

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

**FM TRANSLATOR STATION W292DJ
LAKE BLUFF, ILLINOIS
106.3 MHz / 0.250 kW DA**

CALVARY RADIO NETWORK, INC.

DECEMBER, 2012

APPLICATION FOR CONSTRUCTION PERMIT

The following engineering statement and attached exhibits have been prepared for **Calvary Radio Network, Inc.** ("Calvary"), licensee of FM translator station W292DJ at Lake Bluff, Illinois, and are in support of their application for construction permit to modify that facility.¹

Under this application it is proposed that the primary station of the facility be changed to WOJO(FM) at Evanston, Illinois.² As part of this change, the translator would be relocated, and both the center of radiation and maximum effective radiated power increased. These changes would allow the translator to serve as a fill-in translator for WOJO(FM), and provide an additional programming stream to a large number of residents as the translator would rebroadcast one of the WOJO digital streams.

At present W292DJ operates with an effective radiated power of 11 Watts utilizing a non-directional antenna. The center of radiation is at 304 meters above mean sea level. The proposed facility would operate with a maximum effective radiated power of 250 Watts at a center of radiation of 332 meters AMSL. The use of a directional antenna is proposed in order to provide requisite contour protection to other facilities in the region. The proposed changes would fail to result in 60 dBu contour overlap with the licensed facilities. As a result, a *Mattoon Waiver* is respectfully requested. This waiver request will be subsequently discussed in this technical exhibit.

As previously discussed, the proposed translator would function as a fill-in translator for FM station WOJO(FM) at Evanston, Illinois. WOJO(FM) is a class B facility, thus it has a protected

¹ The Facility ID for W292DJ at Lake Bluff, Illinois is 141545.

² The Facility ID for WOJO(FM) at Evanston, Illinois is 67073.

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service contour of 54 dBu, or 0.5 mV/m F(50,50). Exhibit E-1 compares the WOJO contour to the proposed translator contour, and demonstrates that the translator contour would lie wholly within the WOJO contour.

The proposed facility complies with the provisions of Section 74.1204 of the Commission's Rules as pertains to interference to other facilities. Television channel six protection under Section 74.1205 is not applicable. Compliance with Section 74.1204 will be demonstrated through multiple exhibits attached to this technical exhibit.

First, Exhibit E-2 is a tabular allocation study for the proposed facility. This study demonstrates that there is no prohibited contour overlap between the proposed facility and any other relevant facility except WPPN at Des Plaines, Illinois and WCFS-FM at Elmwood Park, Illinois.³ Although contour overlap would exist between the proposed facility and these facilities, this overlap would comply with Section 74.1204(d) as will be subsequently demonstrated.

Exhibit E-3 is a graphical illustration of the allocation study table contained in Exhibit E-2. This map demonstrates that contour overlap would occur only between the proposed facility at both WCFS-FM and WPPN. As noted on this map, W292DJ would be co-located with FM station WPPN(FM). As a result, there would necessarily be overlap between the 54 dBu service contour of that facility, and the predicted 94 dBu interference contour from the proposed translator.

Although there would be normally prohibited contour overlap between the proposed facility and both WPPN and WCFS-FM, there would be zero population affected by the potential

³ The Facility ID for WPPN and WCFS-FM are 25053 and 71283 respectively.

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interference area. In the case of WPPN it can be inferred by inspection that no interference would result. This is due to the fact that the licensed effective radiated power of WPPN is 50 kW, while the proposed ERP of the translator is 250 Watts. The difference between these two values is approximately 23 dB. It would, as a result, be impossible for the field strength from the translator to exceed the 40 dBu U/D ratio necessary to cause interference under the Commission's Rules.

Exhibit E-4 illustrates the predicted WCFS-FM service contour in the vicinity of the proposed translator site. As indicated on this map, the predicted field strength is approximately 65 dBu. Thus, interference is predicted to occur in areas where the field strength from the translator would be 105 dBu or greater. Although such an area exists, zero population would be located within the area.

Due to the proximity of the potential interference area to the proposed W292DJ antenna and site, the standard FCC contour method is not the most accurate methodology of determining the location of the three dimensional surface that would comprise the interference area. Rather, a determination of the field strength through the use of free-space calculations is more appropriate. Exhibit E-5 illustrates the resulting calculations from this analysis both graphically and in tabular form.

The power density for the proposed facility at a field strength of 105 dBu is given by the following equation:

$$S = \frac{E^2}{Z_0} = \frac{(0.17783)^2}{377} = 0.00008388$$

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In this equation, S represents the calculated power density in Watts per square meter, E is the electric field intensity, which for 105 dBu is 0.17783 Volts per meter, and Z₀ is the characteristic impedance of free space of 377 ohms.

The power density is also given by:

$$S = \frac{P}{4\pi R^2}$$

Where S is the same units, P is the power in Watts (250 in this case), and R is the distance. Rearranging the terms in the equation, it can be solved for the distance to the desired power density as follows:

$$R^2 = \frac{P}{4\pi S}$$

The results of these calculations for depression of angles of 0 degrees to 90 degrees are tabulated in Exhibit E-5. The data in this exhibit is based on the assumption that a non-directional antenna is being utilized. As a result, it represents a worst-case analysis for the facility. In addition to the tabular data in this exhibit, a number of graphs are included, which graphically illustrate the situation for a given azimuth slice. As previously mentioned, it was assumed for these calculations that an Electronics Research, Inc. (ERI) LPX-3E-HW antenna would be utilized. The relative field values at the listed depression angles are based on the published data for the antenna, and in this case were obtained from their planning software.

The resulting "R" or radius value from the third equation above corresponds to the "Field Strength Radius" columns in Exhibit E-5. Since each radius is assigned to a specific depression

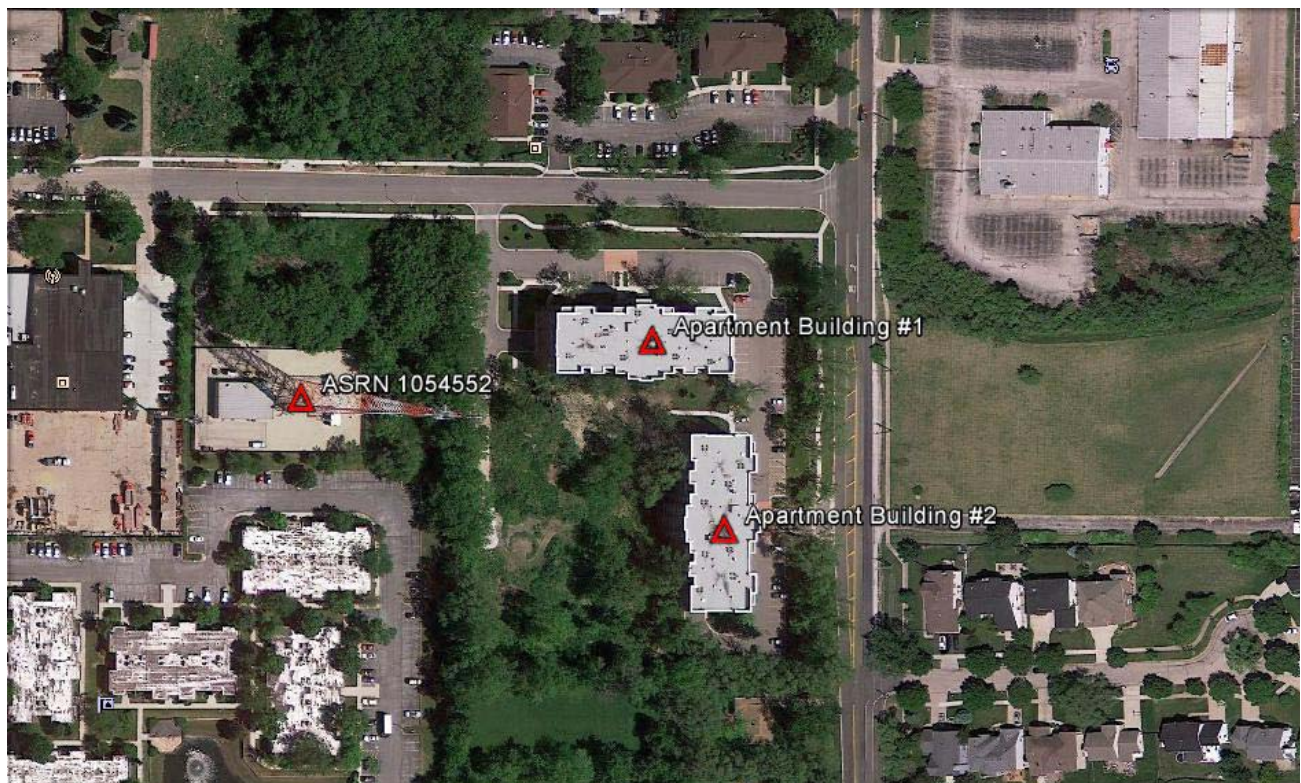
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angle, the radius has both a horizontal and vertical component to it. The specific horizontal and vertical distances from the center of radiation were derived using basic trigonometry. Depression angles where the vertical radius is less than approximately three meters AGL, including negative values, result in areas where interference may potentially be experienced by persons in the area. As this table demonstrates, the predicted interference area lies at locations in excess of 13.1 meters, or 43 feet above ground level.

The tallest buildings in the vicinity of the tower are two apartment buildings located to the east of the tower. The closest point of these two buildings to the tower is 89 meters distant, while the most distant location is at 169 meters from the tower. The first image below illustrates the tower location relative to these two buildings, while the second image provides a street level view of the structures.



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As these images demonstrate, the apartment buildings are approximately 50 feet in height. In the radius from the tower of 89 to 169 meters, the interference area is predicted to reside between 34 and 69 meters AGL. These buildings are well under that height, thus no interference is predicted to occur to the residences within these buildings. No other structure in the immediate vicinity of the tower is of sufficient height to experience interference from the proposed facility. It is therefore respectfully submitted that the proposed facility will not result in interference to any resident or transient population.

Exhibit E-6 illustrates the licensed 60 dBu service contour along with the proposed 60 dBu service contour. As this map demonstrates, the proposed 60 dBu service contour does not overlap a portion of the licensed 60 dBu service contour. Under the Commission's Rules this would constitute a major change to the facility. Calvary, however, respectfully requests a waiver of Section 74.1233(a)(1) of the Commission's Rules to effect the proposed change at this time. The

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proposed changes are similar to those granted under BPFT-20101025ABR, which has colloquially come to be known as a *Mattoon Waiver*.

The proposed W292DJ facility would be mutually exclusive with the licensed W292DJ facility. Exhibit E-7 illustrates the proposed and authorized 60 dBu F(50,50) service contours along with the proposed and authorized 40 dBu F(50,10) interference contours. As this map demonstrates, there would be areas of prohibited contour overlap between the proposed and authorized facilities. Because of this mutual exclusivity, the proposal would qualify as a minor change under the less restrictive full-service processing rules.

The proposed relocation of the translator does not preclude potential LPFM operations in the vicinity. Exhibit E-8 is a single channel spacing study for channel 292 at the licensed transmitter site. This study assumes that the proposed facility would operate as an LP100 facility on channel 292. If W292DJ is neglected, this table demonstrates that there are several other facilities in the region that would preclude LPFM operations on channel 292. This study is graphically illustrated in the contour map in Exhibit E-8. As this map demonstrates, there are no areas within a reasonable distance from the proposed or licensed W292DJ transmitter sites where LPFM operation would be able to meet the spacing requirements.

In addition to the LPFM preclusion for channel 292, other channels in the vicinity would also be precluded. Moving up from the licensed channel, channels 293 through 295 would necessarily be precluded by WPPN, which operates on channel 294. Similarly moving down to channels 289 through 291 would be affected by WCFS-FM at Elmwood Park. Thus, no LPFM operation in the Chicago market would be precluded by the proposed relocation of W292DJ.

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Finally, Calvary does not have a history of serial hops to relocate translators. Calvary Radio Network, Inc. is the licensee of 17 FM translator facilities. For those 17 translator facilities, there are a total of 44 applications listed in the CDBS. Considering STA application as well as renewals, the number of applications on average associated with a facility drops to around two, which would be consistent with original construction permits and licenses.

The proposed relocation of the translator will bring an additional programming stream to more than 1.5 million persons in the suburban Chicago. As a result, a significant population would in essence be able to receive the unique programming to be carried on this stream without having to make a substantial investment in new radios to receive the main signal.

The proposed facility is exempt from environmental processing, as it would not constitute a substantial environmental impact. The proposed facility would utilize an existing tower that is registered with the Commission. The addition of the W292DJ antenna would not necessitate any excavation the ground in the area to be disturbed. In addition, the proposed facility will not result in human exposure to radiofrequency levels in excess of the applicable safety standards.

The proposed facility would operate with an ERI LPX-3E-HW style antenna. *FM Model* predicts the power density from this antenna at ground level to be $0.055 \mu\text{W}/\text{cm}^2$. This value is 0.003 percent of the permissible level under the uncontrolled environment condition. As a result, W292DJ would be categorically excluded.

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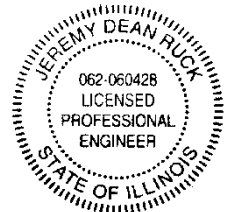
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Calvary certifies that it will coordinate with all present and future users of the site to ensure that workers are not exposed to levels of radiofrequency radiation in excess of the applicable safety standards. Such coordination will include, but is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

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, 2013

Jeremy D. Ruck, PE
December 18, 2012

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WOJO

BLH20030616ACT
Latitude: 41-53-56 N
Longitude: 087-37-23 W
ERP: 5.70 kW
Channel: 286
Frequency: 105.1 MHz
AMSL Height: 606.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

W292DJ.X

Latitude: 42-08-13.60 N
Longitude: 087-58-56.90 W
ERP: 0.25 kW
Channel: 292
Frequency: 106.3 MHz
AMSL Height: 332.3 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model: None

Proposed W292DJ 54 dBu
F(50,50) Contour

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WOJO(FM) 54 dBu
F(50,50) Contour

Exhibit E-1
Service Contour Comparison
W292DJ - Lake Bluff, Illinois
Calvary Radio Network, Inc.
December, 2012

Scale 1:1,000,000

0 10 20 30 km

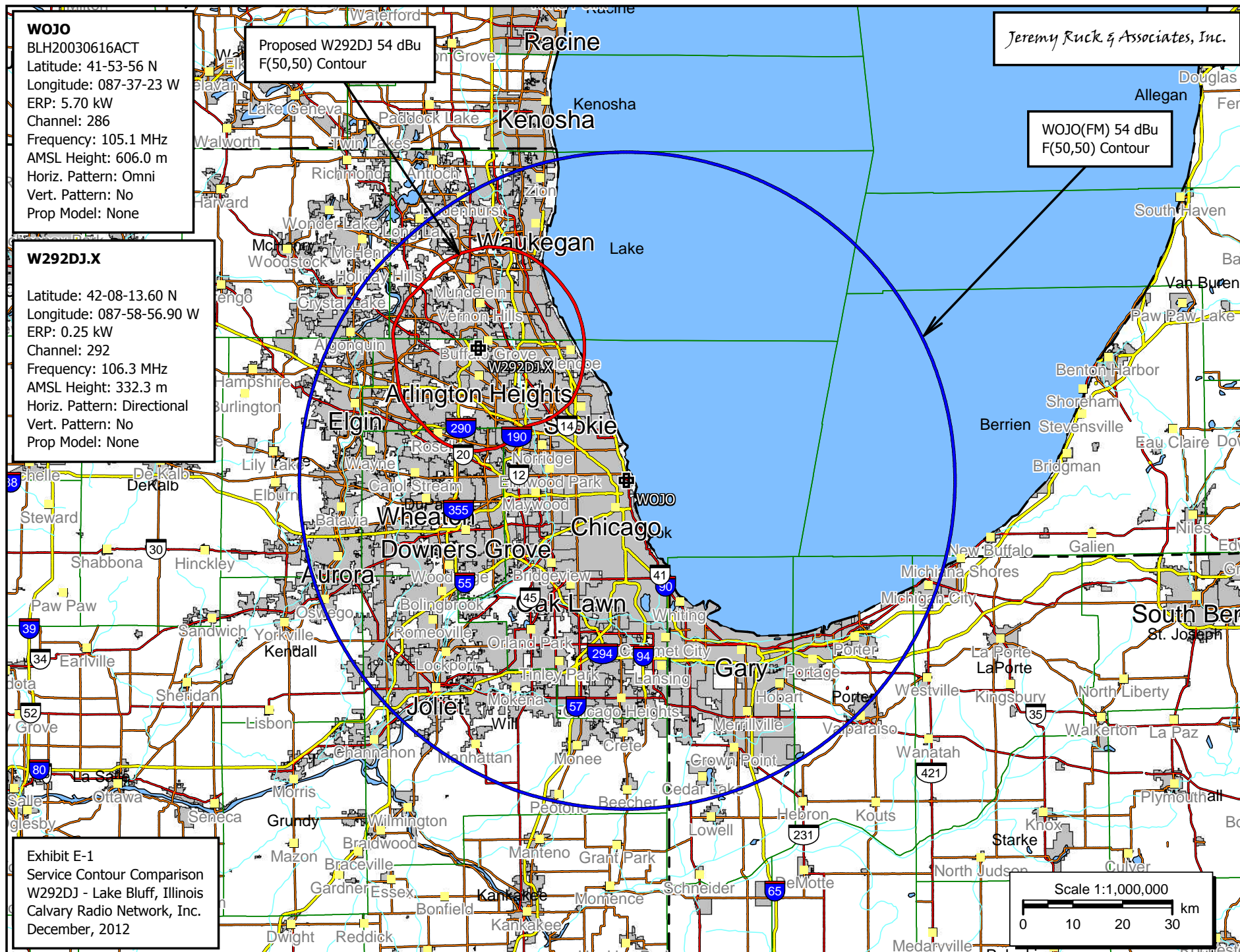


Exhibit E-2 - Tabular Allocation Study

W292DJ - Lake Bluff, Illinois

REFERENCE CH# 292D - 106.3 MHz, Pwr= 0.25 kw DA, HAAT= 112.2 M, COR= 332.3 M DISPLAY DATES
42 08 13.6 N. DATA 12-17-12
87 58 56.9 W. SEARCH 12-17-12
Average Protected F(50-50)= 13.61 km
Standard Directional

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*
294B Des Plaines	WPPN	LIC _C_ IL	0.0 171.3	0.00 BLH19990818KA	42 08 14.0 87 58 57.0	50.000 129	5.8 347	63.6 Univision Radio License Co	-19.4*	-65.2*
292D Lake Bluff	W292DJ	LIC _C_ IL	15.3 195.4	22.08 BLFT20081219AEG	42 19 43.0 87 54 41.0	0.011 92	19.7 304	5.9 Calvary Radio Network, Inc	-12.0	-32.5
290B Elmwood Park	WCFS-FM	LIC _CX IL	134.9 315.2	40.56 BMLH20011101AAC	41 52 44.0 87 38 08.0	4.100 482	4.0 661	65.8 Cbs Radio Holdings Corpora	22.5	-26.8*
292A Genoa	WYRB	LIC _CX IL	264.5 84.0	69.70 BLH20021203ACD	42 04 28.0 88 49 24.0	3.800 126	83.7 380	27.9 Dontron, Inc.	-25.6*	1.4
292A Lansing	WSRB	LIC ZCX IL	149.7 330.0	71.80 BLH20031219AAA	41 34 44.0 87 32 47.0	4.100 121	83.1 309	27.8 Dontron, Inc.	-24.4*	0.0
291B Waukesha	WMIL-FM	LIC _CX WI	3.4 183.5	106.81 BLH20070606ABQ	43 05 46.0 87 54 15.0	12.000 304	76.9 503	65.6 Clear Channel Broadcasting	15.7	11.3
238B Chicago	WNUA«	LIC _CN IL	131.6 311.9	39.83 BLH19881011KC	41 53 56.0 87 37 23.0	8.300 358	12.8 538	58.8 Amfm Broadcasting Licenses	14.5R	25.3M

Terrain database is NED 03 SEC , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
In & Out distances between contours are shown at closest points. Reference zone= East Zone, Co to 3rd adjacent.
All separation margins (if shown) include rounding
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 protected contour.
« = Station meets FCC minimum distance spacing for its class.

W292DJ.X

Latitude: 42-08-13.60 N
Longitude: 087-58-56.90 W
ERP: 0.25 kW
Channel: 292
Frequency: 106.3 MHz
AMSL Height: 332.3 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model: None

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- 60 dBu F(50,50) Contour
- 54 dBu F(50,50) Contour
- 40 dBu F(50,10) Contour
- 48 dBu F(50,10) Contour
- 100 dBu F(50,10) Contour

WMIL-FM 54 dBu
Service Contour

WCFS-FM 54 dBu
Service Contour

Exhibit E-3
Contour Allocation Study
W292DJ - Lake Bluff, Illinois
Calvary Radio Network, Inc.
December, 2012

Note: Proposed W292DJ facilities
are co-located with WPPN. The
WPPN 54 dBu contour has been
omitted from this map.

Scale 1:900,000
0 10 20 30 km

WCFS-FM

BMLH20011101AAC
Latitude: 41-52-44 N
Longitude: 087-38-08 W
ERP: 4.10 kW
Channel: 290
Frequency: 105.9 MHz
AMSL Height: 661.0 m
Elevation: 181.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

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WCFS-FM 65 dBu
F(50,50) Service Contour

Proposed W292DJ
Transmitter Site

Exhibit E-4
WCFS-FM 65 dBu Contour Illustration
W292DJ - Lake Bluff, Illinois
Calvary Radio Network, Inc.
December, 2012

Scale 1:375,000

0 5 10 15 km

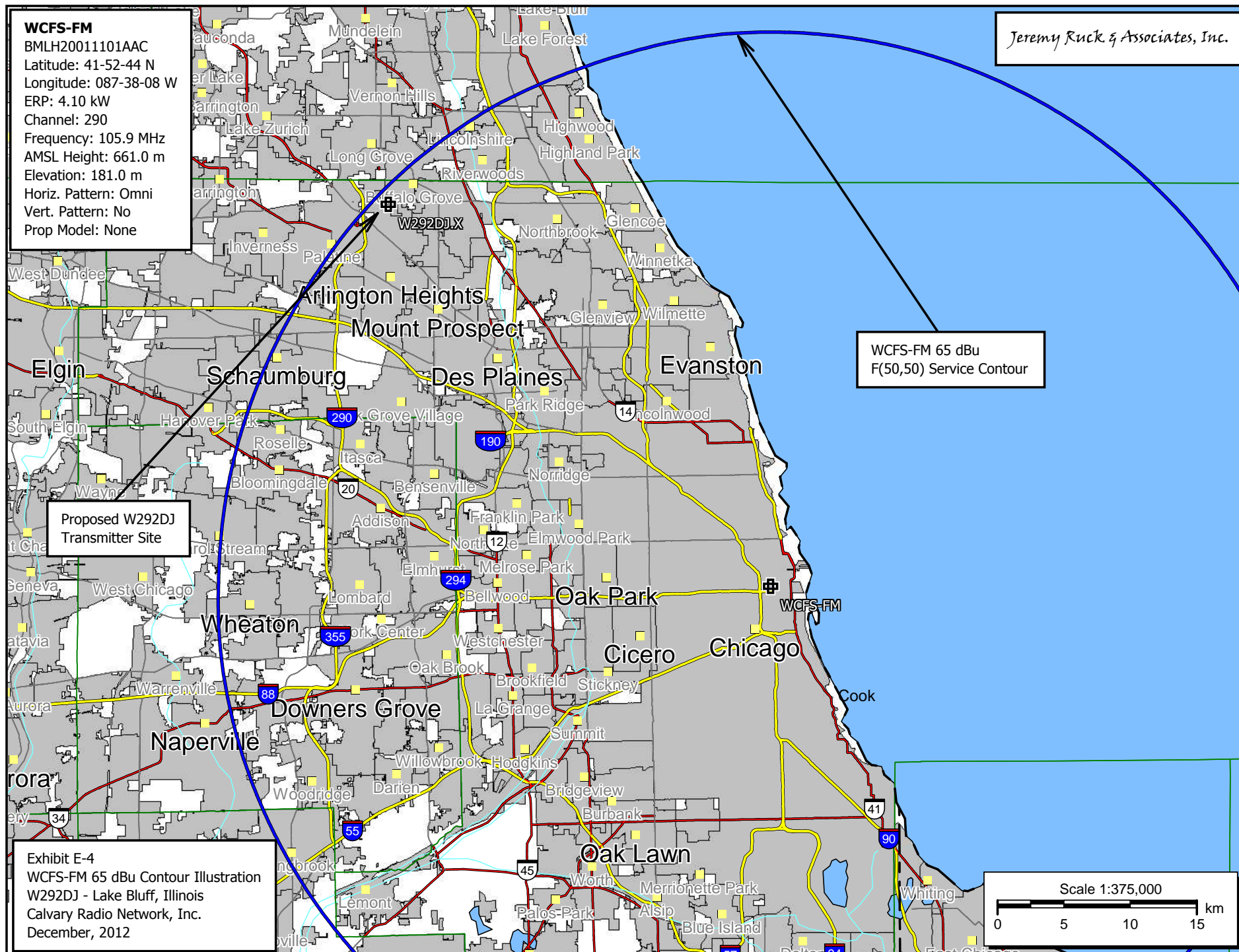


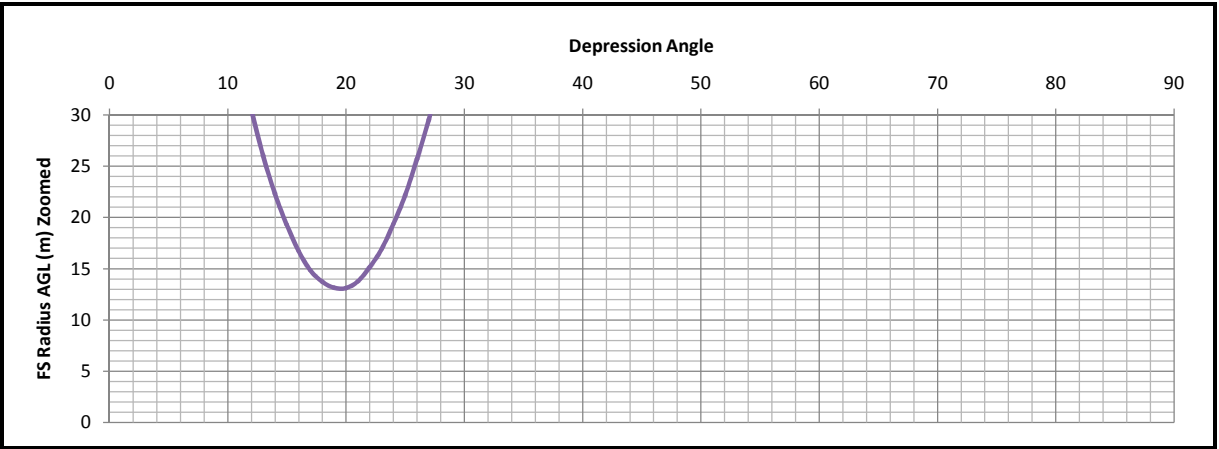
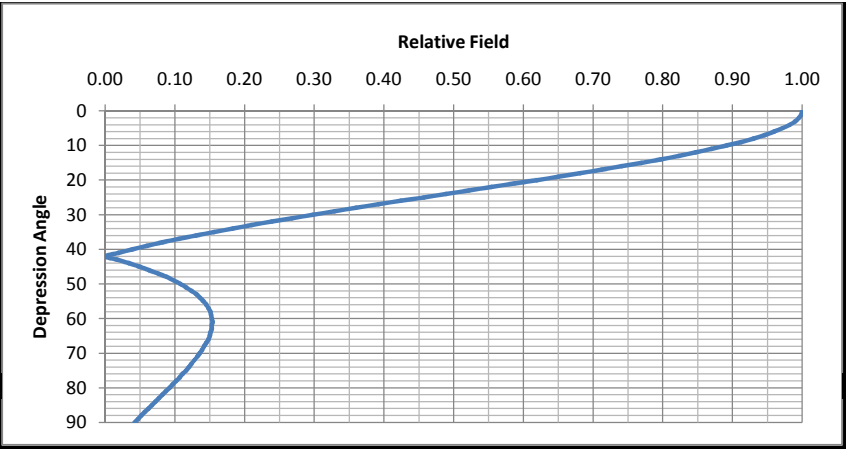


Exhibit E-5 - Translator Proximity Interference Analysis

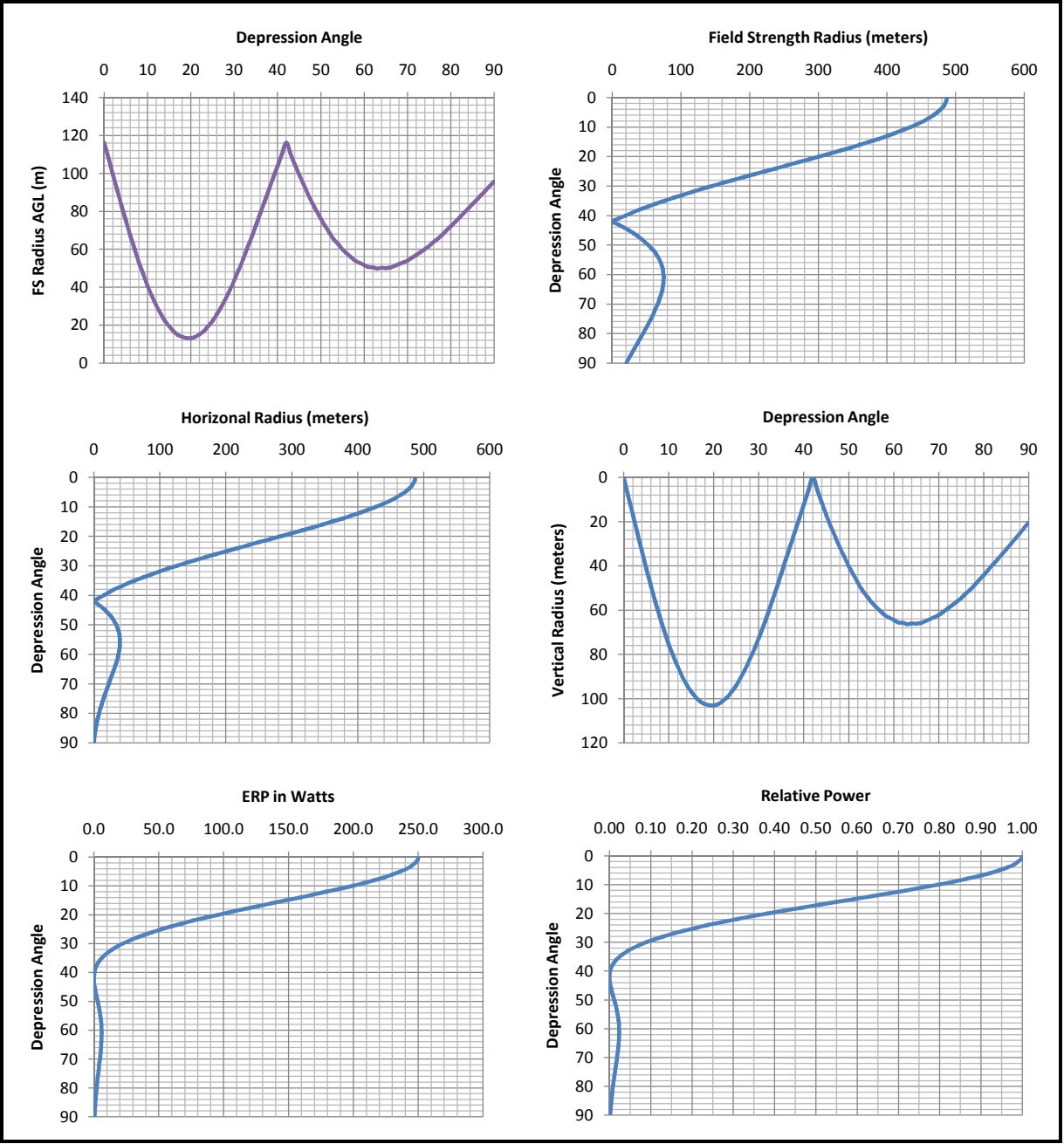
W292DJ - Lake Bluff, Illinois

Antenna No:	44		Center of Radiation:	116.2 m AGL
Manufacturer:	ERI		Effective Radiated Power:	250 Watts
Model:	LPX3H		FS Contour:	105 dBu
Number of Bays:	3		E Field Strength:	0.17783 V/m
Bay Spacing:	Half		Z0 (Ohms):	377 Ohms
			Power Density:	8.388E-05 W/m^2



Depression Angle	Relative Field	Relative Power	ERP Watts	Radii in meters			
				Field Strength	Horizontal	Vertical	AGL
0	1.0000	1.0000	250.00	487.01	487.01	0.00	116.20
1	0.9990	0.9980	249.50	486.52	486.45	8.49	107.71
2	0.9950	0.9900	247.51	484.57	484.28	16.91	99.29
3	0.9900	0.9801	245.03	482.14	481.48	25.23	90.97
4	0.9820	0.9643	241.08	478.24	477.08	33.36	82.84
5	0.9720	0.9448	236.20	473.37	471.57	41.26	74.94
6	0.9600	0.9216	230.40	467.53	464.97	48.87	67.33
7	0.9460	0.8949	223.73	460.71	457.28	56.15	60.05
8	0.9300	0.8649	216.23	452.92	448.51	63.03	53.17
9	0.9120	0.8317	207.94	444.15	438.68	69.48	46.72
10	0.8920	0.7957	198.92	434.41	427.81	75.43	40.77
11	0.8700	0.7569	189.23	423.70	415.91	80.85	35.35
12	0.8470	0.7174	179.35	412.50	403.48	85.76	30.44
13	0.8230	0.6773	169.33	400.81	390.53	90.16	26.04
14	0.7970	0.6352	158.80	388.15	376.62	93.90	22.30
15	0.7690	0.5914	147.84	374.51	361.75	96.93	19.27
16	0.7410	0.5491	137.27	360.87	346.89	99.47	16.73
17	0.7120	0.5069	126.74	346.75	331.60	101.38	14.82
18	0.6810	0.4638	115.94	331.65	315.42	102.49	13.71
19	0.6500	0.4225	105.63	316.55	299.31	103.06	13.14
20	0.6190	0.3832	95.79	301.46	283.28	103.10	13.10
21	0.5870	0.3446	86.14	285.87	266.89	102.45	13.75
22	0.5540	0.3069	76.73	269.80	250.16	101.07	15.13
23	0.5220	0.2725	68.12	254.22	234.01	99.33	16.87
24	0.4890	0.2391	59.78	238.15	217.56	96.86	19.34
25	0.4570	0.2088	52.21	222.56	201.71	94.06	22.14
26	0.4240	0.1798	44.94	206.49	185.59	90.52	25.68
27	0.3920	0.1537	38.42	190.91	170.10	86.67	29.53
28	0.3600	0.1296	32.40	175.32	154.80	82.31	33.89
29	0.3290	0.1082	27.06	160.23	140.14	77.68	38.52
30	0.2980	0.0888	22.20	145.13	125.68	72.56	43.64
31	0.2680	0.0718	17.96	130.52	111.88	67.22	48.98
32	0.2390	0.0571	14.28	116.39	98.71	61.68	54.52
33	0.2100	0.0441	11.03	102.27	85.77	55.70	60.50
34	0.1830	0.0335	8.37	89.12	73.89	49.84	66.36
35	0.1560	0.0243	6.08	75.97	62.23	43.58	72.62
36	0.1300	0.0169	4.23	63.31	51.22	37.21	78.99
37	0.1060	0.0112	2.81	51.62	41.23	31.07	85.13
38	0.0820	0.0067	1.68	39.93	31.47	24.59	91.61
39	0.0600	0.0036	0.90	29.22	22.71	18.39	97.81
40	0.0390	0.0015	0.38	18.99	14.55	12.21	103.99
41	0.0190	0.0004	0.09	9.25	6.98	6.07	110.13
42	0.0000	0.0000	0.00	0.00	0.00	0.00	116.20
43	0.0170	0.0003	0.07	8.28	6.05	5.65	110.55
44	0.0340	0.0012	0.29	16.56	11.91	11.50	104.70
45	0.0490	0.0024	0.60	23.86	16.87	16.87	99.33

Depression Angle	Relative Field	Relative Power	ERP Watts	Radii in meters			
				Field Strength	Horizontal	Vertical	AGL
45	0.0490	0.0024	0.60	23.86	16.87	16.87	99.33
46	0.0630	0.0040	0.99	30.68	21.31	22.07	94.13
47	0.0760	0.0058	1.44	37.01	25.24	27.07	89.13
48	0.0880	0.0077	1.94	42.86	28.68	31.85	84.35
49	0.0980	0.0096	2.40	47.73	31.31	36.02	80.18
50	0.1080	0.0117	2.92	52.60	33.81	40.29	75.91
51	0.1160	0.0135	3.36	56.49	35.55	43.90	72.30
52	0.1240	0.0154	3.84	60.39	37.18	47.59	68.61
53	0.1310	0.0172	4.29	63.80	38.39	50.95	65.25
54	0.1360	0.0185	4.62	66.23	38.93	53.58	62.62
55	0.1410	0.0199	4.97	68.67	39.39	56.25	59.95
56	0.1450	0.0210	5.26	70.62	39.49	58.54	57.66
57	0.1480	0.0219	5.48	72.08	39.26	60.45	55.75
58	0.1510	0.0228	5.70	73.54	38.97	62.36	53.84
59	0.1520	0.0231	5.78	74.03	38.13	63.45	52.75
60	0.1530	0.0234	5.85	74.51	37.26	64.53	51.67
61	0.1540	0.0237	5.93	75.00	36.36	65.60	50.60
62	0.1530	0.0234	5.85	74.51	34.98	65.79	50.41
63	0.1530	0.0234	5.85	74.51	33.83	66.39	49.81
64	0.1510	0.0228	5.70	73.54	32.24	66.10	50.10
65	0.1500	0.0225	5.63	73.05	30.87	66.21	49.99
66	0.1480	0.0219	5.48	72.08	29.32	65.85	50.35
67	0.1450	0.0210	5.26	70.62	27.59	65.00	51.20
68	0.1420	0.0202	5.04	69.16	25.91	64.12	52.08
69	0.1390	0.0193	4.83	67.69	24.26	63.20	53.00
70	0.1360	0.0185	4.62	66.23	22.65	62.24	53.96
71	0.1320	0.0174	4.36	64.29	20.93	60.78	55.42
72	0.1280	0.0164	4.10	62.34	19.26	59.29	56.91
73	0.1240	0.0154	3.84	60.39	17.66	57.75	58.45
74	0.1200	0.0144	3.60	58.44	16.11	56.18	60.02
75	0.1160	0.0135	3.36	56.49	14.62	54.57	61.63
76	0.1110	0.0123	3.08	54.06	13.08	52.45	63.75
77	0.1070	0.0114	2.86	52.11	11.72	50.77	65.43
78	0.1020	0.0104	2.60	49.67	10.33	48.59	67.61
79	0.0970	0.0094	2.35	47.24	9.01	46.37	69.83
80	0.0920	0.0085	2.12	44.80	7.78	44.12	72.08
81	0.0870	0.0076	1.89	42.37	6.63	41.85	74.35
82	0.0820	0.0067	1.68	39.93	5.56	39.55	76.65
83	0.0770	0.0059	1.48	37.50	4.57	37.22	78.98
84	0.0720	0.0052	1.30	35.06	3.67	34.87	81.33
85	0.0670	0.0045	1.12	32.63	2.84	32.51	83.69
86	0.0620	0.0038	0.96	30.19	2.11	30.12	86.08
87	0.0570	0.0032	0.81	27.76	1.45	27.72	88.48
88	0.0520	0.0027	0.68	25.32	0.88	25.31	90.89
89	0.0470	0.0022	0.55	22.89	0.40	22.89	93.31
90	0.0420	0.0018	0.44	20.45	0.00	20.45	95.75



W292DJ

BLFT20081219AEG

Latitude: 42-19-43 N

Longitude: 087-54-41 W

ERP: 0.011 kW

Channel: 292

Frequency: 106.3 MHz

AMSL Height: 304.0 m

Horiz. Pattern: Omni

Vert. Pattern: No

Prop Model: None

Licensed W292DJ
60 dBu Contour*Jeremy Ruck & Associates, Inc.*

- Licensed W292DJ 60 dBu Contour
- Proposed W292DJ 60 dBu Contour

Proposed W292DJ
60 dBu Contour**Exhibit E-6**

60 dBu Service Contour Comparison

W292DJ - Lake Bluff, Illinois

Calvary Radio Network, Inc.

December, 2012

Scale 1:375,000

0 5 10 15 km

W292DJ

BLFT20081219AEG
Latitude: 42-19-43 N
Longitude: 087-54-41 W
ERP: 0.011 kW
Channel: 292
Frequency: 106.3 MHz
AMSL Height: 304.0 m
Horiz. Pattern: Omni
Vert. Pattern: No
Prop Model: None

W292DJ.X

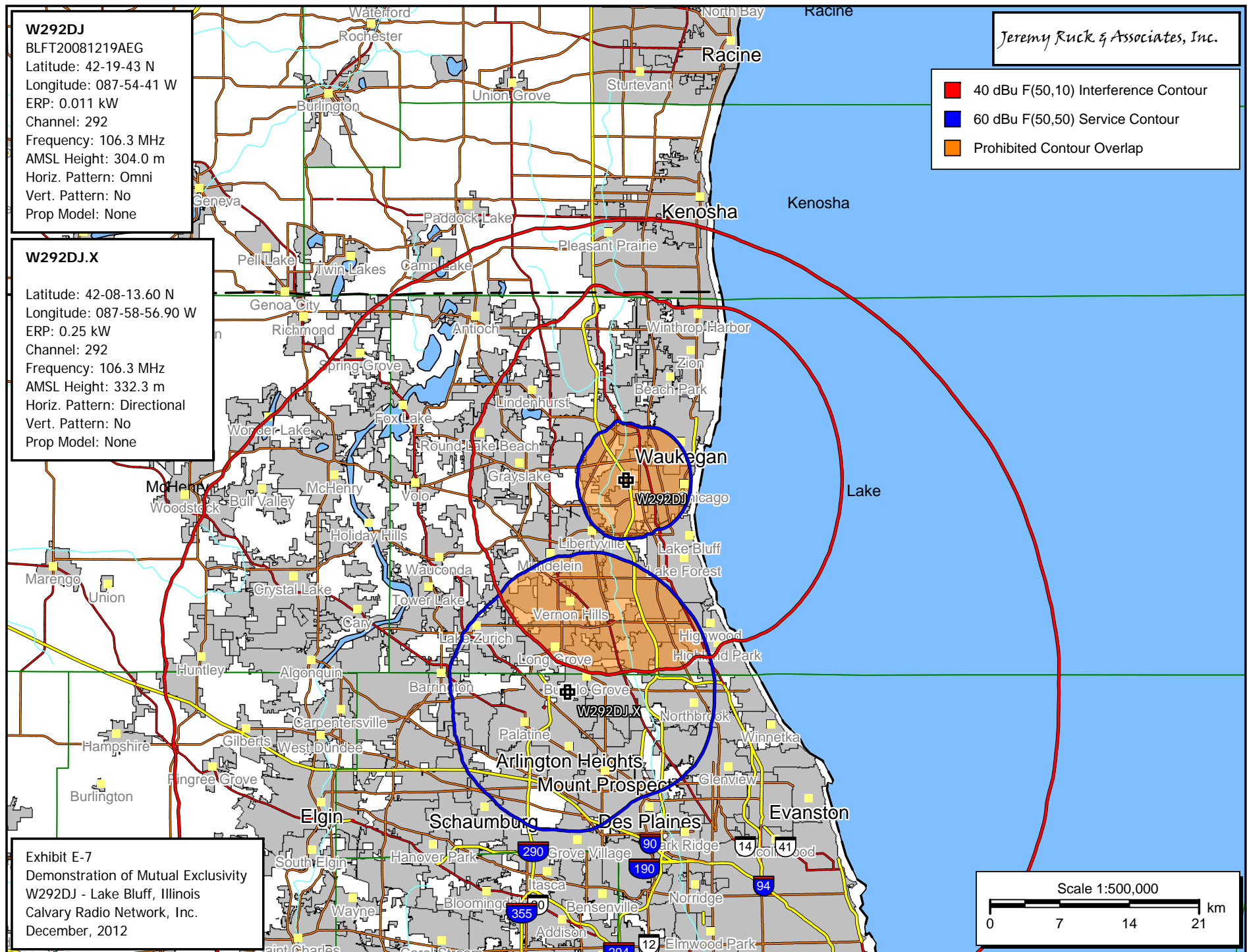
Latitude: 42-08-13.60 N
Longitude: 087-58-56.90 W
ERP: 0.25 kW
Channel: 292
Frequency: 106.3 MHz
AMSL Height: 332.3 m
Horiz. Pattern: Directional
Vert. Pattern: No
Prop Model: None

Exhibit E-7

Demonstration of Mutual Exclusivity
W292DJ - Lake Bluff, Illinois
Calvary Radio Network, Inc.
December, 2012

Jeremy Ruck & Associates, Inc.

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



Jeremy Ruck & Associates, Inc.
 Consulting Engineers - Canton, Illinois
 Exhibit E-8 - Single Channel Spacing Study
 W292DJ - Lake Bluff, Illinois

REFERENCE		DISPLAY DATES
42 19 43.0 N.	CLASS = L1	DATA 12-18-12
87 54 41.0 W.	Current Spacings to 3rd Adj.	SEARCH 12-18-12
----- Channel 292 - 106.3 MHz -----		

Call	Channel	Location	Azi	Dist	FCC	Margin
WPPN	LIC 294B	Des Plaines	IL 195.4	22.05	66.5	-44.5
W292DJ	LIC 292D	Lake Bluff	IL 0.0	0.00	25.5	-25.5
WCFS-FM	LIC 290B	Elmwood Park	IL 155.4	54.91	66.5	-11.6
WMIL-FM	LIC 291B	Waukesha	WI 0.4	85.26	96.5	-11.2
WYRB	LIC 292A	Genoa	IL 249.7	80.43	66.5	13.9
WSRB	LIC-Z 292A	Lansing	IL 160.0	88.60	66.5	22.1
WKCH	LIC-Z 293A	Whitewater	WI 313.3	94.11	55.5	38.6
WNUA	LIC 238B	Chicago	IL 153.4	53.35	11.5	41.9

 All separation margins include rounding

Jeremy Ruck & Associates, Inc.

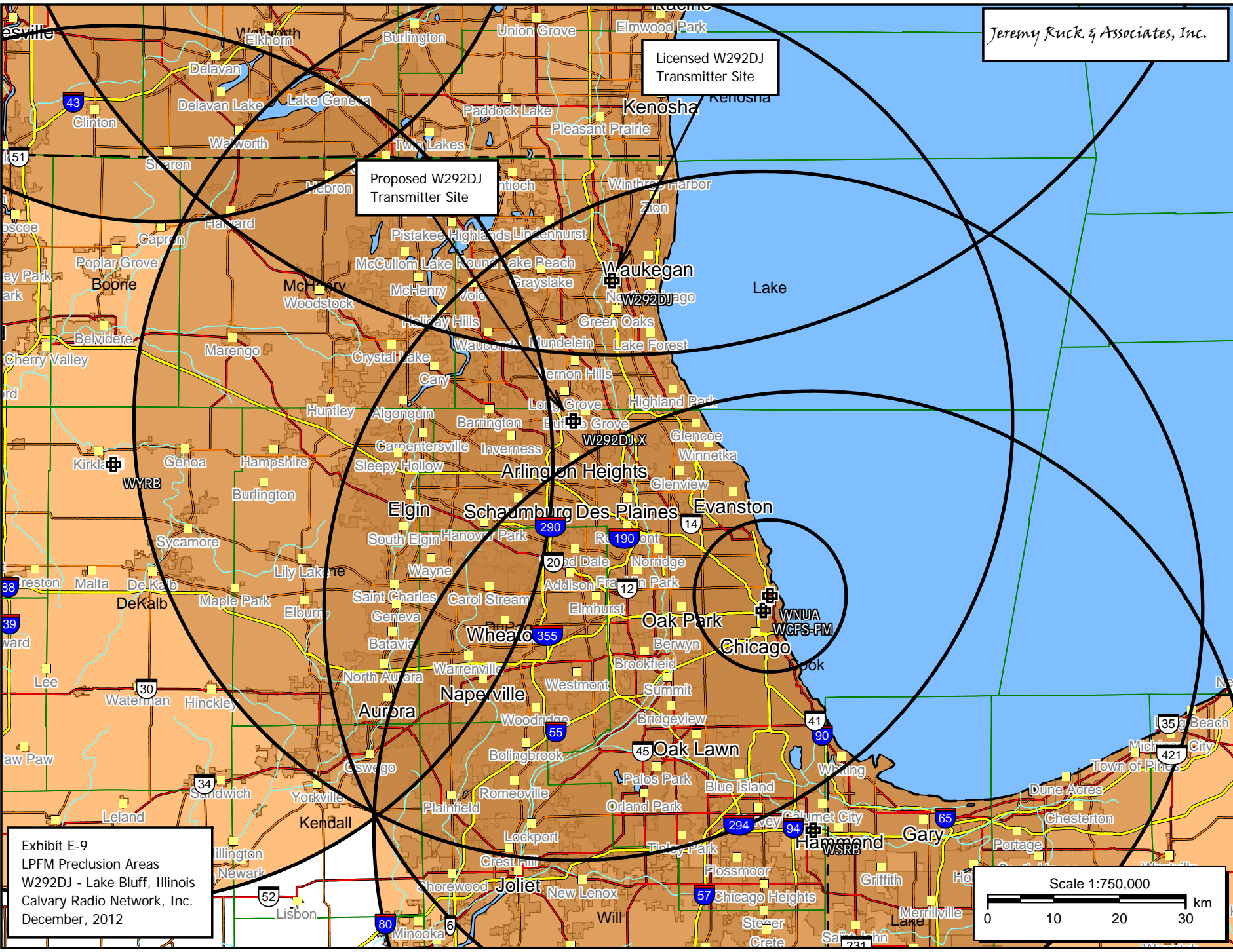


Exhibit E-9
LPMF Preclusion Areas
W292DJ - Lake Bluff, Illinois
Calvary Radio Network, Inc.
December, 2012

