Cultural Survey Report

Terra-Gen King Flat MET Tower Project, Yolo County, California

Prepared for:
Terra-Gen

Prepared by:
Stantec Consulting Services Inc.

October 17, 2017

Prepared by
Leven Kraushaar, Archaeologist

Reviewed by
Erin Sherlock, Senior Archaeologist

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October 17, 2017

1.0 PROJECT DESCRIPTION

Terra-Gen Development Company, LLC (TG) proposes to install three Meteorological (MET) Towers (proposed project). Each MET tower would be a 60-meter XHD NRG TalltowersTM with 3-foot by 3-foot base plates, and 24 guy wires. Lights are not required by the Federal Aviation Administration for Met towers of the height proposed, and none would be installed. Guy wires, with industry-recognized bird deterring reflectors, would extend up to 30 meters from the base of the MET towers at 90-degree angles and be oriented to create an "X" pattern when viewed from overhead. Each guy wire will be attached to a temporary anchor that meets the design standards of the MET tower manufacturer, based on the underlying soil conditions. Cup anemometers and wind direction vanes would be attached at to the MET tower at various heights to measure wind speed and direction. The resulting data will be captured by a small data logger, and transmitted to TG via by an integrated cell phone link. The MET will be powered by a small solar cell, and battery. The MET towers will be unmanned, and aside from the tower and affixed apparatuses, no other equipment is proposed. TG anticipates making visits to each MET tower once every three months for routine maintenance. The towers are temporary and would be decommissioned and removed from the project site within three years from the date of approval.

The proposed MET towers will collect wind speed data that can be used with other regional data to characterize the long-term resource in the area. The data collected will be used to assess the viability of an energy generation project. Though the MET towers are not themselves an energy source, they are necessary to determine the feasibility of installing an energy project.

Installation and staging would occur within 100 feet of each MET tower. Two to three pickup trucks with up to five workers would drive to the sites using existing roads. Each temporary work area would be approximately 1.5 acres and constitute the total lay-down area needed for tower installation.

TG will not require any grading or vegetation clearing; however, should small vegetation need to be cleared and/or trimmed, pruning would occur no lower than six inches above the root ball by the landowner. Any organic waste or plant debris associated with installation would be re-distributed so as not to create piles. Non-organic waste would be picked up and disposed of offsite. No ground disturbing activities are anticipated.

MET towers would be delivered in short sections and assembled on the ground prior to erection. Anemometers and weather vanes would be attached to the tower with horizontal arms. Guy wires would be attached to the towers and to anchors placed in the ground so as not to interfere with traffic on any trail or road. Anchors would be screw-in augurs, unless soil conditions necessitate the use of a non-standard anchor, and sunk into the ground to a depth of three to four feet. No ground disturbing activities are anticipated.

Stantec Consulting Services, Inc. (Stantec) has prepared this Cultural Resources Survey Report detailing a cultural resources study that was conducted in support of this Project.

2.0 RECORD SEARCH

On September 15, 2017, Stantec Archaeologist Leven Kraushaar performed a records search at the Northwest Information Center (NWIC) of the California Historic Resources Information Center (CHRIS) located on the Sonoma State University campus, Rohnert Park, CA. As an affiliate of the State of California Office of Historic Preservation, the NWIC is the official state repository of cultural resource records and reports for the region that includes Yolo County. Results of the records search (NWIC File No. 17-0855) are summarized in Table 1. All Meteorological Tower (MET Tower) locations were included in the search, as well as a 0.25-mile radius around each work area. The following inventories were reviewed:

- California Inventory of Historic Resources (California Department of Parks and Recreation);
- California Historical Landmarks (California Office of Historic Preservation);
- California Points of Historical Interest;
- Directory of Properties in the Historic Property Data File (California Office of Historic Preservation);
- All available historic maps, including historic topographic maps and Bureau of Land Management (BLM) General Land Office (GLO) maps.

2.1 MET TOWER LOCATION 1

Tower Location 1 was included in a 1965 study for the Tehama-Colusa Canal Project (S-005156). A portion of the research radius around Location 1 was also surveyed during a 1994 BLM study (S-017246).

2.2 MET TOWER LOCATION 2

No studies or previously recorded resources were identified in, adjacent to, or within 0.25-mile of Location 2.

2.3 MET TOWER LOCATION 3

MET Tower Location 3 and its 0.25-mile research buffer were entirely within the area surveyed in 2008 for the California-Oregon Transmission Project (S-043684). As the location of this study is only approximate in the NWIC GIS cultural resources layers, it is unclear if the work area itself was

included in this study. No previously recorded cultural resources were identified in, adjacent to, or within 0.25 mile of this tower location.

Table 1. Studies Identified Through the NWIC Records Search

Author	Date	Title	Study Number
Traganza, Adan, E., Robert L. Edwards, and Thomas F. King	1965	Archaeological Survey and Excavation Along the Tehama-Colusa Canal, Central California. San Francisco State College.	S-005156
Greenway, Marlene L.	1994	Cultural Resources Inventory for Scattered Parcels in Yolo, Colusa, and Glenn Counties (Cache Creek Exchange V). Bureau of Land Management.	S-017246
Davy, Douglas M., Humphrey Calicher, and William Shapiro	2008	Cultural Resources Inventory for the California-Oregon Transmission Project, Right-of-Way Maintenance, Environmental Assessment. CH2MHILL.	S-043684

3.0 ARCHAEOLOGICAL FIELD SURVEYS

Two separate field investigations were performed for this Project. The first survey, performed on September 26, 2017, examined three originally proposed tower locations, MET Tower Locations 1-3. The second field investigation was performed on October 11, 2017 to survey two revised locations for MET Towers 2 and 3. Only the three current MET Tower locations are described in detail in this report.

On September 26, 2017, Stantec Archaeologist Leven Kraushaar conducted an archaeological pedestrian field survey of three proposed MET tower locations for the Terra-Gen King Flat MET Tower Project. This pedestrian survey covered areas that will be affected by the installation of the MET tower, winches, and guy line anchors. Each tower location was surveyed in expanding concentric circles. These circles were spaced approximately 5 meters apart, starting at the center of the tower base and extending to approximately 20 meters beyond the proposed guy line anchor locations. Trowel scrapings were occasionally employed to remove vegetation, and any areas of disturbance, including road cuts and rodent burrows, were carefully examined for evidence of cultural materials. Particular attention was paid to bedrock outcrops and to all areas adjacent to natural drainages. Nearby drainages and bedrock outcrops were also visited and examined.

On October 11, 2017, Stantec Senior Archaeologist Ashley Hallock surveyed the revised locations for MET Towers 2 and 3 using methods similar to those used to survey MET Tower locations on September 26, 2017.

No subsurface testing was undertaken during the September or October 2017 field investigations. Maps depicting the survey areas and all identified features can be seen in Figures 1-3. A handheld GPS device and aerial maps were used to verify ground position, and photographs were taken of the survey area. These can be found in Appendix A.

3.1 MET TOWER LOCATION 1

MET Tower Location 1, located on the Hammerness Property, was covered in dense annual grasses, mostly wild oat. The proposed tower location was generally flat, but gently sloped down along the northern side and in the extreme southeastern portion. Soils consisted of yellowish brown sandy silt with several areas with exposed bedrock. Visibility was relatively low, as the dense, un-grazed grass was blown flat and matted across the site, leaving around <5% ground visibility. Tailings from rodent burrows along the northern side of the site were carefully examined, as was the road cut and its margins. Surface staining was observed on the soil at one location along the side of the road in the northwest quadrant of the survey area (see Figure 1). This stained area was roughly oval, measuring about 4 feet by 3 feet, parallel to the road. The source

of the staining could not be identified. It appeared to be organic, but was without discernible odor or change in texture. No carbon or charcoal was identified. The staining was limited to the surface, and was easily removed by trowel. No historic or prehistoric cultural resources were identified at this proposed tower location.

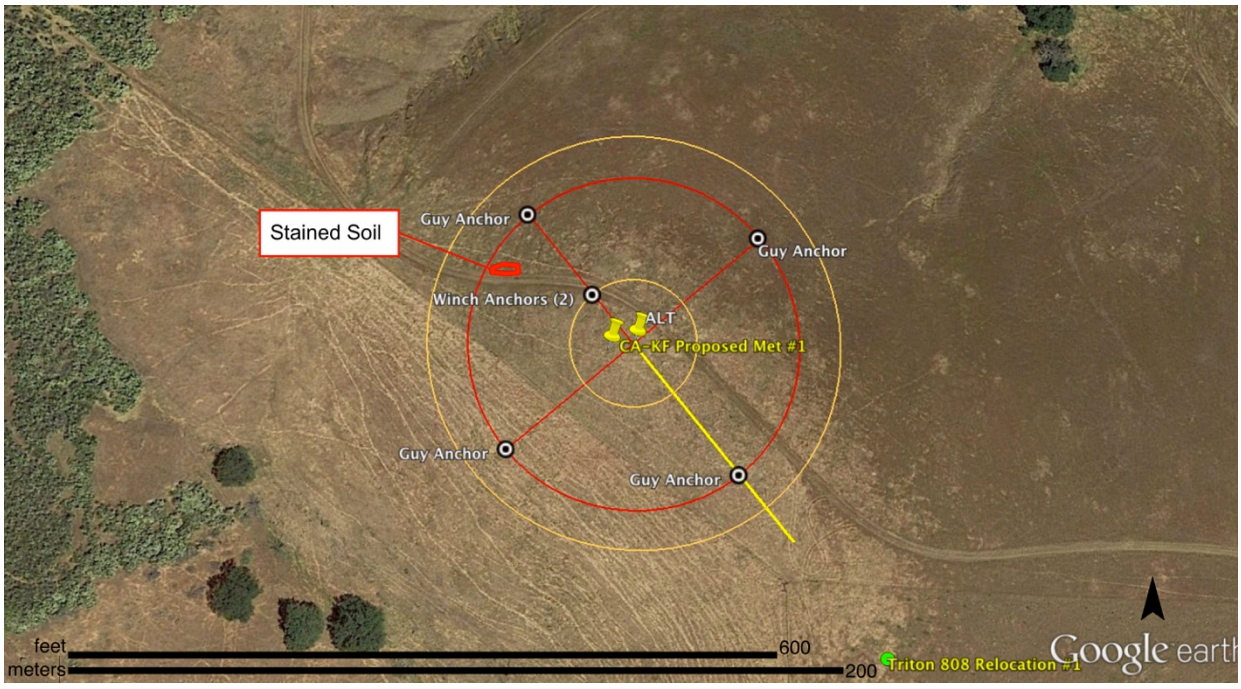


Figure 1. MET Tower Location 1 Results with the location of stained soil.

3.2 MET TOWER LOCATION 2

MET Tower Location 2 was surveyed on October 11, 2017. Visibility was poor at only 1-2% due to thick matted grasses and star thistle. Pockets of exposed soils and burrow tailings were distributed across the site, and these were investigated for evidence of cultural resources, as were all other exposed areas. Soils consisted primarily of loose grey silt loam with sparse sub-angular cobbles. Several bedrock outcrops were present. These were highly weathered, with extensive exfoliation and some spalling. One milling feature, a shallow/incipient cup mortar, was identified at this location. Situated on top of a southwest-facing ridge near a grey pine and several oak trees, the cup mortar was recorded as KF-S-1. No additional artifacts were identified.

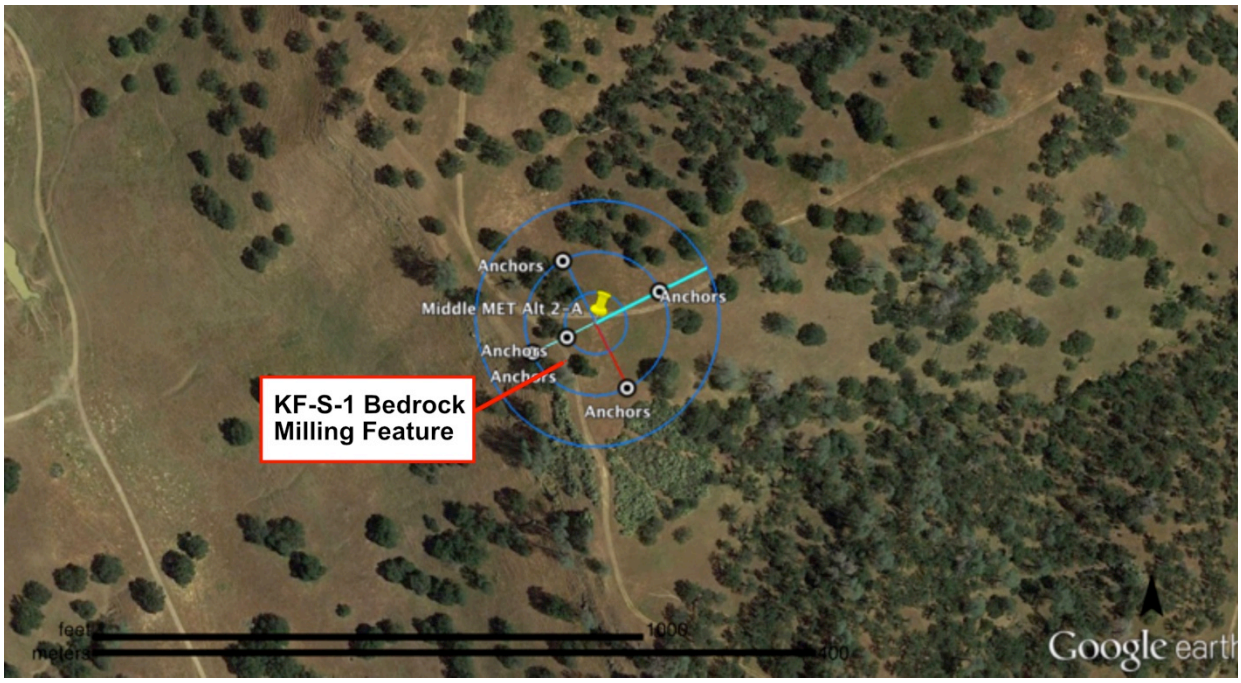


Figure 2. MET Tower Location 2 Results. Location of KF-S-1 Milling Feature.

3.3 MET TOWER LOCATION 3

Surveyed on October 11, 2017, MET Tower Location 3 is the northernmost of the original locations. Ground visibility was very poor at around 1% due to dense, matted grasses and star thistle (*Centaurea solstitialis*), but slightly better visibility was noted near the large oak tree north of the center point. Soils consisted of medium to dark brown semi-compact dry silt loam with some natural cobbles. Some of these unmodified cobbles were located alongside fragments of modern barbed wire and a single fence post remnant that was identified along a line of trees to the north of the site. No nails were observed in association with the fence fragments, and no other indications of historic or prehistoric archaeological sites were identified. A drainage located east of the tower location was also closely examined, and no midden soils or other indicators of cultural deposits were observed.

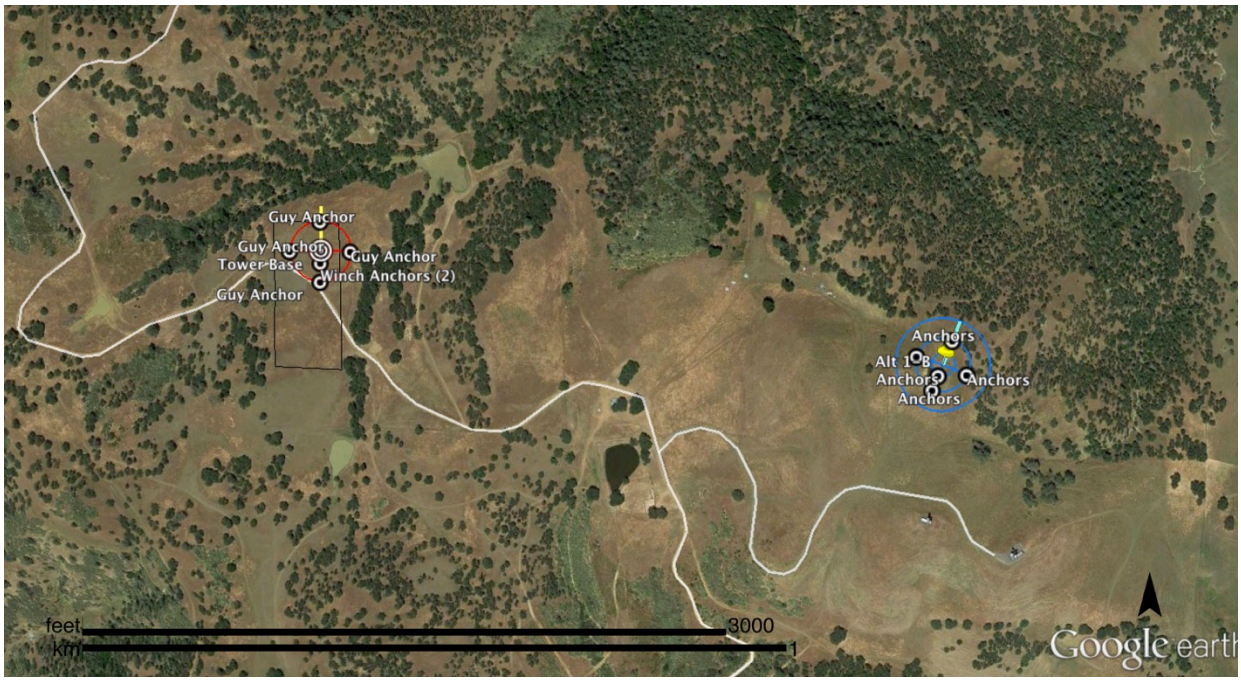


Figure 3. MET Tower Location 3. Location of site relative to MET Tower Location 3.

4.0 CONCLUSIONS AND RECOMMENDATIONS

No historic structures or historic or prehistoric cultural materials or archaeological sites were observed in or adjacent to proposed MET Tower Locations 1 or 3. The single feature near these locations, a possibly historic-period stacked rock feature with a single wooden fence or signpost, is located approximately 150 feet outside of the work area, and does not appear to be associated with any other local features or sites. It will not be affected by tower installation.

A single bedrock milling feature, a shallow cup mortar, was identified in the area of MET Tower Location 2, along the north-south access road in the southwestern quadrant of the work area. This feature has been recorded and reported using the appropriate Department of Parks and Recreation (DPR) forms. No associated artifacts, cultural deposits, or changes in soil color or texture that may indicate buried cultural deposits have been identified in the vicinity of this feature. However, surface visibility across the site was generally low.

The access roads were not surveyed at this time, but are in generally good condition, and are regularly used and maintained by the landowners.

It is recommended a qualified archaeologist flag site KF-S-1, and the area shall be avoided by all construction work and staging equipment.

October 17, 2017

APPENDICES

October 17, 2017

Appendix A SURVEY PHOTOGRAPHS

Photograph 1. MET Tower Location 1. Tower center is located where the figure holding the iPad is standing. View facing northwest. L. Kraushaar. 9/26/2017.

Photograph 2. MET Tower Location 1. View facing east. L. Kraushaar. 9/26/2017.

Photograph 3. MET Tower Location 1. Typical visibility at this location. View facing down. L. Kraushaar. 9/26/2017.

Photograph 4. MET Tower Location 1. Burrow tailings. View facing down. L. Kraushaar. 9/26/2017.

Photograph 5. MET Tower Location 1. Stained soil, gray to very dark gray (hard to see in this photo, but compare with above). View facing down. L. Kraushaar. 9/26/2017.

Photograph 6. MET Tower Location 1. Blue dot represents extent of survey beyond guy line anchors. L. Kraushaar. 9/26/2017.

Photograph 7. MET Tower Location 2. Overview. View facing north. A. Hallock. 10/11/2017.

Photograph 8. MET Tower Location 2. Overview. View facing west. A. Hallock. 10/11/2017.

Photograph 9. MET Tower Location 2. Overview. View facing southwest. A. Hallock. 10/11/2017.

Photograph 10. MET Tower Location 2. Overview. View facing northwest. A. Hallock. 10/11/2017.

Photograph 11. MET Tower Location 2. Bedrock outcrop and grey pine. View facing west. A. Hallock. 10/11/2017.

Photograph 12. MET Tower Location 2. KF-S-1 from the road. View facing south. A. Hallock. 10/11/2017.

Photograph 13. MET Tower Location 2. KF-S-1 from the road. View facing northwest. A. Hallock. 10/11/2017.

Photograph 14. MET Tower Location 2. KF-S-1, outcrop with mortar cup. View facing northwest. A. Hallock. 10/11/2017.

Photograph 15. MET Tower Location 2. KF-S-1, outcrop with Mortar Cup A. View facing down. A. Hallock. 10/11/2017.

Photograph 16. MET Tower Location 2. KF-S-1, detail of Mortar Cup A. View facing down. A. Hallock. 10/11/2017.

Photograph 17. MET Tower Location 2. KF-S-1, detail of Mortar Cup A. View facing down. A. Hallock. 10/11/2017.

Photograph 18. MET Tower Location 3. Ground surface visibility. View facing down. A. Hallock. 10/11/2017.

Photograph 19. MET Tower Location 3. Overview of survey area towards the large oak tree. View facing northwest. A. Hallock. 10/11/2017.

Photograph 20. MET Tower Location 3. View towards tree line. View facing north. A. Hallock. 10/11/2017.

Photograph 21. MET Tower Location 3. Overview. View facing West. A. Hallock. 10/11/2017.

Photograph 22. MET Tower Location 3. Existing tower south of the survey area. View facing southeast. A. Hallock. 10/11/2017.

Photograph 23. MET Tower Location 3. Overview. View facing north. A. Hallock. 10/11/2017.

Photograph 24. MET Tower Location 3. Survey area. View facing east. A. Hallock. 10/11/2017.

Photograph 25. MET Tower Location 3. Tree line near survey area. View facing east. A. Hallock. 10/11/2017.

Photograph 26. MET Tower Location 3. Tree line near survey area. View facing east. A. Hallock. 10/11/2017.

Photograph 27. MET Tower Location 3. Overview from tree line towards the large oak. View facing west. A. Hallock. 10/11/2017.

Photograph 28. MET Tower Location 3. Single deteriorated fence post. View facing down. A. Hallock. 10/11/2017.

Photograph 29. MET Tower Location 3. View from drainage. View facing north. A. Hallock. 10/11/2017.

State of California ☐The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
Primary #
HRI #
Trinomial
NRHP Status Code

PRIMARY RECORD

Other Listings
Review Code Reviewer Date

Page 1 **of** 6 ***Resource Name or #:** (Assigned by recorder) KF-S-1
P1. Other Identifier: King Flat MET Tower Project Location 2

*P2. **Location:** ☒ **Not for Publication** ☐ **Unrestricted**
***a. County** Yolo **and** (P2c, P2e, and P2b or P2d.)
***b. USGS 7.5' Quad** Guinda, CA **Date** 1973 **T** 11N ; **R** 3W ; SW ¼ **of** SE ¼ **of Sec** 1 ; Mount Diablo **B.M.**
c. Address City Zip
d. UTM: Zone 10N, 574407 mE/ 4297892 mN
e. Other Locational Data:

From Vernon and Nichols County Park, Capay, California, head east on Road 57, cross Cache Creek, and then proceed south on gravel/dirt access road for approximately 1.54 miles where the road splits. Turn left (east) and continue as the road veers east, north and then east again, for approximately 1.67 miles. Turn left (north) at the fork, and proceed north for approximately 0.51 mile. Make a sharp right and proceed southeast/east and then south for approximately 0.68 miles. Arrive at the site, which will be situated within a bedrock outcrop on the right-hand side (western side) of the two-track dirt access road.

***P3a. Description:**
This prehistoric resource consists of a small bedrock outcrop with a single shallow cup. It is situated on the top of a ridge with a southwestern exposure near a gray pine tree and several oak trees. No associated artifacts were identified.

***P3b. Resource Attributes:**
AP4
***P4. Resources Present:** ☐ Building ☐ Structure ☐ Object ☒ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)
P5b. Description of Photo:
IMG-0613. Camera facing down. KF-S-1. Ashley Hallock. 10/11/2017.
***P6. Date Constructed/Age and Source:** ☐ Historic ☒ Prehistoric ☐ Both
***P7. Owner and Address:**
Hayes Survival Trust, et al.
P.O.Box 308 Esparto, CA 95627
***P8. Recorded by:**
A. Hallock, Stantec, Inc.
555 Capitol Mall, Ste. 650
Sacramento, CA 95814
***P9. Date Recorded:** 10/11/2017

***P10. Survey Type:** (Describe)
Reconnaissance survey
***P11. Report Citation**:
Cultural Survey Report, Terra-Gen King Flat MET Tower Project, Yolo County, California 2017
***Attachments:** ☐NONE ☒Location Map ☒Continuation Sheet ☐Building, Structure, and Object Record
☒Archaeological Record ☐District Record ☐Linear Feature Record ☒Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☒ Other (List): Sketch map

Photograph 1. IMG_0613. Bedrock outcrop containing milling feature KF-S-1. Camera facing down. A. Hallock. 10/11/2017.

Photograph 2. IMG_0614. Detail of milling feature KF-S-1. A. Hallock. 10/11/2017.

ARCHAEOLOGICAL SITE RECORD

 ***Resource Name or #:** KF-S-1

***A1. Dimensions: a. Length:** 1.67 m. **(** 5′6″**)** SE/NW × **b. Width:** 1.93 m. **(** 6′4″**)** SW/NE
Method of Measurement: ☐ Paced ☒ Taped ☐ Visual estimate ☒ Other: GPS
Method of Determination: ☐ Artifacts ☒ Features ☐ Soil ☐ Vegetation ☐ Topography
☐ Cut bank ☐ Animal burrow ☐ Excavation ☐ Property boundary ☐ Other (Explain):

Reliability of Determination: ☐ High ☒ Medium ☐ Low Explain: Boulder surface is heavily weathered with exfoliation and natural spalling/flaking.

Limitations: ☐ Restricted access ☐ Paved/built over ☐ Site limits incompletely defined
☐ Disturbances ☐ Vegetation ☒ Other (Explain): Low ground surface visibility

A2. Depth: ☐ None ☒ Unknown Method of Determination:
***A3. Human Remains:** ☐ Present ☒ Absent ☐ Possible ☐ Unknown (Explain):

***A4. Features**:
The bedrock outcrop is situated between two smaller bedrock outcrops with one shallow/incipient cup. The outcrop itself is approximately 30 cm tall, 1.67 m (SE/NW) by 1.93 m (SW/NE). The surface of the bedrock is weathered and exfoliating with some signs of natural flaking and spalling. The interior of the cup exhibits evidence of grinding/polishing.

***A5. Cultural Constituents**:
No cultural constituents were identified. Ground visibility was poor at the time of discovery, but surface scrapings did not indicate the presence of midden soils. No associated artifacts were identified in the vicinity of the feature.

***A6. Were Specimens Collected?** ☒ No ☐ Yes
***A7. Site Condition:** ☒ Good ☐ Fair ☐ Poor (Describe disturbances.):

***A8. Nearest Water :** ~2.0 miles from Cache creek with ephemeral drainages 0.30 miles both north and south of feature location.

***A9. Elevation:** 1600 ft amsl

A10. Environmental Setting **:** Oak woodland foothills setting with blue oaks, annual grasses, and star thistle. Gray or foothills pine trees are located immediately southwest of the outcrop.

A11. Historical Information: None.

***A12. Age:** ☒ Prehistoric ☐ Protohistoric ☐ 1542-1769 ☐ 1769-1848 ☐ 1848-1880 ☐ 1880-1914 ☐ 1914-1945
☐ Post 1945 ☐ Undetermined **Describe position in regional prehistoric chronology or factual historic dates if known:**

A13. Interpretations: There is some potential for sub-surface deposits due to the difficulty in assessing the site. There was low ground visibility at the time of recordation.

A14. Remarks: None

A15. References: Cultural Survey Report, Terra-Gen King Flat MET Tower Project, Yolo County, California 2017

A16. Photographs:None

Original Media/Negatives Kept at: Stantec, Inc. 555 Capitol Mall, Ste. 650, Sacramento, CA 95814

***A17. Form Prepared by:** Ashley Hallock **Date:** 10/11/2017
Affiliation and Address: Stantec, Inc. 555 Capitol Mall, Ste. 650 Sacramento, CA 95814

***Required information**

State of California — Natural Resources Agency
DEPARTMENT OF PARKS AND RECREATION
Primary #
Trinomial

MILLING STATION RECORD

Resource Name or #: KF-S-1

Form Prepared by: Ashley Hallock
Date: 10/11/2017

Feature	Outcrop Dimensions (m) and Orientation				Bedrock Type and Condition
1	1.67 m	x 1.93 m	x Height	30 cm	Granite, poor condition with exfoliation/spalling
		x	x Height		
		x	x Height		
		x	x Height		
		x	x Height		

Feature #	Milling Surface #	Type	Length (cm)	Width (cm)	Depth (cm)	Contents	Remarks
1	A	CO	12	12	1.5	S, L	Incipient/very shallow cup

Type Key:
CO Conical mortar
OM Oval mortar
SM Saucer mortar
PM Possible mortar
MS Milling slick
BM Basin milling feature
Other:

Contents Key:
S Filled with soil
L Filled with leaves
U Unexcavated
R Contains rock
P Contains pestle
M Contains mano
Other:

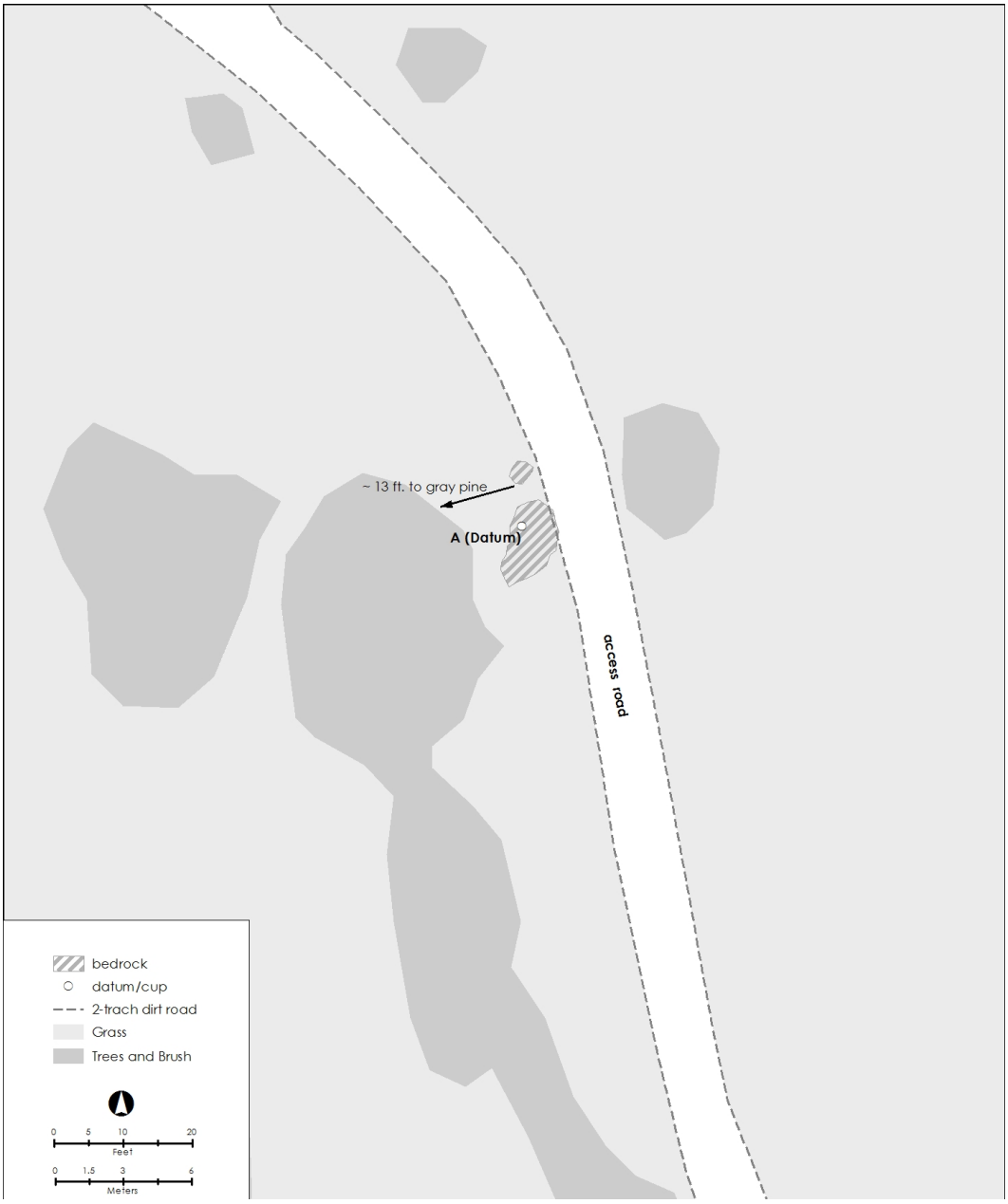
NOTE: Attach plan(s) of milling stations.

State of California ☐Natural Resources Agency
DEPARTMENT OF PARKS AND RECREATION
SKETCH MAP

Primary #
HRI#
Trinomial

Page 5 **of** 6 ***Resource Name or #** KF-S-1

***Drawn by:** A. Hallock ***Date of map:** 10/11/2017



State of California ☐Natural Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

Primary #
HRI#
Trinomial

 ***Resource Name or #** KF-S-1

***Map Name:** Guinda, California ***Scale:** 1:24,000 ***Date of map:** 1993