
**CARTOGRAPHIC DATA
FOR THE HONEY BEE
ARCHAEOLOGICAL PROJECT**

*Michael Brack
Desert Archaeology, Inc.*

Cite as:

Brack, Michael

2012 Cartographic Data for the Honey Bee Archaeological Project.
<<http://www.archaeologysouthwest.org/ap48>>.

Cartography at Honey Bee Village, utilized flexible methodologies to develop a comprehensive mapping database of the excavation. Remote mapping and photography, ground-instrument measurements, and scaled hand-drawn illustrations were used to document the Honey Bee landscape and archaeology while maintaining rigorous spatial control. Prior to fieldwork, Western Mapping Company (Western Mapping) was contracted to establish a GPS control network and to coordinate photogrammetric mapping. Western Mapping established two permanent surveying monuments in the core of the site, which are the basis of geodetic control. Coordinates were derived from long-duration static GPS observation, and additional semipermanent monuments were established, as needed, for optical mapping. The two primary control points and four second order controls are maintained within the Honey Bee Village Archaeological Preserve (Table 1). Remote mapping services were provided by Cooper Aerial Surveys using ground control established by Western Mapping. Planimetric mapping, aerial photography and 20 cm topography were derived from high resolution 1:2000-scale orthophotography.

Desert Archaeology completed the archaeological mapping of Honey Bee using optical and GPS instruments for precision spatial measurements and GIS-enabled data collection. A 5-second total station was used during the initial exploratory phase of the project for mapping and all excavation control. Sub-centimeter GPS was used during the latter phase of intensive excavation. All GPS measurements were made with dual L1/L2 GPS receivers utilizing real-time kinematic corrections based on the Western

Mapping surveying control network. Both optical and GPS instruments were controlled by an external data collector using surveying software customized specifically for archaeological data collection. Ground measurements and attribute data were collected in tandem. Various classes of features were instrument mapped and attributed, including backhoe trenches, machine stripping areas, unexcavated and excavated feature outlines, topographic features, and excavation mapping nails. Instrument mapping provided the basis of horizontal and vertical spatial control for excavation and recording. Small- and large-scale hand-drawn maps were georeferenced-based instrument-mapped ground control points.

The Honey Bee Village excavations generated a large but integrated cartographic data set. More than 2,200 point features and 2,700 polylines were mapped during fieldwork, and are comprised of more than 30,000 individual instrument measurements. Classes of ground-mapped data include more than 1,800 archaeological features, 500 backhoe trenches and 2,100 spatial control points. With the completion of fieldwork, instrument measurements were imported into Autodesk AutoCAD and linked to the attribute data in Microsoft Access for cartography and analysis. Instrument data are complemented by more than 1,000 field illustrations. Hand-drawn maps were rectified to the Honey Bee control network and digitized into the mapping data set. Mapping graphics and illustrations were produced in AutoCAD, and various data were exported to ESRI shapefiles for additional spatial and metric analyses.

Table 1. Control points established for Honey Bee Village, AZ BB:9:88 (ASM), mapping.

| Point Number ^a | UTM Easting ^b | UTM Northing | Orthometric Height ^{c,d} | Meters Below Datum (MBD) Elevation ^e | Monument Description ^f |
|---------------------------|--------------------------|--------------|-----------------------------------|---|-----------------------------------|
| WMC-9001 | 503092.128 | 3589664.115 | 880.535 | -10.000 | BCSM set flush stamped WMC 05-15 |
| WMC-9002 | 503211.402 | 3589537.237 | 877.738 | -12.797 | BCSM set flush stamped WMC 05-16 |
| WMC-9003 | 503168.922 | 3589521.634 | 878.183 | -12.352 | RBAC set flush |
| WMC-9006 | 503048.126 | 3589693.511 | 881.425 | -9.110 | RBAC set flush |
| DAI-5 | 503250.956 | 3589558.033 | 878.120 | -12.415 | RBAC set flush |
| DAI-309 | 503085.927 | 3589497.610 | 879.104 | -11.431 | RBAC set flush |

^aWMC = Western Mapping Company; DAI = Desert Archaeology, Inc.

^bNAD83(HARN) Zone 12 metric grid coordinates.

^cNAVD88(Geoid03) metric.

^dCombined scale factor = 0.999466511; ground adjustment factor = 1.000533774.

^eNAVD-890.535 = MD.

^fBCSM = Brass cap survey monument; RBAC = 1/2-inch rebar with aluminum cap.

