ENGINEERING EXHIBIT

Special Temporary Authority
for Digital Low Power Television Station

prepared for

Gray Television Licensee, LLC
KNDX-LD Dickinson, SD
Facility ID 130519

Gray Television Licensee, LLC ("Gray") is the licensee of digital low power television station KNDX-LD, Facility ID 130519, Channel 38, Dickinson ND. The licensed KNDX-LD facility went silent on February 4, 2018 (file# 0000053738) due to a 120 day notice from a 600 MHz licensee that the wireless licensee intends to commence operations and KNDX-LD is predicted to cause interference to the wireless operations.

As a result of the Special Displacement Window,[1] a Construction Permit ("CP" file# 0000035940) authorizes KNDX-LD to operate on Channel 28. The equipment to construct the Channel 28 CP facility has not yet been delivered. The STA sought herein by *Gray* seeks to operate KNDX-LD on Channel 28 with a reduced facility in order to resume operation prior to the 12 month anniversary of the date of going silent.

The proposed Channel 28 STA facility will operate with 3.9 kW effective radiated power at the same site authorized in the CP. A directional transmitting antenna will be utilized, and Figure 1 supplies a plot of the antenna's azimuthal pattern. As shown in Figure 2, the proposed STA facility's contour does not exceed that of the KNDX-LD Channel 28 CP.

[1] *"Incentive Auction Task Force and Media Bureau Announce Post-Incentive Auction Special Displacement Window April 10, 2018, through May 15, 2018, and Make Location and Channel Data Available,"* Public Notice, DA 18-124, released February 9, 2018.

Human Exposure to Radiofrequency Electromagnetic Field (Environmental)

The proposed KNDX-LD STA operation was evaluated for human exposure to Radiofrequency ("RF") energy using the procedures outlined in the FCC's OET Bulletin Number 65. Based on OET-65 equation (10), and considering the antenna relative field in downward elevations, the graph in Figure 3 depicts calculated power density levels attributable to the proposed KNDX-LD STA facility at locations near the site at a height of two meters above ground level. The maximum calculated RF electromagnetic field attributable to the proposed KNDX-LD STA facility is 59.1 percent of the general population / uncontrolled maximum permissible exposure ("MPE") limit at any location two meters above ground level, which occurs within 20 meters of the KNDX-LD site location.

One full power digital television station and one FM radio station are authorized at the same site location. The following table supplies a summary of RF signal density calculations for the proposed KNDX-LD STA facility and the other facilities at this site. No other authorized broadcast facilities are near enough to the site to contribute significant RF levels.

Summary of Radiofrequency Electromagnetic Field Calculations

Facility	Channel	ERP (kW)	Polari-zation	Relative Field	Height (meters)	S - Calculated ($\mu W/cm^2$)	S - Limit ($\mu W/cm^2$)	Percent of Limit
KNDX-LD Dickinson ND STA Proposed Herein	28	3.9	H	See Graph	6.1	219.4	371.3	59.1%
KQCD-TV Dickinson ND Lic BLCDT-20090223ABH	7	11.3	H	0.1	179	0.12	200	0.1
KDXN(FM) South Heart ND Lic BLH-20100622ABB	289	100	C	Use FMModel	138	34.5	200	17.3%
						Total Calculated Signal Density:		**76.5%**

ERP: Effective Radiated Power
Polarization: H - Horizontal; C- Circular
Field: Elevation Pattern Relative Field Value
Height: Height of radiation center above ground level
S-Calc: OET Bulletin 65 calculated value of signal density at two meters above ground level
S-Limit §1.1310 uncontrolled/general population limit for signal density

Based on this analysis and considering all broadcast facilities, the total maximum calculated RF density at two meters above ground level near the proposed site will be 76.5 percent of the FCC's uncontrolled / general population MPE limit. No other television

broadcast, radio broadcast, or other nonexcluded facilities are known to be within sufficient distance to be a significant contributor to RF exposure at this location.

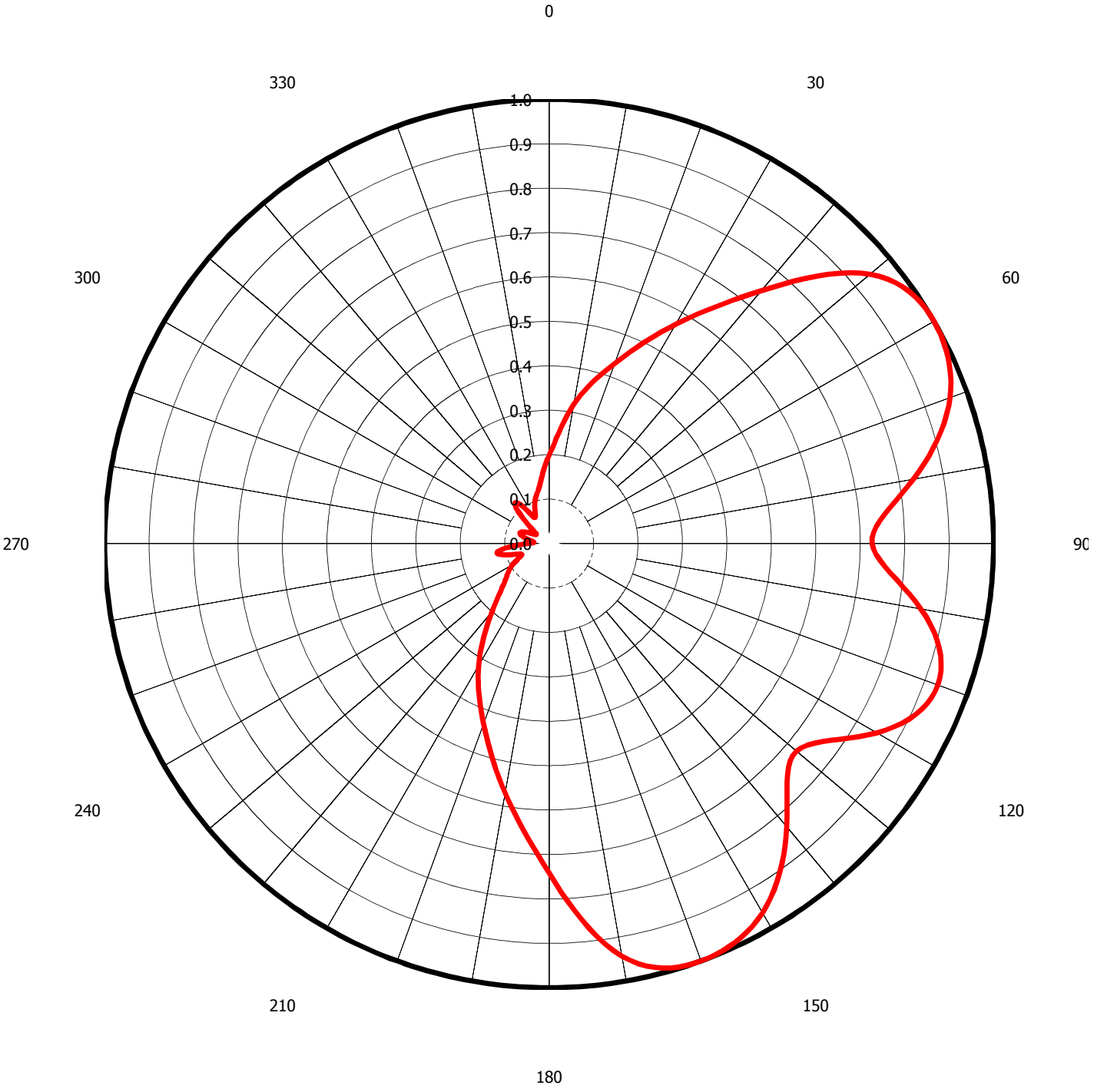
The general public will not be exposed to RF levels attributable to the proposal in excess of the FCC's guidelines. RF exposure warning signs will continue to be posted. With respect to worker safety, the applicant will coordinate exposure procedures with all pertinent stations and will reduce power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

List of Attachments

Figure 1	Antenna Azimuthal Pattern
Figure 2	Coverage Contour Comparison
Figure 3	Calculated RF Electromagnetic Field

Chesapeake RF Consultants, LLC
Joseph M. Davis, P.E. January 14, 2019
207 Old Dominion Road Yorktown, VA 23692 703-650-9600

Azimuth Pattern - Relative Field
(True North)



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Radiofrequency Consulting Engineers
Digital Television and Radio

Figure 1
Antenna Azimuthal Pattern
KNDX-LD Dickinson, SD
Facility ID 130519

prepared for
Gray Television Licensee, LLC

January, 2019

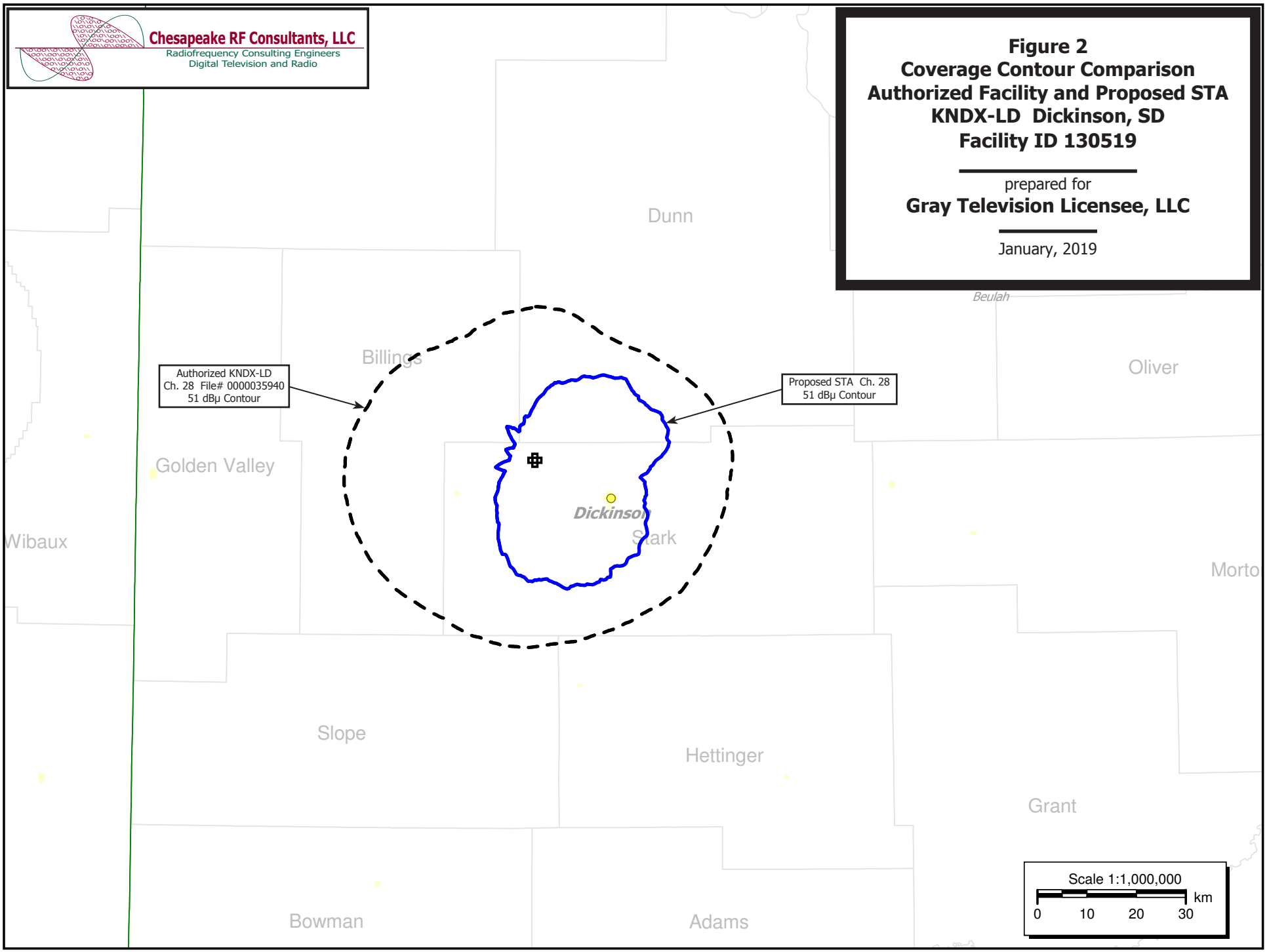
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Figure 2
Coverage Contour Comparison
Authorized Facility and Proposed STA
KNDX-LD Dickinson, SD
Facility ID 130519
prepared for
Gray Television Licensee, LLC
January, 2019
Authorized KNDX-LD
Ch. 28 File# 0000035940
51 dBµ Contour
Proposed STA Ch. 28
51 dBµ Contour
Dunn
Billings
Golden Valley
Dickinson
Stark
Wibaux
Beulah
Oliver
Morto
Slope
Hettinger
Grant
Bowman
Adams
Scale 1:1,000,000
km
0 10 20 30

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Figure 3
Calculated RF Electromagnetic Field
KNDX-LD Dickinson, SD
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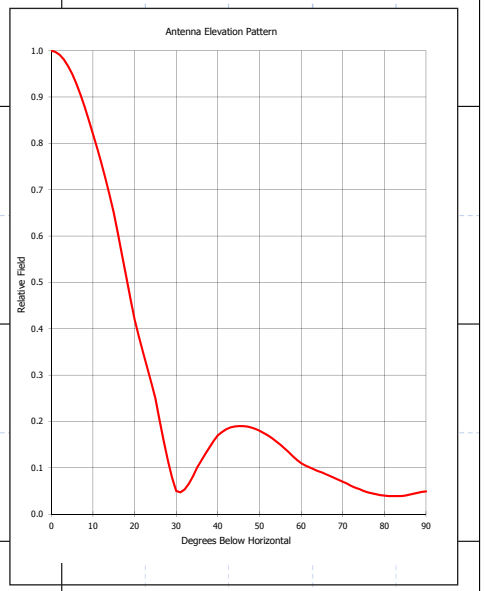
prepared for
Gray Television Licensee, LLC

January, 2019

Graph depicts calculated percentage of General Population/Uncontrolled Maximum Exposure Limit attributable to KNDX-LD for locations 2 meters above ground level. Flat terrain assumed. Calculations conducted pursuant to FCC OET Bulletin Number 65.



General Population Exposure Limit (%)

100
80
60
40
20
0

0
50
100
150
200

Horizontal Distance From Antenna (meters)