Notice of Exemption

Appendix E

To: ☒ Office of Planning and Research
1400 Tenth Street, Room 121
Sacramento, CA 95814

☒ County Clerk
County of Inyo
PO Drawer F, 168 North Edwards Street
Independence, CA, 93526

From: (Public Agency) City of Los Angeles Department of Water and Power
(Address)
300 Mandich Street, Bishop, CA, 93514

FILED
AUG 01 2014
INYO CO. CLERK
KAMMI FOOTE, CLERK
BY DEPUTY

Project Title: California Institute of Technology Long Wavelength Array Expansion Project

Project Location - Specific: Northeast of Big Pine, CA; See Attached

Project Location - City: Not Applicable **Project Location - County:** Inyo County

Description of Nature, Purpose, and Beneficiaries of Project:
See Attached

Name of Public Agency Approving Project: City of Los Angeles Department of Water and Power

Name of Person or Agency Carrying Out Project: California Institute of Technology, Dr. Gregg Hallinan

Exempt Status: (*check one*)

- ☐ Ministerial (Sec. 21080(b)(1); 15268);
- ☐ Declared Emergency (Sec. 21080(b)(3); 15269(a));
- ☐ Emergency Project (Sec. 21080(b)(4); 15269(b)(c));
- ☒ Categorical Exemption. State type and section number: Class 6 j Article ~~Section~~ 18.36.080 Section 15306 "Information Collection"
- ☐ Statutory Exemptions. State code number:

Reasons why project is exempt:
The proposed project involves scientific data collection and will not result in significant impacts to environmental resources.

Lead Agency Contact Person: Lori Dermody Area Code/Telephone/Extension: (760) 872-1104

If filed by applicant:

1. Attach certified document of exemption finding.
2. Has a Notice of Exemption been filed by the public agency approving the project? ☐ Yes ☐ No

Signature: James E. Yannotta Manager of Aqueduct Date: 07/29/14 Title: Manager of Aqueduct

☒ Signed by Lead Agency Date received for filing at OPR:

☐ Signed by Applicant

Revised October 1989

14-00035

1.0 LOCATION OF PROPOSED CALTECH LONG WAVELENGTH ARRAY EXPANSION

An existing radio-telescope observatory, the Owens Valley Radio Observatory (OVRO), is located northeast of Big Pine, California on Los Angeles Department of Water and Power (LADWP) owned land in Inyo County (Figure 1). The site is leased to the California Institute of Technology (Caltech) for scientific research purposes. Caltech is proposing the addition of approximately 32 long wavelength radio antenna (less than eight feet tall) deployed to the north of the existing Long Wavelength Array (LWA) (Figure 2). This proposed project, the Long Wavelength Array Expansion (LWA Expansion) (project), would also include placement of small solar panel at each antenna, underground cabling and cattle exclusion fencing. The proposed project, if approved, would be funded by Caltech funds.

1.1 BACKGROUND

The proposed project is located on the Owens Valley floor, approximately 4.5 miles north of Big Pine and east of the Owens River at approximately 3,950 feet above sea level. The OVRO was initially constructed in the 1950s by Caltech. The OVRO includes numerous telescopes with the largest three being 40, 27 and 27 meters in diameter. The OVRO currently has 10 buildings on site including offices, control centers, machine shops, a lunch facility and a dormitory. On average, there are approximately 30 full time employees (FTE) on site. The number of persons on site varies due to time of year, number of active projects and number of visiting scientists. The project is located in an area of mostly undeveloped land with alkaline shrub vegetation. Current land uses in the vicinity include operation of various radio telescopes and cattle grazing. The proposed project would not alter existing OVRO structures or telescopes.

1.2 SETTING

The proposed project lies in eastern California in the Owens Valley, a deep, north-south trending basin located between the Sierra Nevada mountain range to the west and the White Mountain range to the east. No surface water exists at the location of the proposed project. The closest surface water is the Owens River which is approximately one quarter mile west of the project location. The Owens River, which flows south through the valley, is a trunk stream; the Owens Valley is a closed drainage system. The valley floor is characterized as having low precipitation, abundant sunshine, frequent and highly variable winds, moderate to low humidity and high potential evapotranspiration. A majority of the land on the Owens Valley floor, including the land surrounding the proposed project, is owned either by LADWP or by the U.S. Government (Bureau of Land Management or U. S. Forest Service) and is undeveloped.

1.3 DATA COLLECTION

The purpose of the proposed project is to increase the efficacy of the existing LWA at the OVRO site. The LWA is used to study the early development of the Universe. By studying residual radiation produced during the "Dark Ages" of the Universe (approximately 13.2 billion years

ago) during a transition period when the first stars, galaxies and black holes emerged, a more complete picture of the evolution of the Universe will emerge. This instrument will also be uniquely sensitive to transient radio emissions, such as those associated with extra-solar planets.

The LWA Expansion project will use data collected by numerous small antennas and integrated by a supercomputer to study celestial low frequency radio waves. The estimated project life is three to five years. The Owens Valley is a unique location for radio-wave observation due to its rural setting, benign weather, flat population growth, and, most importantly, low generation of terrestrial radio frequency interference. The OVRO, with its existing infrastructure, computer power, and networking capabilities, provides a unique hosting site for the project. Cost savings generated by using the existing capabilities of the OVRO are on a scale of 2,000 percent.

1.4 SCOPING

Biological and Cultural Resource surveys with associated reports were completed in May and June 2014 by TEAM Engineering & Management (TEAM) and Trans-Sierran Archaeological Research (TSAR), respectively. These surveys were conducted to the north and west of the existing OVRO telescopes in the vicinity of the existing LWA to find a suitable location for the proposed project. Based on the results of these surveys, the proposed project's final location and boundaries were set to avoid any significant impacts to Biological or Cultural Resources.

2.0 DESCRIPTION OF PROPOSED CALTECH LONG WAVELENGTH ARRAY EXPANSION

Caltech is proposing to install 32 individual antennas roughly surrounding the existing LWA to the north and west. These dipole-antennas are aluminum and approximately five-feet tall (Figure 3). The antennas are installed on a single post, diameter of four inches, driven three feet into the ground. The antennas are pre-assembled, deployed in the field, and installed within minutes. Beneath each antenna, a 10 foot by 10 foot wire mesh is installed as a ground screen to reflect radio waves. The mesh matrix is approximately four inches by four inches and can be draped over existing small plants and surfaces. A small solar panel, approximately 40-watts, will power the units. The specific location of each antenna is not fixed and can vary by several feet in any direction to avoid plant disturbance. Cable, buried to 18-inches, will link each antenna to a main line. This line will tie into an existing electronics storage unit which houses the electronics required by the project. Both the existing and proposed LWA antennas are passive radio-wave receptors. The proposed array receives and monitors radio waves; it does not produce emissions and has no moving parts.

Work on the proposed project would take place within an area of 430 acres. The actual size of project-related disturbance is estimated to be less than four (4) acres. Of these less than four acres of disturbance, approximately 1.3 acres will occur on previously disturbed land (existing roads) and 2.4 will occur on non-disturbed land. Project disturbance will be related to the installation of the 32 radio-wave antennas with associated receiver mesh, 40-watt solar panel,

and cable trenching required to link antennas to the existing LWA communication grid, and construction of a cattle exclusion fence around the antennas.

Implementation of the proposed project would occur over a two-to-three month period, with the LWA Expansion project operational by the end of 2014. Construction activities on the proposed project, if approved, would commence after August 31, 2014.

2.1 CONSTRUCTION

The 32 new antennas would be constructed either off-site or at existing OVRO facilities. These antennas are stationary with no motorized parts. Caltech personnel would transport these antennas to the proposed LWA Expansion sites on existing roads where possible using small pickup-sized trucks. The main transportation, trenching and fencing routes are shown in Figure 2. The light-weight antennas can be installed using manual labor. A 10-foot by 10-foot wire mesh receiver will be laid on the ground beneath each antenna. This mesh can be deployed over existing smaller vegetation, and field surveys of the existing LWA antennas installed in 2012 demonstrates that vegetation grows in the mesh. The specific location of each new antenna is not fixed and can be moved several feet in any direction to minimize ground disturbance. However, based on project area surveys, in some areas larger brush may need to be removed to accommodate this mesh.

The trenches for project-related power and optical fiber cables will be "plowed" to approximately 18 inches below ground surface by a tractor-mounted plow with spool installer. These trenches will average 6-8 inches in width. The tractor-mounted plow has an approximate four foot wheel base with the machine's body elevated. The trenching routes will have some flexibility in path, and by using the "plow" method plant disturbance can be minimized. The total amount of trenching for the proposed project is estimated to be 29,000 feet. Much of this trenching will be routed along existing roads; however, approximately 16,500 feet of new access/trenching routes will be required.

A wooden, split rail cattle-exclusion fence of approximately 16 foot by 16 foot dimension will be installed around each of the 32 new antennas. These fence posts will be anchored in two-to-three foot deep holes. The holes will be dug by a mechanical auger attached to a utility truck.

The proposed project will make no improvements to the existing road system at the OVRO. The access routes to the new antenna may require minor upkeep (re-grading, brush removal) during project construction and implementation.

Construction activities associated with the proposed project are anticipated to include:

- Access route, trenching, and installation of communications cable
- Installation of antennas poles, solar panels, wire mesh bases, and antennas
- Construction of cattle exclusion fencing

The following equipment is anticipated to be used during construction of the proposed project: utility and light trucks, trenchers, a small tractor or backhoe, a grader (for access route maintenance), auger, mechanized hand tools, and other small tools necessary to complete the construction described above.

2.2 SCHEDULE

Construction for the proposed project is expected to occur over two to four months, commencing after August 31, 2014. The proposed project would not alter any existing buildings or telescopes on site. No habitable structures are associated with the proposed project.

2.3 OPERATIONS

During the proposed project's operational phase, daily observations and radio-wave emission data will be collected from the non-motorized project antennas. Site management, oversight of daily operations, and routine maintenance will be conducted by project staff either remotely or using existing OVRO infrastructure (office buildings). During the operations phase, no additional full time employees (FTE) would be required for the proposed project. The current Caltech staffing level at the OVRO is approximately 30 FTE. Minor upkeep of the antennas, access routes, and the cattle exclusion fence is expected during the implementation phase using existing Caltech staff.

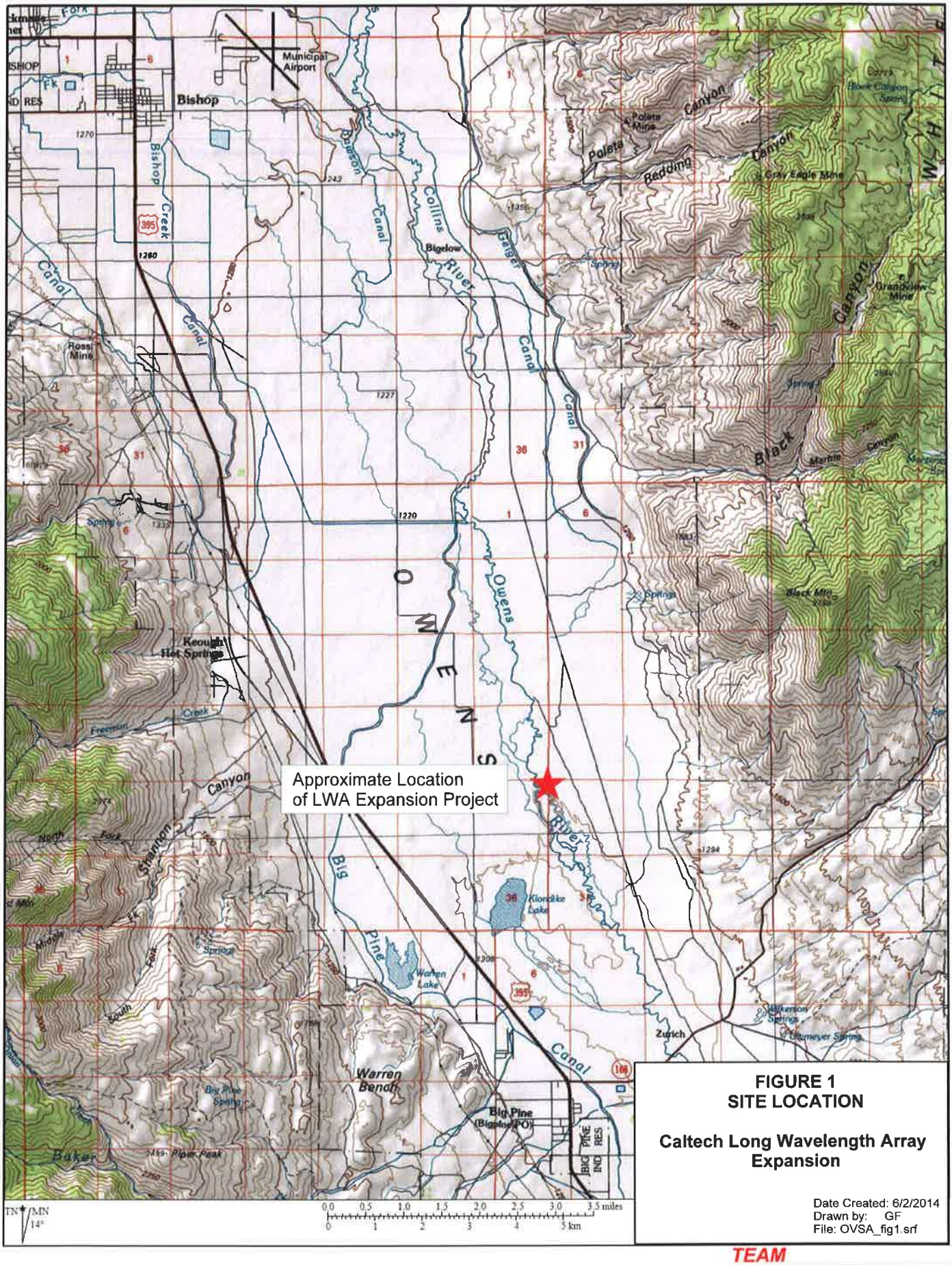

FIGURE 1
SITE LOCATION

Caltech Long Wavelength Array Expansion

Date Created: 6/2/2014
Drawn by: GF
File: OVSA_fig1.srf

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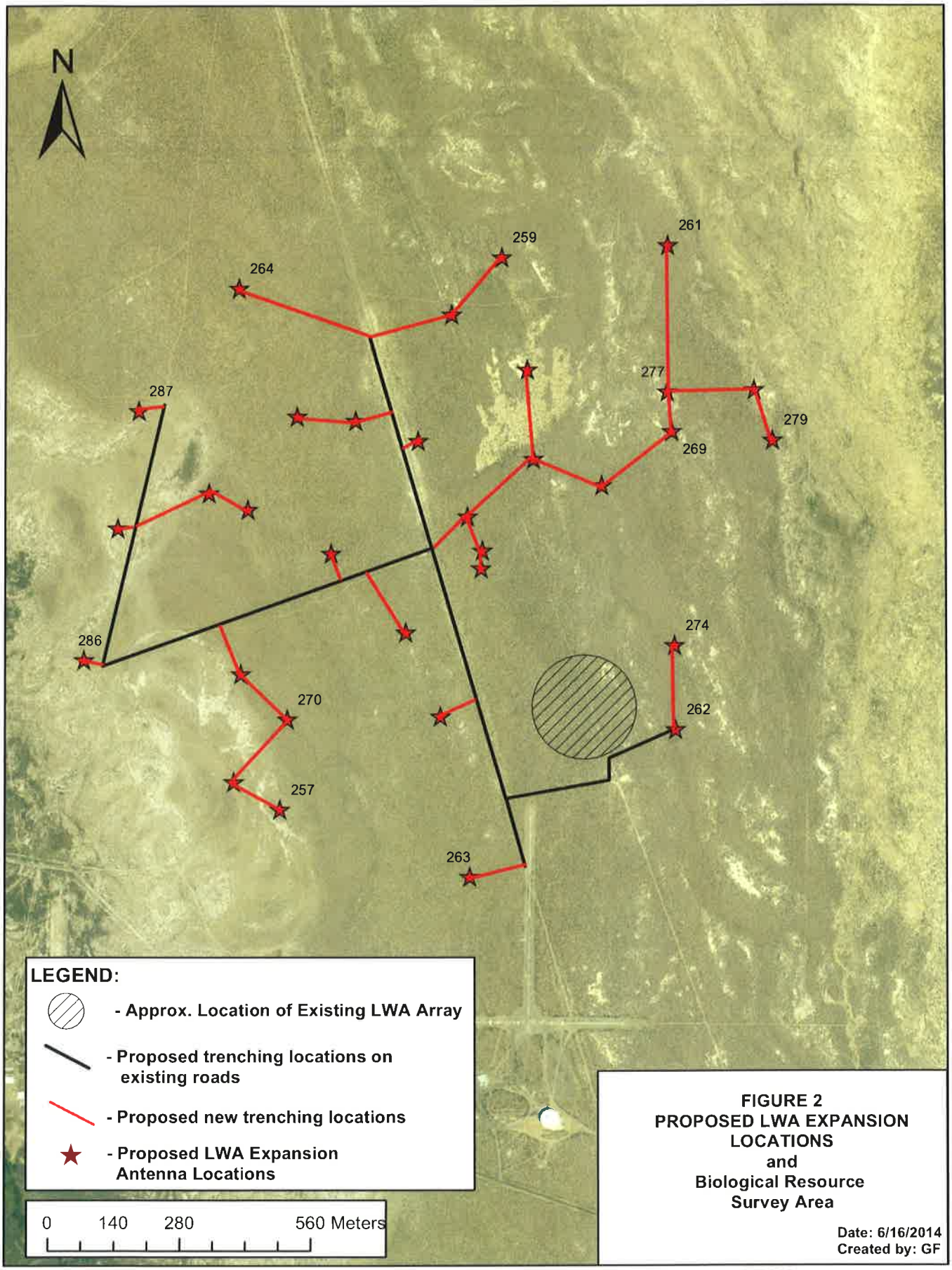

FIGURE 2
PROPOSED LWA EXPANSION LOCATIONS
and
Biological Resource Survey Area

Date: 6/16/2014
Created by: GF

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FIGURE 3
Long Wavelength Radio Antenna - photos
Caltech LWA Expansion
Owens Valley Radio Observatory

A demonstration antenna of one of the 32 proposed radio antennas for the Caltech LWA Expansion is shown below. The following photos show the wire mesh ground screen with antenna pole installation (Photo 1), placement of the antenna on the pole (Photos 2 and 3), and the final installed antenna (Photo 4). The entire installation process can be completed by two people using hand tools.


(Photo 1)


(Photo 2)


(Photo 3)


(Photo 4)

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