

ENGINEERING EXHIBIT
IN SUPPORT OF AN
AMENDMENT TO AN
APPLICATION FOR CONSTRUCTION PERMIT
FCC FILE NO. BP-20220204AAK
KLBJ – AUSTIN, TEXAS
590 kHz – 5.0 kW DAY/0.35 kW NIGHT – ND-2
FACILITY ID: 65791

Applicant: Waterloo Media Group, L.P.

October, 2022

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FCC Form 301 - Section III

STATEMENT OF CYNTHIA M. JACOBSON, P.E.

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ENGINEERING STATEMENT
IN SUPPORT OF AN AMENDMENT TO AN
APPLICATION FOR CONSTRUCTION PERMIT
FCC FILE NO. BP-20220204AAK
KLBJ(AM) – AUSTIN, TEXAS
590 kHz – 5.0 kW DAY/0.35 kW NIGHT – ND-2
FACILITY ID: 65791

Applicant: Waterloo Media Group, L.P.

I am a Radio Engineer, an employee in the firm of Carl T. Jones Corporation, with offices located in Springfield, Virginia.

My education and experience are a matter of record with the Federal Communications Commission. I am a Registered Professional Engineer in the Commonwealth of Virginia, Registration No. 0402027914.

GENERAL

This office has been authorized by Waterloo Media Group, L.P. ("Waterloo"), licensee of Standard Broadcast Station KLBJ, Austin, Texas, to prepare this statement, FCC Form 301 (Section III), and the attached engineering figures in support of an Amendment to an Application for Construction Permit, FCC File No. BP-20220204AAK, to relocate the KLBJ antenna system approximately 17.4 kilometers northwest to the licensed transmitter site of AM station KVET. KLBJ presently operates on 590 kHz with

a power of 5.0 kilowatts during daytime hours and 1.0 kW during nighttime hours. The station operates with a nondirectional antenna during the day and with a four tower directional array at night. The amendment proposes to collocate the KLBJ transmission facilities at the transmitter site of AM station KVET, Austin, Texas. KVET is licensed to Austin, Texas and operates on a frequency of 1300 kHz, with a power of 5.0 kW during the day and 1.0 kW during the night. The KVET antenna array consists of a total of four towers. During daytime hours KVET operates with three towers. The nighttime operation uses two towers. One tower is in common to both arrays. KLBJ proposes to construct a single new tower on the southwest portion of the property and operate nondirectionally with a daytime power of 5.0 kW and a nighttime power of 0.35 kW, (ND-2).¹ KLBJ will not share the use of any of the KVET towers for the proposed operation.

SITE AND SURROUNDING TERRAIN

The proposed NAD-27 coordinates for the new KLBJ nondirectional tower are:

North Latitude: 30 – 22 – 31
West Longitude: 97 – 43 – 01

¹ This amendment specifically reduces the overall proposed tower height to 93.2 meters above ground level as requested by the FAA. A slight power reduction at night was also warranted to meet nighttime protections.

Figure 1 as amended depicts an aerial view of the location of the proposed tower at the KVET site.

GROUND SYSTEM

The proposed ground system will consist of 120 – 100.6 meter (0.198 wavelength at the frequency of 590 kHz), buried copper radials except where shortened due to property boundaries. Where possible, ground radials will be extended beyond 100.6 meters, resulting in a proposed ground system that will be equivalent to a full 100.6 meter long radial ground system, see Figure 2 as amended. In addition, a square copper ground screen approximately 14.6 meters by 14.6 meters will be installed at the base of the tower.

The 100.6 meter long ground radials are 0.198 wavelengths long at the frequency of 590 kHz. A 16.1 mV/m correction has been taken into account for the shortened ground system. Thus, a theoretical efficiency of 274.1 mV/m/kW at one kilometer, ($290.2 - 16.1 = 274.1$ mV/m/kW at one kilometer), defines the efficiency of the proposed KLBJ nondirectional antenna system.

PROPOSED KLBJ ANTENNA SYSTEM

The proposed KLBJ antenna system will be a guyed, series excited vertical radiator. The electrical height will be 66.1 degrees tall at KLBJ's frequency of 590 kHz.

This corresponds to a radiator height of 93.3 meters. Figure 3, as amended, is the vertical antenna sketch of the proposed structure.

FAA NOTIFICATION AND TOWER REGISTRATION

The overall height of the proposed structure will be 95.1 meters AGL, (319.7 meters AMSL). A Determination of No Hazard was issued by the FAA, Aeronautical Study No. 2022-ASW-12106-OE on June 27, 2022. Subsequently, tower registration was completed. The ASR number for the proposed structure is 1323095.

BLANKETING AND STATION INTERACTION

The KLBJ proposed daytime and nighttime 1000 mV/m contours are shown on the map in the amended Figure 4. The population within the predicted daytime 1000 mV/m contour is greater than 300 persons. The population within the predicted nighttime 1000 mV/m contours is less than 300 persons. The population within the predicted daytime 1000 mV/m contour is less than 1.0 percent of the population within the predicted daytime 25 mV/m contour. The KLBJ proposed daytime and nighttime 25.0 mV/m contours are shown on the map in the amended Figure 5. See the table below.

CONTOUR OF INTEREST	NUMBER OF PERSONS	% OF PERSONS WITHIN THE 25 MV/M CONTOUR
Proposed Day 1000 mV/m	4,091	0.33
Proposed Night 1000 mV/m	0	N/A
Proposed Day 25 mV/m	1,225,099	N/A
Proposed Night 25 mV/m	227,642	N/A

In response to all complaints of blanketing interference, KLBJ will undertake steps to mitigate the interference in accordance with the requirements of Section 73.88 of the FCC's Rules and Regulations.

The proposed KLBJ antenna site is located greater than 3.2 kilometers from any other AM station with the exception of KVET. There are fourteen full-service FM stations and several low power, translator and/or FM aux stations located within 10 kilometers of the proposed site. There are five full service TV stations and five low power/translator stations located within 10 kilometers of the proposed site. It is expected that no detrimental interaction will occur with any other station as a result of the grant of the instant application. Filter and detuning circuits will be installed to minimize any interaction with nearby station KVET.

COVERAGE CONTOURS

The present and proposed daytime service contours are shown on the maps in the amended Figure 6 and Figure 7. The proposed daytime 5.0 mV/m contour will cover

100% of the population and 100% of the area of the city of license, Austin, Texas as shown on Figure 6 as amended. The present and proposed daytime 2.0 mV/m contours are shown on the map in Figure 7 as amended. The present and proposed daytime 0.5 mV/m contours are shown on the map in Figure 8 as amended.

The present and proposed nighttime service contours are shown on the map of amended Figure 10. The present nighttime interference-free (“NIF”) contour is the 8.1 mV/m contour. The proposed NIF contour is the 8.0 mV/m contour. The proposed NIF mV/m nighttime contour will encompass 70.7% of the population and 66.4% of the area of the city of license. Because KLBJ is an existing, licensed AM station, coverage of the city of license is not a requirement during nighttime hours for any proposed change to the nighttime facilities.

Section 73.24(i) of the FCC Rules is fully satisfied for both the proposed daytime and nighttime operations.

DAYTIME ALLOCATION STUDY

Eight stations were considered in detail regarding the daytime allocation. These stations are:

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XE	570 kHz	Cd. Acuna, CI, MX;
XELRDA ²	580 kHz	Piedras Negra, CI, MX;
KJMJ	580 kHz	Alexandria, LA;
KRFE	580 kHz	Lubbock, TX;
CMCA	590 kHz	San Ant. Vegas, Cuba;
XEFD ¹³	590 kHz	Rio Bravo, TA, MX;
XE	590 kHz	Altares, CI, MX; and
KTBB	600 kHz	Tyler, TX.

Amended Figure 9 depicts the daytime allocation study results for the above stations as they pertain to the present and proposed KLBJ daytime operations. A further breakdown of the allocation study results by channel relationship follows along with corresponding maps depicting the pertinent contours. The distances to all groundwave contours were calculated using the equivalent distance method. Contours were calculated at 5 degree intervals using ground conductivity values shown on the FCC's M-3 soil map. Tabulations of distances to groundwave contours can be supplied upon request.

² Multiple entries. Worst case station record was studied.

³ Ibid.

CO-CHANNEL DAYTIME STUDY

As depicted on the map in amended Figure 9A, there is existing and proposed overlap of the KLBJ 0.005 mV/m interfering contour with the 0.1 mV/m protected contour of CMCA. This overlap occurs over water or within the land boundaries of the United States in which the contour of CMCA is not protected. Also, it can be seen that the present and proposed KLBJ 0.5 mV/m protected contour has overlap with the 0.025 mV/m interfering contour of CMCA. This overlap occurs within the United States and can be ignored though the proposal will result in less overlap area than the present facility.

Further as shown on the map in amended Figure 9A, there is overlap of the present and proposed KLBJ 0.025 mV/m interfering contours with the 0.5 mV/m protected contour of Mexican stations XE and XEFD1. There is also present and proposed received overlap to the KLBJ 0.5 mV/m protected contours from the 0.025 mV/m interfering contours of XE and XEFD1. Both the caused and received overlap is reduced with the KLBJ proposal. Amended Figure 9B shows the decrease in caused overlap to XE in greater detail.

FIRST ADJACENT CHANNEL DAYTIME STUDY

The contours on the map of Figure 9C, as amended, shows existing overlap between the present 0.5 mV/m interfering/protected contour of KLBJ and the 0.5 mV/m protected/interfering contour of first adjacent channel Mexican station XELRDA (580

kHz). The proposed KLBJ daytime operation will decrease the amount of existing overlap with station XELRDA.

The contours on the map of amended Figure 9C shows no overlap between the present or proposed 0.25 mV/m interfering contour of KLBJ and the 0.5 mV/m protected contour of adjacent channel station KRFE. Further, there is no overlap of the present or proposed 0.5 mV/m protected contours of KLBJ with the 0.25 mV/m interfering contour of KRFE.

The contours on the map of amended Figure 9C shows present overlap of the 0.25 mV/m interfering contour of KLBJ with the 0.5 mV/m protected contour of adjacent channel station KJMJ. The KLBJ proposal will entirely eliminate the overlap that occurs over land areas. Further, there is a small area of overlap of the present 0.5 mV/m protected contour of KLBJ with the 0.25 mV/m interfering contour of KJMJ. Once again, the KLBJ proposal will entirely eliminate any overlap received by KLBJ from KJMJ.

There exists considerable overlap between the present 0.5 mV/m protected contour of KLBJ and the 0.25 mV/m interfering contour of KTBB. In addition, there is existing overlap between the 0.25 mV/m interfering contour KLBJ and the 0.5 mV/m protected contour of KTBB. Greater detail of the overlap areas can be seen on the map in the amended Figure 9D with respect to KTBB. Based on detailed study of the various overlap areas, the proposed KLBJ daytime facility is predicted to result in an overall

reduction in both the caused and received overlap with respect to area and the populations when compared with the licensed KLBJ daytime facility as it relates to KTBB. The resulting areas and populations from that detailed study are tabulated in the table below.⁴

	PRESENT OVERLAP		PROPOSED OVERLAP	
SUBJECT STATION	RECEIVED FROM SUBJECT STATION	CAUSED TO SUBJECT STATION	RECEIVED FROM SUBJECT STATION	CAUSED TO SUBJECT STATION
KTBB Population Area	3,341,827 persons 24,785.6 sq. km	7,615,410 persons 34,299.7 sq. km	1,801,987 persons 23,626.2 sq. km	7,290,288 persons 31,907.1 sq. km

As demonstrated above, the proposal of KLBJ satisfies the criteria that the overall overlap in both population numbers and area is reduced when compared with the present overlap numbers.

SECOND ADJACENT CHANNEL DAYTIME STUDY

As demonstrated on the map of amended Figure 9E, there is no prohibited overlap of the present or proposed KLBJ 0.5 mV/m protected contour with the 15 mV/m interfering

⁴ 2020 US Census data.

contour of second adjacent channel Mexican station XE. Likewise, there is no prohibited overlap of the present or proposed KLBJ 15 mV/m interfering contours with the 0.5 mV/m protected contour of second adjacent channel Mexican station XE.

THIRD ADJACENT CHANNEL DAYTIME STUDY

There are no third adjacent channel stations within a distance that would warrant study.

NIGHTTIME INTERFERENCE STUDY

Amended Figure 11 contains tabulations of the proposed RSS calculations for co-channel and first-adjacent channel stations that may be impacted by the instant proposal. Protection of stations with a proposed margin greater than 1000 mV/m are not included in amended Figure 11. Based on the results from the nighttime interference study, it is concluded that proposed nighttime facility of KLBJ will not raise the 25% or 50% RSS limit of any domestic station or the 50% RSS limit of any foreign station. Based on the studies, the proposed KLBJ nighttime facility is compliant with all current domestic and international nighttime allocations standards.

Figure 11, as amended, also demonstrates that the 0.5 mV/m-50% skywave contour of Region 2, Class A Cuban station, CMCA, 590 kHz, Sn Ant Vegas, Cuba is fully protected by the proposed 0.025 mV/m-10% skywave contour of KLBJ when compared

to the present KLBJ facility. In most instances the overlap will occur over water and therefore the land boundary of Cuba becomes the protected contour at a 20:1 D/U ratio. In those instances where a night skywave contour is not produced by CMCA, the groundwave contour along the border of Cuba becomes the protected contour at a 20:1 D/U ratio. With margins greater than 800 mV/m, it is evident that CMCA is fully protected by the KLBJ proposal.

ENVIRONMENTAL IMPACT

The proposal described herein meets the criteria specified in Section 1.1306 of the Commission's Rules as an action which is categorically excluded from environmental processing. The proposal does not involve a site location specified under Section 1.1307(a)(1)-(7) of the Rules, nor high intensity lighting as specified under section 1.1307(a)(8).

RADIOFREQUENCY IMPACT

Effective January 1, 1986, the FCC amended its Rules to implement the National Environmental Policy Act (NEPA). This amendment established RF radiation protection guidelines to be used to determine if potentially harmful RF exposure is possible from an FCC-regulated facility. The guidelines that were adopted were those issued in 1982 by the American National Standards Institute (ANSI). The FCC has also issued OET Bulletin

No. 65 entitled, “Evaluating Compliance with FCC–Specified Guidelines for Human Exposure to Radiofrequency Radiation” to aid in the radiation exposure analysis. This bulletin, based on the ANSI standard, as well as other current literature, provides detailed information for conducting an analysis including mathematical equations that can be used to determine compliance with the Commission’s guidelines.

Though the proposed KLBJ facility will be collocated with the 1300 kHz operation of KVET, KLBJ will use a stand-alone tower that will not be shared with KVET. Thus the proposed KLBJ RFR analysis will consider solely KLBJ in determining the minimum fencing distance for the proposed tower.

DETERMINATION OF COMPLIANCE WITH RADIO FREQUENCY ENERGY EXPOSURE LIMITS

Verification of compliance with FCC specified guidelines for human exposure to RF radiation was obtained from OET Bulletin No. 65.

The proposed KLBJ facility will operate on 590 kHz with a proposed daytime power level of 5.0 kW and a proposed nighttime power level of 0.35 kW. To determine distance to compliance with the guidelines, Tables 1 and 2 of Supplement A (Edition 97-01) to OET Bulletin 65 was used. The daytime mode represents the worst-case condition, therefore the nighttime proposal will not have any impact upon the fencing requirements. A fence of no less than 3.8 meters from the base of the tower would be compliant with the radio-

frequency energy requirements of the FCC regarding the occupational/controlled and the general population/uncontrolled MPE limits.

It is submitted that the proposed KLBJ operation at the KVET site will not constitute a potential hazard to the quality of the human environment. Accordingly, the KLBJ proposal, as described herein, should be categorically excluded from RF environmental processing under Section 1.1307(b) of the Rules.

OCCUPATIONAL SAFETY

Access to the area immediately surrounding the KLBJ supporting tower base will be restricted to authorize maintenance personnel only. KLBJ ensures protection to station personnel or tower contractors working in the vicinity of the tower. Procedures will be followed during times of service or maintenance of the transmission system when necessary to avoid potentially harmful exposure to personnel. In those instances where necessary, the licensees of KLBJ and KVET will jointly develop procedures to reduce power or cease operation to ensure the safety of personnel and contractors.

CONCLUSION

This statement and Sections III of FCC Form 301 and the attached figures were prepared by me or under my direct supervision and are believed to be true and correct.

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It is submitted that the proposed facility described herein complies with the technical standards of the Rules and Regulations of the Federal Communications Commission.

DATED: October 11, 2022



Aerial Satellite View of Site

KLBJ-Austin, Texas

590 kHz - 5.0 kW Day/0.35 kW Night - ND-2

October, 2022

Legend

- KLBJ new tower

KLBJ new tower



Metric Blvd

Metric Blvd

W Rundberg Ln



AMENDED
FIGURE 2

Ground System Layout

KLBJ-Austin, Texas
590 kHz - 5.0 kW Day/0.35 kW Night - ND-2
October, 2022

Legend

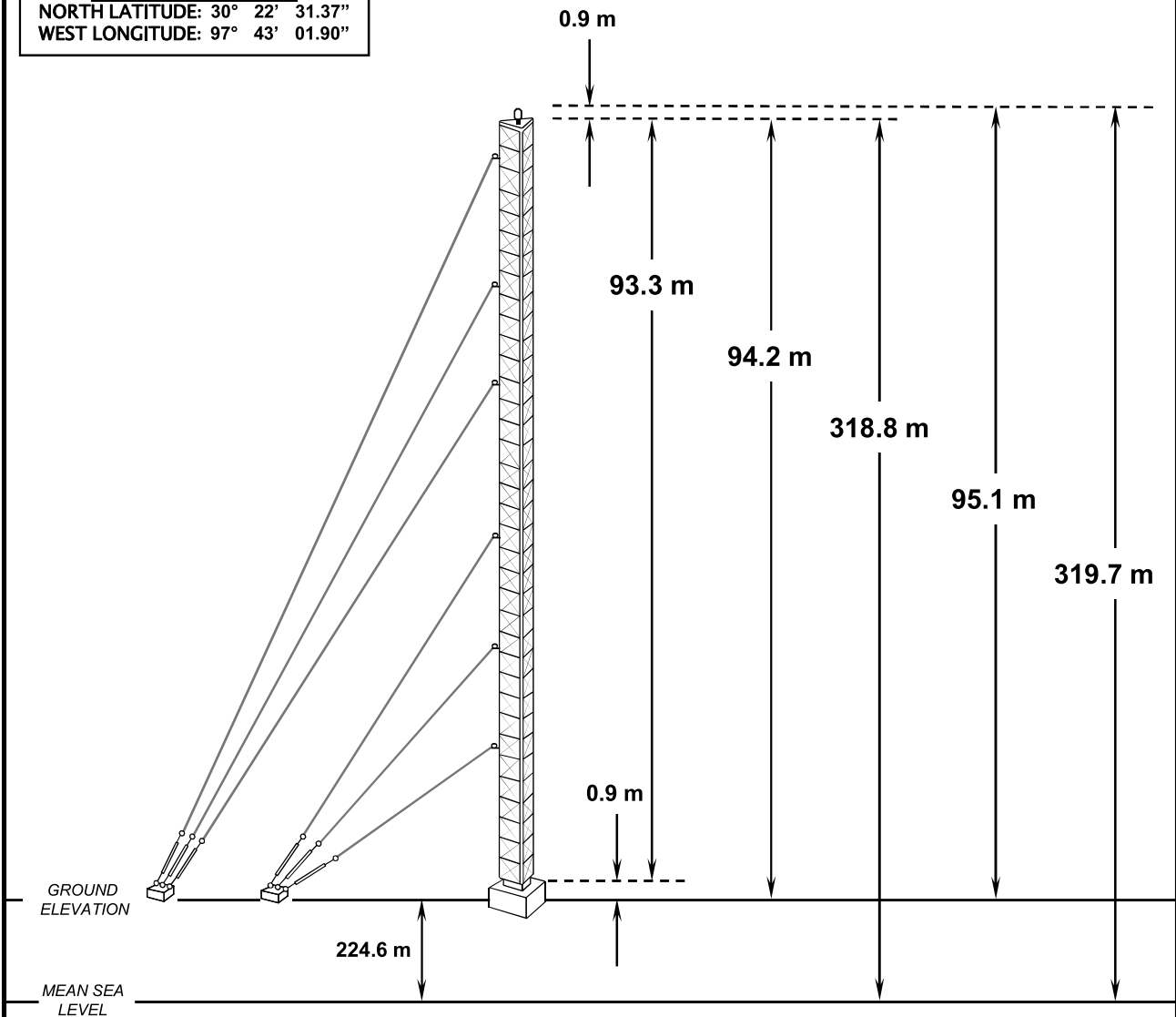
- KLBJ new tower



COORDINATES NAD-27
NORTH LATITUDE: 30° 22' 31"
WEST LONGITUDE: 97° 43' 01"

COORDINATES NAD-83
NORTH LATITUDE: 30° 22' 31.37"
WEST LONGITUDE: 97° 43' 01.90"

**AMENDED
FIGURE 3**

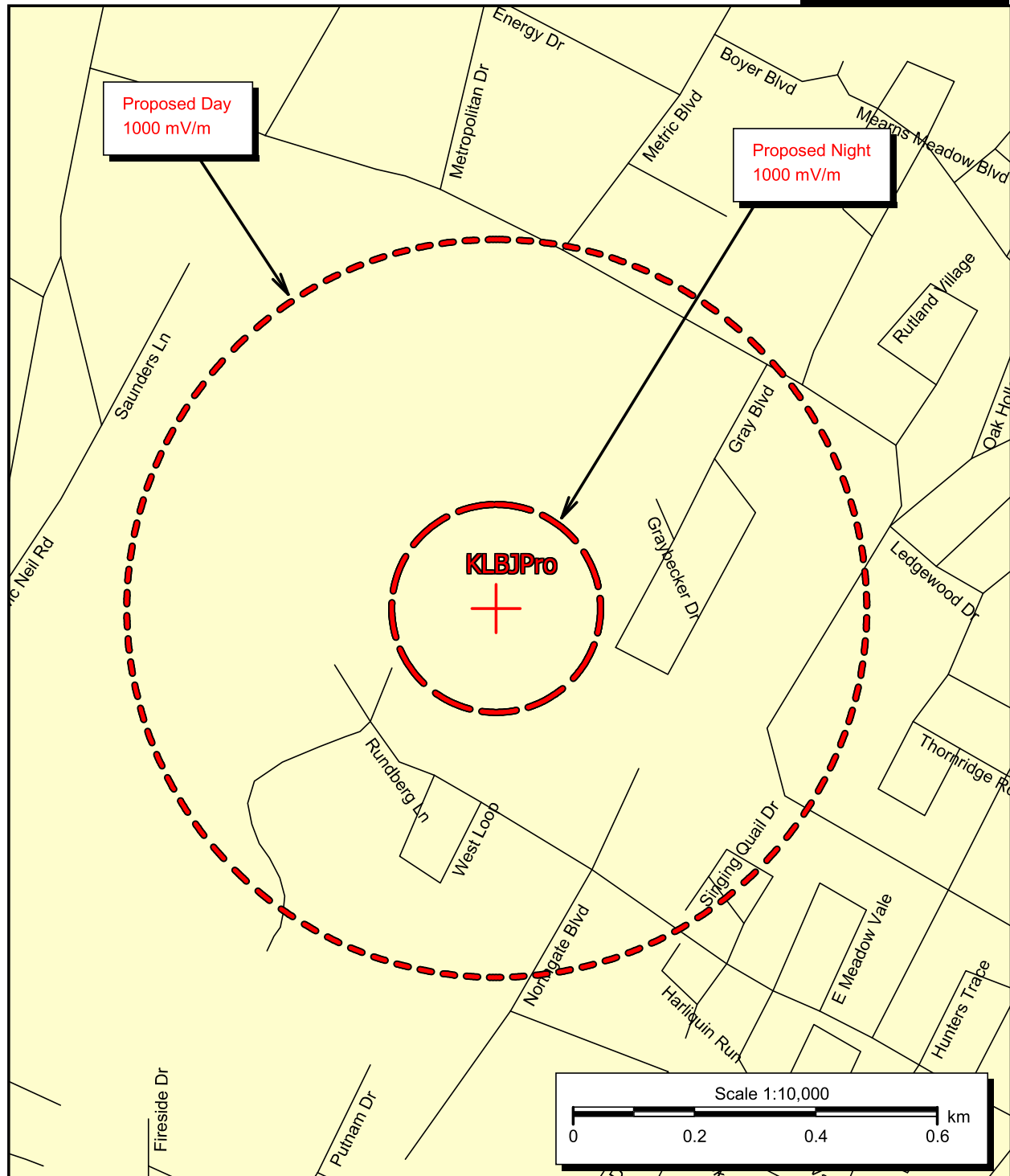


VERTICAL PLAN ANTENNA SKETCH

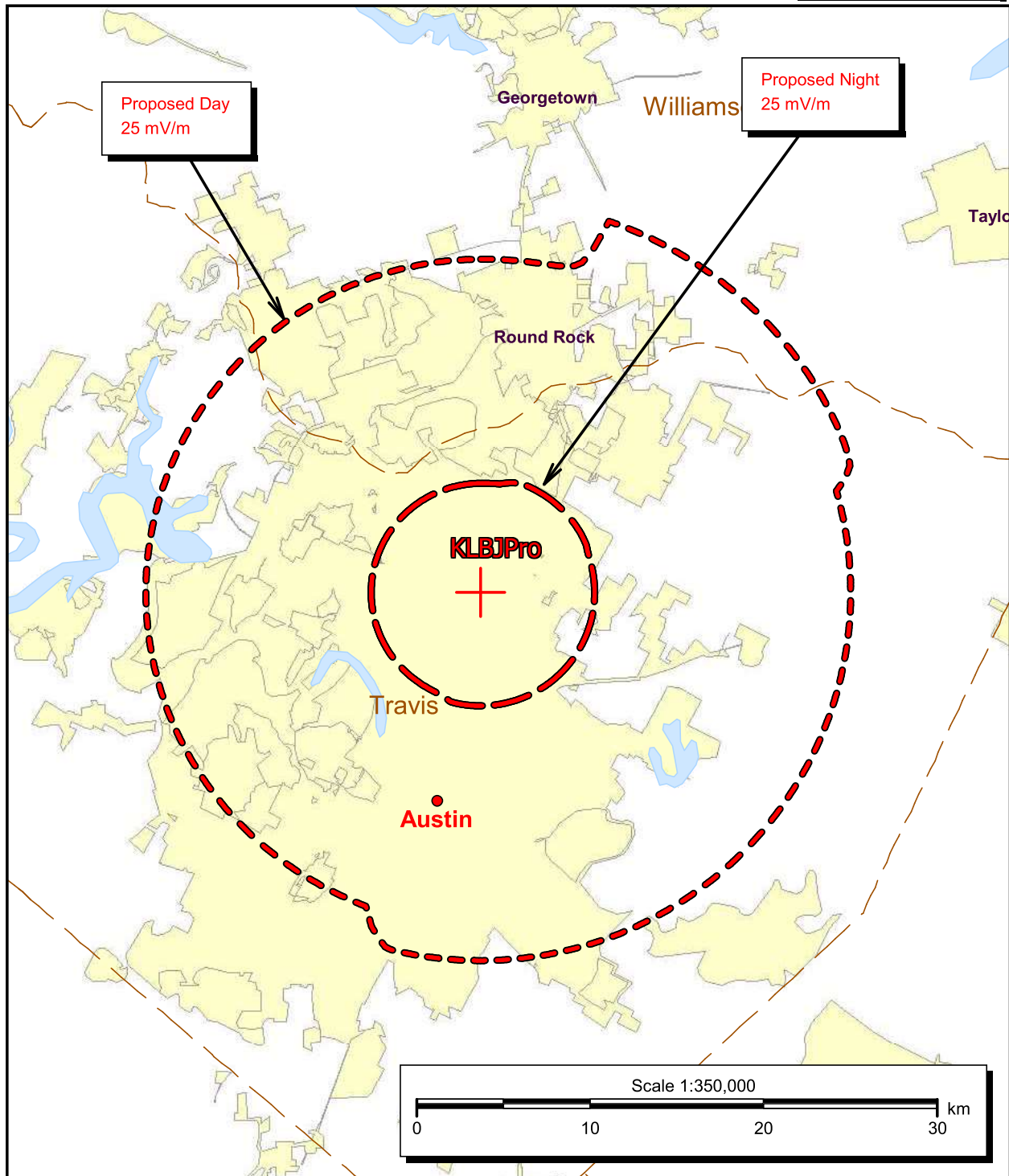
KLBJ - AUSTIN, TEXAS
590 kHz - 5.0 kW D / 0.35 kW N - ND-2
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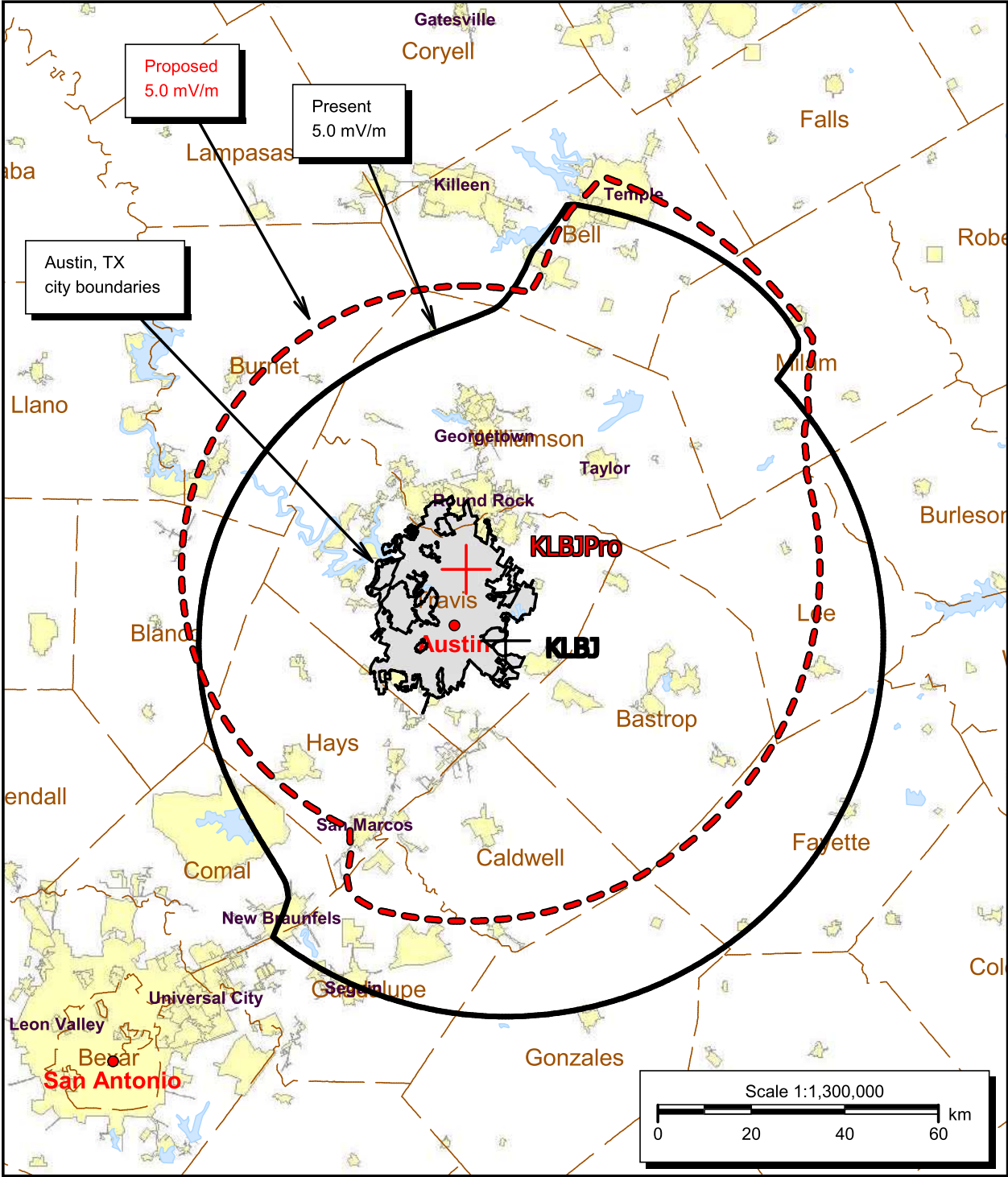
NOT DRAWN TO SCALE



PROPOSED 1000 MV/M
DAYTIME & NIGHTTIME COVERAGE CONTOURS
KLBJ - AUSTIN, TEXAS
590 KHZ - 5.0 KW DAY/0.35 KW NIGHT - ND-2
OCTOBER, 2022

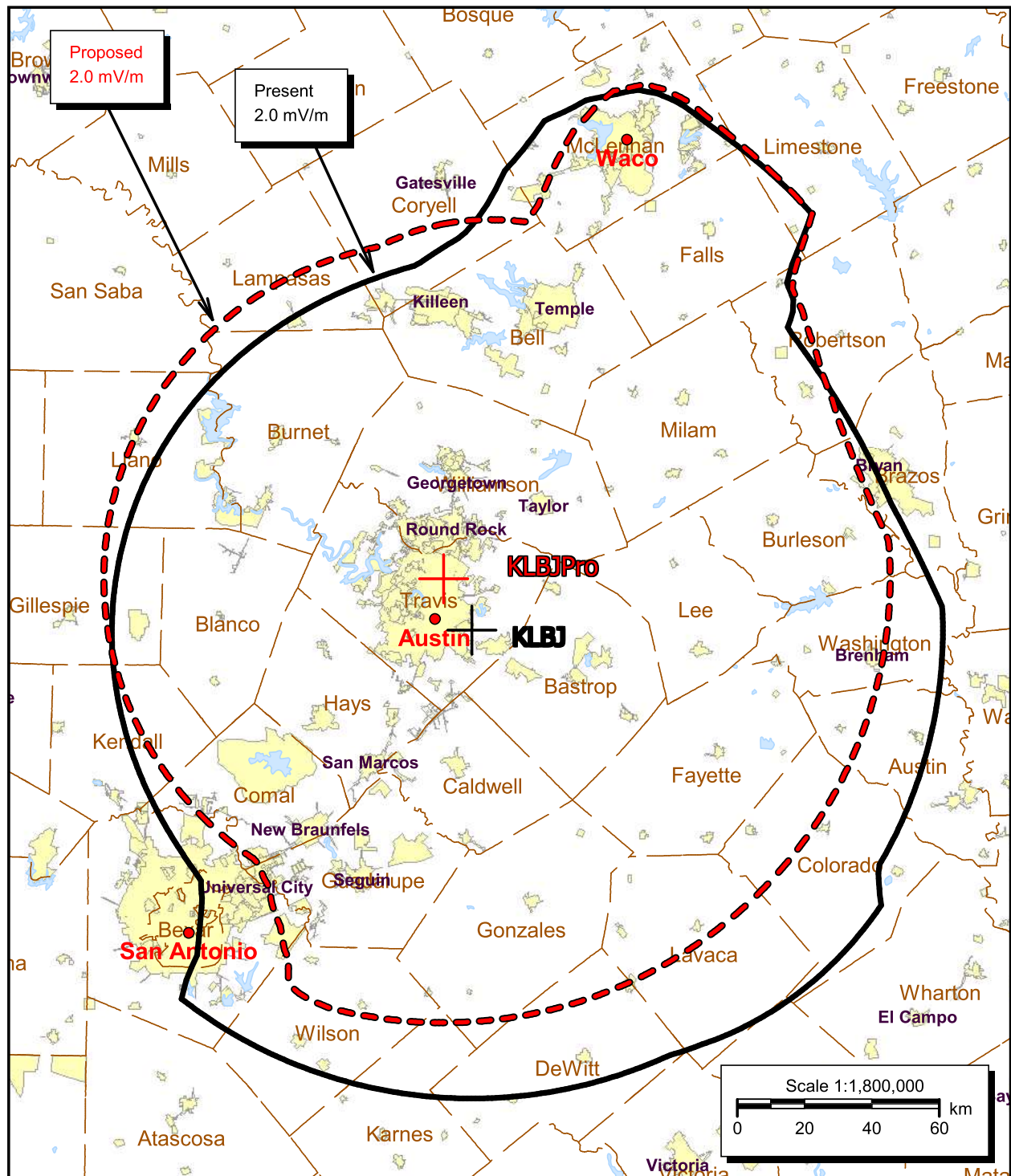


PROPOSED 25 MV/M
 DAYTIME & NIGHTTIME COVERAGE CONTOURS
 KLBJ - AUSTIN, TEXAS
 590 KHZ - 5.0 KW DAY/0.35 KW NIGHT - ND-2
 OCTOBER, 2022

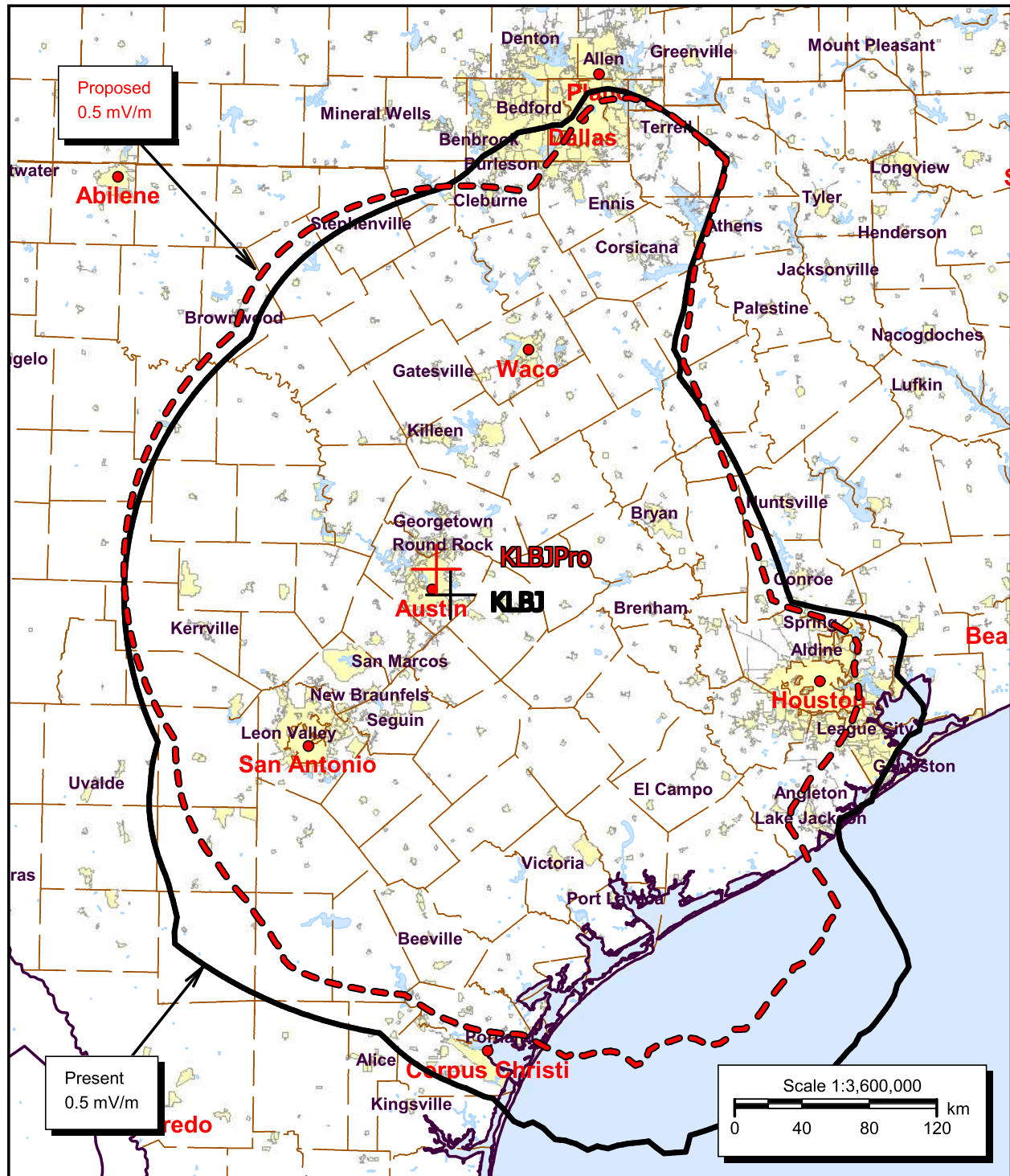


PRESENT AND PROPOSED 5.0 MV/M
DAYTIME COVERAGE CONTOURS
KLBJ - AUSTIN, TEXAS
590 KHZ - 5.0 KW DAY/0.35 KW NIGHT - ND-2
OCTOBER, 2022

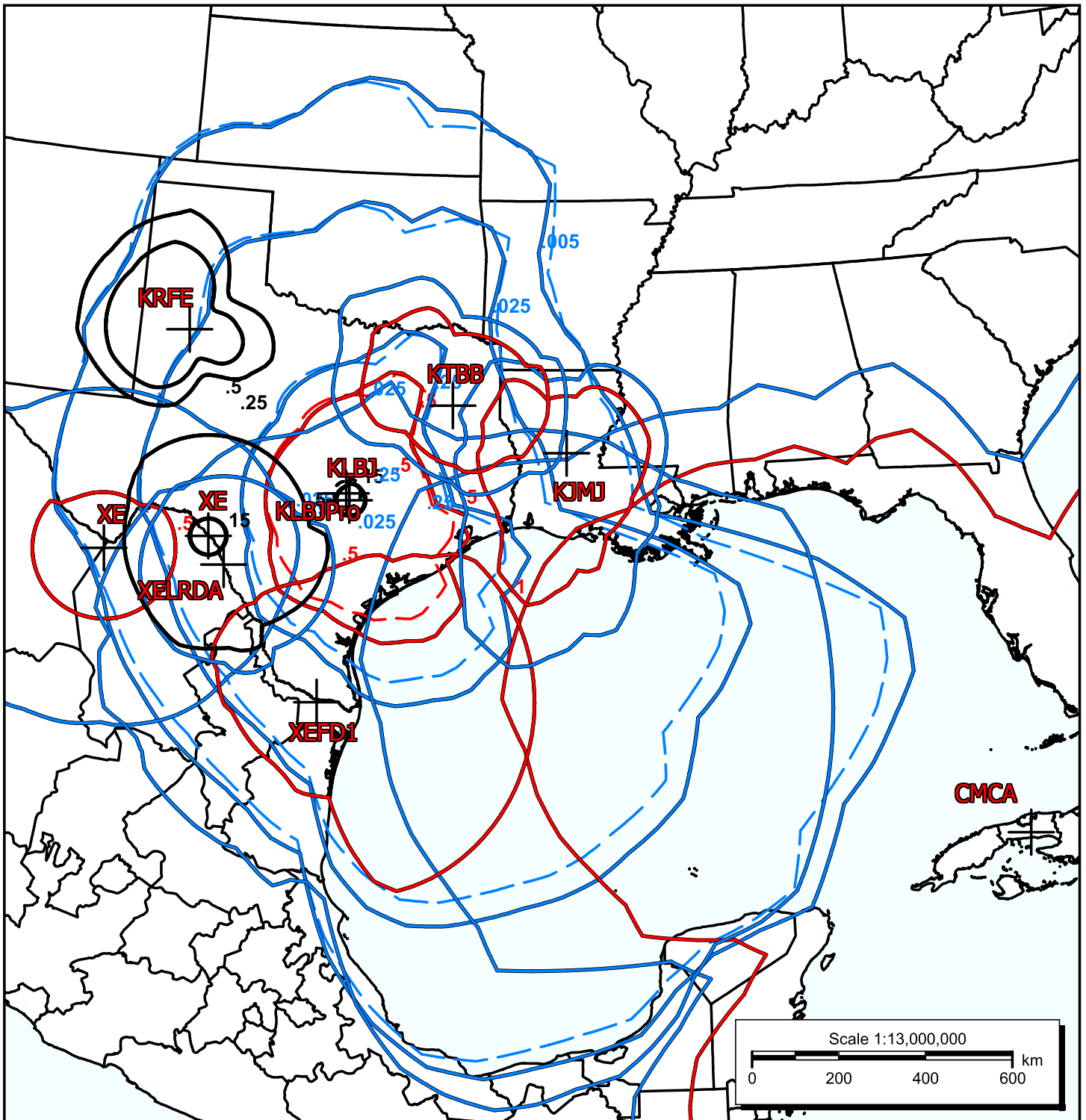




PRESENT AND PROPOSED 2.0 MV/M
DAYTIME COVERAGE CONTOURS
KLBJ - AUSTIN, TEXAS
590 KHZ - 5.0 KW DAY/0.35 KW NIGHT - ND-2
OCTOBER, 2022



PRESENT AND PROPOSED 0.5 MV/M
DAYTIME COVERAGE CONTOURS
KLBJ - AUSTIN, TEXAS
590 KHZ - 5.0 KW DAY/0.35 KW NIGHT - ND-2
OCTOBER, 2022



DAYTIME ALLOCATION STUDY
 KLBJ - AUSTIN, TEXAS
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