

## **ENGINEERING EXHIBIT**

### **Application for Construction Permit**

prepared for

**Mirage Media 2, LLC**  
KOTR-LP Santa Cruz, CA  
Facility ID 2871  
Ch. 2 (analog) 0.84 kW

*Mirage Media 2, LLC* (“*Mirage*”) is the licensee of Low Power Television (“LPTV”) station KOTR-LP, analog Channel 2, Gonzales, CA, Facility ID 2871 (BLTVL-20070402KIR). A digital companion facility on Channel 41 is authorized by Construction Permit (“CP”, BDCCDTL-20081205ACL). *Mirage* herein proposes to make a minor change regarding the analog Channel 2 facility. The changes involve use of a different directional antenna pattern and effective radiated power (“ERP”). No change in KOTR-LP’s channel or transmitting location is specified. Santa Cruz, CA is specified herein as the community to be served by the proposed KOTR-LP facility in lieu of Gonzales, CA, the present community.

The KOTR-LP analog facility will continue to operate on Channel 2 using a “zero” offset. The existing antenna array will be reconfigured to achieve a different directional pattern having a maximum ERP of 0.84 kW.

The antenna system will continue to be side-mounted on the existing antenna support structure as the licensed KOTR-LP analog facility. The tower structure is not required to be registered with the FCC, as it is an existing structure of less than 61 meters overall height above ground and there are no known landing areas within 8 km of the site. No marking or lighting specifications are presently required. Since no change to the structure’s overall height is proposed, FAA notification and commensurate FCC registration are not necessary. The structure was previously registered (ASR# 1051048) however that registration was terminated since registration was not required (ASR reference 507986). The tower location and elevation data specified herein correspond to the terminated ASR and are slightly revised from the licensed facility (one second difference in geographic coordinates and three meters difference in site elevation).

**Figure 1** depicts the 62 dBμ protected contour of both the licensed and the proposed facilities. The use of the same transmitter site and the service area overlap shown demonstrates compliance with §73.3572 for a minor change. The KOTR-LP analog coverage contour will continue to have overlap with the KOTR-LD digital companion facility's coverage contour (51 dBμ), as shown on **Figure 1**.

The instant proposal complies with the Commission's standard contour overlap protection requirements toward all DTV, television translator, LPTV, and Class A stations except those summarized in **Table 1**. The results of a detailed interference study per OET Bulletin 69<sup>1</sup> are summarized in **Table 1** which shows that any new interference created by the proposal does not exceed the Commission's 0.5 percent rounding tolerance to any currently authorized facilities. Accordingly, the instant proposal complies with §§74.706, 74.707, 74.708, and 74.710 regarding interference protection to digital television, low power television, television translator, and Class A television facilities.

The nearest FCC monitoring station is 133 km distant at Livermore, CA. This exceeds the threshold minimum distance specified in §73.1030(c)(3) that would suggest consideration of the monitoring station. The site is not located within the areas requiring coordination with "quiet" zones specified in §73.1030(a) and (b). The Land-Mobile protections of §73.709 are not relevant for Channel 2. There are no AM stations within 3.2 kilometers of the site, based on information contained within the Commission's database. The site location is beyond the border areas requiring international coordination.

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<sup>1</sup>FCC Office of Engineering and Technology Bulletin number 69, *Longley-Rice Methodology for Evaluating TV Coverage and Interference*, February 6, 2004 ("OET-69"). The implementation of OET-69 for this study followed the guidelines of OET-69 as specified therein. A cell size of 1 km was employed. Comparisons of various results of this computer program (run on a Sun Sparc processor) to the Commission's implementation of OET-69 show excellent correlation.

### **Human Exposure to Radiofrequency Electromagnetic Field (Environmental)**

The proposal involves reconfiguration of an existing transmitting antenna which is side-mounted on an antenna support structure. The use of existing transmitting locations has been characterized as being environmentally preferable by the Commission, according to Note 1 of §1.1306 of the FCC Rules.

The proposed operation was evaluated for human exposure to RF energy using the procedures outlined in the Commission's OET Bulletin Number 65. Based on OET-65 equation (10), and a conservative assumption of 50 percent antenna relative field in downward elevations, the calculated signal density near the tower at two meters above ground level attributable to the proposed facility is  $7.2 \mu\text{W}/\text{cm}^2$ , which is 3.6 percent of the general population/uncontrolled maximum permitted exposure limit. This is below the five percent threshold limit described in §1.1307(b) regarding sites with multiple emitters, categorically excluding the applicant from responsibility for taking any corrective action in the areas where the proposal's contribution is less than five percent.

The general public will not be exposed to RF levels attributable to the proposal in excess of the FCC's guidelines. RF exposure warning signs will continue to be posted. With respect to worker safety, the applicant will coordinate exposure procedures with all pertinent stations and will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from RF electromagnetic field exposure in excess of FCC guidelines.

### **Certification**

The undersigned hereby certifies that the foregoing statement and associated attachments were prepared by him or under his direction, and that they are true and correct to the best of his knowledge and belief.



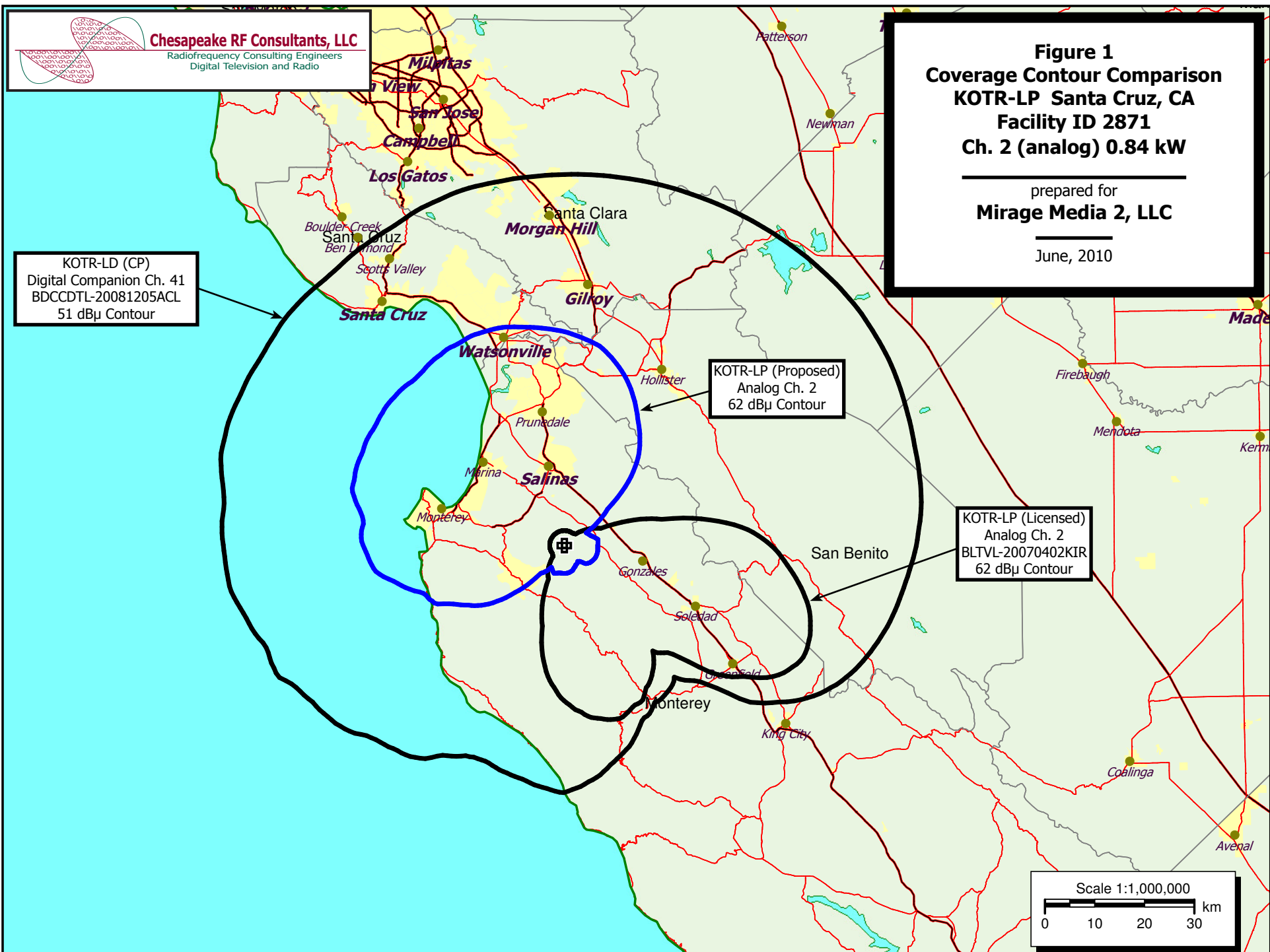
Joseph M. Davis, P.E.  
June 14, 2010

**Chesapeake RF Consultants, LLC**  
11993 Kahns Road  
Manassas, VA 20112  
703-650-9600

### List of Attachments

Figure 1	Proposed Coverage Contour
Table 1	Interference Analysis Results Summary
Form 346	Saved Version of Engineering Sections from FCC Form at Time of Upload

*This material was entered June 14, 2010 for filing electronically. Since the FCC's electronic filing system may be accessed by anyone with the applicant's account number and password, and electronic data may otherwise be altered in an unauthorized fashion, we cannot be responsible for changes made subsequent to our entry of this data and related attachments.*



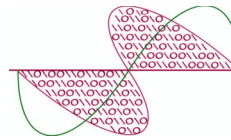
# Table 1

## Interference Analysis Results Summary

prepared for

**Mirage Media 2, LLC**

KOTR-LP Ch. 2 Santa Cruz, CA



**Chesapeake RF Consultants, LLC**

Radiofrequency Consulting Engineers  
Digital Television and Radio

KOTR-LP	USERRECORD-01	SANTA CRUZ	CA US
Channel 02	ERP 0.84 kW	HAAT 998. m	RCAMSL 01056 m
Latitude 036-32-05	Longitude 0121-37-09		
Dir Antenna Make	usr Model KOTR CL24 v1	Beam tilt N	Ref Azimuth 0.

<u>Ch.</u>	<u>Call</u>	<u>City/State</u>	<u>Dist</u> <u>(km)</u>	<u>Status</u>	<u>Application Ref. No.</u>	---Population (2000 Census)---	
						<u>Baseline</u>	<u>New Interference</u>
2	KQRM-LP	PETALUMA CA	177.0	CP	BDISTVL-20090107AGJ	---	none
3	KMMD-CA	SALINAS CA	0.0	LIC	BLTVA-20060524AGK	336,971	535 (0.16%)

**SECTION III - ENGINEERING DATA (Analog)****TECHNICAL SPECIFICATIONS**

Ensure that the specifications below are accurate. Contradicting data found elsewhere in this application will be disregarded. All items must be completed. The response "on file" is not acceptable.

**TECH BOX**

1.	Channel Number: 2																																																																																																
2.	Frequency Offset: <input type="radio"/> No offset <input checked="" type="radio"/> Zero offset <input type="radio"/> Plus offset <input type="radio"/> Minus offset																																																																																																
3.	Translator Input Channel No. :																																																																																																
4.	Primary station proposed to be rebroadcast: <table border="1"><tr><td>Facility Identifier</td><td>Call Sign</td><td>City</td><td>State</td><td>Channel</td></tr></table>	Facility Identifier	Call Sign	City	State	Channel																																																																																											
Facility Identifier	Call Sign	City	State	Channel																																																																																													
5.	Antenna Location Coordinates: (NAD 27) Latitude: Degrees 36 Minutes 32 Seconds 05 <input checked="" type="radio"/> North <input type="radio"/> South  Longitude: Degrees 121 Minutes 37 Seconds 09 <input checked="" type="radio"/> West <input type="radio"/> East																																																																																																
6.	Antenna Structure Registration Number: <input checked="" type="checkbox"/> Not Applicable [Exhibit 7] <input type="checkbox"/> Notification filed with FAA																																																																																																
7.	Antenna Location Site Elevation Above Mean Sea Level: 1032 meters																																																																																																
8.	Overall Tower Height Above Ground Level: 51.5 meters																																																																																																
9.	Height of Radiation Center Above Ground Level: 24 meters																																																																																																
10.	Maximum Effective Radiated Power (ERP) Towards Radio Horizon: 0.84 kW																																																																																																
11.	Maximum ERP in any Horizontal and Vertical Angle: 0.84 kW																																																																																																
12.	Transmitting Antenna: Before selecting Directional "Off-the-Shelf", refer to "Search for Antenna Information" under <a href="http://licensing.fcc.gov/prod/cdbs/pubacc/prod/cdbs_pa.htm">CDBS Public Access</a> (http://licensing.fcc.gov/prod/cdbs/pubacc/prod/cdbs_pa.htm). Make sure that the Standard Pattern is marked Yes and that the relative field values shown match your values. Enter the Manufacturer (Make) and Model exactly as displayed in the Antenna Search. <input type="radio"/> Nondirectional <input type="radio"/> Directional "Off-the-shelf" <input checked="" type="radio"/> Directional composite  Manufacturer SCA Model 2XCL-24 CUSTOM																																																																																																
Directional Antenna Relative Field Values: <input type="checkbox"/> N/A (Nondirectional or Directional "Off-the-shelf") Rotation (Degrees): <input checked="" type="checkbox"/> No Rotation																																																																																																	
<table border="1"><thead><tr><th>Degrees</th><th>Value</th><th>Degrees</th><th>Value</th><th>Degrees</th><th>Value</th><th>Degrees</th><th>Value</th><th>Degrees</th><th>Value</th><th>Degrees</th><th>Value</th></tr></thead><tbody><tr><td>0</td><td>0.697</td><td>10</td><td>0.615</td><td>20</td><td>0.477</td><td>30</td><td>0.338</td><td>40</td><td>0.220</td><td>50</td><td>0.084</td></tr><tr><td>60</td><td>0.034</td><td>70</td><td>0.038</td><td>80</td><td>0.047</td><td>90</td><td>0.046</td><td>100</td><td>0.047</td><td>110</td><td>0.047</td></tr><tr><td>120</td><td>0.046</td><td>130</td><td>0.047</td><td>140</td><td>0.045</td><td>150</td><td>0.040</td><td>160</td><td>0.041</td><td>170</td><td>0.042</td></tr><tr><td>180</td><td>0.041</td><td>190</td><td>0.040</td><td>200</td><td>0.043</td><td>210</td><td>0.035</td><td>220</td><td>0.055</td><td>230</td><td>0.182</td></tr><tr><td>240</td><td>0.336</td><td>250</td><td>0.498</td><td>260</td><td>0.664</td><td>270</td><td>0.802</td><td>280</td><td>0.884</td><td>290</td><td>0.934</td></tr><tr><td>300</td><td>0.995</td><td>310</td><td>0.982</td><td>320</td><td>0.959</td><td>330</td><td>0.926</td><td>340</td><td>0.848</td><td>350</td><td>0.764</td></tr><tr><td>Additional Azimuths</td><td></td><td>305</td><td>1.0</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></tbody></table>		Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	0	0.697	10	0.615	20	0.477	30	0.338	40	0.220	50	0.084	60	0.034	70	0.038	80	0.047	90	0.046	100	0.047	110	0.047	120	0.046	130	0.047	140	0.045	150	0.040	160	0.041	170	0.042	180	0.041	190	0.040	200	0.043	210	0.035	220	0.055	230	0.182	240	0.336	250	0.498	260	0.664	270	0.802	280	0.884	290	0.934	300	0.995	310	0.982	320	0.959	330	0.926	340	0.848	350	0.764	Additional Azimuths		305	1.0								
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[Relative Field Polar Plot](#)

**NOTE:** In addition to the information called for in this section, an explanatory exhibit providing full particulars must be submitted for each question for which a "No" response is provided.

**CERTIFICATION**

13.	<b>Interference</b> : The proposed facility complies with all of the following applicable rule sections. 47.C.F.R Sections 74.705, 74.706, 74.707, 74.708, 74.709, 74.710.	<input checked="" type="radio"/> Yes <input type="radio"/> No  See Explanation in [Exhibit 8]
14.	<b>Environmental Protection Act.</b> The proposed facility is excluded from environmental processing under 47. C.F.R. Section 1.1306 (i.e., The facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments). Unless the applicant can determine RF compliance, an <b>Exhibit is required</b> .  By checking "Yes" above, the applicant also certifies that it, in coordination with other users of the site, will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic exposure in excess of FCC guidelines.	<input checked="" type="radio"/> Yes <input type="radio"/> No  See Explanation in [Exhibit 9]

**PREPARERS CERTIFICATION ON PAGE 3 MUST BE COMPLETED AND SIGNED.**

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**SECTION III PREPARER'S CERTIFICATION**

I certify that I have prepared Section III (Engineering Data) on behalf of the applicant, and that after such preparation, I have examined and found it to be accurate and true to the best of my knowledge and belief.

Name JOSEPH M. DAVIS, P.E.	Relationship to Applicant (e.g., Consulting Engineer) CONSULTING ENGINEER	
Signature	Date 6/14/2010	
Mailing Address CHESAPEAKE RF CONSULTANTS LLC 11993 KAHNS ROAD		
City MANASSAS	State or Country (if foreign address) VA	Zip Code 20112 -
Telephone Number (include area code) 7036509600	E-Mail Address (if available) JDAVIS@RF-CONSULTANTS.COM	