

***COMPREHENSIVE TECHNICAL EXHIBIT
APPLICATION FOR CONSTRUCTION PERMIT***

FM STATION WIQI(FM)
FM CHANNEL 240A
WATSEKA, ILLINOIS

RADIOACTIVE, LLC

MARCH, 2015

APPLICATION FOR CONSTRUCTION PERMIT

The following engineering statement and attached exhibits have been prepared for **Radioactive, LLC** ("Radioactive"), licensee of FM broadcast station WIQI(FM) at Watseka, Illinois, and are in support of their application for construction permit to modify that facility.¹ This application seeks to modify the existing license under FCC File No. BLH-20080227ADL.

The proposed facility would be relocated to the tower bearing 1009753 as its Antenna Structure Registration Number. The proposed facility would operate with an effective radiated power of 6 kW at a center of radiation of 270 meters above mean sea level. A 360-radial sample of the NED 3-second linearly interpolated terrain database yields an average terrain of 195.8 meters at the site. Thus, the proposed facility would operate with a center of radiation of 74 meters above average terrain.

The proposed facility would comply with the allotment requirements of Section 73.203 of the Commission's Rules. Channel 240A is currently allocated to Watseka, Illinois. This application proposes no changes to the channel or class of operation, or community of license assigned to the facility.

The proposed facility would comply with the community coverage requirements of Section 73.315 of the Commission's Rules. Exhibit E-1 illustrates the predicted 70 dBu and 60 dBu service contours by the standard method. As this map demonstrates, the predicted 70 dBu service

¹ The Facility ID for WIQI(FM) at Watseka, Illinois is 164237.

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contour would fully encompass Watseka, Illinois. In addition, there are no major terrain obstructions between the proposed site, and the community of license.

The main studio for the facility would comply with the provisions of Section 73.1125 of the Commission's Rules. The main studio for the facility will be located within twenty-five miles of the community of license.

Exhibit E-2 is a single channel spacing study for the proposed facility. As this study demonstrates, the proposed facility would comply with the spacing requirements under Section 73.207 to all relevant facilities with the exception of two. The two facilities to which a contour protection assignment under Section 73.215 is requested are WERV-FM at Aurora, Illinois, and WYCM at Attica, Indiana.²

Exhibit E-3 is a tabular based allocation study for the proposed WIQI facility. This study demonstrates that adequate contour overlap would be maintained to both WERV-FM and WYCM. Exhibit E-4 provides a graphical overview of the contour overlap between WIQI, and these two facilities. This map confirms no prohibited contour overlap exists between the proposed facility, and either facility to which it is short-spaced.³ Contours depicted are based on terrain data sampled from the NED 3-second linearly interpolated terrain database.

Exhibit E-5 provides additional detail in the tangential region between the proposed WIQI 60 dBu F(50,50) service contour and the WERV-FM 40 dBu F(50,10) interfering contour. As this map

² The Facility ID for WERV-FM at Aurora, Illinois is 73171. The Facility ID for WYCM(FM) at Attica, Indiana is 68985.

³ WERV-FM is not authorized pursuant to Section 73.215, thus the elevation and effective radiated power listed for that facility correspond to those required to achieve class reference facilities. WYCM is authorized pursuant to Section 73.215, thus its actual parameters are utilized.

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demonstrates, the arc of concern from WIQI is from 320 degrees true clockwise to 357 degrees true and for WERV-FM from 153 degrees true clockwise to 163 degrees true. Exhibits E-6 and E-7 provide contour tabulations for the relevant contours.

Additional arcs of concern exist for WIQI from 332 degrees true clockwise to 344 degrees true and for WERV-FM from 140 degrees true clockwise to 170 degrees true. Additional graphical detail in this region is provided in Exhibit E-8. Tabulations of the relevant contours for this arc are provided in Exhibits E-9 and E-10.

The proposed facility would not constitute a significant environmental impact, and is exempt from environmental processing. The proposed facility would utilize an existing tower that is registered with the Commission. The addition of the WIQI antenna to this structure would not increase the existing environmental impact already present from the structure.

Additionally, the proposed location of WIQI at this structure would not result in human exposure to radiofrequency radiation in excess of the applicable safety standards. A final antenna type has not yet been selected for the proposed facility, however, under the Commission's *FM Model* software package, the worst-case antenna type, the ring-stub, yields a predicted power density of $39.3 \mu\text{W}/\text{cm}^2$ at 16 meters from the tower base assuming three sections with full-wave spacing.⁴ This predicted value is less than the upper limit permissible under the uncontrolled environment condition of the Commission's safety standard.

⁴ A single bay ring-stub antenna yields a slightly higher power density, but still approximately 20 percent of the uncontrolled environment upper limit.

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Radioactive certifies that it will coordinate with all users of the site to ensure that workers and other personnel are not exposed to radiofrequency radiation in excess of the applicable safety standards. Such coordination activities will include, but are not necessarily limited to, a reduction in transmitter power, or cessation of operation.

The proposed facility complies with the provisions of Section 73.3555 of the Commission's Rules. Radioactive is the licensee of sixteen FM broadcast facilities. None of the other Radioactive facilities, or facilities in which Radioactive has an attributable interest, are located in the vicinity of WIQI. As a result, there is no contour overlap between the proposed facility, and any other Radioactive facility.

The preceding statement and attached exhibits have been prepared by me, or under my direction, and are true and accurate to the best of my belief and knowledge.



Above signature is digitized copy of actual signature
License Expires November 30, 2015

Jeremy D. Ruck, PE
March 16, 2015

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03.16.2015

WIQI.X

BLH20080227ADL
Latitude: 40-49-22 N
Longitude: 087-44-54 W
ERP: 6.00 kW
Channel: 240
Frequency: 95.9 MHz
AMSL Height: 270.2 m
Elevation: 194.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

Community of License
Watseka, Illinois

Jeremy Ruck & Associates, Inc.

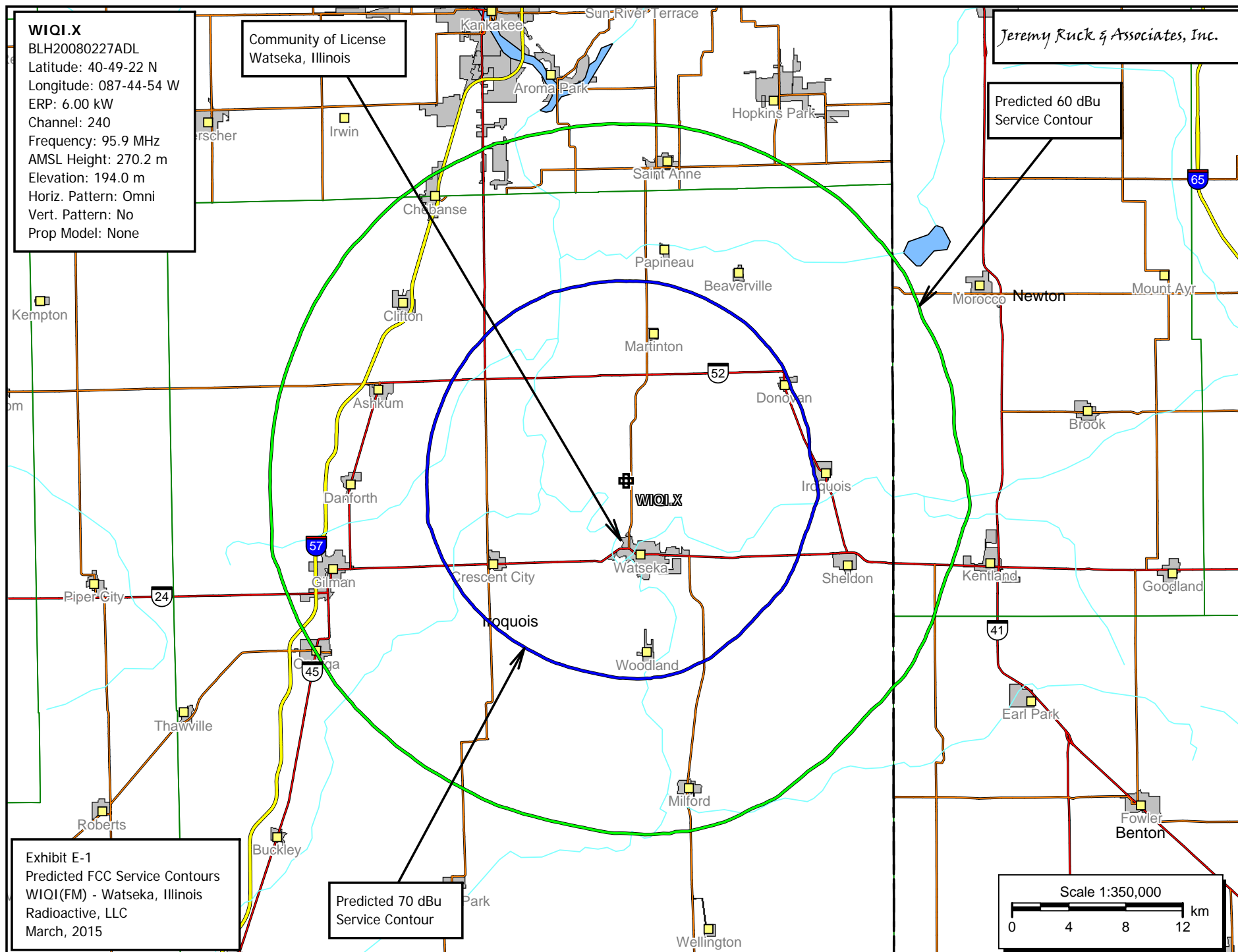
Predicted 60 dBu
Service Contour

Predicted 70 dBu
Service Contour

Exhibit E-1
Predicted FCC Service Contours
WIQI(FM) - Watseka, Illinois
Radioactive, LLC
March, 2015

Scale 1:350,000

0 4 8 12 km



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Consulting Engineers - Canton, Illinois
Exhibit E-2 - Single Channel Spacing Study
WIQI - Watseka, Illinois

REFERENCE		DISPLAY DATES
40 49 22.0 N.	CLASS = A	DATA 03-16-15
87 44 54.0 W.	Current Spacings to 3rd Adj.	SEARCH 03-16-15
----- Channel 240 - 95.9 MHz -----		

Call	Channel	Location	Azi	Dist	FCC	Margin
WIQI	LIC-N 240A	Witseka	IL 197.9	5.99	114.5	-108.5
WERV-FM	LIC 240A	Aurora	IL 337.8	113.73	114.5	-0.8
WYCM	LIC-N 239A	Attica	IN 133.0	71.39	71.5	-0.11
WAZY-FM	LIC 243B	Lafayette	IN 133.0	71.39	68.5	2.9
WJDK-FM	LIC 239A	Seneca	IL 303.9	79.93	71.5	8.4
WEFM	LIC 240A	Michigan City	IN 36.4	123.87	114.5	9.4
WQQB	LIC-Z 241A	Rantoul	IL 215.1	81.20	71.5	9.7
WXNU	LIC-N 293A	St. Anne	IL 12.4	20.78	9.5	11.3
WEZC	LIC-N 240A	Clinton	IL 232.2	131.00	114.5	16.5
WDKE	LIC 240A	Seelyville	IN 167.9	141.68	114.5	27.2
WJEK	LIC 237A	Rantoul	IL 204.9	74.00	30.5	43.5
WBBM-FM	LIC 242B	Chicago	IL 4.5	117.66	68.5	49.2

All separation margins include rounding

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Consulting Engineers - Canton, Illinois

Exhibit E-3 - Tabular Allocation Study

WIQI - Watseka, Illinois

REFERENCE CH# 240A - 95.9 MHz, Pwr= 6 kW, HAAT= 74.3 M, COR= 270.2 M
40 49 22.0 N. Average Protected F(50-50)= 24.63 km
87 44 54.0 W. 73.215 Omni-directional

DISPLAY DATES
DATA 03-16-15
SEARCH 03-16-15

CH CITY	CALL	TYPE STATE	ANT	AZI ---	DIST FILE #	LAT LNG	PWR(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
240A WIQI- Witseka		LIC NCX IL		197.9 17.9	5.99 BLH20080227ADL	40 46 17.0 87 46 13.0	1.000 14	35.6 211	10.2 Radioactive, LIC	-54.1*	-86.0*
240A WERV-FM^ Aurora		LIC _C_ IL		337.8 157.4	113.79 BMLH20010314AAF	41 46 09.0 88 16 02.0	6.000 100	88.4 315	29.7 Nm License, LIC	0.0	1.1
243B WAZY-FM« Lafayette		LIC _CN IN		133.0 313.4	71.39 BLH7632	40 23 02.0 87 07 55.0	50.000 152	5.7 352	63.4 Artistic Media Partners, I	68.5R	2.9M
239A WYCM Attica		LIC NCN IN		133.0 313.4	71.33 BLH19950929KF	40 23 02.0 87 07 55.0	3.100 132	39.7 330	26.1 Artistic Media Partners, I	8.0	9.4
239A WJDK-FM« Seneca		LIC _CN IL		303.9 123.3	79.93 BLH19971204KD	41 13 12.0 88 32 27.0	3.000 100	38.0 294	25.0 Grundy County Broadcasters	71.5R	8.4M
240A WEFM« Michigan City		LIC _CN IN		36.4 217.0	123.87 BLH7669	41 42 58.0 86 51 47.0	3.000 70	71.4 277	21.4 Michigan City Fm Broadcast	114.5R	9.4M
241A WQOB« Rantoul		LIC ZCN IL		215.1 34.8	81.20 BLH19930316KA	40 13 27.0 88 17 56.0	3.800 123	42.5 346	27.8 S.j. Broadcasting, LIC	71.5R	9.7M
293A WXNU« St. Anne		LIC NCX IL		12.4 192.5	20.78 BLH20060502AEB	41 00 20.0 87 41 42.0	1.950 141	179.4 336	82.0 Staradio Corp.	9.5R	11.3M
240A WEZC« Clinton		LIC NCX IL		232.2 51.4	131.00 BMLH20080304ACD	40 05 43.0 88 57 51.0	6.000 94	84.5 308	26.6 Kaskaskia Broadcasting, In	114.5R	16.5M
240A WDKE« Seelyville		LIC _CN IN		167.9 348.1	141.68 BLH19961002KE	39 34 29.0 87 24 06.0	4.100 121	82.6 288	27.3 Midwest Communications, In	114.5R	27.2M
237A WJEK« Rantoul		LIC _CN IL		204.9 24.6	74.00 BLH19900716KC	40 13 05.0 88 06 55.0	1.900 126	2.1 342	23.8 S.j. Broadcasting, LIC	30.5R	43.5M
242B WBBM-FM« Chicago		LIC _CX IL		4.5 184.6	117.66 BLH20100517AFR	41 52 44.0 87 38 08.0	3.300 474	3.6 655	63.2 Cbs Radio East Inc.	68.5R	49.2M

Terrain database is NED 03 SEC , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
Contour distances are on direct line to and from reference station. Reference zone= - Zone 1, Co to 3rd adjacent.
All separation margins (if shown) include rounding. Call signs with strikeout need not be protected.
Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)
""affixed to 'IN' or 'OUT' values = site inside restricted contour.
« = Station meets FCC minimum distance spacing for its class.
^ = Power and antenna height 'Max classed' as per Sec 73.215 protection requirements

WIQI-X

BLH20080227ADL
Latitude: 40-49-22 N
Longitude: 087-44-54 W
ERP: 6.00 kW
Channel: 240
Frequency: 95.9 MHz
AMSL Height: 270.2 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

WERV-FM

BMLH20010314AAF
Latitude: 41-46-09 N
Longitude: 088-16-02 W
ERP: 6.00 kW
Channel: 240
Frequency: 95.9 MHz
AMSL Height: 314.13 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

WYCM

BLH19950929KF
Latitude: 40-23-02 N
Longitude: 087-07-55 W
ERP: 3.10 kW
Channel: 239
Frequency: 95.7 MHz
AMSL Height: 330.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

Exhibit E-4

Contour Allocation Study Overview
WIQI - Watseka, Illinois
Radioactive, LLC
March, 2015

Jeremy Ruck & Associates, Inc.

- 60 dBu F(50,50) Service Contour
- 40 dBu F(50,10) Interference Contour
- 54 dBu F(50,10) Interference Contour

Scale 1:1,500,000

0 20 40 60 km

WIQI.X

BLH20080227ADL
Latitude: 40-49-22 N
Longitude: 087-44-54 W
ERP: 6.00 kW
Channel: 240
Frequency: 95.9 MHz
AMSL Height: 270.2 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

WERV-FM

BMLH20010314AAF
Latitude: 41-46-09 N
Longitude: 088-16-02 W
ERP: 6.00 kW
Channel: 240
Frequency: 95.9 MHz
AMSL Height: 314.13 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

Jeremy Ruck & Associates, Inc.

- WIQI 60 dBu F(50,50) Service Contour
- WERV-FM 40 dBu F(50,10) Service Contour

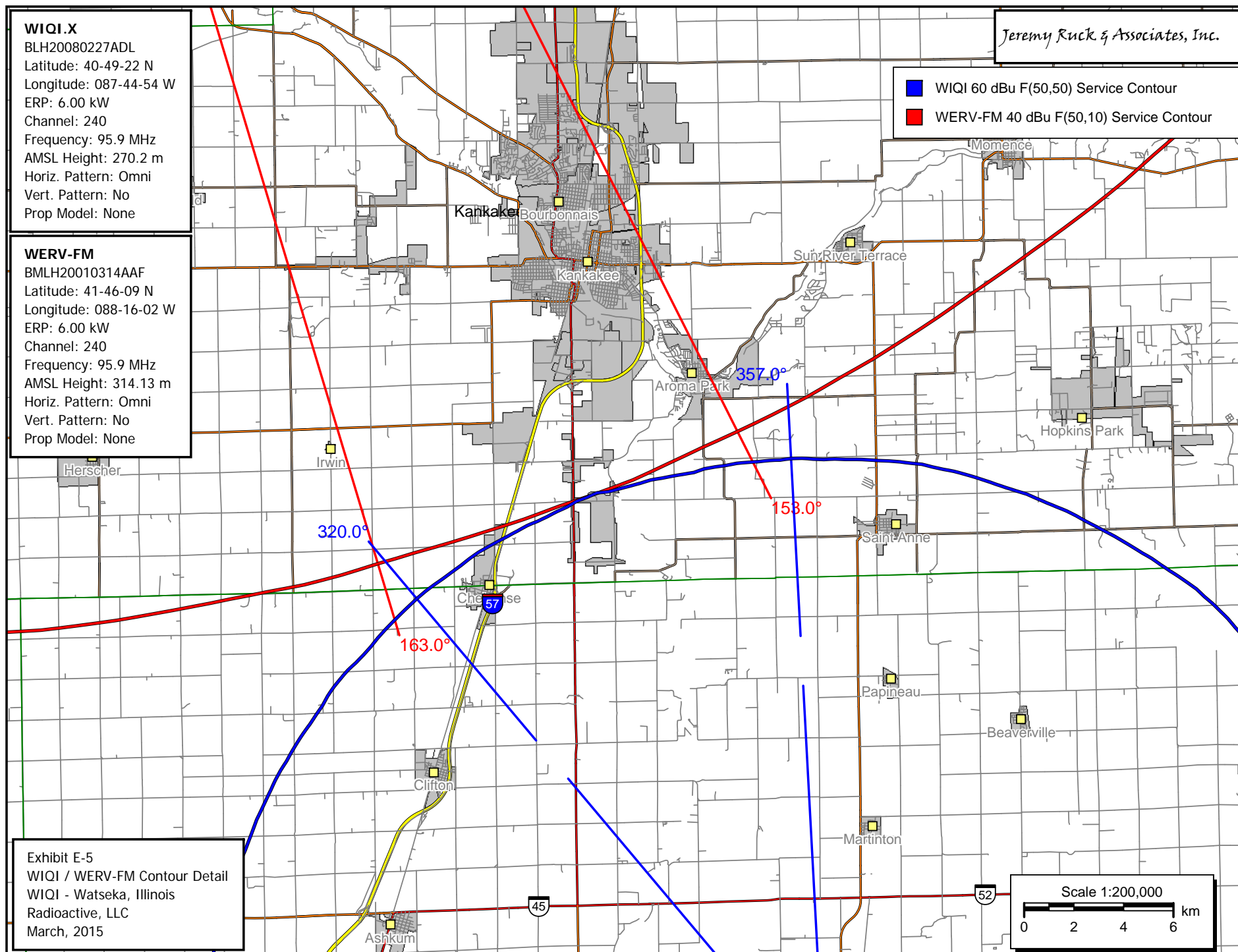


Exhibit E-5
WIQI / WERV-FM Contour Detail
WIQI - Watseka, Illinois
Radioactive, LLC
March, 2015

Scale 1:200,000

0 2 4 6 km

Exhibit E-6 - WIQI 60 dBu F(50,50) Contour Tabulation

Distance to Contour Report
Type of contour: FCC
Location Variability: 50.0 %
Time Variability: 50.0 %
of Radials Calculated: 360
FCC Matching HAAT Calculation Used
Field Strength: 60.00 dBuV/m
Primary Terrain: NED 3 Second US Terrain
Secondary Terrain: FCC 30 Second US Database

----- Transmitter Information:

Call Letters: WIQI.X
File Number: BLH20080227ADL
Latitude: 40-49-22 N
Longitude: 087-44-54 W
ERP: 6.00 kW
EIRP: 9.84 kW
Channel: 240
Frequency: 95.9 MHz
AMSL Height: 270.2 m
Elevation: 194.0 m
HAAT: 74.28 m
Horiz. Antenna Pattern: Omni
Vert. Elevation Pattern: No

Azimuth (deg)	Distance (km)	HAAT (m)
-----	-----	-----
320.0	25.44	79.8
321.0	25.45	79.8
322.0	25.43	79.7
323.0	25.41	79.6
324.0	25.41	79.6
325.0	25.42	79.6
326.0	25.45	79.8
327.0	25.46	79.9
328.0	25.44	79.8
329.0	25.42	79.6
330.0	25.40	79.5
331.0	25.39	79.4
332.0	25.39	79.4
333.0	25.35	79.2
334.0	25.34	79.1
335.0	25.36	79.2
336.0	25.36	79.2
337.0	25.41	79.6
338.0	25.40	79.5
339.0	25.42	79.6
340.0	25.30	78.8
341.0	25.26	78.6
342.0	25.24	78.4
343.0	25.22	78.3
344.0	25.22	78.3
345.0	25.18	78.0
346.0	25.15	77.8
347.0	25.12	77.6

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Exhibit E-6 - WIQI 60 dBu F(50,50) Contour Tabulation

348.0	25.09	77.4
349.0	25.15	77.8
350.0	25.15	77.8
351.0	25.14	77.7
352.0	25.16	77.8
353.0	25.14	77.7
354.0	25.12	77.6
355.0	25.12	77.6
356.0	25.10	77.5
357.0	25.14	77.7
358.0	25.13	77.7
359.0	25.08	77.3

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Exhibit E-7 - WERV-FM 40 dBu F(50,10) Contour Tabulation

Distance to Contour Report
Type of contour: FCC
Location Variability: 50.0 %
Time Variability: 10.0 %
of Radials Calculated: 360
FCC Matching HAAT Calculation Used
Field Strength: 40.00 dBuV/m
Primary Terrain: NED 3 Second US Terrain
Secondary Terrain: FCC 30 Second US Database

Transmitter Information:
Call Letters: WERV-FM
File Number: BMLH20010314AAF
Latitude: 41-46-09 N
Longitude: 088-16-02 W
ERP: 6.00 kW
EIRP: 9.84 kW
Channel: 240
Frequency: 95.9 MHz
AMSL Height: 314.13 m
Elevation: 213.0 m
HAAT: 100.0 m
Horiz. Antenna Pattern: Omni
Vert. Elevation Pattern: No

Azimuth (deg)	Distance (km)	HAAT (m)
-----	-----	-----
153.0	88.44	110.8
154.0	88.40	110.5
155.0	88.40	110.5
156.0	88.41	110.6
157.0	88.34	110.2
158.0	88.24	109.6
159.0	88.22	109.5
160.0	88.16	109.1
161.0	88.11	108.8
162.0	88.05	108.4
163.0	88.03	108.3

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WIQI.X

BLH20080227ADL
Latitude: 40-49-22 N
Longitude: 087-44-54 W
ERP: 6.00 kW
Channel: 240
Frequency: 95.9 MHz
AMSL Height: 270.2 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

WERV-FM

BMLH20010314AAF
Latitude: 41-46-09 N
Longitude: 088-16-02 W
ERP: 6.00 kW
Channel: 240
Frequency: 95.9 MHz
AMSL Height: 314.13 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

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- WIQI 60 dBu F(50,50) Service Contour
- WERV-FM 40 dBu F(50,10) Service Contour

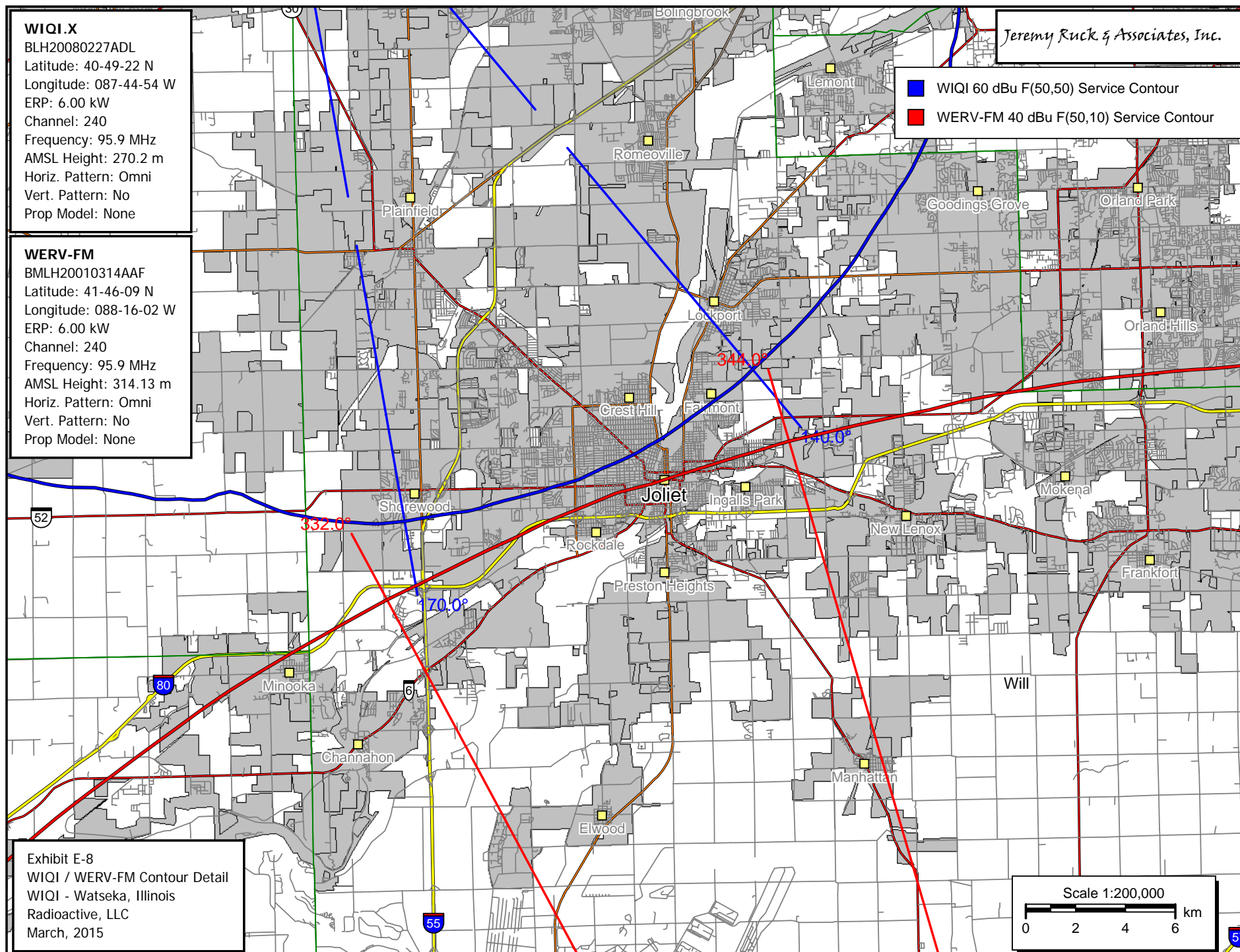


Exhibit E-8
WIQI / WERV-FM Contour Detail
WIQI - Watseka, Illinois
Radioactive, LLC
March, 2015

Scale 1:200,000

0 2 4 6 km

Exhibit E-9 - WIQI 40 dBu F(50,10) Contour Tabulation

Distance to Contour Report

Type of contour: FCC

Location Variability: 50.0 %

Time Variability: 10.0 %

of Radials Calculated: 360

FCC Matching HAAT Calculation Used

Field Strength: 40.00 dBuV/m

Primary Terrain: NED 3 Second US Terrain

Secondary Terrain: FCC 30 Second US Database

Transmitter Information:

Call Letters: WIQI.X

File Number: BLH20080227ADL

Latitude: 40-49-22 N

Longitude: 087-44-54 W

ERP: 6.00 kW

EIRP: 9.84 kW

Channel: 240

Frequency: 95.9 MHz

AMSL Height: 270.2 m

Elevation: 194.0 m

HAAT: 74.28 m

Horiz. Antenna Pattern: Omni

Vert. Elevation Pattern: No

Azimuth (deg)	Distance (km)	HAAT (m)
-----	-----	-----
332.0	83.00	79.4
333.0	82.95	79.2
334.0	82.94	79.1
335.0	82.96	79.2
336.0	82.96	79.2
337.0	83.03	79.6
338.0	83.01	79.5
339.0	83.04	79.6
340.0	82.88	78.8
341.0	82.84	78.6
342.0	82.80	78.4
343.0	82.78	78.3
344.0	82.78	78.3

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03.16.2015

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Exhibit E-10 - WERV-FM 60 dBu F(50,50) Contour Tabulation

Distance to Contour Report
Type of contour: FCC
Location Variability: 50.0 %
Time Variability: 50.0 %
of Radials Calculated: 360
FCC Matching HAAT Calculation Used
Field Strength: 60.00 dBuV/m
Primary Terrain: NED 3 Second US Terrain
Secondary Terrain: FCC 30 Second US Database

Transmitter Information:
Call Letters: WERV-FM
File Number: BMLH20010314AAF
Latitude: 41-46-09 N
Longitude: 088-16-02 W
ERP: 6.00 kW
EIRP: 9.84 kW
Channel: 240
Frequency: 95.9 MHz
AMSL Height: 314.13 m
Elevation: 213.0 m
HAAT: 100.0 m
Horiz. Antenna Pattern: Omni
Vert. Elevation Pattern: No

Azimuth (deg)	Distance (km)	HAAT (m)
-----	-----	-----
140.0	29.58	110.0
141.0	29.63	110.4
142.0	29.64	110.6
143.0	29.64	110.5
144.0	29.63	110.4
145.0	29.64	110.5
146.0	29.64	110.5
147.0	29.68	110.8
148.0	29.70	111.0
149.0	29.72	111.2
150.0	29.71	111.1
151.0	29.73	111.3
152.0	29.71	111.1
153.0	29.67	110.8
154.0	29.64	110.5
155.0	29.64	110.5
156.0	29.65	110.6
157.0	29.60	110.2
158.0	29.52	109.6
159.0	29.51	109.5
160.0	29.46	109.1
161.0	29.42	108.8
162.0	29.38	108.4
163.0	29.36	108.3
164.0	29.38	108.4
165.0	29.37	108.4
166.0	29.30	107.8

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Exhibit E-10 - WERV-FM 60 dBu F(50,50) Contour Tabulation

167.0	29.26	107.4
168.0	29.24	107.3
169.0	29.22	107.2
170.0	29.22	107.1

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