

## **Comprehensive Engineering Statement**

prepared for

**WAGY, Inc.**

W298CZ Forest City, NC

Facility ID 202870

Channel 298D 0.25 kW 57 m AGL

WAGY, Inc. (“*WAGY*”), has a Construction Permit (file number BNPFT-20180423AAZ) for FM Translator W298CZ. *WAGY* has determined that the original application contains an error in the coordinates requested, and seeks to correct this error. *WAGY* proposes to correct the coordinates to 35° 21’ 16.1”N, 81° 52’ 48.4”W (NAD 27). The FAA has been notified of the coordinate correction. The proposed antenna is unchanged, which is a Shively 6812C four-bay omnidirectional antenna, mounted at 57 meters AGL at 250 Watts ERP.

### **Allocation Considerations**

No allocation issues arise as a result of the changes requested; however pertinent coverage and allocations considerations have been revisited to confirm compliance with protection rules. **Figure 1** demonstrates that the proposed translator coverage contour remains completely within the 2 mV/m WAGY(AM) coverage contour and the 25 mile (40 km) radius from WAGY(AM), thus complying with §74.1201(j).

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 compliance under §74.1204. The contour protection for pertinent co-channel and first adjacent channel stations is demonstrated in **Figure 2**. As shown, there is no prohibited overlap between the proposed facility and co-channel or first adjacent authorizations.

As shown in **Figure 2**, the proposed translator is located inside the protected contours of second adjacent WLNK(FM) and third adjacent WMIT(FM). Protection of stations WLNK(FM) and WMIT(FM) is achieved pursuant to §74.1204(d) by demonstrating that the proposed translator’s interfering contour does not reach populated areas. The WLNK(FM) contour-method field strength is at least 69.2 dBμ at the proposed translator site. 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 109.2 dBμ. No roads, dwellings, or other publicly accessible areas are within 150 meters of the transmitter site. Using the distance from the proposed antenna and the proposed antenna vertical plane (elevation) pattern, predicted field strengths were calculated and plotted for two meters above ground level in **Figure 3**. As shown,

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the field strength of 109 dB $\mu$  is not exceeded in populated areas beyond 100 meters away from the tower. Thus, considering the antenna height and elevation pattern, the proposed translator signal does not reach the level of 109.2 dB $\mu$  beyond the transmitter site that would be considered interference to surrounding population.

Similarly for WMIT(FM), the signal strength is at least 76.9 dB $\mu$  at the proposed W298CZ transmitter site. 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 116.9 dB $\mu$ . As demonstrated above, the proposed facility's signal strength will not reach the 116.9 dB $\mu$  signal level in areas that would be considered interference to surrounding population.

The proposed site is located more than 700 km from both the Canadian and Mexican borders, well beyond the coordination distances with either country. The nearest FCC monitoring station is 308.77 km distant at Powder Springs, GA. The Green Bank Quiet Zone is 268.66 km distant. This distance exceeds the threshold minimum distance specified in §73.1030 that would suggest consideration of the monitoring station and research installations.

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 four bay non-directional antenna at 57 meters above ground on an existing tower associated with WAGY's night time authorization. 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

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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  $3.504 \mu\text{W}/\text{cm}^2$  at two meters above ground level near the antenna support structure, or 1.752 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 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 fence. According to information provided by the applicant, appropriate RF exposure warning signs are posted.

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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.

**EXHIBIT 12 - FIGURE 1  
COVERAGE CONTOUR COMPARISON**

*prepared August 2018 for*

**WAGY, Inc.  
W298CZ(FX) Forest City, NC  
Facility ID 202870  
Ch. 298D 0.25 kW 57 m AGL**

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

**W298CZ Proposed**  
Ch 298D 250 Watts  
60 dBμ F(50,50)

TX Site

**W298CZ CP**  
Original Contour  
60 dBμ F(50,50)

**WAGY(AM) Daytime License**  
2 mV/m Contour

40 km Radius

Array Coordinates

Rutherford

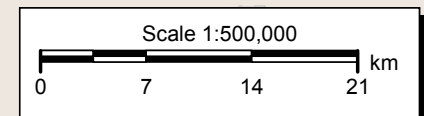
Cleveland

Lincoln

Gaston  
*Gastonia*

Cherokee

*Spartanburg*

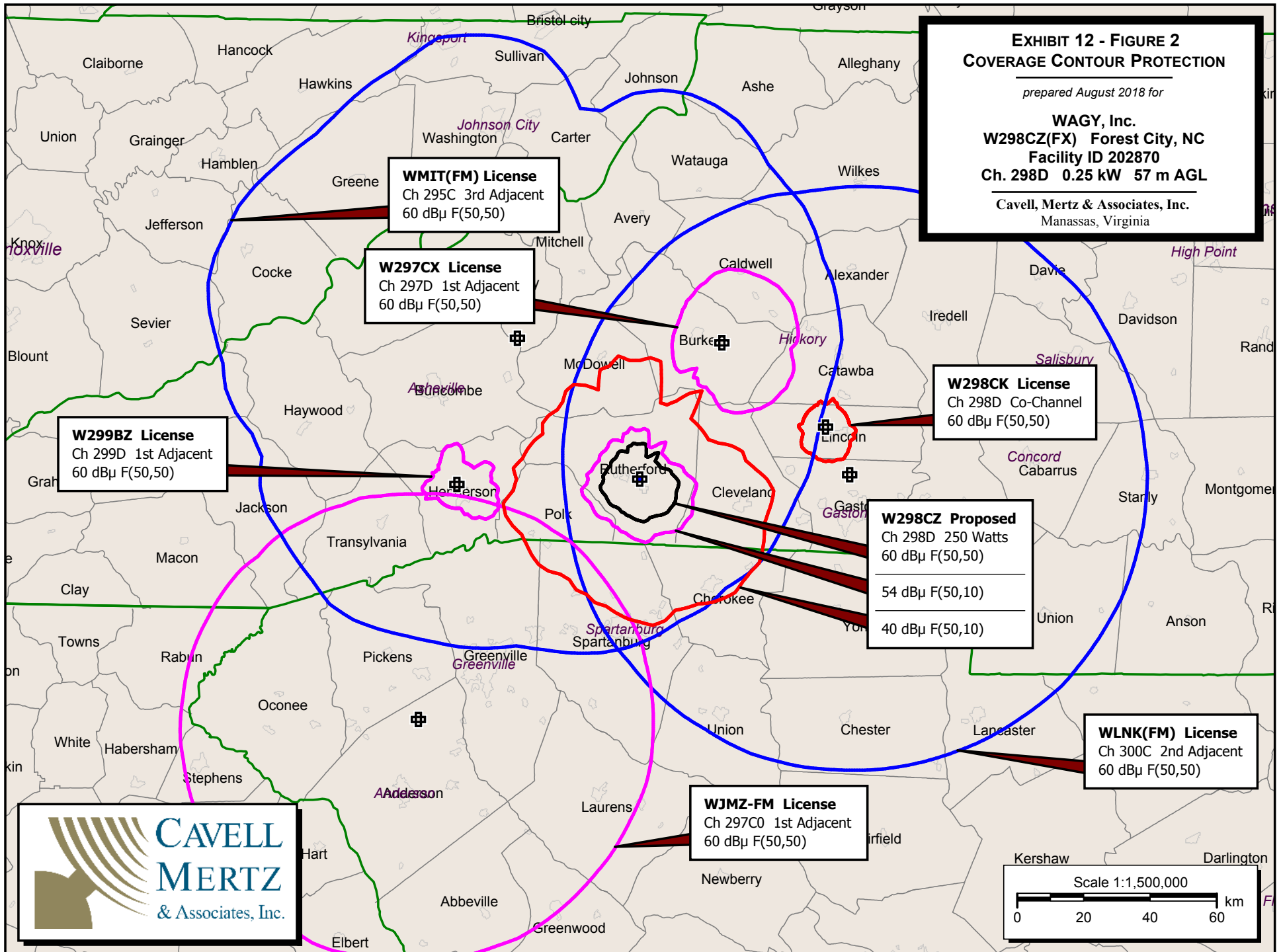


**EXHIBIT 12 - FIGURE 2  
COVERAGE CONTOUR PROTECTION**

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**EXHIBIT 12 - FIGURE 3**  
**SIGNAL STRENGTH AT GROUND**

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