INVESTIGATION OF ASSEMBLAGE STRUCTURE AND VARIATION AT CA-MNO-566 NEAR BRIDGEPORT, MONO COUNTY, CALIFORNIA

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ABSTRACT

CA-MNO-566, a multi-component site near Bridgeport, California, is marked by an extensive lithic scatter that varies in density across the surface of the site, becoming concentrated within spatially discrete "activity loci". Differences in debitage assemblages within spatially discrete loci of the site may illuminate patterns in loci function and temporal use patterns of the site. Obsidian hydration and sourcing analyses are used to illustrate variability and allow comparison of lithic assemblages between loci.

CA-MNO-566 has been identified as a multi-component site situated in the Huntoon Valley approximately 14.5 kilometers north of Bridgeport, California (Figure 1). The site is a large lithic scatter situated on the west side of Highway 395, encompassing an area approximately 1/4 kilometer wide by 1 1/4 kilometers long. The topography of the site is gentle, sloping downward from the western and northern portions on alluvial fans which cross to form the sandy colluvial plain on which the majority of the site is situated.

Five spatially discrete study areas were identified based on debitage densities within surface transect units; a sixth was delineated on the basis of surface materials only. Each of these areas is defined here as a locus of study, although no functional relationships are implied at this time. Vertical units were placed in and around areas of highest concentration to confirm data produced from surface transect units, to further assess the extent of the deposit, and to characterize the nature of the deposits. A sample of debitage was chosen from the materials recovered from each of these vertical units and analyzed with regard to attributes such as size, flake type, and amount of cortex. Our goal was to characterize the debitage assemblages present at each discrete area of the site to determine whether

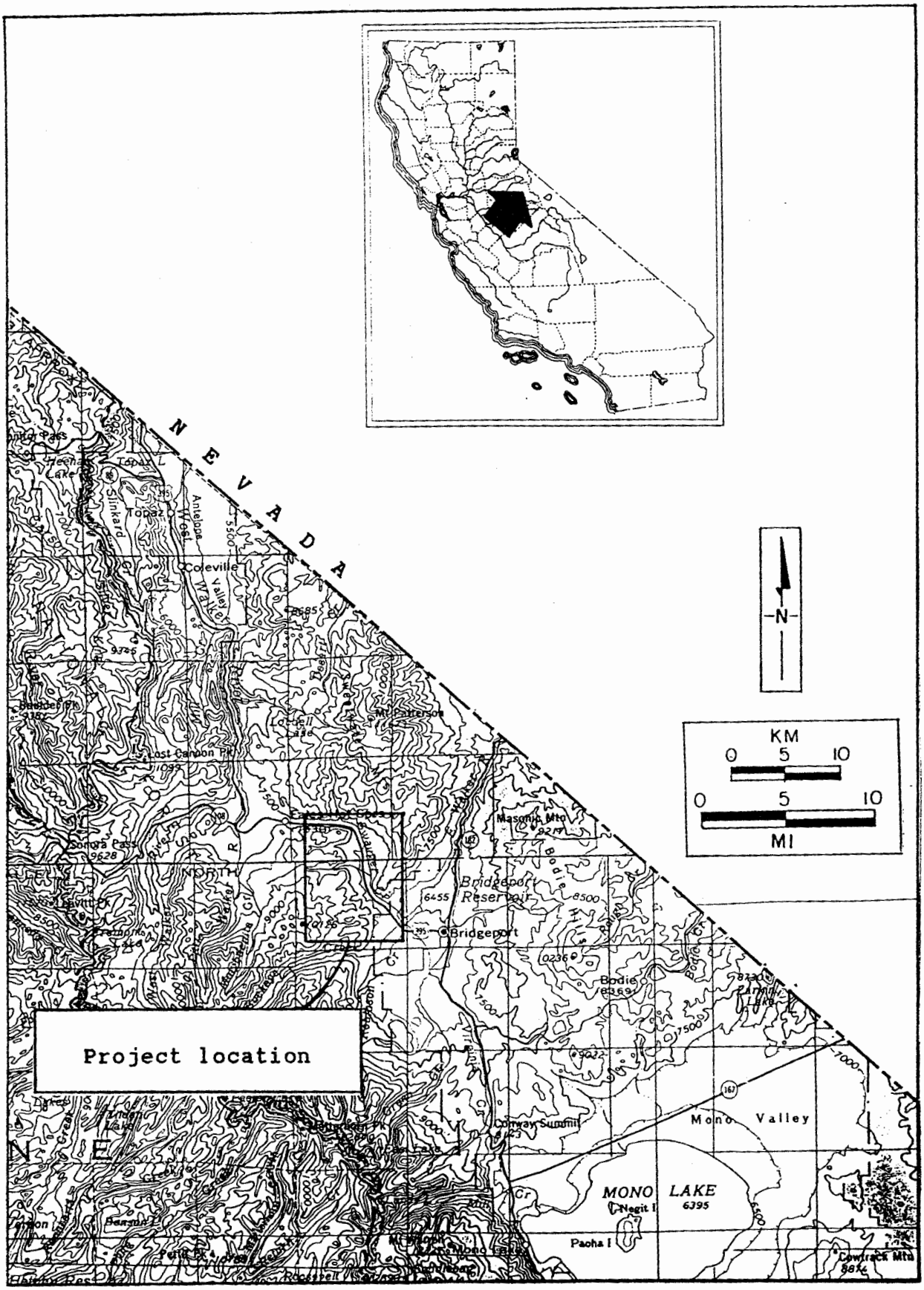

Figure 1. General vicinity of CA-MNO-566.

temporal and spatial differences in activities occurred.

More than 99% of the flaked stone debitage recovered was obsidian; the remaining pieces included some basalt and miscellaneous volcanic materials. Because of this, and the lack of spatial patterning of non-obsidian debitage, only obsidian debitage is included in this discussion. Eighty percent of the debitage was non-cortical. Of the intact flakes sampled, more than 80% were smaller than 12 mm.

A total of 43 projectile points characterized by diagnostic basal elements was recovered from the site. Projectile points are categorized by morphological types following Thomas'(1981) key for projectile points from Monitor Valley. Although other researchers recognize certain difficulties with this typology, point types referred to in this paper follow his system for convenience of description. Points representing earlier time periods include 20 classified as Gatecliff series, 2 as Elko, and 9 as Humboldt Concave Base series. Later period points include 2 classified as Rosegate series and 2 Desert Side Notched. Five additional points were too fragmentary to be typed using Thomas' key.

Hydration rim readings from the typed points do not support Thomas' chronological framework (see Thomas 1981, 1983). The hydration distributions are similar to findings by R. Jackson and others working in the western Great Basin; most of the projectile points are considered temporally diagnostic of the Newberry Period which has been defined as lasting from 3100 to 1300 years ago (Basgall 1983; Jackson 1985). Humboldt points, which have previously been thought to occur earlier than Gatecliff and Elko series points in the Great Basin, are virtually contemporaneous at CA-MNO-566 given their hydration values (Figure 2). The hydration values for the points show a bimodal distribution, although debitage and bifaces tested to date do not support this.

One hundred and thirty-seven bifaces and biface fragments, most of which are obsidian, were recovered; a few are made of other volcanic materials. Bifaces have been categorized according to morphological types based on attributes of size, shape, and degree of finishing. Several of the types classified were recovered from different parts of the site; virtually all of the bifaces are broken. Milling equipment is limited to four single bedrock mortars along the creek, one milling slick, and four broken handstones.

To date, 39 projectile points, 20 bifaces, and 10 flakes have been assigned to source by XRF analysis. The results of this analysis indicate that Bodie Hills obsidian represents the predominant source of lithic material at the site. Small amounts of Casa Diablo, Mt. Hicks, and Queen/Truman Meadows obsidian have also been identified in the projectile point assemblage. It is expected that additional tools and debitage submitted for testing

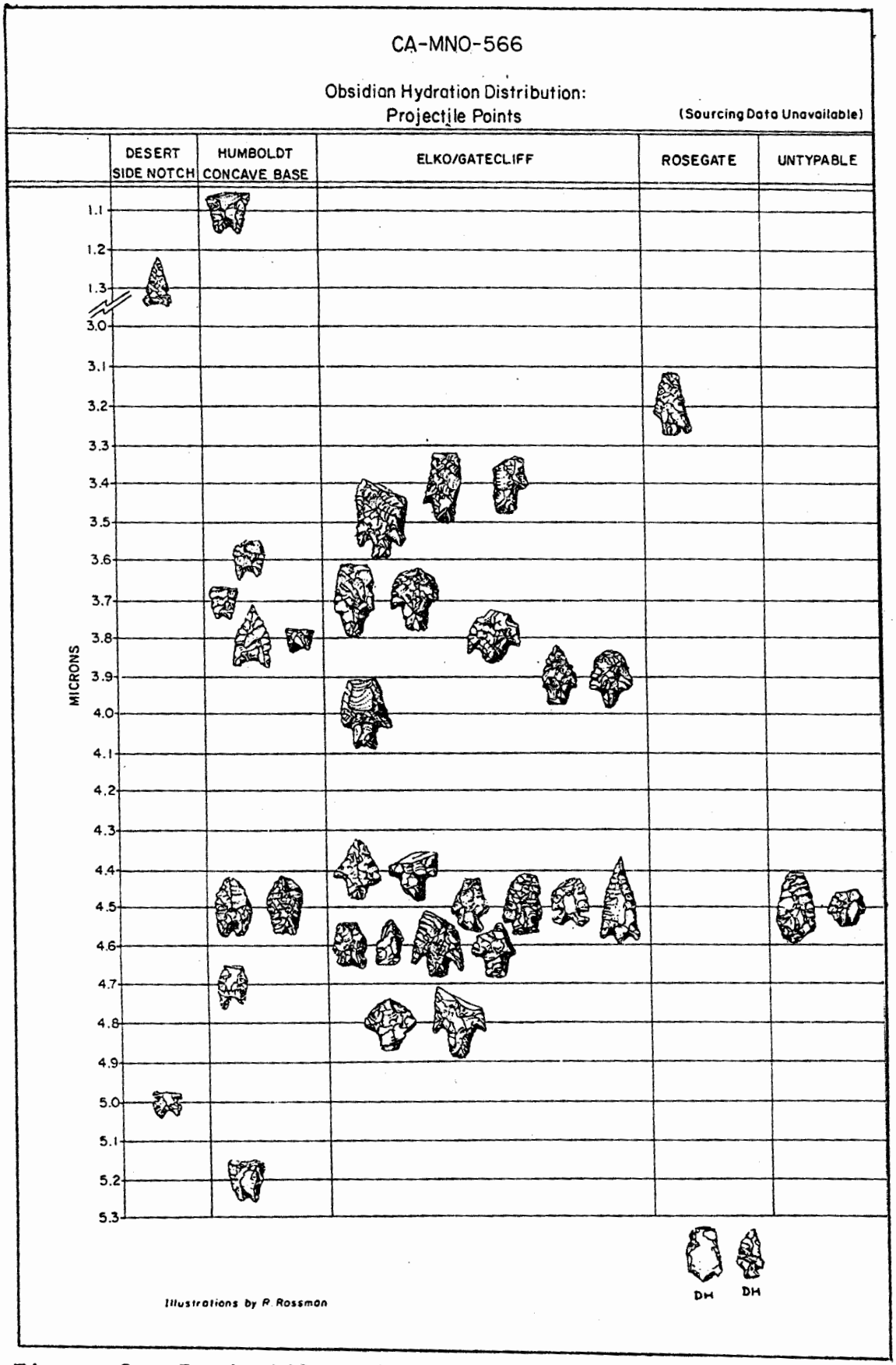

Figure 2. Projectile point hydration distribution.

will also be characterized by high proportions of Bodie Hills obsidian.

Obsidian hydration data indicate the 6 loci are virtually contemporaneous; all were characterized by mean hydration values between 4.1 and 4.5 microns. Standard deviations calculated on these values support an assignment of predominantly single component activities (Table 1).

Table 1. Mean hydration and standard deviations per locus.

Locus	Mean	SD
1	4.1	0.37
2	4.1	0.42
3	4.3	0.80
2&3*	4.2	0.64
4	4.5	0.56
5	4.1	1.07
6	4.1	1.12
*Data for Loci 2&3 combined.		

Vertical excavation units within the 6 study localities were characterized by significantly different recovery rates of debitage (Table 2). Excavation unit tool recovery rates were very low and also varied by locus. Although the study localities exhibited variability in tool assemblages and debitage classes, Loci 2, 3, and 5 showed higher numbers of formal tools and diagnostic point types and for purposes here are used for more detailed analysis. Loci 1, 4, and 6 are discussed first but do not comprise the major focus of this paper. The latter loci are characterized by low amounts of debitage per cubic meter and low tool counts, constituting a significantly smaller sample.

Locus 1 is located at the northern end of the site near Highway 395. The tool assemblage for Locus 1 includes 3 projectile points and 2 bifaces. The bifaces consist of large, wide forms, one of which is well-thinned and the other less modified. The projectile points include one Elko series and tow non-diagnostic mid-sections. Locus 4 is located at the extreme southern end of the site and differs from other loci by being in an area where small branches of Swauger Creek braid to form a semi-marshy environment. The tool assemblage includes 2 bifaces and 2 projectile points (one concave base and one midsection).

Locus 6 is situated on an alluvial slope at the western edge of the site. This locus was characterized by a higher debitage density than the previous two loci. Vertical units yielded 166

pieces of debitage per cubic meter but no formal artifacts. Two Gatecliff series points, one Humboldt concave base, and two non-diagnostic projectile point fragments were recovered from the surface as well as 5 bifaces and one uniface.

Table 2. Quantity of debitage and artifacts per cubic meter*.

Locus	Debitage	Artifacts
1	(22.0)**	0
2	481.1	1.7
3	469.7	1.1
4	59.7	1.0
5	973.6	4.5
6	165.6	0

*Data for 3 mm & 6 mm vertical excavation units combined.
**<1 cubic meter excavated.

Although all study loci are being analyzed with regard to defining assemblages, Loci 2, 3, and 5 appear to be of sufficient size and diversity for addressing similarities and differences at this time. Loci 2 and 3 comprise the middle portion of the site between Highway 395 and Swauger Creek. Although Gatecliff and Elko series points occur across most of the site, they are somewhat concentrated within Loci 2 and 3. Thus, we have identified these loci as the "Stemmed Point Component".

Locus 5 lies on an alluvial slope in the central-western portion of the site. Humboldt Concave Base points predominate within Locus 5. Seven small basal notched forms were recovered from the surface of this locus whereas 1 was recovered from Locus 6 and 1 from Locus 4. Locus 5 is identified as the "Concave Base Component".

The general assemblage attributes defined for the two components may be summarized as follows. More than 85% of the debitage from both areas was non-cortical and both areas are characterized by a predominance of small flakes in the 3-9 mm range. This pattern is interpreted as resulting from tool finishing and maintenance, although material from one unit sampled in Locus 2 appears to represent a greater amount of earlier stage reduction activities as well. The ratio of projectile points to bifaces in both components is approximately 1:1. Each loci within the two component areas also yielded a single handstone.

Assemblages at Loci 2 and 3 are characterized by stemmed

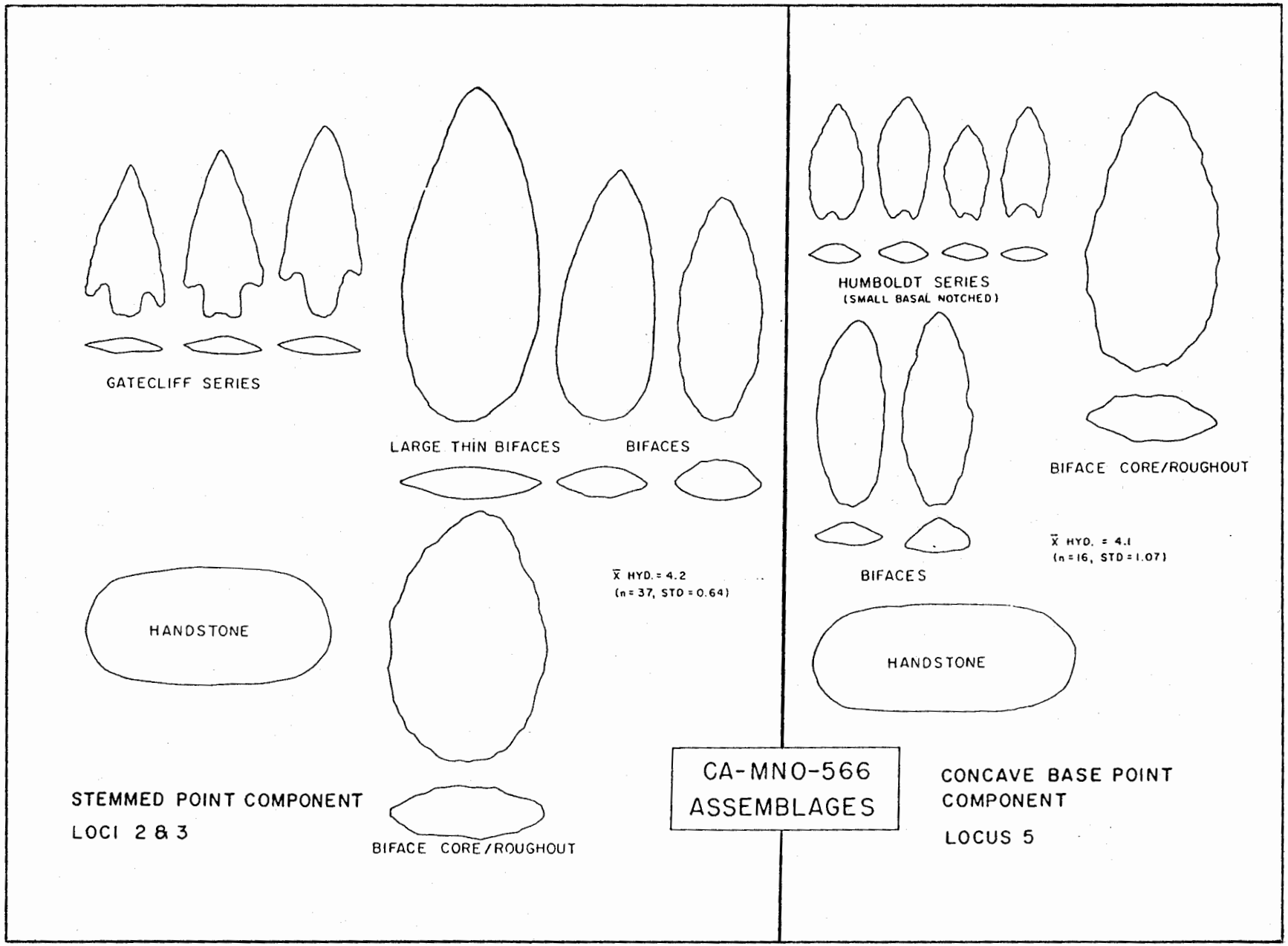

Figure 3. Artifact assemblages for loci 2 & 3 and locus 5.

projectile points, an emphasis on the use and/or production of large, thinned bifaces among other forms, and a greater ratio of bifaces to unifaces as compared with Locus 5 (Figure 3). Bifaces exhibit more variability than those from Locus 5 reflecting more diverse stage reduction activities and, inferentially, a greater diversity of possible functions.

The Locus 5 assemblage is characterized by small basal-notched projectile points and an emphasis on the use and/or production of narrower biface forms. These bifaces also exhibit variability in stage reduction like those of the Stemmed Point Component, but are more homogeneous in size and shape.

Although both components appear to emphasize Bodie Hills obsidian in both curated artifact types and debitage, concave base points recovered from Locus 5 contain 1 item from the Mt. Hicks source; 3 stemmed points from Loci 2 and 3 were assigned to the Casa Diablo source, and 2 were assigned to the Queen/Truman Meadow source. Nineteen of the 20 biface forms tested (including flake blanks, cores, knives, and projectile point preforms) were assigned to the Bodie Hills source; the other (a small flake blank from Locus 3) was identified as Mt. Hicks. No data are available yet for the sourcing of other tool forms or projectile point fragments within these components, but 10 pieces of debitage tested from the Concave Base Component were assigned to Bodie Hills. Overall, Bodie Hills obsidian was used for projectile points on a ratio of 7 to 2, which doesn't differ significantly between the two components.

DISCUSSION

Interpretations of data recovered from CA-MNO-566 are limited at this time. Although some hydration and sourcing results have been obtained, other special studies are still pending. Some preliminary interpretations may be made, however, based on similarities and differences between the spatially discrete components and their assemblages. Both are characterized by tool kits emphasizing general biface forms, extensive use of obsidian, the use of shaped handstones or manos, and a noticeable lack of formal flake tools and nonbiface/uniface cores. High amounts of obsidian debitage within both component areas attest to intensive biface reduction. The high incidence of small non-cortical flakes as well as tool fracture patterns indicative of breakage during use and reworking suggest later-stage tool production and maintenance were frequent activities.

High amounts of obsidian debitage and formal bifacial tools, and the high incidence of projectile point repair and discard of damaged forms suggest task-specific seasonal use by small groups. Although use-wear studies have not yet been conducted, it would appear that bifaces took the place of other formal tool types for a variety of processing activities. Given the low numbers of

handstones relative to flaked stone tool artifacts, it is likely that the areas were only intermittently used by family groups.

Discard patterns of flaked stone materials can provide information about particular aspects of human behavior and site formation processes at CA-MNO-566. Behavioral principles concerned with tool use lives and discard processes are presumed to be closely linked. For instance, Binford (1977, 1979), among others, has commented that tools are often carried between successive settlements as a means of maximizing their utility. None of the seven concave base points in Locus 5 were complete or undamaged: 1 exhibited impact-related damage to the distal end and the remainder were characterized by bending breaks at a point near the hafting portion (Table 3). Points from the Stemmed Point Component exhibited a greater variety of use attributes: 6 were characterized by impact-related damage to the distal end resulting in loss of margins or facial scarring; 6 exhibited reworking into smaller forms, some of which were also damaged by use; 2 were complete but apparently reworked. Two appeared to have damage incurred by manufacture or repair (loss of tangs through notching), and 3 others may have been broken either during use or manufacture as characterized by bending breaks at the mid-section and no obvious evidence of reworking.

Table 3. Ratio of bases to tips/medial sections.

Locus	Bases:Tip/Medial
2	1:1.5
3	1.5:1
2&3*	1:1
5	3:1
*Data from Loci 2&3 combined.	

Bifaces in both components were characterized predominantly by bending breaks and other fractures suggesting damage resulting from either tool production or general reduction activities. Debitage, as previously noted, is characterized predominantly by small pieces. Most larger flake forms exhibited some type of edge modification and, consequently, have been provisionally classed as elements within possible biface reduction trajectories rather than flake tools. This procedure has been employed because of their size, shape, and the overall lack of large unmodified pieces of debitage in the recovered sample. Obsidian hydration testing and use-wear analysis will be designed to provide information to aid in determining whether the modification is cultural or the result of recent incidental damage.

The high recovery rates of debitage from both components at least suggest that these areas were the focus of repeated use by populations involved in the manufacture and maintenance of obsidian tools. Hydration results place this time of use during the Newberry Period.

Late period activities at CA-MNO-566 are less well-defined but appear to represent infrequent hunting episodes and occupation by small family units. Tool kits for this time period are believed to be characterized by less intensive use of obsidian (see Basgall 1989). If we assume that bedrock mortars are temporally late, the presence of only three single bedrock mortars supports the contention that site use during the late period was minimal or less intensive.

CONCLUSIONS

The concentrations of materials recorded at CA-MNO-566 are spatially discrete. The archaeological assemblages for the two identified component areas have been defined here using obsidian source and hydration data coupled with lithic analyses. Similar methods are being used to define the nature of activities at the other concentrations at the site.

The Stemmed Point and Concave Base Point components are situated approximately 200 meters from one another. The spatially discrete occurrence of Humboldt Series points have been observed by other researchers working in the Great Basin. Basgall (1990), Layton and Thomas (1979), and Thomas (1990) have each observed similar spatially discrete distributions of concave base points versus other point types. It would be premature at this time to interpret these patterns as the result of either functional or cultural differences, and as stated above, they are not temporally discrete at CA-MNO-566.

The data and interpretations presented here are the results of preliminary studies but are not expected to change significantly with further analysis. Ongoing studies will involve more obsidian hydration and sourcing of specific categories of flaked stone materials. Research will continue to focus on questions concerning temporally-specific land use patterns and functional variability in the eastern Great Basin.

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