

## **ENGINEERING EXHIBIT**

### **Incentive Auction Channel Reassignment**

#### **Application for Digital Television Station Construction Permit**

prepared for

#### **North Carolina License Holdings, Inc.**

WCTI-TV New Bern, NC

Facility ID 18334

Ch. 10 34.2 kW 583 m

*North Carolina License Holdings, Inc. (“NCLH”)* is the licensee of digital television station WCTI-TV, Channel 12, Facility ID 18334, New Bern, NC. *NCLH* herein proposes construction of the WCTI-TV post-auction facility on Channel 10. Reassignment of WCTI-TV from Channel 12 to Channel 10 was specified in the *Incentive Auction Closing and Channel Reassignment Public Notice (“CCRPN”*, DA 17-317, released April 13, 2017).

The proposed Channel 10 operation will employ a new antenna system to be top-mounted on the WCTI-TV tower in lieu of the existing Channel 12 antenna. The proposed antenna is a circularly polarized nondirectional Dielectric model THV-12A10/VP-R O4. The length of the proposed antenna is much less than the existing antenna, resulting in a reduction of the antenna’s radiation center height above ground by 6.4 meters. *NCLH* proposes to operate WCTI-TV with an effective radiated power (“ERP”) of 34.2 kW at 583 meters antenna height above average terrain (“HAAT”).

The WCTI-TV tower structure corresponds to FCC Antenna Structure Registration number 1011271, having an overall structure height above ground of 606.2 meters. The antenna replacement will result in a reduction in the structure’s overall height to 593.1 meters. Following construction, the FAA will be notified of the reduction in height and the FCC ASR will be modified accordingly.

A map is supplied as Figure 1 which depicts the standard predicted coverage contours. This map includes the location of New Bern, WCTI-TV's principal community. As demonstrated thereon, the proposed facility complies with §73.625(a)(1) as the entire principal community will be encompassed by the 43 dBμ contour.

The proposed noise limited service contour ("NLSC") does not extend beyond that of the *CCRPN* parameters of 32.8 kW ERP and 589 meters HAAT. Therefore, interference analysis to other television facilities is not required.

The proposed WCTI-TV facility's terrain-limited population provides a 100.0 percent match of the *CCRPN* baseline facility, as detailed in the following table.

<b>Terrain Limited Population - Match of Reassignment</b>		
Population Summary (2010 Census) OET Bulletin 69: TVStudy	Reassignment Parameters	Proposed
Within Noise Limited Contour	1,680,664	1,680,504
Not affected by terrain losses	1,678,237	1,678,077
Match of Reassignment	---	<b>100.0%</b>

The proposed 34.2 kW ERP exceeds the maximum allowed for the proposed antenna HAAT of 583 meters permitted by §73.622(f)(7)(i). The proposed 34.2 kW / 583 m facility places the NLSC at the same location as the *CCRPN* facility parameters of 32.8 kW / 589 m. The proposed antenna's radiation center height is decreased slightly from the reassignment height, and the ERP is increased commensurately to maintain the same NLSC location. Therefore, the ERP restriction is not applicable to the proposed WCTI-TV facility since the proposed ERP is necessary to match the reassignment parameter's coverage contour and does not expand the NLSC beyond the *CCRPN*.

The nearest FCC monitoring station is 453 km distant at Laurel, MD. 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 coordination with "quiet" zones specified in §73.1030(a) and (b). There are no authorized AM stations within 3 kilometers of the site. The site location is beyond the border areas requiring international coordination.

### **Human Exposure to Radiofrequency Electromagnetic Field**

The proposed 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 considering 15 percent antenna relative field in downward elevations (pattern data shows less than 15 percent relative field at angles 15 to 90 degrees below the antenna), the calculated signal density near the tower at two meters above ground level attributable to the proposed facility is  $0.15 \mu\text{W}/\text{cm}^2$ , which is 0.1 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.

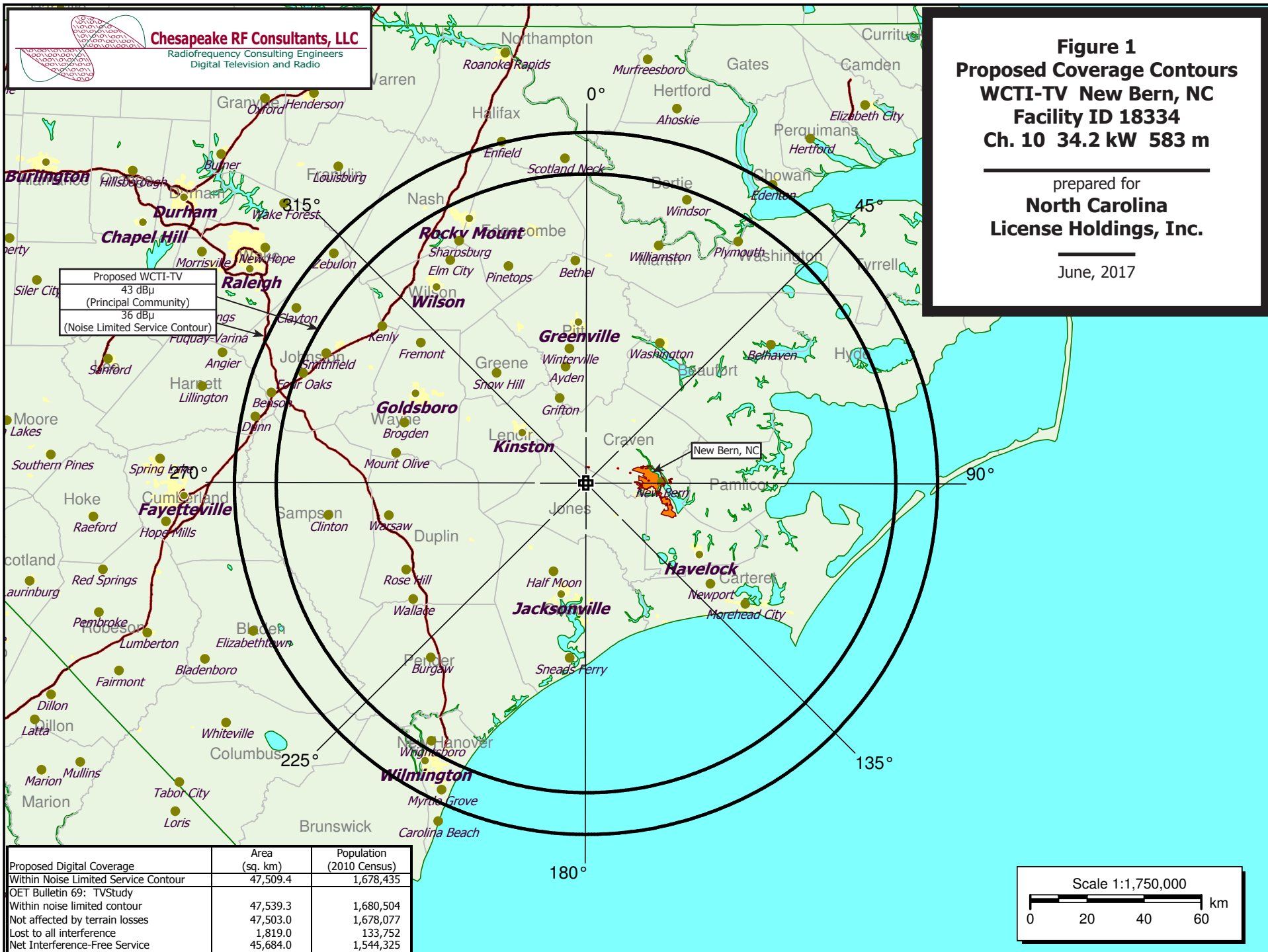
The general public will not be exposed to RF levels attributable to the proposal in excess of the FCC's guidelines. RF exposure warning signs will continue to be posted. With respect to worker safety, the applicant will coordinate exposure procedures with all pertinent stations and will reduce power 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. This exhibit is limited to the evaluation of exposure to RF electromagnetic field. No increase in structure height is proposed.

#### List of Attachments

Figure 1	Proposed Coverage Contours
Form 2100	Saved Version of Engineering Sections from FCC Form at Time of Upload

#### **Chesapeake RF Consultants, LLC**

Joseph M. Davis, P.E.	June 16, 2017	
207 Old Dominion Road	Yorktown, VA 23692	703-650-9600



Channel and Facility Information

Section	Question	Response
Proposed Community of License	Facility ID	18334
	State	North Carolina
	City	NEW BERN
	DTV Channel	10
Facility Type	Facility Type	Commercial
	Station Type	Main
Zone	Zone	2

Antenna Location Data

Section	Question	Response
Antenna Structure Registration	Do you have an FCC Antenna Structure Registration (ASR) Number?	Yes
	ASR Number	1011271
Coordinates (NAD83)	Latitude	35° 06' 16.0" N+
	Longitude	077° 20' 11.0" W-
	Structure Type	TOWER-A free standing or guyed struct
	Overall Structure Height	606.2 meters
	Support Structure Height	572.6 meters
	Ground Elevation (AMSL)	14.0 meters
Antenna Data	Height of Radiation Center Above Ground Level	581.6 meters
	Height of Radiation Center Above Average Terrain	582.7 meters
	Height of Radiation Center Above Mean Sea Level	595.6 meters
	Effective Radiated Power	34.2 kW

Antenna  
Technical Data

Section	Question	Response
Antenna Type	Antenna Type	Non-Directional
	Do you have an Antenna ID?	
	Antenna ID	
Antenna Manufacturer and Model	Manufacturer:	DIE
	Model	THV-12A10/VP-R O4
	Rotation	
	Electrical Beam Tilt	0.75
	Mechanical Beam Tilt	Not Applicable
	toward azimuth	
	Polarization	Circular
DTV and DTS: Elevation Pattern	Does the proposed antenna propose elevation radiation patterns that vary with azimuth for reasons other than the use of mechanical beam tilt?	No
	Uploaded file for elevation antenna (or radiation) pattern data	

Construction  
Permit  
Certifications

Section	Question	Response
Post-Incentive Auction Expedited Processing	It will operate on the DTV channel for this station as established in the post-incentive auction channel reassignment public notice.	Yes
	It will operate post-incentive auction facilities that do not expand the noise-limited service contour in any direction beyond that established by the post-incentive auction channel reassignment public notice.	Yes
	It will operate post-incentive auction facilities that match or reduce by no more than five percent with respect to predicted population from those defined in the post-incentive auction channel reassignment public notice.	Yes
	The antenna structure to be used by this facility has been registered by the Commission and will not require re-registration to support the proposed antenna, OR the FAA has previously determined that the proposed structure will not adversely affect safety in air navigation and this structure qualifies for later registration under the Commission's phased registration plan, OR the proposed installation on this structure does not require notification to the FAA pursuant to 47 C.F.R. Section 17.7.	Yes
Environmental Effect	Would a Commission grant of Authorization for this location be an action which may have a significant environmental effect? (See Section 1.1306 of 47 C.F.R.)	No
Broadcast Facility	The proposed facility complies with the applicable engineering standards and assignment requirements of 47 C. F.R. Sections 73.616, 73.622(i), 73.623(e), 73.625, 73.1030, and 73.1125.	Yes