

Technical Exhibit
Comprehensive Engineering Statement

prepared for

Eagle Communications, Inc.

K273BF St. Joseph, Missouri

Facility ID 149137

Channel 273D 0.25 kW 461 meters AMSL

Eagle Communications, Inc. (“*Eagle*”), is the licensee of translator K273BF (file no. BLFT-20070920ABF) on Channel 273D utilizing a non-directional antenna. K273BF is a fill-in translator for standard broadcast station KYSJ(AM), 1270 kHz, St. Joseph, MO. *Eagle* has been granted a Construction Permit (“CP”) to move to a new location and utilize a directional antenna (file no. 0000114193). *Eagle* requests a minor modification to utilize a slightly lower antenna center than that specified in the CP. In particular, *Eagle* proposes to use the registered tower, ASRN 1006728, with coordinates of 39° 40’ 51.0”N, 94° 46’ 48.0”W (NAD 83). The proposed antenna will be directional, circularly polarized and mounted at 132 meters AGL. A maximum ERP of 250 Watts is being specified.

Nature of the Proposal

The antenna system for the proposed translator is a directional antenna which will be side-mounted on an existing antenna support structure. No change in structure overall height is necessary to carry out this proposal. Since no change to the structure’s overall height is proposed, no change to structure marking/lighting requirements will result. To demonstrate the proposal’s qualifications as a minor modification, **Figure 1** depicts the K273BF licensed contour, the proposed contour, the parent station KYSJ(AM) 2 mV/m contour, and the 40 km (25 mile) radius from the KYSJ(AM) transmitter site. As shown, the contour of the proposed facility overlaps the authorized facility, and remains within the greater of the 2 mV/m contour or the 40 km radius of the parent station, KYSJ(AM), thus complying with §74.1201(g). A graphical representation of the proposed antenna envelope pattern is provided in **Figure 2**. The tabulation is provided as part of the application form.

Allocation Considerations

A study of nearby FM facilities on co-channel, adjacent-channel, and intermediate frequencies was conducted to identify which stations require further study to demonstrate

Comprehensive Engineering Statement

(page 2 of 4)

compliance under §74.1204. The nearest co-channel facilities are KCHI-FM (Ch. 237A, Chillicothe, MO), KBLS(FM) (Ch. 273C1, North Fort Riley, KS) and translator K273BZ (Ch. 237D, Bonner Springs, KS). As demonstrated in **Figure 3**, no prohibited contour overlap will occur with co-channel facilities. The closest first adjacent station is KPGZ-LP (Ch. 273L1, Kearney, MO). As shown in **Figure 3**, the 54 dB μ F(50,10) contour of the proposed facility does not overlap the protected 60 dB μ F(50,50) contour of the first adjacent facility¹.

Also, as shown in **Figure 4**, the proposed facility is located inside the 60 dB μ contour of second adjacent channel KCKC(FM) (Ch. 271C0, Kansas City, MO). Protection of KCKC(FM) is achieved pursuant to §74.1204(d) by demonstrating that the proposed translator's interfering contour does not reach populated areas. The proposed facility's Channel 273 antenna will be located at the KCMO-FM 62 dB μ contour, as demonstrated in **Figure 4**. Thus, based on the -40 dB desired-to-undesired ratio specified in §74.1204(a)(3), the appropriate second-adjacent interfering signal level at this location is 102 dB μ . The proposed antenna will be configured as a 4-bay, 0.75 wavelength spaced antenna. Using the manufacturer's vertical (elevation) pattern for this antenna, calculations were performed to determine the signal strength from the proposal at two meters above ground level near the transmitter site. As shown in **Figure 5**, the peak signal strength for the proposed facility will be 101.18 dB μ at 87 meters from the tower. Thus, the proposed translator's interfering signal will not exceed the level of 102.25 dB μ that would be considered interference to surrounding population at ground level or nearby buildings. The nearest IF relationship (53 or 54 channels removed) facilities are KSRD(FM) (Ch. 220C3, St. Joseph, MO) at a distance of 22.8 km, and K219KS (Ch. 219D, Maryville, MO) at a distance of 77.4 km. There are no AM stations within 3.2 km of the proposed facility.

The proposed site is located more than 950 km from the Canadian and Mexican borders, well beyond the 320 km coordination distance required for translators specified in §74.1235(d). The nearest FCC monitoring station is 339.5 km distant at Grand Island, NE and the facility is 894.6 km from the Green Bank Quiet Zone. These distances exceed the threshold minimum distance specified in §73.1030 that would suggest consideration.

¹ Further, studies were performed on co-channel and adjacent channel stations to their 45 dB μ contour based on the FCC's D/U contour method, and have determined that no new areas of interference will be created by the instant proposal.

Comprehensive Engineering Statement

(page 3 of 4)

It is therefore believed that the proposed facility satisfies all of the pertinent Commission Rules and Policies now in effect regarding allocation matters.

Environmental Considerations

The proposed facility will operate with a circularly-polarized ERP of 250 Watts with a non-directional antenna at 132 meters AGL on the registered tower with ASRN 1006728. 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. Because no change in structure height is proposed, no change in current structure marking and lighting requirements is anticipated. Therefore, it is believed that this application may be categorically excluded from environmental processing pursuant to §1.1306 of the Commission's rules.

Human Exposure to Radiofrequency Radiation

The proposed operation was evaluated for human exposure to radiofrequency energy using the procedures outlined in the Commission's OET Bulletin No. 65 ("OET 65"). OET 65 describes a means of determining whether a proposed facility meets the radiofrequency exposure guidelines adopted in §1.1310. Under present Commission policy, a facility may be presumed to comply with the limits specified in §1.1310 if it satisfies the exposure criteria set forth in OET 65. Based upon that methodology, and as demonstrated in the following, the proposed transmitting system will comply with the cited adopted guidelines.

The general population/uncontrolled maximum permitted exposure ("MPE") limit specified in §1.1310 for the entire FM broadcast band is $200 \mu\text{W}/\text{cm}^2$. For the purpose of this study, "public access" will be considered at the base of the tower at a location two-meters above ground. Using the FCC's FM Model program and a worst-case EPA Type 1 antenna it was determined that the proposed facility would contribute a worst-case RF power density of $0.04 \mu\text{W}/\text{cm}^2$ at two meters above ground level near the antenna support structure, or 0.02 percent of the general population/uncontrolled limit.

§1.1307(b)(3) states that facilities at locations with multiple emitters are categorically excluded from responsibility for taking any corrective action in the areas where their contribution is

Comprehensive Engineering Statement

(page 4 of 4)

less than five percent of the pertinent MPE limit. Since the instant situation meets the five percent exclusion test at all ground level areas, the impact of any other facilities near this site may be considered independently from this proposal. Accordingly, it is believed that the impact of the proposed operation should not be considered to be a factor at ground level as defined under §1.1307(b).

Safety of Tower Workers and the General Public

As demonstrated herein, excessive levels of RF energy will not be caused by the proposal at publicly accessible areas at ground level near the antenna supporting structure. Consequently, members of the general public will not be exposed to RF levels in excess of the Commission's guidelines. Nevertheless, tower access will continue to be restricted and controlled through the use of a locked gate. According to information provided by the applicant, appropriate RF exposure warning signs are posted. In the event that maintenance or other workers gain access to the tower, power output of the translator will be decreased or shut off to protect workers.

With respect to worker safety, it is believed that based on the preceding analysis, excessive exposure would not occur in areas at ground level. A site exposure policy will be employed protecting maintenance workers from excessive exposure when work must be performed on the tower in areas where high RF levels may be present. Such protective measures may include, but will not be limited to, restriction of access to areas where levels in excess of the guidelines may be expected, power reduction, or the complete shutdown of facilities when work or inspections must be performed in areas where the exposure guidelines would otherwise be exceeded. On-site RF exposure measurements may also be undertaken to establish the bounds of safe working areas. The applicant will coordinate exposure procedures with all pertinent stations. Based on the preceding, it is believed that the instant proposal may be categorically excluded from environmental processing under §1.1306 of the Rules, hence preparation of an Environmental Assessment is not required.

Conclusion

It is therefore believed that the proposed facility satisfies all of the pertinent Commission Rules and Policies now in effect.

**FIGURE 1
COVERAGE CONTOUR COMPARISON**

prepared December 2020 for

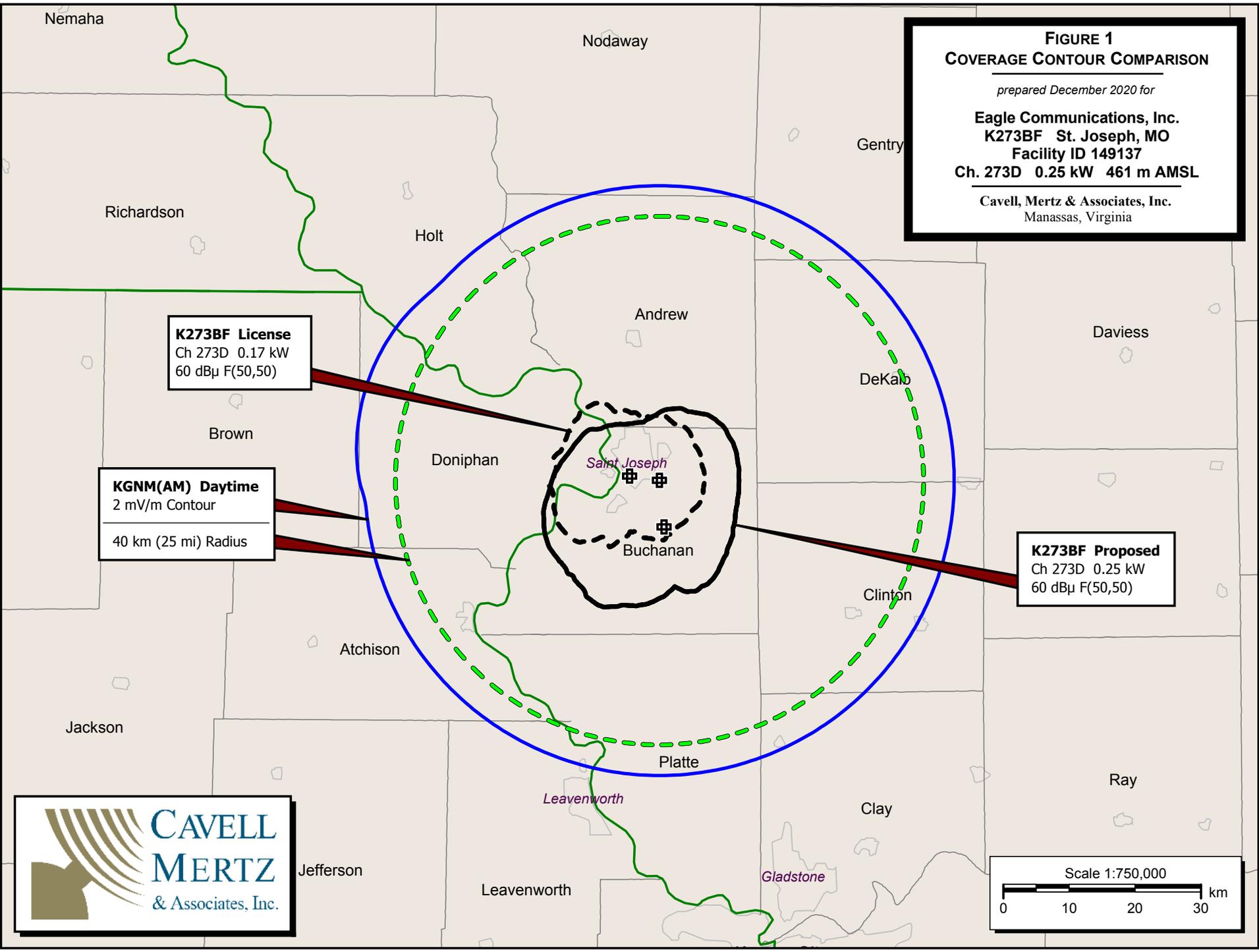
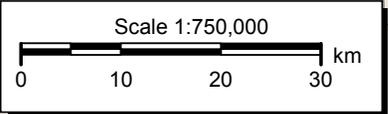
**Eagle Communications, Inc.
K273BF St. Joseph, MO
Facility ID 149137
Ch. 273D 0.25 kW 461 m AMSL**

**Cavell, Mertz & Associates, Inc.
Manassas, Virginia**

K273BF License
Ch 273D 0.17 kW
60 dBμ F(50,50)

KGNM(AM) Daytime
2 mV/m Contour
40 km (25 mi) Radius

K273BF Proposed
Ch 273D 0.25 kW
60 dBμ F(50,50)



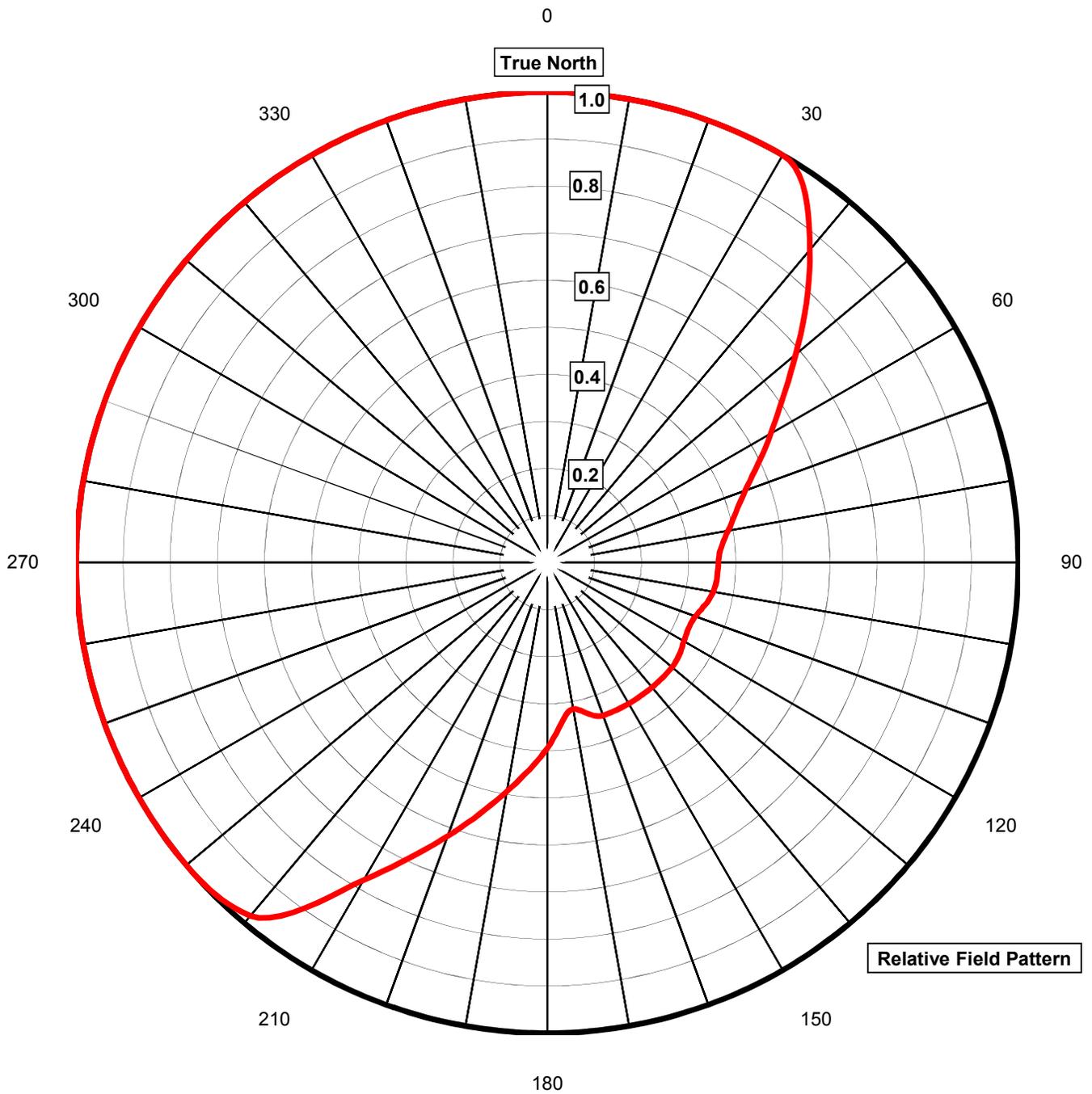


FIGURE 2
ANTENNA HORIZONTAL PLANE
RADIATION PATTERN (Envelope)

prepared December 2020 for
 Eagle Communications, Inc.
 K273BF St. Joseph, Missouri
 Facility ID 149137
 Ch. 273D 0.25 kW 461 m AMSL

Cavell, Mertz & Associates, Inc.
 Manassas, Virginia

**FIGURE 3 - CO- AND 1ST ADJACENT
CONTOUR PROTECTION**

prepared December 2020 for

**Eagle Communications, Inc.
K273BF St. Joseph, MO
Facility ID 149137
Ch. 273D 0.25 kW 461 m AMSL**

**Cavell, Mertz & Associates, Inc.
Manassas, Virginia**

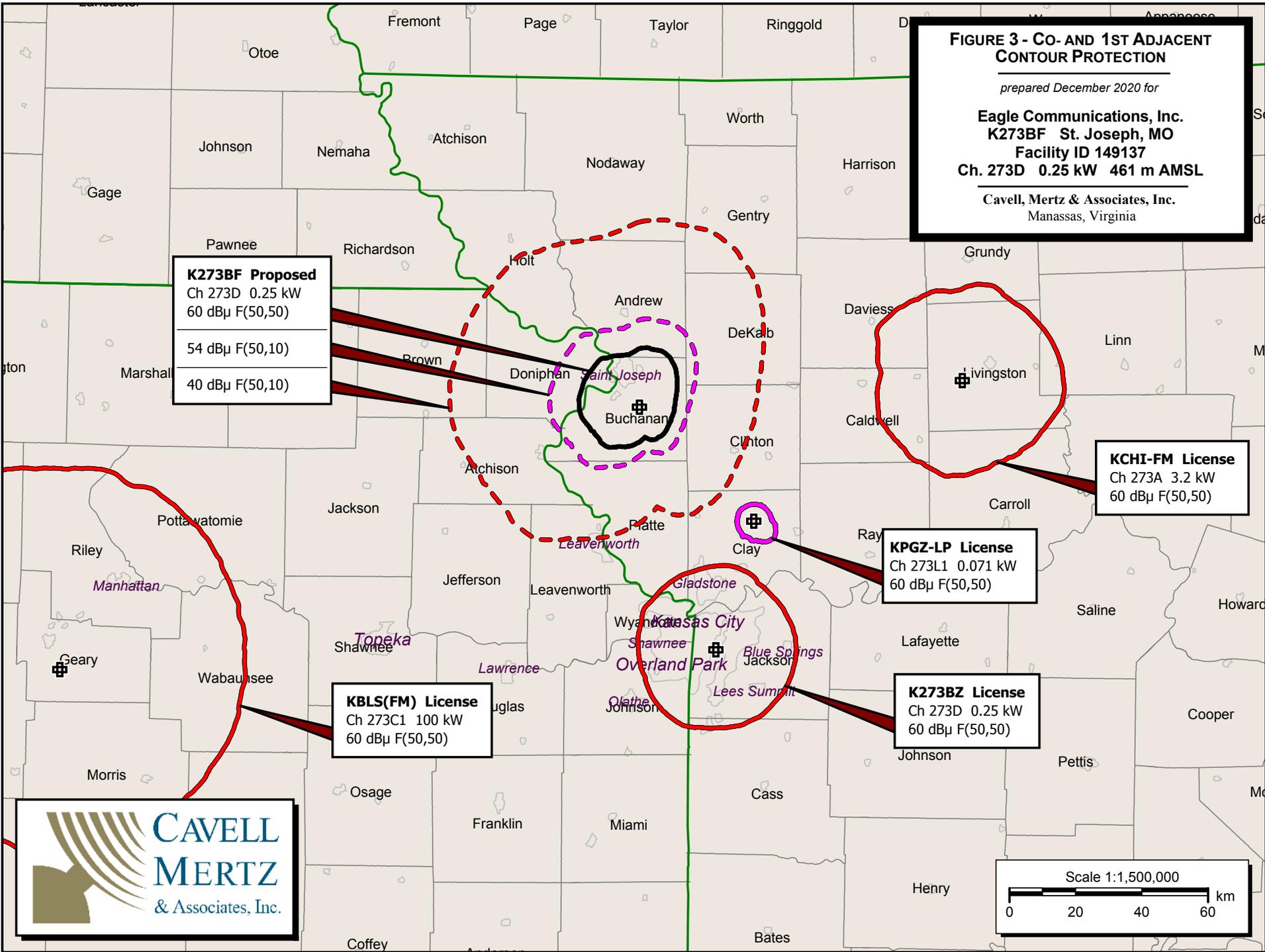
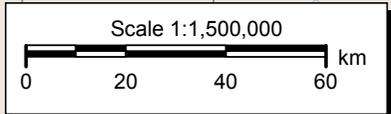
K273BF Proposed
Ch 273D 0.25 kW
60 dBμ F(50,50)
54 dBμ F(50,10)
40 dBμ F(50,10)

KCHI-FM License
Ch 273A 3.2 kW
60 dBμ F(50,50)

KPGZ-LP License
Ch 273L1 0.071 kW
60 dBμ F(50,50)

KBLS(FM) License
Ch 273C1 100 kW
60 dBμ F(50,50)

K273BZ License
Ch 273D 0.25 kW
60 dBμ F(50,50)



**FIGURE 4 - 2nd ADJACENT
CONTOUR PROTECTION**

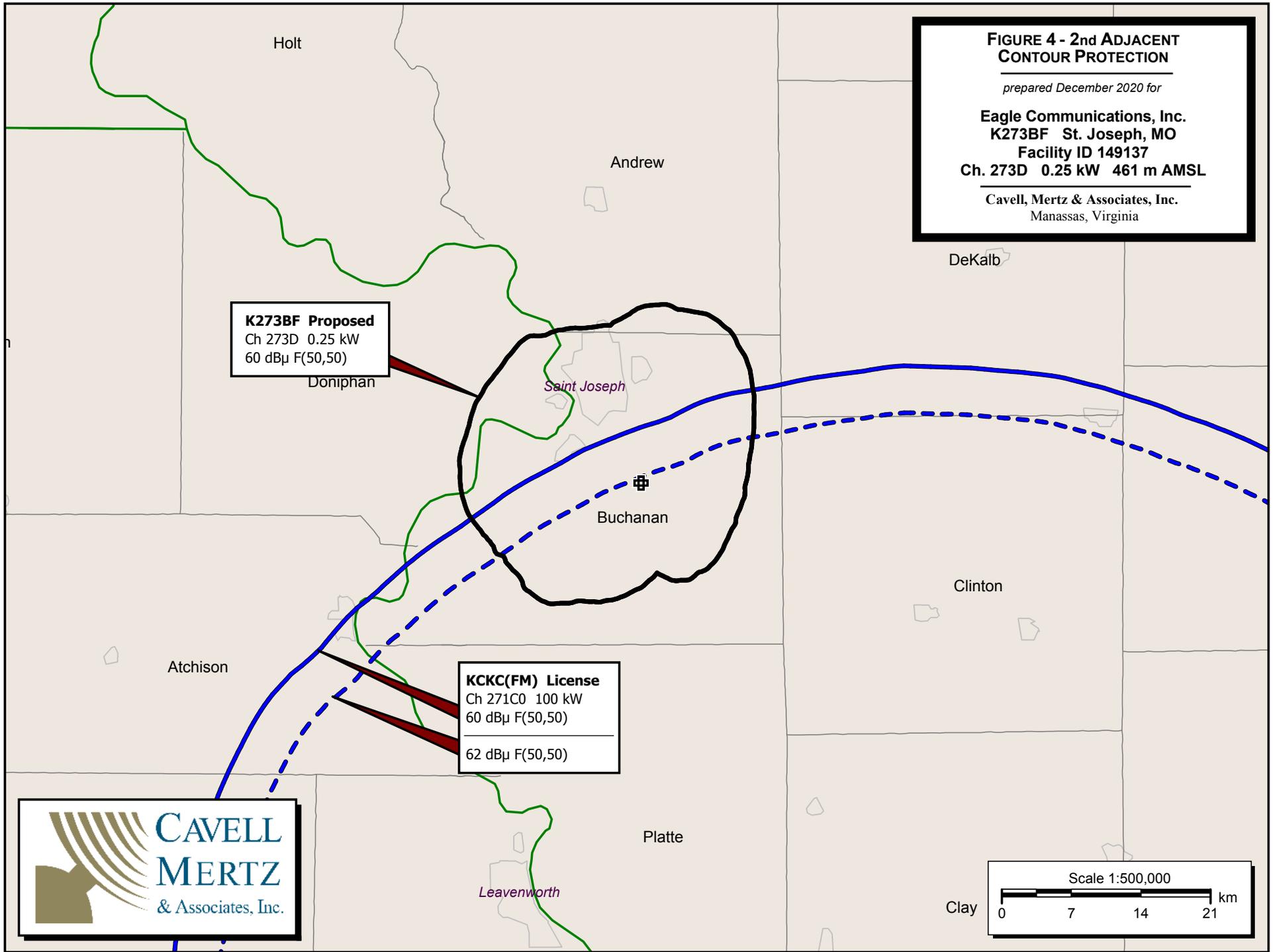
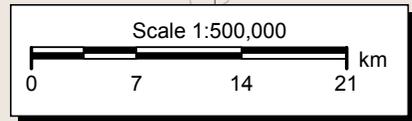
prepared December 2020 for

**Eagle Communications, Inc.
K273BF St. Joseph, MO
Facility ID 149137
Ch. 273D 0.25 kW 461 m AMSL**

**Cavell, Mertz & Associates, Inc.
Manassas, Virginia**

K273BF Proposed
Ch 273D 0.25 kW
60 dB μ F(50,50)

KCKC(FM) License
Ch 271C0 100 kW
60 dB μ F(50,50)
62 dB μ F(50,50)



**FIGURE 5 - POWER AT
2 METERS ABOVE GROUND LEVEL**

prepared December 2020 for

**Eagle Communications, Inc.
K273BF St. Joseph, MO
Facility ID 149137
Ch. 273D 0.25 kW 461 m AMSL**

**Cavell, Mertz & Associates, Inc.
Manassas, Virginia**

