ENGINEERING NARRATIVE

KZSM – LP

SAN MARCOS TEXAS COMMUNITY RADIO ASSOCIATION

FACILITY ID: 134127

FCC FILE: BLL – 20170824ABC

SAN MARCOS, TEXAS

Applicant San Marcos Texas Community Radio Association, SMTCRA, is submitting this minor change application to move its licensed facilities, to a new location and a change in frequency of operation.

Exhibits are provided to support these changes.

Currently KZSM – LP has a stay silent STA, LMS 0000214165.

Reason for channel change from ch 276 (103.1) to 104.1 ch 281 is Full Power KBPA FM displacement.

The following engineering analysis, Exhibit A, is centered on the current licensed location for KZSM – LP.
29 – 54 – 20.7 N
97 – 54 – 17.0 W
ERP – 100 watts

Exhibit A – Second Adjacent Channel Contour Overlap

KZSM F(50,10) 100 db contour is completely inside the KBPA F(50,50) 60 db contour.

KBPA F(50,50) signal strength at the KZSM – LP licensed site is 69.3 db.
KZSM – LP F(50,10) contour is109.3 db. [69.3 db + 40 db = 109.3 db]

The distance to contour is 240 meters. This contour does intersect with the ground, crosses a major highway, Interstate 35, and does encompass population. Since this causes interference to KBPA, applicant requests that a new channel be assigned to KZSM – LP.

This table shows that KZSM is short spaced to KBPA by 26.9 km.

KZSM – LP
73.81
SPACING
29 – 54 – 20.7 N
97 – 54 – 17 W

Callsign	State	City	Freq	Channel	ERP_w	Class	Status	Distance_km	Sep	Clr
KBPA	**TX**	**AUSTIN**	**103.5**	**278**	**46000**	**C1**	**LIC**	**46.09**	**73**	**-26.9**
K276GR	**TX**	**NEW BRAUNFELS**	**103.1**	**276**	**250**	**D**	**LIC**	**28.47**	**32**	**-3.5**
KJXK	TX	SAN ANTONIO	102.7	274	100000	C1	LIC	77.85	73	4.8
K276EL	TX	AUSTIN	103.1	276	250	D	LIC	47.37	39	8.4
KZKV	TX	KARNES CITY	103.1	276	34000	C2	LIC	101.59	91	10.6
KDRP-LP	TX	DRIPPING SPRINGS	103.1	276	5	LP100	LIC	35.47	24	11.5
K274AX	TX	AUSTIN	102.7	274	250	D	LIC	47.26	21	26.3

Map for Exhibit A, second adjacent channel interference to KBPA is attached.

Channel 281 (104.1) has been selected, based on an engineering study that demonstrates the following location will comply with separation requirements of 73.807.

For this application, the proposed location of KZSM – LP:
29 – 51 – 15.6 N;
97 – 53 – 13.6 W.
ERP – 0.1 kw (H) and (V)
RCAGL – 30 meters

This site is 281.4 km from the US/Mexico Border.

This application protects all licensed facilities, construction permits, applications, and allotments.

Applicant will construct a short tower, 30 meters tall, for the antenna that will be used at the proposed location.

Exhibit 1 – Proposed Channel 281 KZSM – LP Spacing Study

This application is full spaced to co-channel 281 KOWO – LP Wimberley, Texas. Distance between KOWO – LP (CP) LMS file number 0000218606 and this proposal is 24.1 km.

Exhibit 2 – KZSM – LP licensed and KZSM – LP proposed 60 db overlap map

Exhibit 3 – Full Spacing contour map KOWO – LP CP and proposed KZSM – LP

Exhibit 4 – Aerial of Proposed Site

Exhibit 5 – FCC Graph distance to contour KZSM – LP at licensed location

Exhibit 6 – FCC TOWAIR determination. Registration of this tower not required.

Environmental and RFE.

The calculated worst case RFE is:

ERP = 200 watts
R = 28 meters

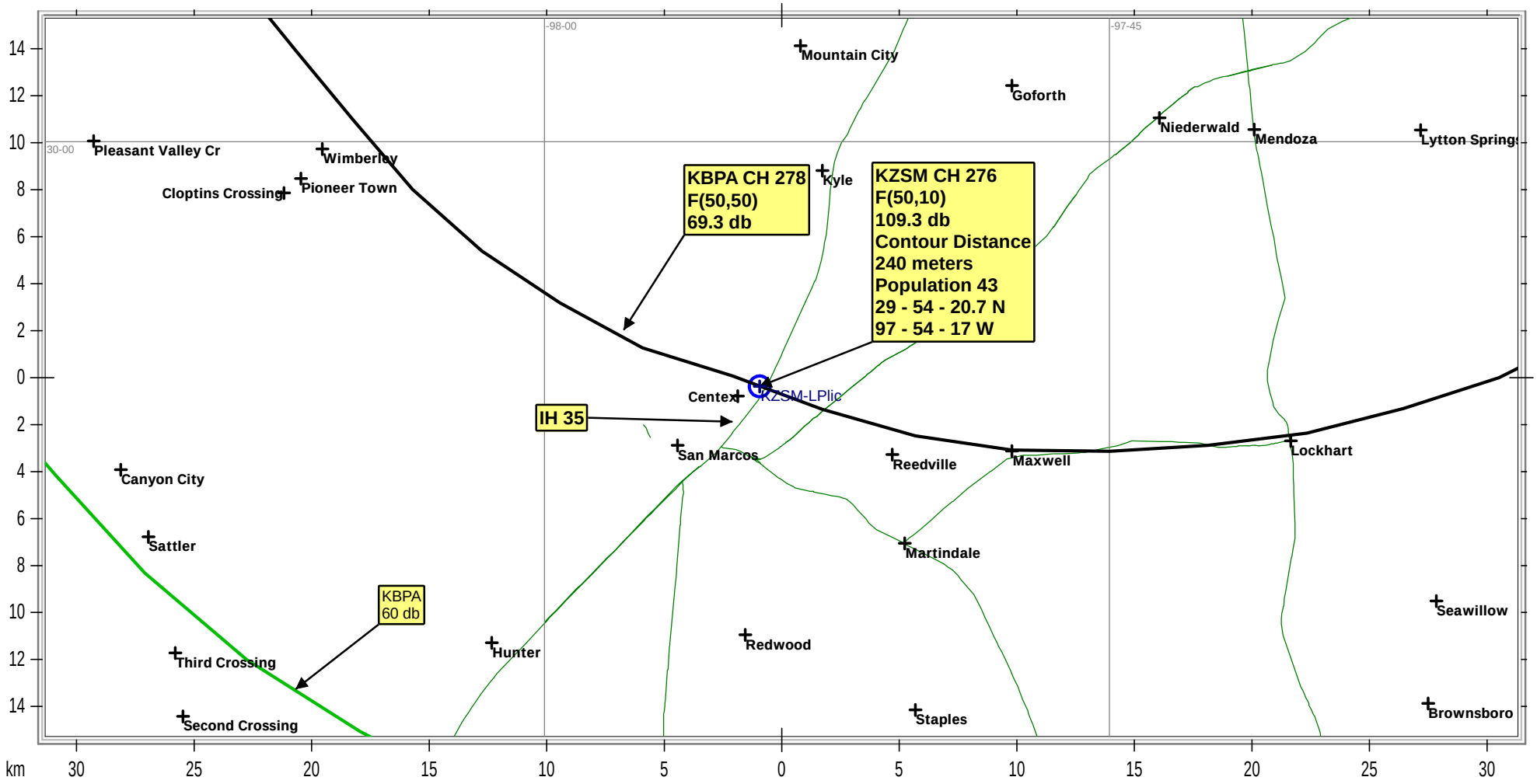
It is sometimes convenient to use units of microwatts per centimeter squared ($\mu W/cm^2$)
instead of mW/cm^2 in describing power density. The following equation can be derived if power density, S, is to be expressed in units of $\mu W/cm^2$:

$$S = \frac{33.4\ ERP}{R^2}$$

where: S = power density in μW/cm 2
ERP = power in watts
R = distance in meter

S=8.5 $\mu W/cm^2$, which is 4.3% of the maximum allowable uncontrolled 200 $\mu W/cm^2$ public exposure.

Applicant will construct a 6 foot high fence with a locked gate around the base of the tower. Appropriate signage will be posted at the site. Whenever there are personal working at the site or on the tower, applicant will reduce ERP or cease transmission.



US CENSUS 2020 POPULATION

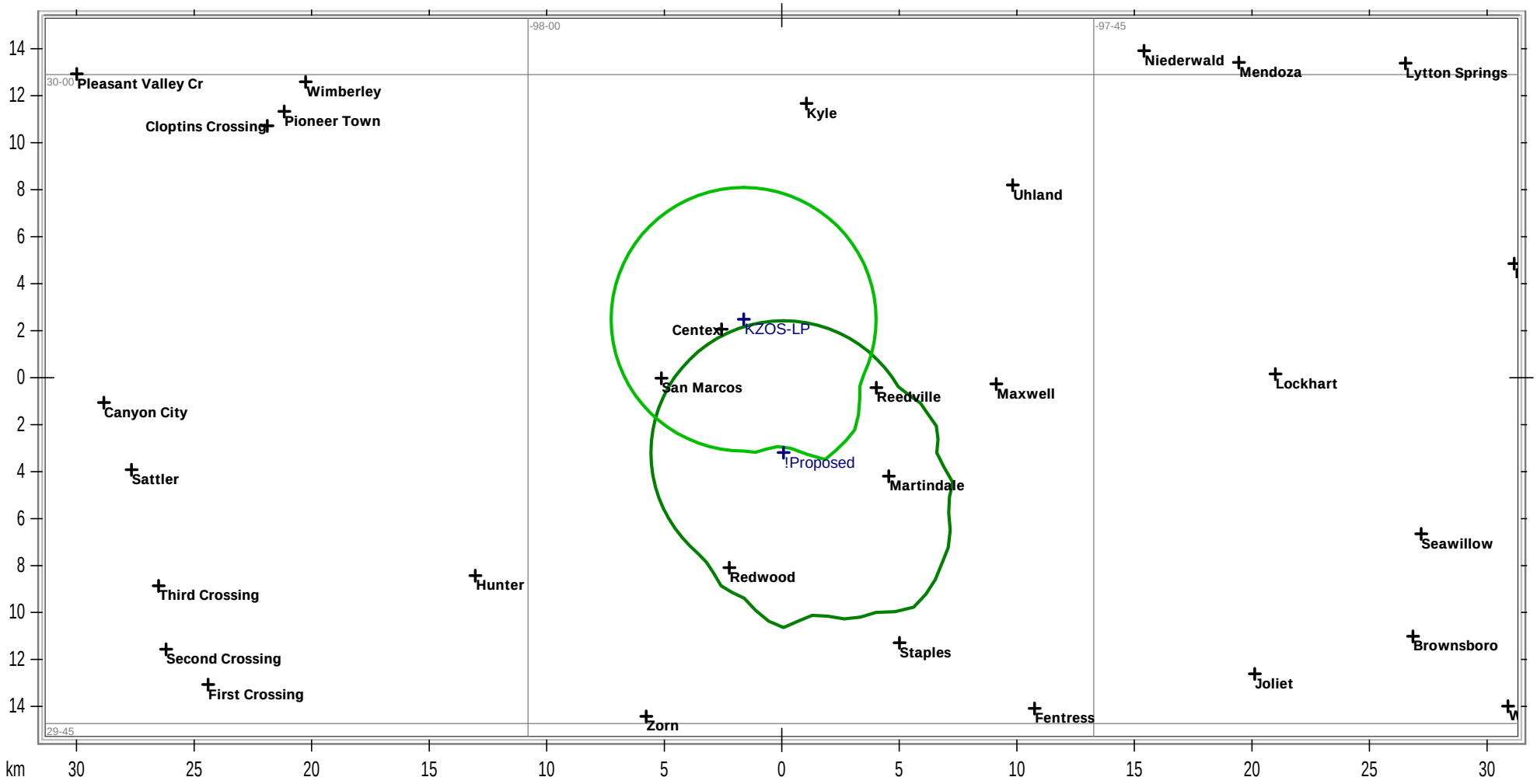
State Borders Highways Lat/Lon Grid

EXHIBIT 1
73.807 SPACING STUDY

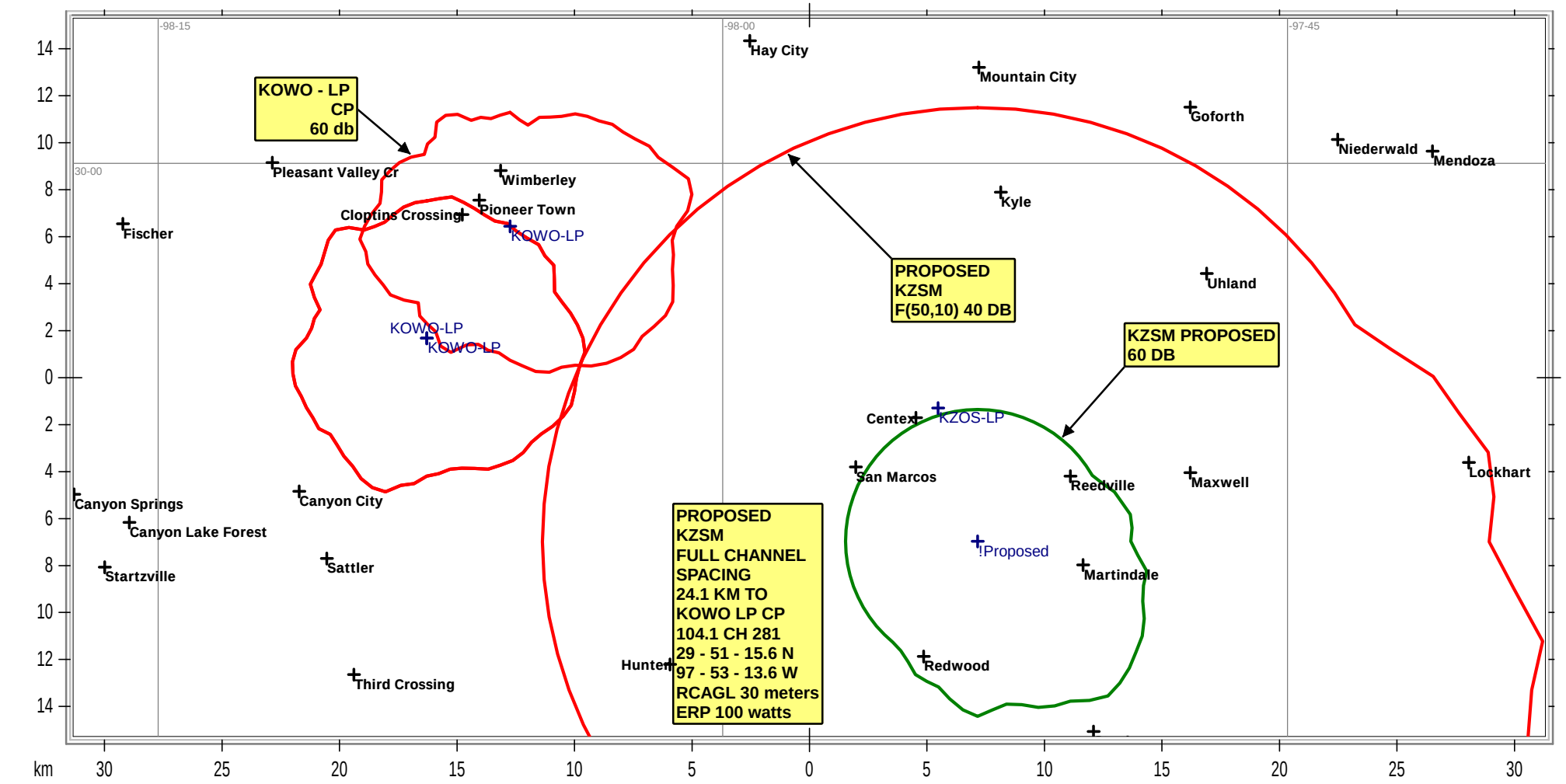
KZSM – LP
CHANNEL 281 – 104.1

29 – 51 – 15.6 N
97 – 53 – 13.6 W

Callsign	State	City	Freq	Channel	ERP_w	Class	Status	Distance_km	Sep	Clr
KOWO-LP	TX	WIMBERLEY	104.1	281	18	LP100	CP MOD	24.1	24	0.1
KOWO-LP	TX	WIMBERLEY	104.1	281	10	LP100	APP	25.1	24	1.1
KLQB	TX	TAYLOR	104.3	282	48000	C2	LIC	81.66	80	1.7
KOWO-LP	TX	WIMBERLEY	104.1	281	10	LP100	LIC	25.1	24	1.1
KBQQ	TX	SMILEY	103.9	280	25000	C3	LIC	72.66	67	5.7
K280GC	TX	NEW BRAUNFELS	103.9	280	167	D	LIC	26.38	21	5.4
KSAH-FM	TX	PEARSALL	104.1	281	20000	C1	CP	128.29	111	17.3
K280GN	TX	AUSTIN	103.9	280	250	D	LIC	52.23	28	24.2



State Borders Lat/Lon Grid



State Borders Lat/Lon Grid

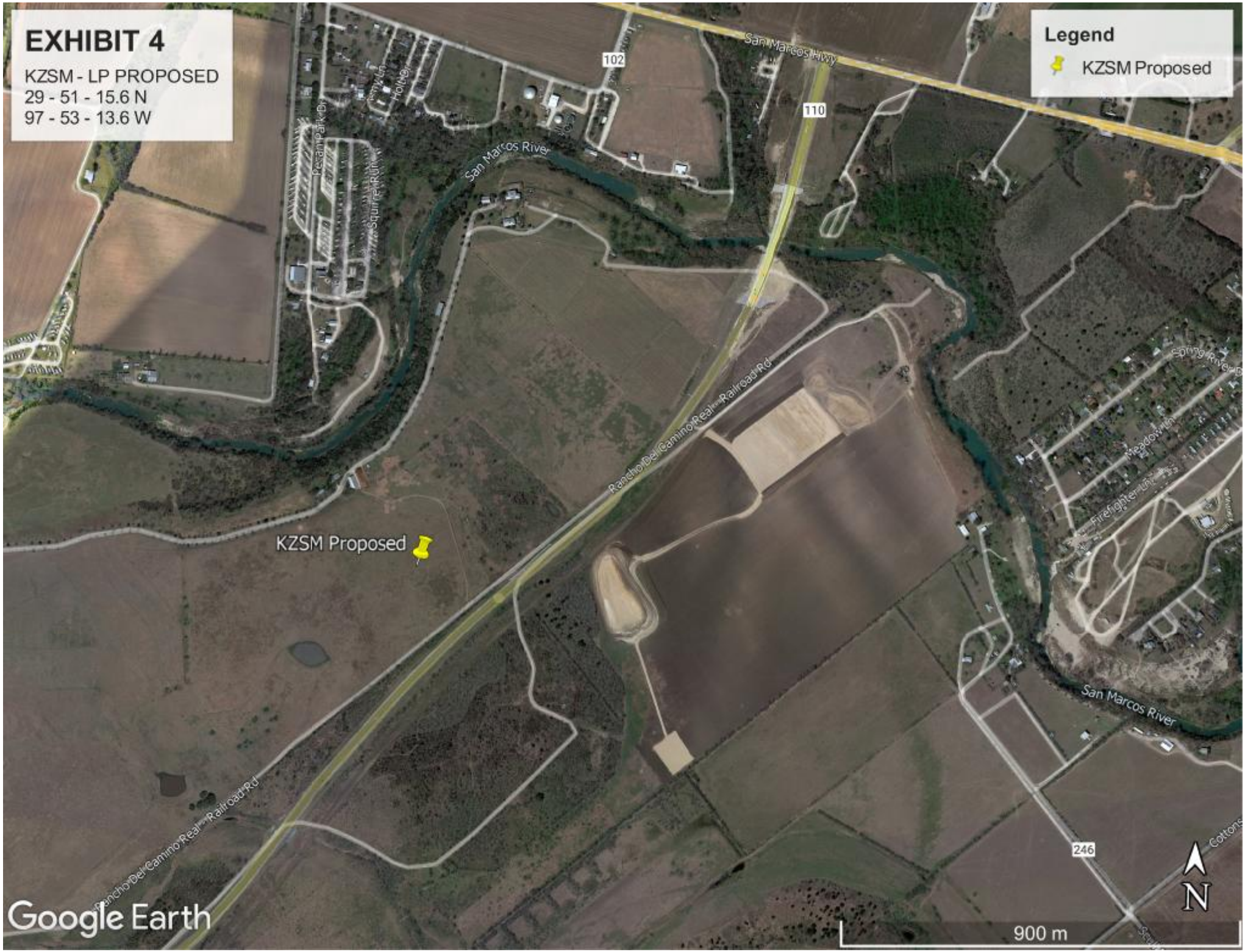


EXHIBIT 4
KZSM - LP PROPOSED
29 - 51 - 15.6 N
97 - 53 - 13.6 W
Legend
KZSM Proposed
San Marcos Hwy
102
110
San Marcos River
Rancho Del Camino Real
Railroad Rd
KZSM Proposed
Meadow Ln
Firefighter Ln
Spring River Dr
246
Google Earth
900 m
N

EXHIBIT 5

Select Contour Type:
- F(50,50) Service Contour -- FM and NTSC (analog) TV
- F(50,10) Interfering Contour
- F(50,90) Digital TV Service Contour

Select Channel Range:
(not TV Virtual Channel)
- FM Radio or TV Transmit Channels 2-6
- TV Transmit Channels 7-13
- TV Transmit Channels 14-69

Find This:
- Field Strength, given a Distance (in km)
- Distance, Given a Field Strength (in dBu)
- FM ERP, given Distance and Field Strength [F(50,50) Service Contour]

.1
ERP (kW)

Distance (km)

30
HAAT (meters)

109.3
Field (dBu)

Find Result Clear Form

Results:

Calculated Distance = **0.240 km**

Free Space equation used to compute distance.

TOWAIR Determination Results

A routine check of the coordinates, heights, and structure type you provided indicates that this structure does not require registration.

*** NOTICE ***

TOWAIR's findings are not definitive or binding, and we cannot guarantee that the data in TOWAIR are fully current and accurate. In some instances, TOWAIR may yield results that differ from application of the criteria set out in 47 C.F.R. Section 17.7 and 14 C.F.R. Section 77.13. A positive finding by TOWAIR recommending notification should be given considerable weight. On the other hand, a finding by TOWAIR recommending either for or against notification is not conclusive. It is the responsibility of each ASR participant to exercise due diligence to determine if it must coordinate its structure with the FAA. TOWAIR is only one tool designed to assist ASR participants in exercising this due diligence, and further investigation may be necessary to determine if FAA coordination is appropriate.

DETERMINATION Results

PASS SLOPE(100:1)NO FAA REQ - 4282.0 Meters (14048.3 Feet)away & below slope by 5.0 Meters (16.3999 Feet)

Type	C/R	Latitude	Longitude	Name	Address	Lowest Elevation (m)	Runway Length (m)
AIRP	R	29-53-31.00N	097-52-37.00W	SAN MARCOS RGNL	CALDWELL AUSTIN, TX	174.8	1929.4000000000001

PASS SLOPE(100:1)NO FAA REQ - 4595.0 Meters (15075.2 Feet)away & below slope by 8.0 Meters (26.25 Feet)

Type	C/R	Latitude	Longitude	Name	Address	Lowest Elevation (m)	Runway Length (m)
AIRP	R	29-53-11.00N	097-51-25.00W	SAN MARCOS RGNL	CALDWELL AUSTIN, TX	174.8	1929.4000000000001

PASS SLOPE(100:1)NO FAA REQ - 4650.0 Meters (15255.7 Feet)away & below slope by 9.0 Meters (29.5300 Feet)

Type	C/R	Latitude	Longitude	Name	Address	Lowest Elevation (m)	Runway Length (m)
AIRP	R	29-53-14.00N	097-51-26.00W	SAN MARCOS RGNL	CALDWELL AUSTIN, TX	174.8	1929.4000000000001

Your Specifications

NAD83 Coordinates

Latitude	29-51-15.6 north
Longitude	097-53-13.6 west

Measurements (Meters)

Overall Structure Height (AGL)	30
Support Structure Height (AGL)	0
Site Elevation (AMSL)	182

Structure Type

GTOWER - Guyed Structure Used for Communication Purposes

Tower Construction Notifications
Notify Tribes and Historic Preservation Officers of your plans to build a tower.

CLOSE WINDOW