

**June 2016**  
**FM Translator K249ES**  
**Carson City, Nevada Channel 249D**  
**Allocation Study**

The attached spacing study shows the spacing between the proposed translator site and the location of cochannel and adjacent channel stations and proposals. This study was made with the Commission's Class A spacing requirements, and individual situations were examined to determine the lack of prohibited contour overlap per the requirements of §74.1204 of the Rules. The attached allocation study map demonstrates compliance with the Commission's Rules for protection of FM broadcast stations and FM translators as outlined in §74.1204.

***KOLC 247C Carson City***

The proposed translator transmitter site is located within the 60 dBu protected contour of second-adjacent channel station KOLC 247C Carson City. The following calculation, performed using the *Living Way* methodology, demonstrates interference protection to that station.

Protected Station	Distance & Bearing to Proposal	Station ERP and HAAT on that azimuth	Station Field Strength at Proposal	Corresponding Translator Interfering Contour	Distance to Translator Interfering Contour
KOLC 247C	co-located 0.1 km assumed	87 kW	146.3 dBu Free Space	186.3 dBu	0.05 meters Free Space

The 186.3 dBu interfering contour extends at most 0.05 meters from the translator antenna per a Free Space calculation and does not reach ground level. There is no population within this contour. Therefore, the proposed facility is believed to satisfy the requirements of §74.1204(d) with respect to KOLC.

***KBUL-FM 251C Carson City***

The proposed translator transmitter site is located within the 60 dBu protected contour of second-adjacent channel station KBUL-FM 251C Carson City. The following calculation, performed using the *Living Way* methodology, demonstrates interference protection to that station.

Protected Station	Distance & Bearing to Proposal	Station ERP and HAAT on that azimuth	Station Field Strength at Proposal	Corresponding Translator Interfering Contour	Distance to Translator Interfering Contour
KBUL-FM 251C	0.74 km 256 deg True	74 kW 669 meters	128.2 dBu Free Space	168.2 dBu	0.4 meters Free Space

The 168.2 dBu interfering contour extends at most 0.4 meters from the translator antenna per a Free Space calculation and does not reach ground level. There is no population within this contour. Therefore, the proposed facility is believed to satisfy the requirements of §74.1204(d) with respect to KBUL-FM.

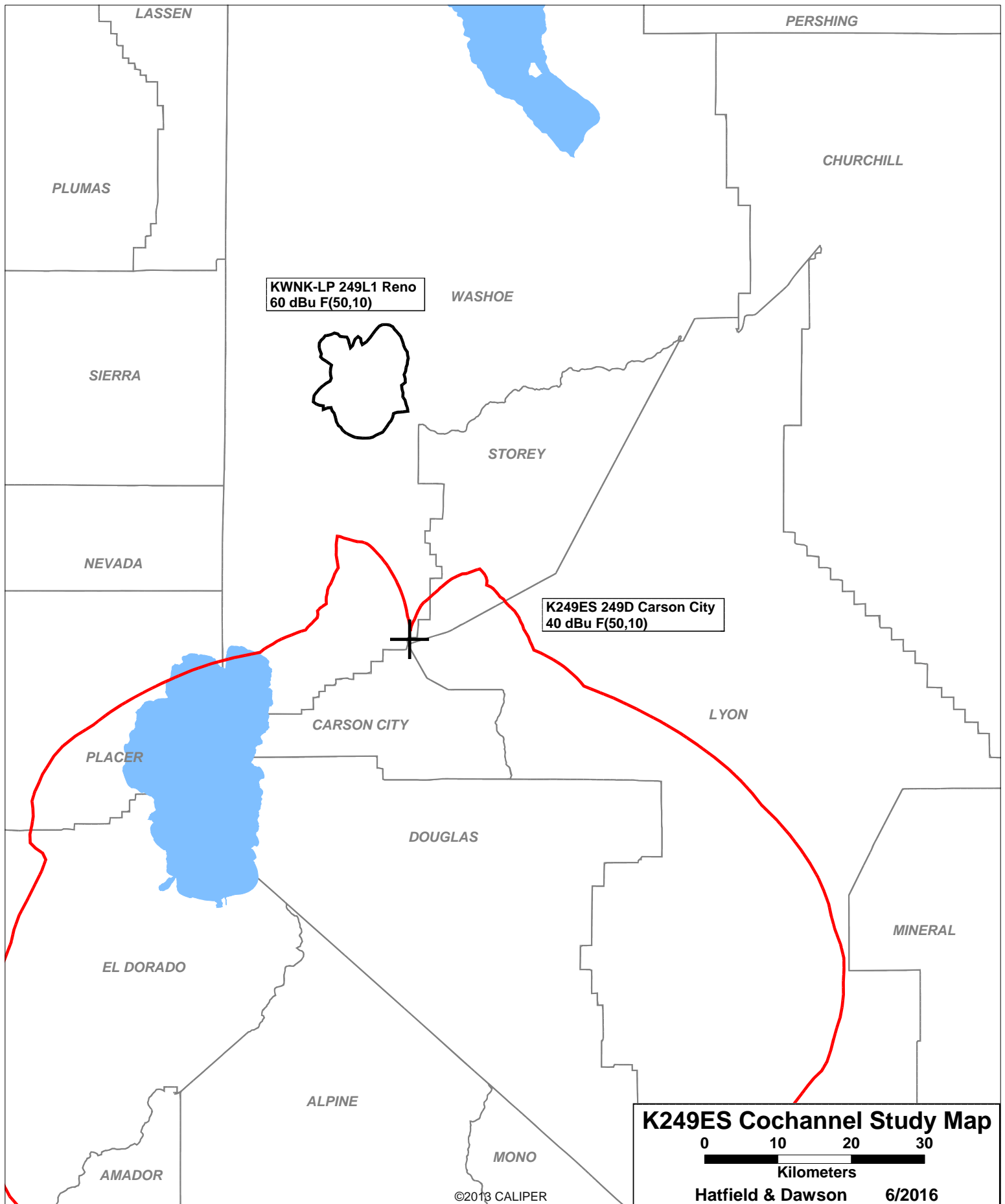
The attached spacing study demonstrates compliance with §73.207 of the Commission's Rules regarding spacing restrictions to stations which are 53 or 54 channels removed from the proposed operation.

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SEARCH PARAMETERS                               FM Database Date: 160616
Channel: 249A      97.7 MHz                      Page   1
Latitude:  39 15 26
Longitude: 119 42 36
Safety Zone:  50 km
Job Title: K249ES CARSON CITY
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Call Status	City St	FCC File No.	Channel Freq.	ERP(kW) HAAT(m)	Latitude Longitude	Bearing deg-True	Dist (km)	Req (km)
KOLC LIC	CARSON CITY NV	BLH-50730ACN	247C 97.3	87.000 637.0	39-15-26 119-42-36	0.0	0.00 -95.00	95 SHORT
KHHZ LIC	GRIDLEY CA	BLH-80821ACX	249B1 97.7	1.500 389.0	39-30-18 121-18-35	281.8	140.55 -2.45	143 SHORT
K249CS LIC	SUSANVILLE, ETC. CA	BLFT-880920TA	249D 97.7	0.068 DA 795.0	40-26-49 120-21-25	337.5	143.23 0.00	0 TRANS
KWNK-LP CP MOD	RENO NV	BMPL-60203ABL	249L1 97.7	0.007 113.0	39-35-03 119-48-05	347.8	37.14 -29.86	67 SHORT
K249ES CP	SOUTH LAKE TAHOE NV	BNPFT-30827ACT	249D 97.7	0.010 909.0	38-55-38 119-55-50	207.5	41.31 0.00	0 TRANS
KBUL-FM LIC	CARSON CITY NV	BLH-950504KB	251C 98.1	74.000 699.0	39-15-32 119-42-06	75.5	0.74 -94.26	95 SHORT

===== END OF FM SPACING STUDY FOR CHANNEL 249 =====



**June 2016**  
**FM Translator K249ES**  
**Carson City, Nevada Channel 249D**  
**RF Exposure Study**

**Facilities Proposed**

The proposed operation will be on Channel 249D (97.7 MHz) with a maximum lobe effective radiated power of 250 watts. Operation is proposed with an array of two stacked Scala CA2CP antennas to be mounted in a reduced-rear configuration on an existing tower on McClellan Butte, with FCC Antenna Structure Registration Number 1011093.

**RF Exposure Calculations**

OET Bulletin 65 Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields (Edition 97-01) states in part that:

When performing an evaluation for compliance with the FCC's RF guidelines all significant contributors to the ambient RF environment should be considered. . . For purposes of such consideration, significance can be taken to mean any transmitter producing more than 5% of the applicable exposure limit (in terms of power density or the square of the electric or magnetic field strength) at accessible locations.

As will be demonstrated below, the proposed operation of K249ES will produce less than 5% of the applicable exposure limit for controlled environments. Thus, the proposed facility is categorically excluded from the requirement of further study. Therefore, pursuant to §1.1307(b)(3) of the Commission's Rules no calculations are required for the other FM and TV facilities in the vicinity, and precise calculations are made only with regard to the levels from this proposal.

The power density calculations shown below were made using the techniques outlined in OET Bulletin No. 65. "Ground level" calculations in this report have been made at a reference height of 2 meters above ground to provide a worst-case estimate of exposure for persons standing on the ground in the vicinity of the tower. The equation shown below was used to calculate the ground level power density figures from each antenna.

$$S(\mu W / cm^2) = \frac{33.40981 \times AdjERP(Watts)}{D^2}$$

Where: *AdjERP(Watts)* is the maximum lobe effective radiated power times the element pattern factor times the array pattern factor.

*D* is the distance in meters from the center of radiation to the calculation point.

Ground level power densities have been calculated for locations extending from the base of the tower to a distance of 1000 meters. Values past this point are increasingly negligible.

Calculations of the power density produced by the proposed antenna system assume a Type 1

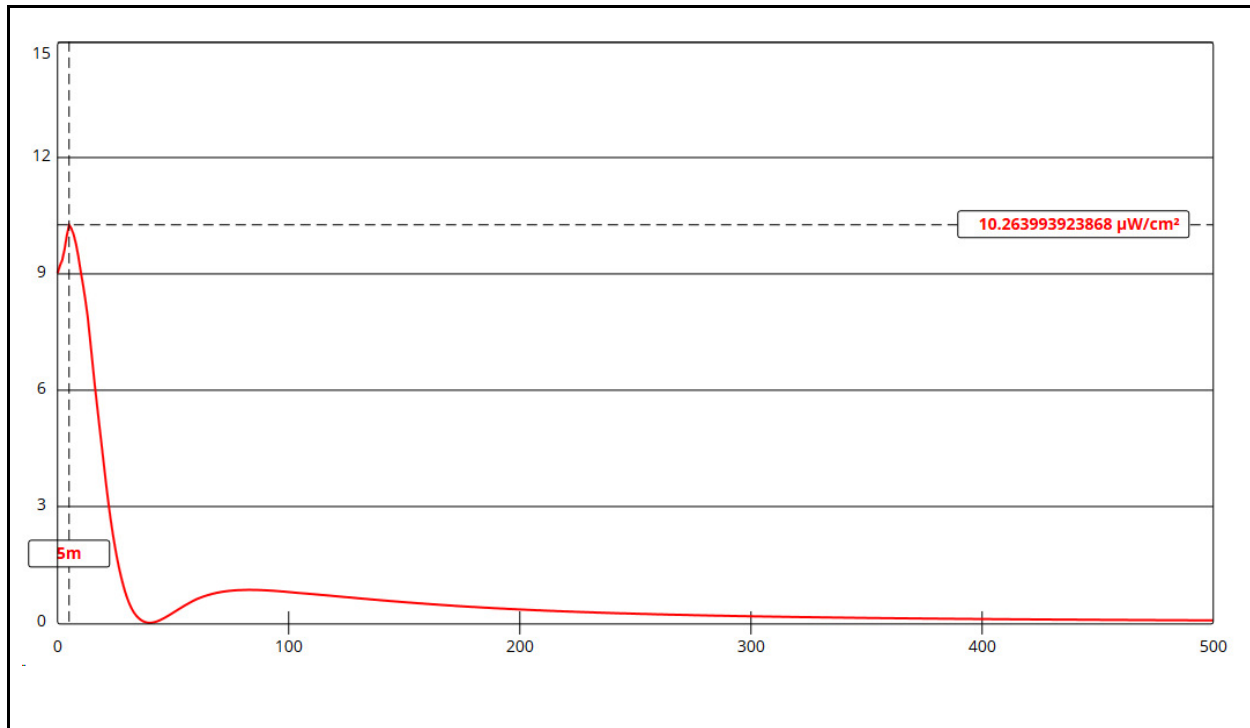
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element pattern, which is the “worst case” element pattern. The highest calculated ground level power density occurs at a distance of 4 meters from the base of the antenna support structure. At this point the power density is calculated to be  $18.2 \mu\text{W}/\text{cm}^2$ , which is 1.8% of  $1000 \mu\text{W}/\text{cm}^2$  (the FCC standard for controlled environments).

As was described in the 2005 renewal application BRH-20050601BNL for KOLC(FM), the transmitter site is fenced to prevent public access to any areas which measurements have shown to be above the FCC MPE limit for the general population. This is considered to be a controlled access area. As noted in a report which was included as an exhibit to the referenced 2005 renewal application, Americom/Reno Media Group engineering staff “erected a new fence to prevent public access to the area where the FCC general public MPE is exceeded. Appropriate signage has been installed to warn members of the general public against attempting to gain access to this area.”

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation of K249ES alone is less than 5% of the applicable FCC exposure limit at all locations between 1 and 1000 meters from the base of the antenna support structure. Section 1.1307(b)(3) of the Commission's Rules excludes applications for new facilities or modifications to existing facilities from the requirement of preparing an environmental assessment when the calculated emissions from the applicants proposed facility are predicted to be less than 5% of the applicable FCC exposure limit. Therefore, the proposed facility is in compliance with Section 1.1301 *et seq* and no further analysis of RF exposure at this site is required in this application.

The permittee/licensee in coordination with other users of the site must reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency radiation in excess of FCC guidelines.



## Ground-Level RF Exposure

OET FMModel

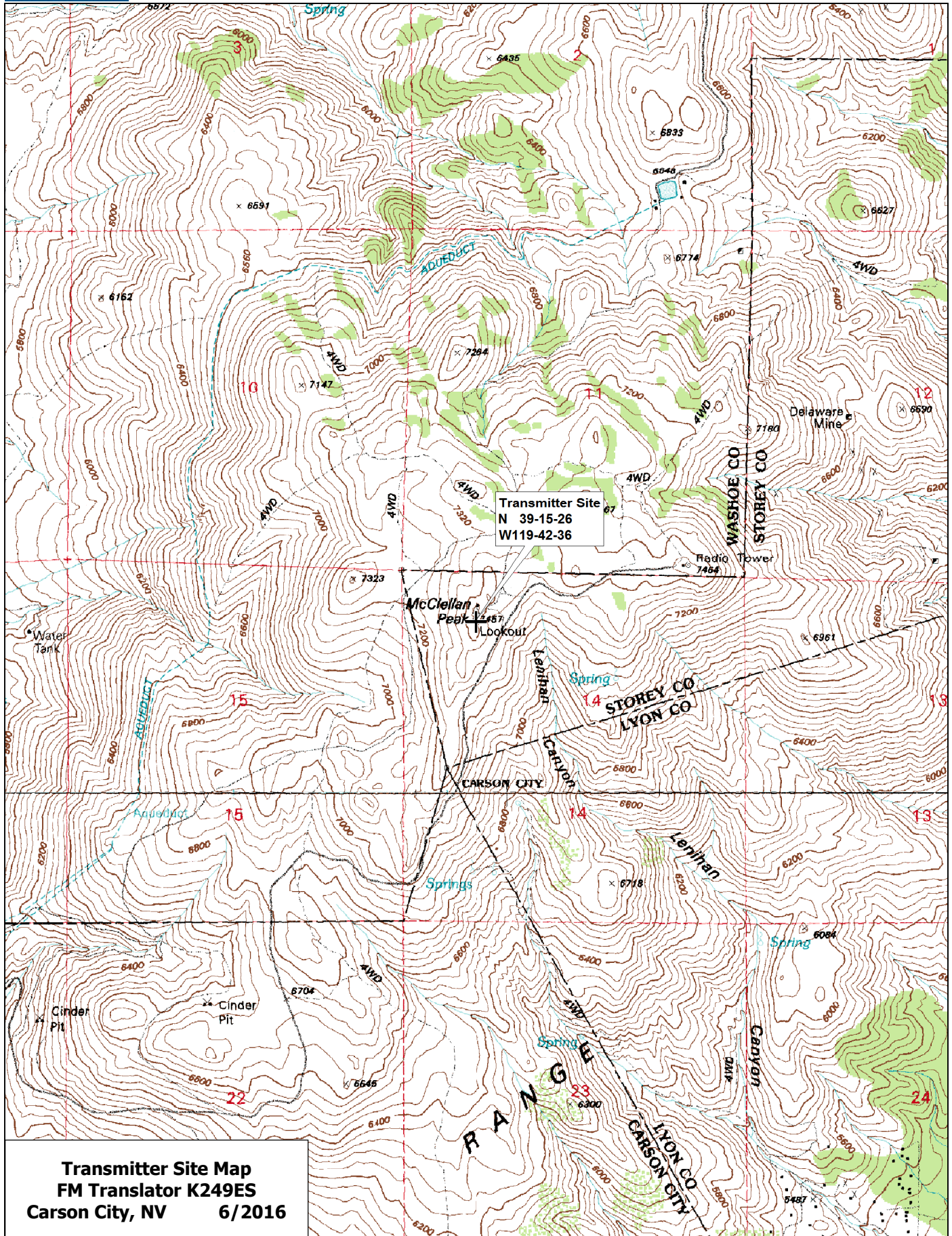
### K249ES Carson City

Antenna Type: (2) Scala CA2CP (Type 1 element model assumed)  
No. of Elements: 2  
Element Spacing: 0.87 wavelength

Distance: 1000 meters  
Horizontal ERP: 0.250 kW  
Vertical ERP: 0.250 kW

Antenna Height: 30 meters AGL

Maximum Calculated Power Density is 10.3  $\mu\text{W}/\text{cm}^2$  at 5 meters from the antenna structure.



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