

**Engineering Statement
Special Temporary Authority**
prepared for
Gray Television Licensee, LLC
WZAW-LD Wausau, WI
Facility ID 183262
STA Ch. 31 (digital) 15 kW

Gray Television Licensee, LLC (“Gray”) is the permittee of Low Power Television (“LPTV”) station WZAW-LD, Channel 33, Facility ID 183262, Wausau, WI. WZAW-LD is authorized to operate pursuant to a Construction Permit (“CP”, BNPDTL-20090914AAE) with 5 kW effective radiated power (“ERP”), nondirectional. This statement supports *Gray’s* request for Special Temporary Authority (“STA”) to operate WZAW-LD on Channel 31 on an interim basis.

The WZAW-LD CP was recently assigned to *Gray* pursuant to file number BAPDTL-20150318ABR, as consummated on May 1, 2015. By separate application, *Gray* is seeking a minor modification of the WZAW-LD CP to utilize an alternate transmitting location (13.6 km from the authorized WZAW-LD site) and increased ERP. That minor modification application specifies use of an existing top-mount antenna on the tower structure associated with Antenna Structure Registration number 1063096. Pending construction of that facility, the STA sought herein by *Gray* seeks to operate WZAW-LD on digital Channel 31 at the proposed alternate location in lieu of Channel 33. The STA facility will allow interim operation which can be implemented in a short timeframe in order for WZAW-LD to commence operation on July 1, 2015.

A different channel is requested due to equipment availability. *Gray* is unable to secure and install a Channel 33 transmitter on short notice, however there is an operational Channel 31 transmitter at the site proposed in the minor modification application.

The proposed STA facility on Channel 31 will operate at the same site and using the same, existing directional antenna as that specified in the minor modification application. No tower work is required to carry out this proposal. The proposed STA facility will operate with 15 kW ERP, the same as that specified in the minor modification application. Except for the channel of operation

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(Channel 31 in lieu of Channel 33), the proposed STA operation's technical parameters match those specified in the minor modification application.

A summary of the proposed STA facility's technical specifications is supplied in Table 1. The STA facility's 51 dBμ contour matches that of the CP minor modification application, as depicted in the attached Figure 1.

Interference study per OET Bulletin 69¹ shows that the proposal complies with the FCC's interference protection requirements toward all digital television, television translator, LPTV, and Class A stations. The results, summarized in Table 2, show that any new interference does not exceed the FCC's interference limits (0.5 percent to full power and Class A stations, and 2.0 percent to secondary stations) to any facility except for WFXS-DT (Channel 31, Wittenberg, WI).

WFXS-DT would receive 73.1 percent interference to its licensed facility (BLCDDT-20090310AED). The licensee of WFXS-DT has agreed to accept this level of interference from WZAW-LD caused to WFXS-DT. A copy of a consent statement from WFXS-DT is attached separately. As a practical matter, the interference is theoretical because WFXS-DT and the proposed STA Channel 31 WZAW-LD facility will not operate simultaneously.

The site is located 325 km from the U.S. – Canadian border. The worst-case 19.5 dBμ F(50,10) co-channel DTV-to-DTV interfering contour is depicted in Figure 2 and does not reach Canada. Thus, international coordination is not required.

The nearest FCC monitoring station is 392 km distant at Allegan, MI. This exceeds by a large margin 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

¹FCC 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. The default 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.

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coordination with quiet zones specified in §73.1030(a) and (b). There are no authorized AM stations within 3 kilometers of the site.

Human Exposure to Radiofrequency Electromagnetic Field

The proposed STA operation was evaluated for human exposure to RF energy using the procedures outlined in the FCC's OET Bulletin Number. 65. Based on OET-65 equation (10) and the worst-case of 100% field at all elevations, the calculated signal density near the tower at two meters above ground level attributable to the proposed facility is $5.5 \mu\text{W}/\text{cm}^2$, which is 1.4 percent of the general population/uncontrolled maximum permitted exposure limit.

This is well 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. When the antenna's elevation pattern is considered, the calculated electromagnetic field will be even lower.

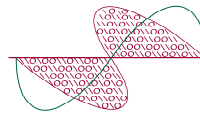
The general public will not be exposed to RF levels attributable to the proposal in excess of the FCC's guidelines. RF exposure warning signs will continue to be posted. With respect to worker safety, the applicant will coordinate exposure procedures with all pertinent stations and will reduce power 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.

List of Attachments

Table 1	Engineering Data
Table 2	Interference Analysis Results Summary
Figure 1	Coverage Contour Comparison
Figure 2	Interfering Contour Towards Canada

Chesapeake RF Consultants, LLC

Joseph M. Davis, P.E.	June 9, 2015	
207 Old Dominion Road	Yorktown, VA 23692	703-650-9600

**Table 1****Engineering Data****Special Temporary Authority**

prepared for

Gray Television Licensee, LLC

WZAW-LD Wausau, WI

Channel:	31 (572-578 MHz)
Site Coordinates: (NAD-27)	45° 03' 22" N-Lat 89° 27' 54" W-Lon
Antenna Structure Registration number:	1063096
Site elevation:	448 m AMSL
Overall height above ground:	309 m
Antenna Radiation Center Height	
Above ground:	303 m
Above mean sea level:	751 m
Effective Radiated Power:	15 kW (11.76 dBk) Digital
Out of Band Emission Mask:	Stringent
Antenna:	ERI ATW24H3-HSCX-31S Gain 15.32 dBd Directional, Horizontal polarization
Transmission Line:	1.22 dB loss
Transmitter Power Output:	0.583 kW (-2.34 dBk)

Directional Antenna Azimuthal Pattern**Rotate Pattern 0 degrees FCC Antenna ID# 90296**

Azimuth (degrees)	Relative Field	Azimuth (degrees)	Relative Field	Azimuth (degrees)	Relative Field	Azimuth (degrees)	Relative Field	Azimuth (degrees)	Relative Field	Azimuth (degrees)	Relative Field
0	0.979	10	0.939	20	0.868	30	0.816	40	0.738	50	0.678
60	0.595	70	0.549	80	0.496	90	0.498	100	0.496	110	0.549
120	0.595	130	0.678	140	0.738	150	0.816	160	0.868	170	0.939
180	0.979	190	0.992	200	1.000	210	0.987	220	0.945	230	0.892
240	0.837	250	0.878	260	0.914	270	0.939	280	0.914	290	0.878
300	0.837	310	0.892	320	0.945	330	0.987	340	1.000	350	0.992

Table 2

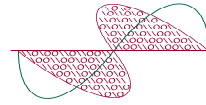
Interference Analysis Results Summary

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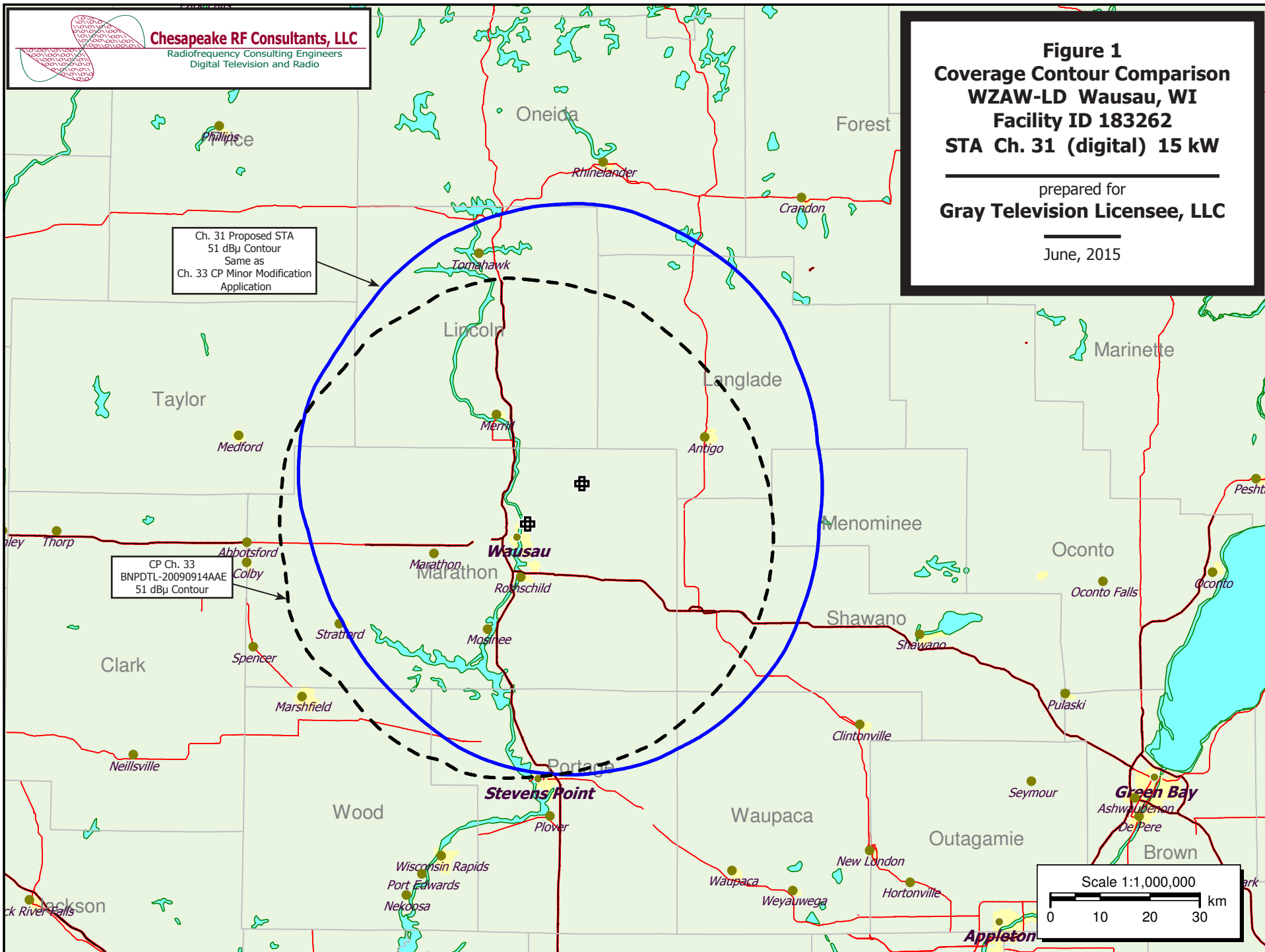
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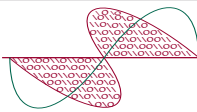
**Chesapeake RF Consultants, LLC**Radiofrequency Consulting Engineers
Digital Television and Radio

WZAW-LD	USERRECORD-01	WAUSAU	WI US
Channel 31 ERP 15. kW HAAT 325. m RCAMSL 00751 m STRINGENT MASK			
Latitude 045-03-22 Longitude 0089-27-54			
Dir Antenna Make CDB Model 00000000090296 Beam tilt N Ref Azimuth 0.			

		Dist					---Population (2000 Census)---	
Ch.	Call	City/State	(km)	Status	Application Ref. No.	Baseline	New Interference	
30	W30BU	GREEN BAY WI	140.2	CP	BDFCDTL-20090806ACF	---	none	
30	W30BU	GREEN BAY WI	140.2	LIC	BLTTL-20030923AAD	---	none	
30	WHLA-TV	LA CROSSE WI	205.3	LIC	BLANK-1485	---	none	
31	WFLD	CHICAGO IL	382.7	LIC	BLCDDTL-20090223ABV	---	none	
31	W31DT-D	STERLING - DIXON IL	351.2	CP	BDCCDTL-20110726AJF	---	none	
31	K31EF-D	FROST MN	390.8	LIC	BLDTT-20090730ACQ	---	none	
31	WRPT	HIBBING MN	372.5	LIC	BLEDT-20090603AAY	---	none	
31	WDMI-LD	MINNEAPOLIS MN	291.2	LIC	BLDTL-20100809CIU	---	none	
31	K31LN-D	ROCHESTER MN	262.5	CP	BNPDTL-20100309AAW	---	none	
31	K31LP-D	SAINT CLOUD MN	405.2	CP	BNPDTL-20100216AEB	---	none	
31	K31GH	HAYWARD WI	183.7	LIC	BLTTL-20020729AAS	---	none	
31	WFXS-DT	WITTENBERG WI	0.0	LIC	BLCDDTL-20090310AED	497,764	363,876 (73.1%) *	
32	W32CV	IRONWOOD MI	163.9	LIC	BLTT-20040217ACE	---	none	
32	K32GF	RHINELANDER WI	81.6	LIC	BLTT-20050929AGL	---	none	

* WFXS-DT is accepting 73.1 percent interference from WZAW-LD.
See engineering statement.





Chesapeake RF Consultants, LLC
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Figure 2
Interfering Contour Towards Canada
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