TECHNICAL STATEMENT
WXOW-WQOW LICENSE, LLC
WXOW 251 KW-DA 348 M HAAT CH. 28
LA CROSSE, WISCONSIN

WXOW-WQOW License, LLC, the licensee of digital television station WXOW, Facility ID No. 64549, proposes construction of the WXOW post-auction facility on Channel 28. Reassignment from Channel 48 to Channel 28 was specified in the *Channel Reassignment Public Notice* ("CRPN"), DA 17-314, released on April 13, 2017. The licensee proposes to operate WXOW in accordance with the technical parameters listed in the CRPN, with the exception of a slight adjustment in the antenna radiation center height. More specifically, it is proposed that WXOW will operate with an effective radiated power (ERP) of 251 kW and an antenna radiation center height above mean sea level (AMSL) of 616.8 meters. The antenna radiated center height above average terrain (HAAT) will remain 348 meters as determined by the *TVStudy* analysis software.

This application seeks to replace the antenna that WXOW currently employs in order to accommodate the channel reassignment. The new antenna will be an elliptically polarized directional Dielectric Model TFU-18GTH/VP 3T140. This new antenna will be designed to operate such that the horizontally polarized ERP will be 251 kW and the vertically polarized ERP will be 107.6 kW. The proposed horizontal azimuth pattern varies slightly from the relative field values associated with the present antenna due to the change in frequency. The vertically polarized component will not exceed the horizontally polarized component in any direction. The horizontal and vertical azimuth patterns for the new directional antenna are depicted in Figures 1 and 1A.

The aforementioned antenna height of 616.8 meters AMSL was determined based on the site elevation of the registered antenna-supporting structure and the proposed height of the new antenna radiation center of 243.2 meters above ground level (AGL).[1] Because there is no significant variance from the permissible contour coverage area as defined by the technical parameters specified in the CRPN, the proposed interference-free service population and area match the baseline 100 percent.[2] The *TVStudy* summary report provided in Figure 2 demonstrates that no interference beyond 0.5 percent will be caused to the

[1] WXOW's present antenna radiation center height is 240 meters AGL. Antenna Structure Registration No. 1035149 specifies a site elevation of 373.6 meters AMSL.

[2] The technical parameters specified in the CRPN result in an interference-free coverage area of 406,445 people and 22,997.4 sq.km. The proposed interference-free coverage area amounts to 407,656 people and 23,121.2 sq.km.

technical parameters of any other station as specified in the CRPN and the permissible coverage area will not be extended by more than one percent in any direction.

The construction permit application specifies an existing FCC registered tower that was constructed before March 16, 2001.[3] Given that the specified antenna replacement does not result in a substantial increase in the size of the existing antenna-supporting structure,[4] the criteria outlined in 47 CFR § 1.1307(a) for certain types of facilities that may significantly affect the environment do not apply. With regard to the rules for limiting human exposure to radio-frequency (RF) energy in 47 CFR § 1.1307(b), this application seeks authority to operate a television broadcast antenna in full compliance with those guidelines as described in greater detail below. The following technical specifications are proposed:

Frequency :	554 - 560 MHz (UHF Channel 28)
Effective Radiated Power:	251 kW(H); 107.6 kW(V)
Antenna Type:	DIE TFU-18GTH/VP 3T140
Antenna Polarization:	Elliptical
Antenna Height:	243.2 meters AGL
Location coordinates:	43-48-23.0 N, 91-22-03.0 W (NAD83)
Site elevation:	373.6 meters AMSL
Overall tower height:	249.7 meters AGL
FCC ASRN:	1035149; Constructed in 1982

[3] 47 CFR Part 1, App. B, § III.A. *"An antenna may be mounted on an existing tower constructed on or before March 16, 2001 without such collocation being reviewed through the Section 106 process set forth in the NPA, unless: 1. The mounting of the antenna will result in a substantial increase in the size of the tower as defined in Stipulation I.E, above; or, 2. The tower has been determined by the FCC to have an adverse effect on one or more historic properties, where such effect has not been avoided or mitigated through a conditional no adverse effect determination, a Memorandum of Agreement, a programmatic agreement, or a finding of compliance with Section 106 and the NPA; or, 3. The tower is the subject of a pending environmental review or related proceeding before the FCC involving compliance with Section 106 of the National Historic Preservation Act; or, 4. The collocation licensee or the owner of the tower has received written or electronic notification that the FCC is in receipt of a complaint from a member of the public, an Indian Tribe, a SHPO or the Council, that the collocation has an adverse effect on one or more historic properties. Any such complaint must be in writing and supported by substantial evidence describing how the effect from the collocation is adverse to the attributes that qualify any affected historic property for eligibility or potential eligibility for the National Register."*

[4] 47 CFR Part 1, App. B, § I.C. A substantial increase in size means: "*(1) The mounting of the proposed antenna on the tower would increase the existing height of the tower by more than 10%, or by the height of one additional antenna array with separation from the nearest existing antenna not to exceed twenty feet, whichever is greater, except that the mounting of the proposed antenna may exceed the size limits set forth in this paragraph if necessary to avoid interference with existing antennas; or (2) The mounting of the proposed antenna would involve the installation of more than the standard number of new equipment cabinets for the technology involved, not to exceed four, or more than one new equipment shelter; or (3) The mounting of the proposed antenna would involve adding an appurtenance to the body of the tower that would protrude from the edge of the tower more than twenty feet, or more than the width of the tower structure at the level of the appurtenance, whichever is greater, except that the mounting of the proposed antenna may exceed the size limits set forth in this paragraph if necessary to shelter the antenna from inclement weather or to connect the antenna to the tower via cable; or (4) The mounting of the proposed antenna would involve excavation outside the current tower site, defined as the current boundaries of the leased or owned property surrounding the tower and any access or utility easements currently related to the site."*

Using the methodology for predicting power density levels for television broadcast antennas outlined in *FCC OET Bulletin No. 65, Edition 97-01,* (OET-65), the proposed facility is calculated to produce a maximum power density of 2.06 μW/cm² at points 2 meters above ground (approximate human head height). This exposure level was determined using 10 percent antenna relative field, which is generally considered to be a typical value for UHF antennas. The maximum exposure limits applicable to Channel 28, as determined in accordance with 47 CFR § 1.1310 for uncontrolled and controlled situations, are 369 μW/cm² and 1,847 μW/cm² respectively. Because the worst-case exposure level determined for the proposed facility is not more than 5% of those guidelines and considering that the base of the tower is fenced and suitable warning signs are posted, no further showing of compliance is necessary. Accordingly, this application complies with the RF exposure limits and is categorically excluded from environmental processing by 47 CFR § 1.1306.

Steps to limit exposure to persons authorized to access the transmitter site will be consistent with the appropriate recommendations in OET-65. All maintenance and other related work to be performed at elevations higher than 2 meters above ground will be coordinated to prevent exposure to RF fields in excess of the controlled limit. Such preventative steps shall include reducing power or shutting down the facility.

Respectfully submitted,

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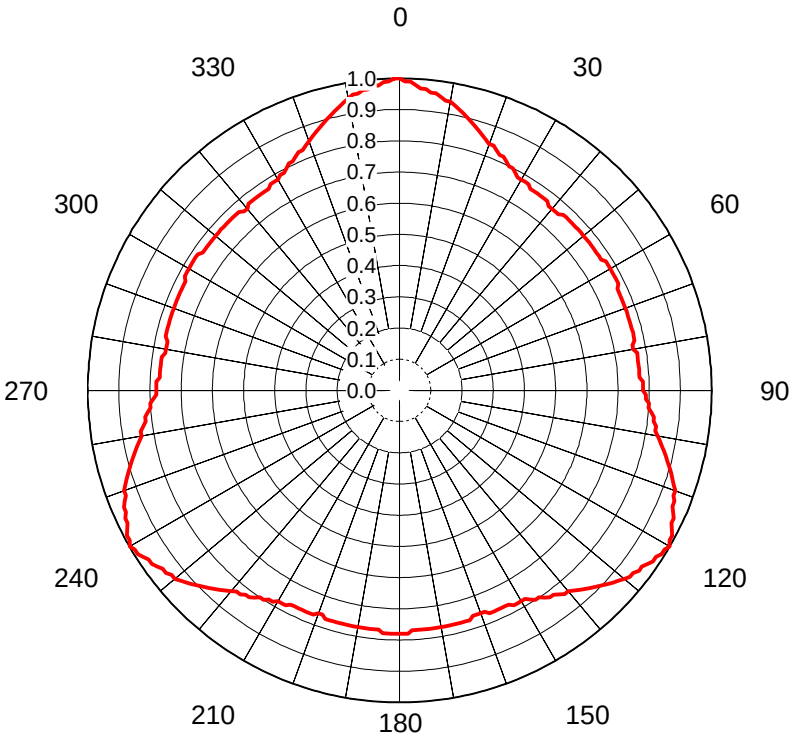
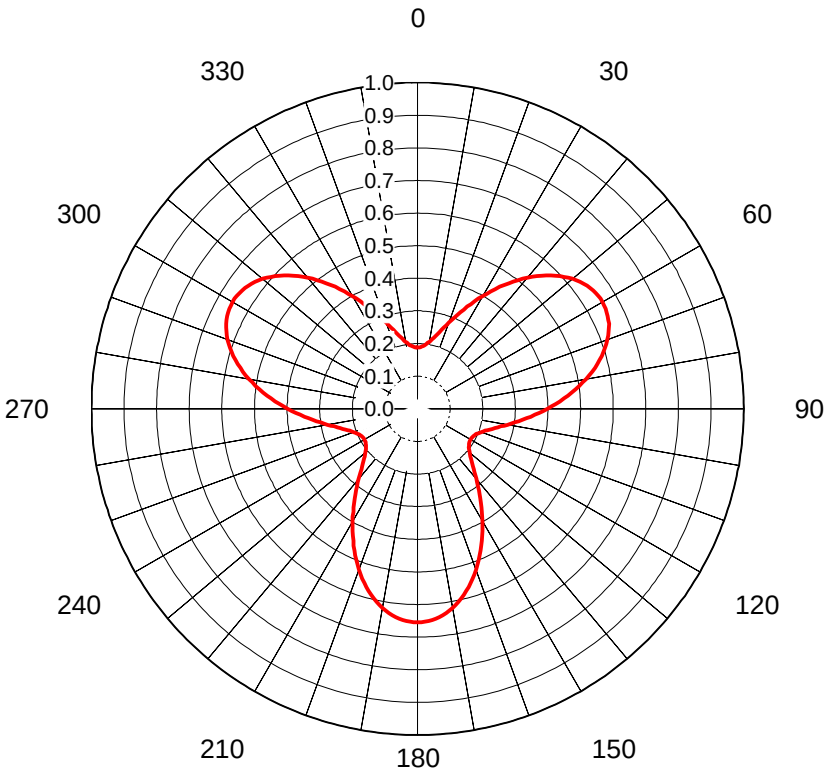
July 7, 2017



AZIMUTH PATTERN
Horizontal Polarization

Proposal No.	**C-70144**
Date	**28-Feb-17**
Call Letters	**WXOW 28**
Frequency	**557 MHz**
Antenna Type	**TFU-18GTH/VP 3T140**
Gain	**1.44 (1.57dB) Calculated**
Directional Drawing #	**3T140-28**

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	1.000	36	0.770	72	0.770	108	0.920	144	0.820	180	0.780	216	0.820	252	0.920	288	0.770	324	0.770
1	0.990	37	0.770	73	0.770	109	0.930	145	0.810	181	0.780	217	0.820	253	0.910	289	0.770	325	0.770
2	0.990	38	0.770	74	0.770	110	0.940	146	0.800	182	0.780	218	0.830	254	0.900	290	0.770	326	0.770
3	0.980	39	0.760	75	0.770	111	0.940	147	0.800	183	0.780	219	0.830	255	0.890	291	0.770	327	0.770
4	0.970	40	0.760	76	0.770	112	0.950	148	0.790	184	0.780	220	0.840	256	0.880	292	0.770	328	0.780
5	0.970	41	0.760	77	0.770	113	0.950	149	0.780	185	0.770	221	0.850	257	0.870	293	0.770	329	0.780
6	0.960	42	0.760	78	0.770	114	0.960	150	0.780	186	0.770	222	0.860	258	0.860	294	0.770	330	0.780
7	0.960	43	0.770	79	0.760	115	0.970	151	0.780	187	0.770	223	0.870	259	0.850	295	0.770	331	0.790
8	0.950	44	0.770	80	0.760	116	0.970	152	0.780	188	0.770	224	0.880	260	0.840	296	0.770	332	0.790
9	0.940	45	0.770	81	0.770	117	0.980	153	0.770	189	0.770	225	0.890	261	0.840	297	0.770	333	0.800
10	0.940	46	0.770	82	0.770	118	0.990	154	0.770	190	0.770	226	0.900	262	0.830	298	0.780	334	0.810
11	0.930	47	0.770	83	0.770	119	0.990	155	0.770	191	0.770	227	0.910	263	0.820	299	0.780	335	0.810
12	0.920	48	0.770	84	0.770	120	1.000	156	0.770	192	0.770	228	0.920	264	0.820	300	0.780	336	0.820
13	0.910	49	0.770	85	0.770	121	0.990	157	0.770	193	0.770	229	0.930	265	0.810	301	0.780	337	0.830
14	0.900	50	0.770	86	0.770	122	0.990	158	0.770	194	0.770	230	0.940	266	0.800	302	0.780	338	0.830
15	0.890	51	0.770	87	0.770	123	0.980	159	0.760	195	0.770	231	0.940	267	0.800	303	0.780	339	0.840
16	0.880	52	0.770	88	0.780	124	0.980	160	0.760	196	0.770	232	0.950	268	0.790	304	0.780	340	0.850
17	0.870	53	0.770	89	0.780	125	0.970	161	0.760	197	0.770	233	0.950	269	0.780	305	0.770	341	0.860
18	0.860	54	0.770	90	0.780	126	0.960	162	0.760	198	0.770	234	0.960	270	0.780	306	0.770	342	0.870
19	0.850	55	0.770	91	0.790	127	0.960	163	0.770	199	0.760	235	0.970	271	0.780	307	0.770	343	0.880
20	0.840	56	0.770	92	0.790	128	0.950	164	0.770	200	0.760	236	0.970	272	0.780	308	0.770	344	0.890
21	0.840	57	0.770	93	0.800	129	0.950	165	0.770	201	0.770	237	0.980	273	0.770	309	0.770	345	0.900
22	0.830	58	0.780	94	0.800	130	0.940	166	0.770	202	0.770	238	0.990	274	0.770	310	0.770	346	0.910
23	0.820	59	0.780	95	0.810	131	0.930	167	0.770	203	0.770	239	0.990	275	0.770	311	0.770	347	0.920
24	0.820	60	0.780	96	0.820	132	0.920	168	0.770	204	0.770	240	1.000	276	0.770	312	0.770	348	0.930
25	0.810	61	0.780	97	0.820	133	0.910	169	0.770	205	0.770	241	0.990	277	0.770	313	0.770	349	0.940
26	0.800	62	0.780	98	0.830	134	0.900	170	0.770	206	0.770	242	0.990	278	0.770	314	0.770	350	0.950
27	0.800	63	0.780	99	0.830	135	0.890	171	0.770	207	0.770	243	0.980	279	0.760	315	0.770	351	0.960
28	0.790	64	0.780	100	0.840	136	0.880	172	0.770	208	0.780	244	0.970	280	0.760	316	0.770	352	0.960
29	0.780	65	0.770	101	0.850	137	0.870	173	0.770	209	0.780	245	0.970	281	0.760	317	0.770	353	0.970
30	0.780	66	0.770	102	0.860	138	0.860	174	0.770	210	0.780	246	0.960	282	0.760	318	0.770	354	0.970
31	0.780	67	0.770	103	0.870	139	0.850	175	0.770	211	0.790	247	0.960	283	0.770	319	0.760	355	0.980
32	0.780	68	0.770	104	0.880	140	0.840	176	0.770	212	0.790	248	0.950	284	0.770	320	0.760	356	0.980
33	0.770	69	0.770	105	0.890	141	0.840	177	0.770	213	0.800	249	0.940	285	0.770	321	0.770	357	0.990
34	0.770	70	0.770	106	0.900	142	0.830	178	0.780	214	0.800	250	0.940	286	0.770	322	0.770	358	0.990
35	0.770	71	0.770	107	0.910	143	0.820	179	0.780	215	0.810	251	0.930	287	0.770	323	0.770	359	1.000



AZIMUTH PATTERN
Vertical Polarization

Proposal No.	**C-70144**
Date	**28-Feb-17**
Call Letters	**WXOW 28**
Frequency	**557 MHz**
Antenna Type	**TFU-18GTH/VP 3T140**
Gain	**2.19 (3.41dB) Calculated**
Directional Drawing #	**3T140-28-V**

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.188	36	0.476	72	0.605	108	0.218	144	0.324	180	0.655	216	0.324	252	0.218	288	0.605	324	0.476
1	0.188	37	0.488	73	0.596	109	0.213	145	0.336	181	0.654	217	0.313	253	0.224	289	0.612	325	0.463
2	0.189	38	0.501	74	0.588	110	0.208	146	0.348	182	0.653	218	0.301	254	0.230	290	0.620	326	0.450
3	0.190	39	0.513	75	0.578	111	0.204	147	0.360	183	0.651	219	0.291	255	0.237	291	0.626	327	0.437
4	0.191	40	0.525	76	0.568	112	0.201	148	0.373	184	0.649	220	0.281	256	0.245	292	0.632	328	0.424
5	0.193	41	0.536	77	0.558	113	0.196	149	0.386	185	0.646	221	0.271	257	0.253	293	0.637	329	0.411
6	0.195	42	0.547	78	0.547	114	0.195	150	0.398	186	0.642	222	0.262	258	0.262	294	0.642	330	0.398
7	0.198	43	0.558	79	0.536	115	0.193	151	0.411	187	0.637	223	0.253	259	0.271	295	0.646	331	0.386
8	0.201	44	0.568	80	0.525	116	0.191	152	0.424	188	0.632	224	0.245	260	0.281	296	0.649	332	0.373
9	0.204	45	0.578	81	0.513	117	0.190	153	0.437	189	0.626	225	0.237	261	0.291	297	0.651	333	0.360
10	0.208	46	0.588	82	0.501	118	0.189	154	0.450	190	0.620	226	0.230	262	0.301	298	0.653	334	0.348
11	0.213	47	0.596	83	0.488	119	0.188	155	0.463	191	0.612	227	0.224	263	0.313	299	0.654	335	0.336
12	0.218	48	0.605	84	0.476	120	0.188	156	0.476	192	0.605	228	0.218	264	0.324	300	0.655	336	0.324
13	0.224	49	0.612	85	0.463	121	0.188	157	0.488	193	0.596	229	0.213	265	0.336	301	0.654	337	0.313
14	0.230	50	0.620	86	0.450	122	0.189	158	0.501	194	0.588	230	0.208	266	0.348	302	0.653	338	0.301
15	0.237	51	0.626	87	0.437	123	0.190	159	0.513	195	0.578	231	0.204	267	0.360	303	0.651	339	0.291
16	0.245	52	0.632	88	0.424	124	0.191	160	0.525	196	0.568	232	0.201	268	0.373	304	0.649	340	0.281
17	0.253	53	0.637	89	0.411	125	0.193	161	0.536	197	0.558	233	0.198	269	0.386	305	0.646	341	0.271
18	0.262	54	0.642	90	0.398	126	0.195	162	0.547	198	0.547	234	0.195	270	0.398	306	0.642	342	0.262
19	0.271	55	0.646	91	0.386	127	0.196	163	0.558	199	0.536	235	0.193	271	0.411	307	0.637	343	0.253
20	0.281	56	0.649	92	0.373	128	0.201	164	0.568	200	0.525	236	0.191	272	0.424	308	0.632	344	0.245
21	0.291	57	0.651	93	0.360	129	0.204	165	0.578	201	0.513	237	0.190	273	0.437	309	0.626	345	0.237
22	0.301	58	0.653	94	0.348	130	0.208	166	0.588	202	0.501	238	0.189	274	0.450	310	0.620	346	0.230
23	0.313	59	0.654	95	0.336	131	0.213	167	0.596	203	0.488	239	0.188	275	0.463	311	0.612	347	0.224
24	0.324	60	0.655	96	0.324	132	0.218	168	0.605	204	0.476	240	0.188	276	0.476	312	0.605	348	0.218
25	0.336	61	0.654	97	0.313	133	0.224	169	0.612	205	0.463	241	0.188	277	0.488	313	0.596	349	0.213
26	0.348	62	0.653	98	0.301	134	0.230	170	0.620	206	0.450	242	0.189	278	0.501	314	0.588	350	0.208
27	0.360	63	0.651	99	0.291	135	0.237	171	0.626	207	0.437	243	0.190	279	0.513	315	0.578	351	0.204
28	0.373	64	0.649	100	0.281	136	0.245	172	0.632	208	0.424	244	0.191	280	0.525	316	0.568	352	0.201
29	0.386	65	0.646	101	0.271	137	0.253	173	0.637	209	0.411	245	0.193	281	0.536	317	0.558	353	0.196
30	0.398	66	0.642	102	0.262	138	0.262	174	0.642	210	0.398	246	0.195	282	0.547	318	0.547	354	0.195
31	0.411	67	0.637	103	0.253	139	0.271	175	0.646	211	0.386	247	0.198	283	0.558	319	0.536	355	0.193
32	0.424	68	0.632	104	0.245	140	0.281	176	0.649	212	0.373	248	0.201	284	0.568	320	0.525	356	0.191
33	0.437	69	0.626	105	0.237	141	0.291	177	0.651	213	0.360	249	0.204	285	0.578	321	0.513	357	0.190
34	0.450	70	0.620	106	0.230	142	0.301	178	0.653	214	0.348	250	0.208	286	0.588	322	0.501	358	0.189
35	0.463	71	0.612	107	0.224	143	0.313	179	0.654	215	0.336	251	0.213	287	0.596	323	0.488	359	0.188

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FIGURE 2
Analysis Summary
TVSTUDY, VERSION 2.2.2.

Study created: 2017.07.07 20:51:34

Study build station data: LMS TV 2017-06-25 (3)

Proposal: WXOW D28 DT APP LA CROSSE, WI
Facility ID: 64549
Station data: User record
Record ID: 136
Country: U.S.

Record ARNs excluded:

20121019AAE

Non-U.S. records included

All records on or after 2017-04-13 excluded

Stations potentially affected:

Call	Chan	Svc	Status	City, State	File Number	Distance
KFXA	D27	DT	LIC	CEDAR RAPIDS, IA	BLCDT20050713ABD	199.5 km
WHWC-TV	D27	DT	LIC	MENOMONIE, WI	BLEDT20040824AAF	143.4
KSIN-TV	D28	DT	LIC	SIOUX CITY, IA	BLEDT20050726AMC	425.2
WEDE-CD	D28	DC	BL	ARLINGTON HEIGHTS, IL	DTVBL66978	371.9
WYZZ-TV	D28	DT	LIC	BLOOMINGTON, IL	BLCDT20060609ABE	394.7
KAWB	D28	DT	LIC	BRAINERD, MN	BLEDT20101012ADI	378.7
WYOW	D28	DT	LIC	EAGLE RIVER, WI	BLCDT20121005AAF	275.3
WISN-TV	D28	DT	BL	MILWAUKEE, WI	DTVBL65680	288.0
KGAN	D29	DT	LIC	CEDAR RAPIDS, IA	BLCDT20140416AAI	170.3
WFTC	D29	DT	LIC	MINNEAPOLIS, MN	BLCDT20100809CJF	197.0

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D28
Latitude: 43 48 23.00 N (NAD83)
Longitude: 91 22 3.00 W

Height AMSL: 616.8 m
HAAT: 348.0 m
Peak ERP: 251 kW
Antenna: DIE TFU-18GTH/VP 3T140 70.0 deg

40.1 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	149 kW	351.6 m	87.9 km
45.0	167	389.4	91.8
90.0	177	383.4	91.8
135.0	151	398.7	91.6
180.0	222	310.1	86.4
225.0	149	336.4	86.4
270.0	145	314.5	83.7
315.0	236	302.3	85.9

Proposal service area is within baseline plus 1.0%
Proposal service area population is more than 95.0% of baseline

Distance to Canadian border: 471.2 km

Distance to Mexican border: 1794.4 km

Conditions at FCC monitoring station: Allegan MI
Bearing: 105.1 degrees Distance: 458.2 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 255.2 degrees Distance: 1213.1 km

Study cell size: 2.00 km
Profile point spacing: 1.00 km

Maximum new IX to full-service and Class A: 0.50%
Maximum new IX to LPTV: 2.00%

Proposal receives 1.36% interference from scenario 1
No IX check failures found.