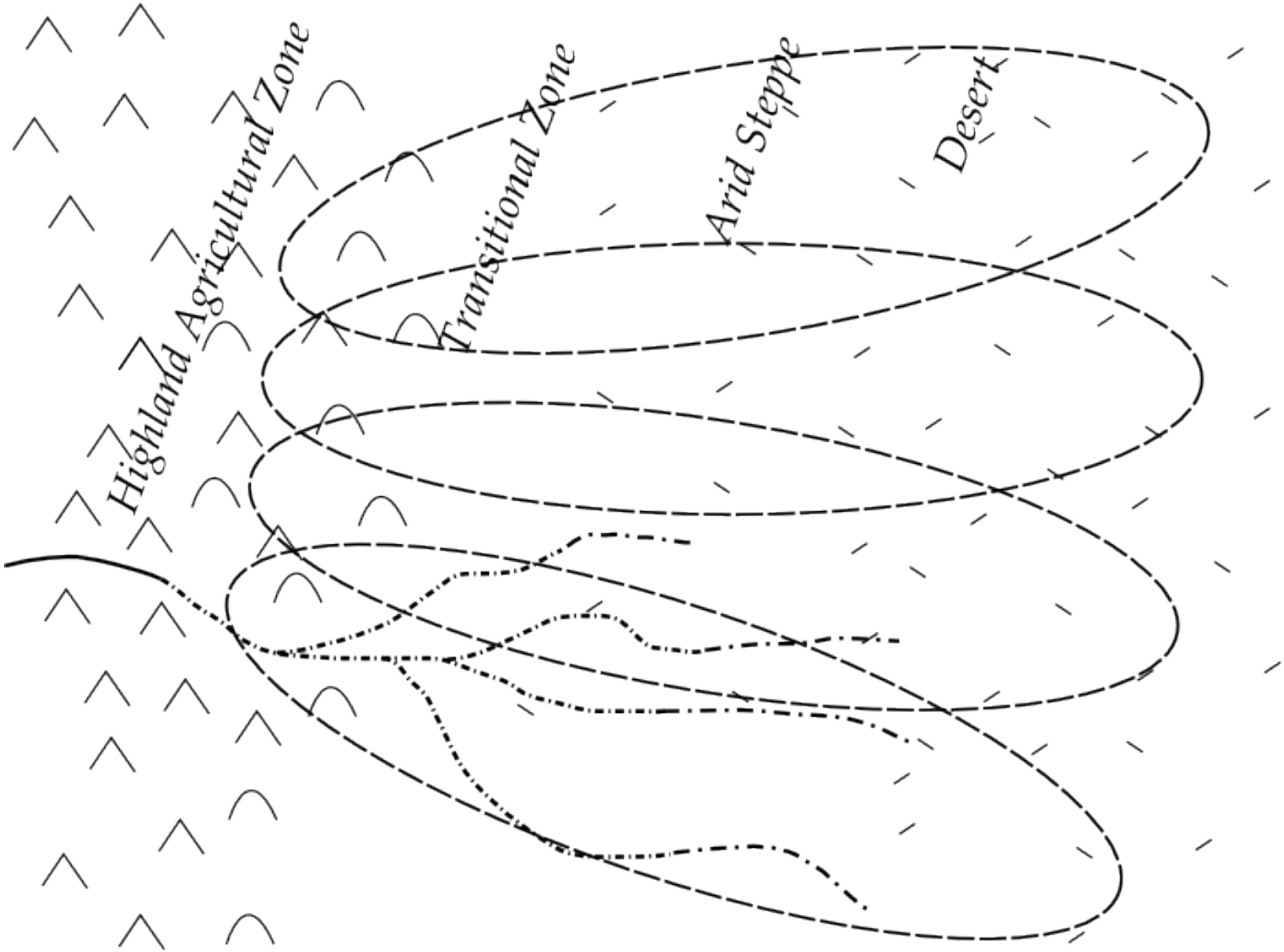
- Similar stone tool types and pottery styles between desert and highland sites.
- Retouch frequencies and cortex ratios at sites will indicate high curation rates for campsites in the desert, but will indicate low curation rates for campsites in the agricultural areas.
- Desert sites should have some stone tools made on raw material that sources to the agricultural areas.

Agropastoral Split Model

- **Test Implications**

- Settlement pattern will be “tethered” to the agricultural core, and sites should radiate from there out into the desert with evidence of increasing residentially mobility in arid areas.
- There will be site furniture related to grain storage and processing (e.g., bins, pits, storage vessels, granaries, small rock platforms, or grinding implements).
- Architecture at all sites will be related mainly to dwelling and herding, but the architecture at sites in or near the agricultural areas should be more robust than that of desert sites and show evidence for repeated seasonal occupation over long periods of time.

Agropastoral Split Model



Shifting Strategies Model

- **Conditions**

- Pastoralists, farmers, and/or foragers are part of the same cultural or social group.
- Subsistence strategies are constantly adjusted through time.
- Sites will be in locations that are good for both agriculture and pastoralism or both foraging and pastoralism.
- Mobility patterns change through time and vary with economic strategy.

Shifting Strategies Model

- **Test Implications**

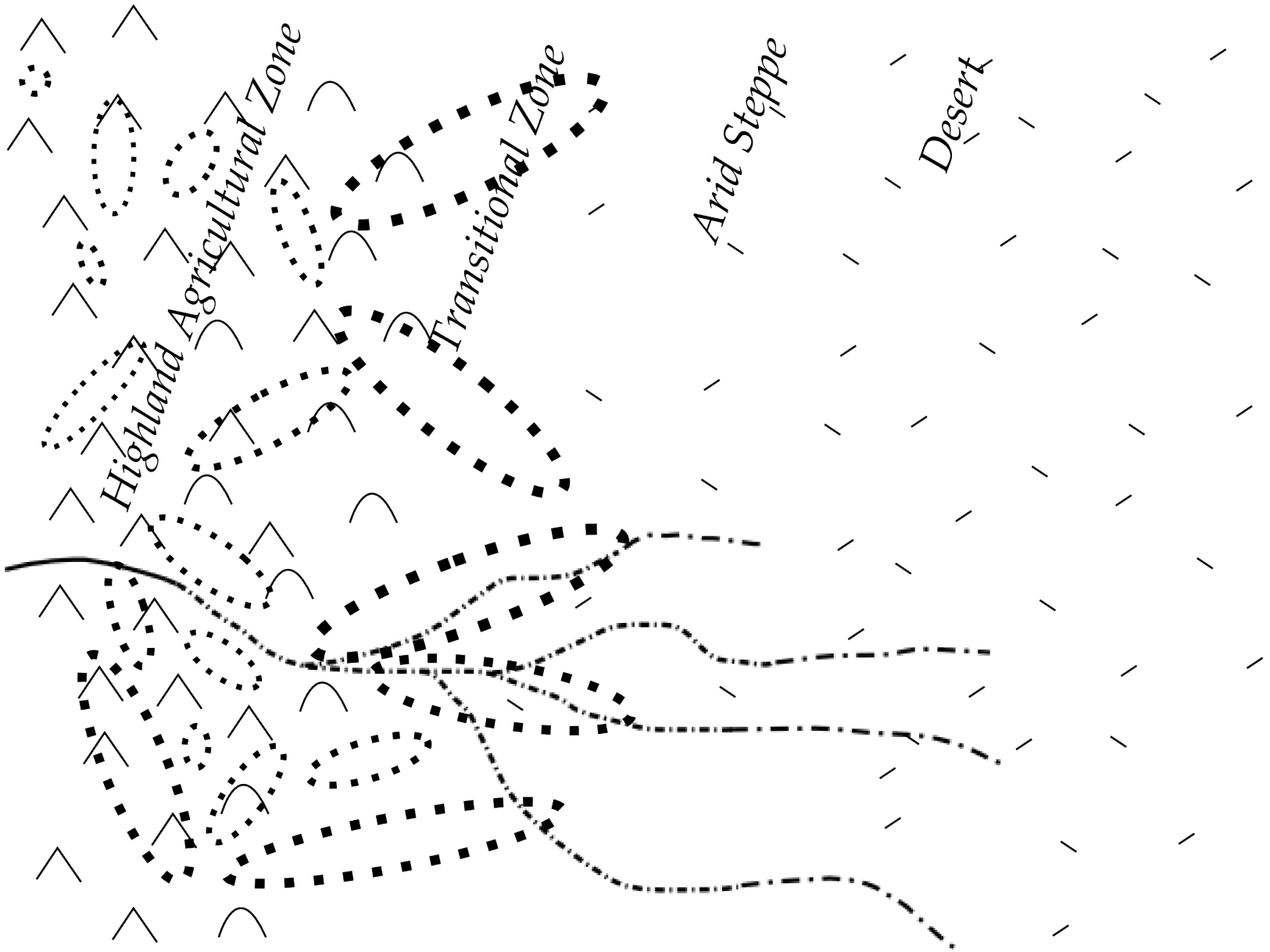
- Stylistic aspects of the material culture of contemporary pastoralists, farmers, and/or foragers should be basically identical.
- Alternating frequencies in technology related to pastoralism, horticulture, and foraging at different sites that otherwise share similar material culture.
- Retouched tool frequencies and cortex ratios will indicate minimal curation of lithic tools at all sites.

Shifting Strategies Model

- **Test Implications**

- Most stone tools will be made on local raw material.
- Variation in settlement patterns over time and space from fairly sedentary to logistically mobile
- Architectural analyses will show evidence of multiple occupational phases at sites, and changing frequencies of architecture related to pastoralism between adjacent sites and over time.

Shifting Strategies Model



Mobile Forager Transition Model

- **Conditions**

- Pastoralists and farmers are culturally and socially distinct, and interaction between pastoralists and farmers is sporadic and infrequent.
- Although pastoral foods dominate, wild resources will be more important than agricultural ones as a source of supplemental food.
- Desert pastoralists derive from an earlier group of desert-adapted hunter-gatherers.
- Pastoralists will be residentially mobile year-round, and pastoral mobility patterns might resemble previous game-hunting mobility patterns.

Mobile Forager Transition Model

- **Test Implications**

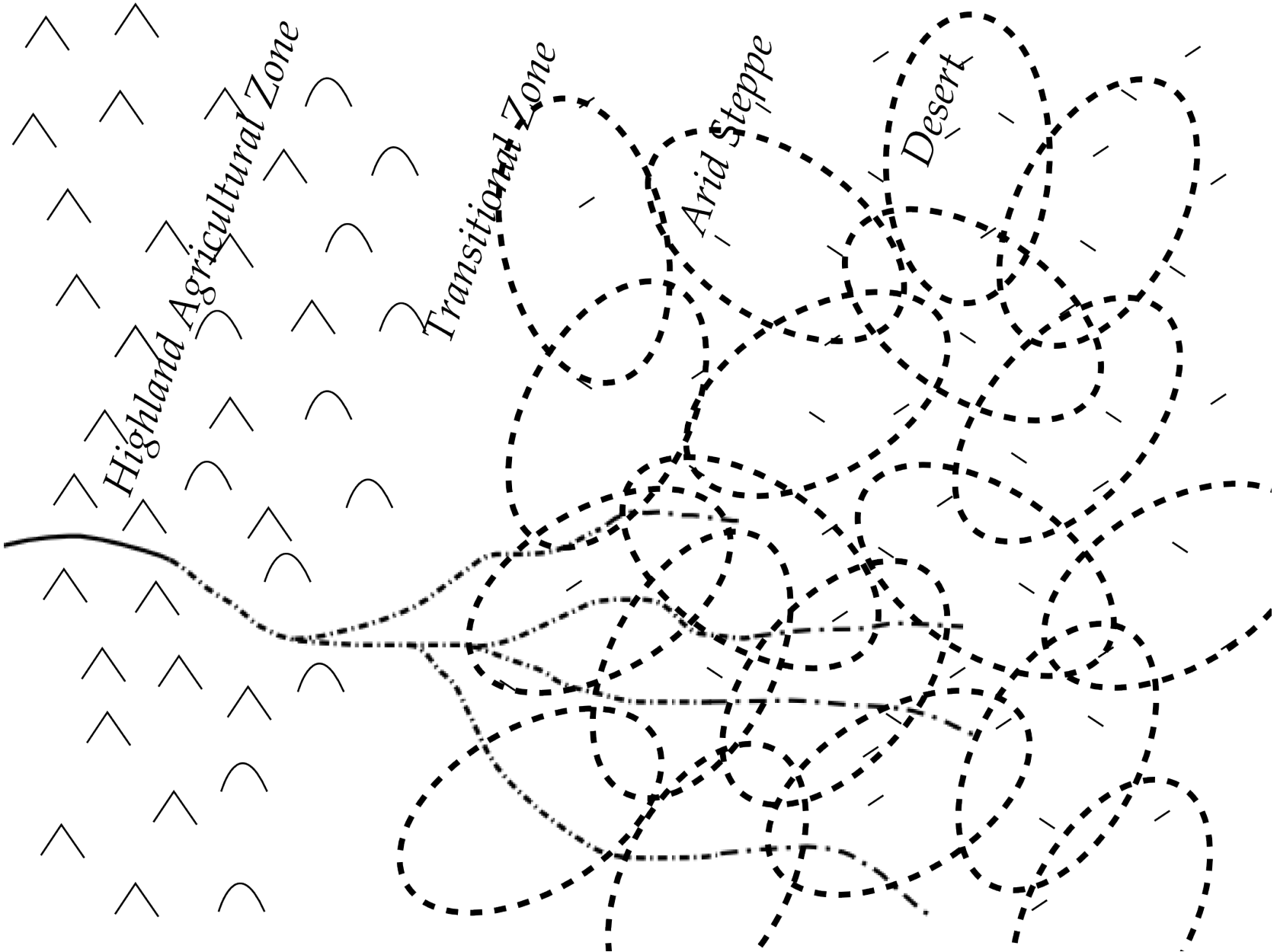
- Significant stylistic differences in material culture from contemporaneous farmers, but stylistic similarities with antecedent desert foragers.
- Relatively high proportions of hunting and wild plant processing equipment will characterize the assemblages of these sites (e.g., projectile points, small grinding or pounding implements).
- Cortical indices and retouch proportions will indicate a fairly high degree of mobility.

Mobile Forager Transition Model

- **Test Implications**

- Most stone tools at sites will be made on raw material from desert areas.
- Most sites should be located in the desert, away from agricultural areas, and the settlement pattern will indicate that migration tracks drifted randomly over time resulting in a more “nomadic” signature, and Campsite architecture will be both simple and ephemeral, and show signs of long abandonment periods between infrequent reuse.
- Architecture related to hunting and gathering, such as game traps like the “desert kites” might be associated with these sites.

Mobile Forager Transition Model



Thank You!