

## **ENGINEERING EXHIBIT**

### **Application for Construction Permit**

prepared for

#### **The WBEZ Alliance, Inc.**

WBEZ(FM) Chicago, IL

Facility ID 66649

Ch. 218B 91.5 MHz 5.7 kW 425 m

*The WBEZ Alliance, Inc. (“Alliance”)* is the licensee of non-commercial educational FM radio station WBEZ(FM) Ch. 218B, Chicago, IL. The current WBEZ license (BLED-19850628KL) specifies operation with 8.3 kW effective radiated power (“ERP”) and an antenna height above average terrain (“HAAT”) of 360 meters using a shared antenna located on one of two masts atop the John Hancock Center. A Construction Permit (“CP”, BPED-20050914ACR) authorizes WBEZ to employ a different shared antenna located on the other John Hancock Center mast at 5.6 kW ERP and 425 meters HAAT. An *Application for License* to cover that CP is pending (BLED-20060905ACG).

The instant application seeks a minor modification of the new WBEZ facility to specify an increase in ERP to 5.7 kW to achieve the maximum Class B facility for 425 meters HAAT. No other changes are sought. WBEZ will continue to employ the ERI model COG3-20P-2-70-2 shared antenna on the second John Hancock Center mast as described above (Antenna Structure Registration number 1009012). No change in overall structure height is proposed.

WBEZ is a Class B station as described in §§ 73.506(a)(3), 73.210, and 73.211. The proposed 5.7 kW / 425 meter operation results in a class contour distance of 52.3 km, which matches the 52 km maximum Class B limit specified in §73.211(b)(1) when rounded to the nearest kilometer as specified in §73.211(b)(1)(i). Other Class B stations licensed to operate at 5.7 kW ERP / 425 m HAAT with the same shared antenna are WUSN(FM) (Ch. 258B, Chicago, IL), WILV(FM) (Ch. 262B, Chicago, IL), WKQX(FM) (Ch. 266B, Chicago, IL), and WOJO(FM) (Ch. 286B, Evanston, IL).

Chicago, the principal community, is encompassed by the proposed WBEZ 60 dBμ coverage contour. The attached **Figure 1** supplies a coverage contour map for the proposed WBEZ facility. There is no change in site location, clearly complying with §73.3573(a)(1) regarding a minor modification.

Terrain data for the eight standard radials was obtained from the USGS National Elevation Data (“NED”) 3 arc-second digital terrain data. The determination of HAAT excluded the consideration of the 0° and 45° True radials per §73.313(d)(2), due to the proximity of the Lake Michigan. The entire 3 to 16 km segments of these radials are entirely over water and the resulting 34 dBμ contour does not cover any land area in these directions. Accordingly, the determination of HAAT was based on the remaining six radials. Averaging these six radials, the WBEZ antenna’s resulting HAAT is 425.1 meters.

**Allocation Considerations**

A study of the minimum separation requirements for the proposed transmitter site shows that the following FM facilities are close enough to warrant study in regard to prohibited overlap under §73.509 of the Commission’s Rules:

Channel Status	Call Sign Service	City/State File Number	Fac. ID	Latitude Longitude	Power HAAT	Distance Bearing
215A LIC	WDCB FM	GLEN ELLYN, IL BMLD-19840113AF	12281	41 50 36 88 05 00	5.0 91	38.71 260.95
216A APP	980512MP FM	VALPARAISO, IN BPED-19980512MP	90651	41 31 22 87 01 28	0.23 125	65.02 129.89
216A APP	971112MA FM	VALPARAISO, IN BPED-19971112MA	89070	41 31 25 87 01 06	0.15 134	65.35 129.54
216A APP	980512MV FM	SOUTH HAVEN, IN BPED-19980512MV	90705	41 31 25 87 01 06	0.15 135	65.35 129.54
218A LIC	WNIQ FM	STERLING, IL BLED-19981112KA	49557	41 53 52 89 36 20	2.4 100	164.52 270.62
218A CP	WWJA FM	JANESVILLE, WI BPED-19990719MI	93903	42 43 47 89 10 10	2.2 118	157.39 306.52
219A LIC	WETL FM	SOUTH BEND, IN BLED-19830926AG	60920	41 37 24 86 14 15	3.0 91	119.22 104.47
219A CP	990917MM FM	WOODSTOCK, IL BPED-19990917MM	94208	42 17 37 88 35 13	5.0 100	91.00 299.22
220B LIC	WJCH FM	JOLIET, IL BLED-19860505KF	20847	41 24 55 88 16 19	50.0 151	76.20 225.29

The attached **Figures 2, 3, and 4** depict the pertinent protected and interfering contours of the stations listed and the proposed WBEZ facility. Co-channel stations and first-adjacent channel stations protected and interfering contours are depicted in **Figures 2 and 3**, respectively. **Figure 4** provides an allocation map regarding second and third adjacent stations.

Regarding first-adjacent stations, **Figure 3A** supplies a detailed map of the contours which are close but do not overlap associated with the Construction Permit facility for Channel 219A at Woodstock, IL (BPED-19990917MM). **Table 1** provides a companion “FM Over” computation for these contours at one-degree increments. These exhibits demonstrate that no prohibited contour overlap will exist with respect to the Woodstock CP facility.

The application underlying the Woodstock Channel 219A (BPED-19990917MM) by Cornerstone Community Radio Inc. (“Cornerstone”) was mutually exclusive (“MX”) with another Woodstock Channel 219A application (BPED-19990917MI) filed by Family Stations Inc. (“Family”). Cornerstone’s application was the tentative selectee in FCC 07-40 (March 27, 2007), and Cornerstone has since received a construction permit for Channel 219A at Woodstock. The Family application (BPED-19990917MI) was dismissed on May 30, 2007 and should not be a consideration for the instant WBEZ proposal.

The proposed WBEZ facility does involve prohibited contour overlap with third-adjacent station WDCB(FM) (Ch. 215A, Glen Ellyn, IL) as shown in **Figure 4**. However this overlap of the WBEZ 60 dB $\mu$  contour by the WDCB 100 dB $\mu$  contour is an existing situation where WDCB’s contour is currently encompassed by WBEZ. As depicted in **Figure 4A**, there would be no change in the area of overlap with WDCB, therefore the proposal complies with §73.509(d) concerning existing overlap.

The allocations studies summarized above conclude that the WBEZ proposal is in compliance with §73.509 regarding prohibited contour overlap. The contour locations were determined using the actual ERP and height above terrain along each radial for each facility, as

specified in §73.509(c). For the facilities under study, the antenna elevation above mean sea level, geographic coordinates, and ERP (including directional antenna relative field values, where appropriate) were retrieved from the FCC’s engineering database. The requisite contours were determined using U.S.G.S. NED 3-second digitized terrain data along each radial of interest from each transmitter site and an implementation of the Commission’s TVFMFS computer program which simulates the FM propagation curves. The F(50,10) distances are used to calculate distance to interfering contours, however if the distance is less than 16 km the F(50,50) curves are used, as specified by §73.509(c)(2).

A spacing study was performed as required by §73.507(c) (regarding facilities differing in frequency by 10.6 or 10.8 MHz from the proposal). The proposed facility meets the minimum distance separation requirements of §73.207 in all such instances. The nearest station on the pertinent channels is summarized below.

Channel Status	Call Sign	City/State File Number	Fac. ID	Latitude Longitude	Power HAAT	Distance Bearing	Required Clear
272A LIC	WXLC FM	WAUKEGAN, IL BLH-19850122LR	10451	42 20 59 87 52 53	3.0 98	54.44 337.06	15.00 39.44

**TV Channel 6 Considerations**

Under §73.525(a)(1), an affected TV Channel 6 station must be considered with a proposed non-commercial educational facility on Channel 218 if the distance between the respective transmitter sites is 166 km or less. Within a 166 km radius of the proposed WBEZ facility, the only TV Channel 6 facility is that of WITI(TV), Milwaukee, Wisconsin (BLCT-19990129KT), at a distance of 134 km.

Accordingly, **Figure 5** depicts the WITI Grade B (47 dBμ) contour, along with the interfering 79.5 dBμ F(50,10) from the proposed WBEZ facility.<sup>1</sup> As shown on **Figure 5**, there is no

<sup>1</sup>The interfering contour level is determined in accordance with §73.525(e)(1)(ii), and does not consider the additional 6 dB receiving antenna directivity as permitted by §73.525(e)(1)(iii).

overlap between these contours. Accordingly, the instant proposal complies with the television Channel 6 protection criteria of §73.525.

### **Other Allocation Matters**

The site is not within a border area requiring international coordination. The nearest FCC monitoring station is 158 km distant at Allegan, MI. This exceeds by a great margin the threshold minimum distance specified in §73.1030(c)(3) that would suggest consideration of the monitoring station. The proposed site is also located outside the areas specified in §73.1030(a)(1) and §73.1030(b). Thus, notification of the instant proposal to the National Radio Astronomy Observatory at Green Bank, West Virginia, or the Table Mountain Radio Receiving Zone in Boulder County, Colorado is not required. There are no AM broadcast stations located within 3.2 km (2 miles) of the proposed site, according to information extracted from the Commission's engineering database.

### **Human Exposure to Radiofrequency Electromagnetic Field (Environmental)**

The proposed WBEW will continue to employ an existing shared antenna system atop the John Hancock Center in downtown Chicago. The use of existing transmitting locations has been characterized as being environmentally preferable by the Commission, according to Note 1 of §1.1306 of the FCC Rules. No change in structure height is proposed, thus no change in current structure marking and lighting requirements is anticipated. Therefore, it is believed that this application may be categorically excluded from environmental processing pursuant to §1.1306 of the Commission's rules.

The proposed operation was evaluated for human exposure to RF energy using the procedures outlined in the Commission's OET Bulletin Number. 65. Based on OET-65 equation (10) and the worst-case of 100% field at all elevations, the calculated signal density near the John Hancock Center at two meters above ground level attributable to the proposed facility is  $2.1 \mu\text{W}/\text{cm}^2$ , which is 1.1 percent of the general population/uncontrolled maximum permitted exposure limit. This is well below the five percent threshold limit described in §1.1307(b)(3)

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. When the antenna's elevation pattern is considered, the level of RF exposure will be much lower.

Consideration was also given with respect to the building's rooftop areas and other nearby "tall" buildings, considering 25 percent antenna relative field in downward elevations (pattern data in **Figure 6** shows less than 25 percent relative field at angles 35 to 90 degrees below the antenna). Exposure levels exceeding five percent of the general population / uncontrolled limit for the proposed operation are calculated to occur only at certain locations within 49 meters of the transmitting antenna at downward elevations. Nearby buildings, including the John Hancock Center rooftop itself (at a distance of over 70 meters), do not encroach upon this distance. Thus, for rooftop and any publicly-accessible areas on the John Hancock Center and nearby buildings, the five percent exclusion of §1.1307(b)(3) applies.

Access to the John Hancock Center rooftop, antenna support structures, and any areas within the building that may exceed exposure limits is strictly controlled by the building owner. *Alliance* will continue to participate in the building's RF exposure safety program along with the other broadcasters and FCC licensees that utilize the John Hancock Center as a transmission site. As necessary, based on calculations or actual measurements considering all emitters, exposure abatement procedures will be confirmed and amended as necessary. The RF safety program will continue to be employed protecting maintenance and installation workers from excessive exposure when work must be performed in locations where high RF levels may be present. Such areas have been placed under strict restricted access and properly identified.

The general public will not be exposed to RF levels attributable to the proposal in excess of the FCC's guidelines. 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, mast or antenna from RF electromagnetic field exposure in excess of FCC guidelines.

## **Certification**

The undersigned hereby certifies that the foregoing statement and associated attachments were prepared by him or under his direction, and that they are true and correct to the best of his knowledge and belief.

Joseph M. Davis, P.E.  
July 20, 2007

**Chesapeake RF Consultants, LLC**  
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Manassas, VA 20112  
703-650-9600

### List of Attachments

Figure 1	Proposed Coverage Contour
Figure 2	Co-Channel Allocation Study
Figure 3	First-Adjacent Channel Allocation Study
Figure 3A	First-Adjacent Channel Allocation Study – Detail
Table 1	Contour Protection “FM Over” Report
Figure 4	Second and Third-Adjacent Channel Allocation Study
Figure 5	TV Channel 6 Allocation Study
Figure 6	Antenna Vertical Plane (Elevation) Pattern
Form 340	Saved Version of Engineering Sections from FCC Form at Time of Upload

*This material was entered July 20, 2007 for filing electronically. Since the FCC's electronic filing system may be accessed by anyone with the applicant's name and password, and electronic data may otherwise be altered in an unauthorized fashion, we cannot be responsible for changes made subsequent to our entry of this data and related attachments.*

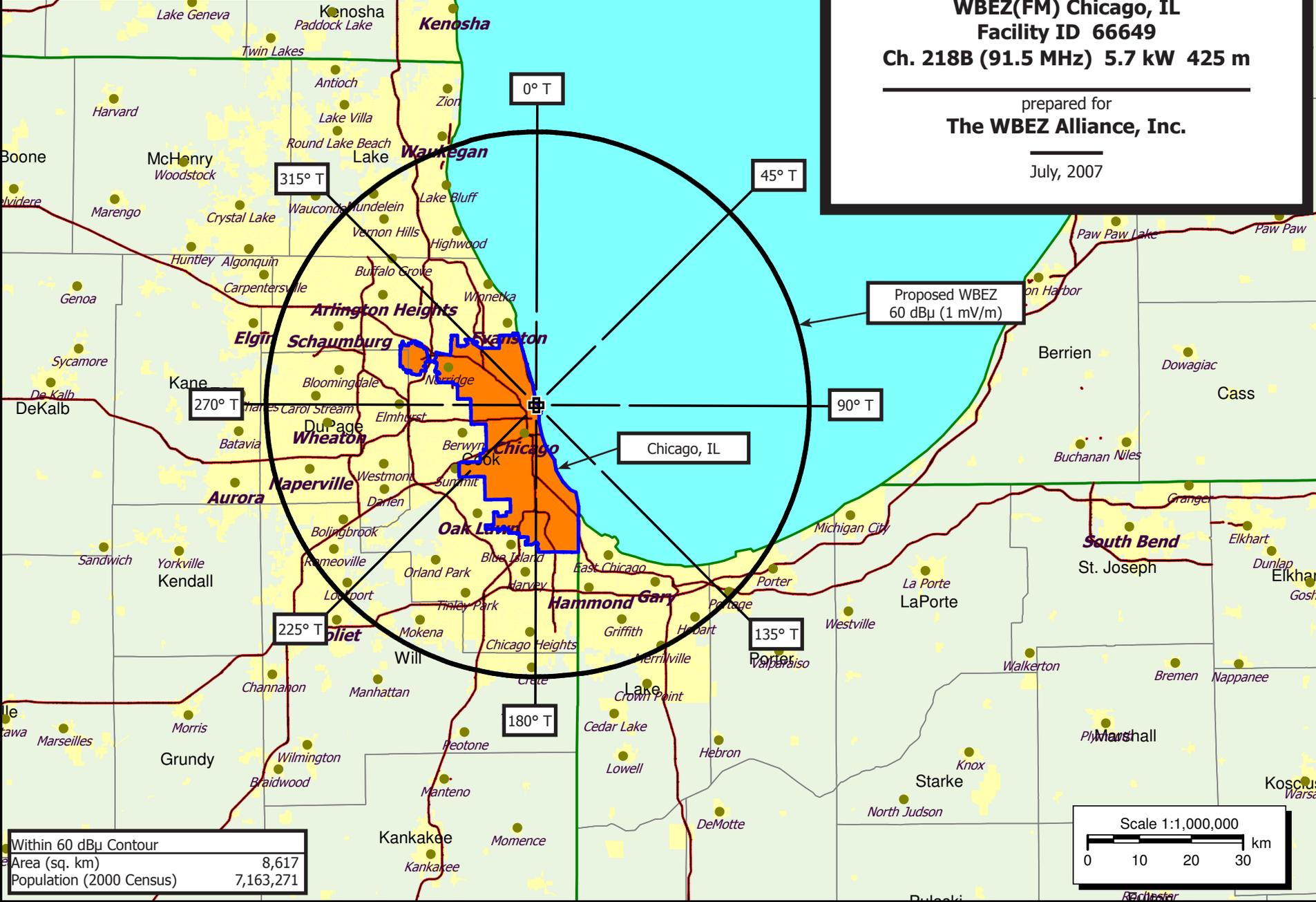
**Figure 1**  
**Proposed Coverage Contour**  
**WBEZ(FM) Chicago, IL**  
**Facility ID 66649**  
**Ch. 218B (91.5 MHz) 5.7 kW 425 m**

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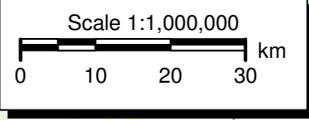
prepared for  
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July, 2007



Within 60 dBμ Contour	
Area (sq. km)	8,617
Population (2000 Census)	7,163,271



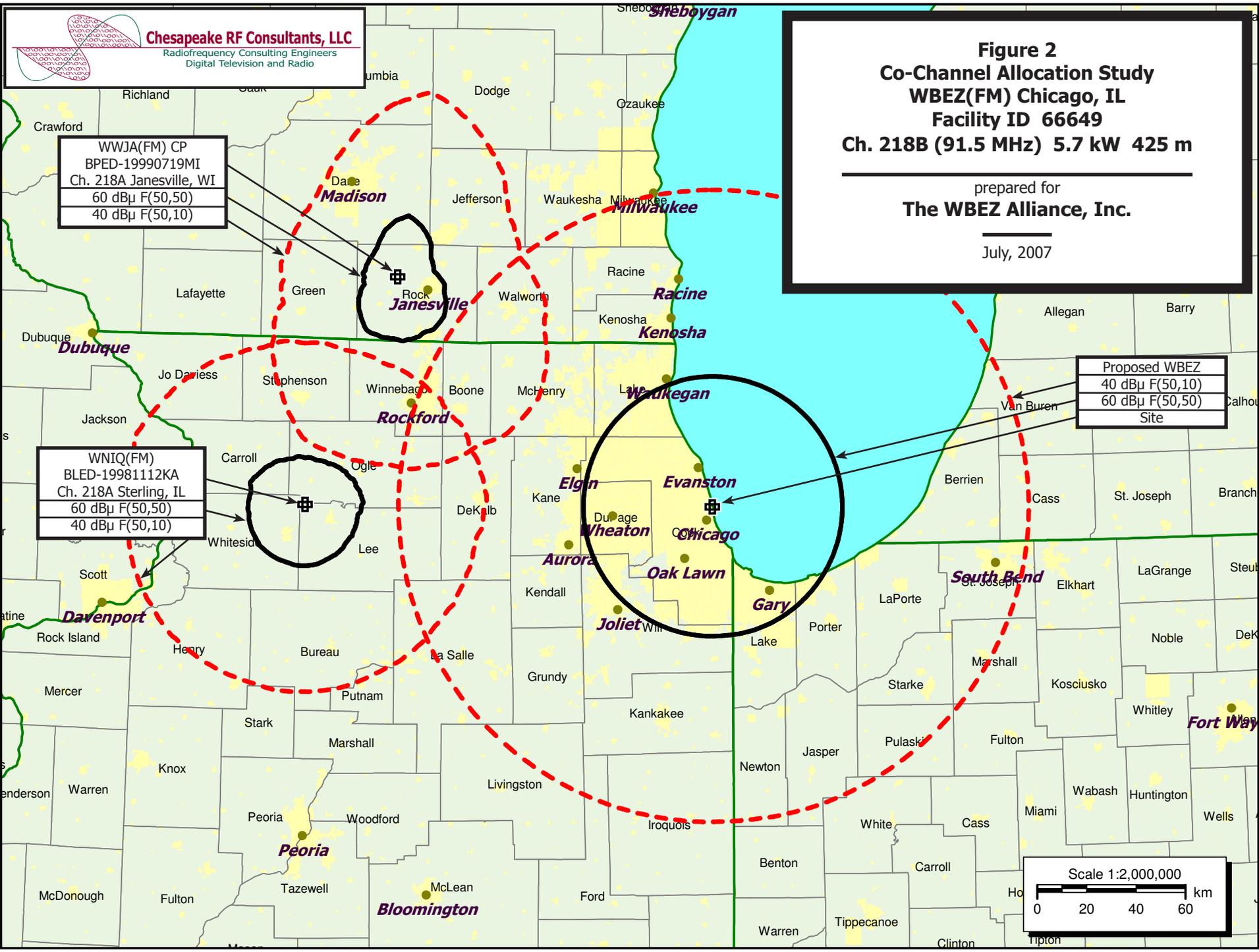
**Figure 2**  
**Co-Channel Allocation Study**  
**WBEZ(FM) Chicago, IL**  
**Facility ID 66649**  
**Ch. 218B (91.5 MHz) 5.7 kW 425 m**

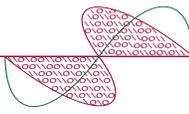
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prepared for  
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July, 2007





**Chesapeake RF Consultants, LLC**  
 Radiofrequency Consulting Engineers  
 Digital Television and Radio

**Figure 3**  
**First-Adjacent Channel Allocation Study**  
**WBEZ(FM) Chicago, IL**  
**Facility ID 66649**  
**Ch. 218B (91.5 MHz) 5.7 kW 425 m**

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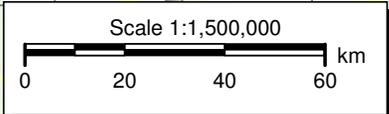
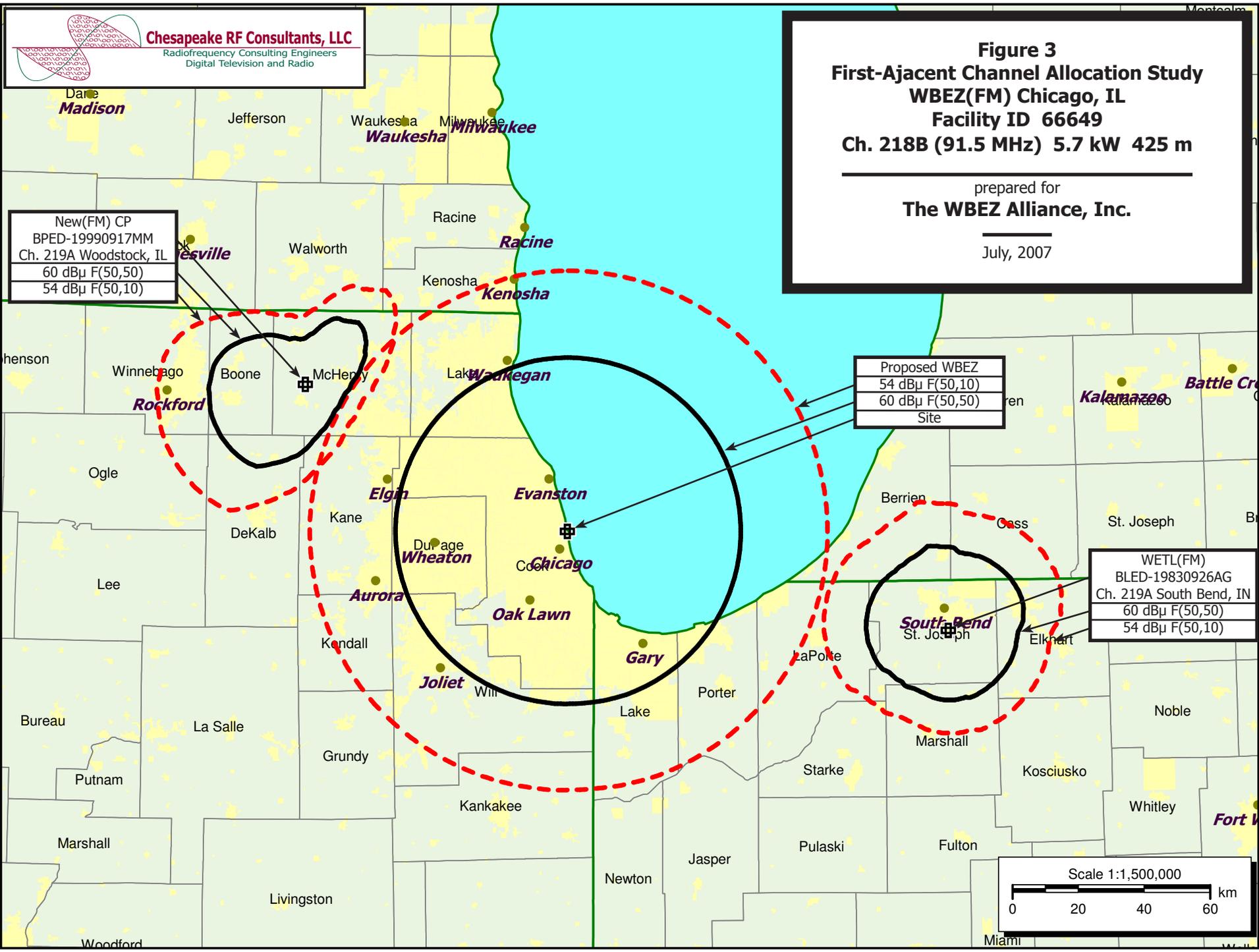
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July, 2007

New(FM) CP  
 BPED-19990917MM  
 Ch. 219A Woodstock, IL  
 60 dBμ F(50,50)  
 54 dBμ F(50,10)

Proposed WBEZ  
 54 dBμ F(50,10)  
 60 dBμ F(50,50)  
 Site

WETL(FM)  
 BLED-19830926AG  
 Ch. 219A South Bend, IN  
 60 dBμ F(50,50)  
 54 dBμ F(50,10)



**Figure 3A - Detail**  
**First-Adjacent Channel Allocation Study**  
**WBEZ(FM) Chicago, IL**  
**Facility ID 66649**  
**Ch. 218B (91.5 MHz) 5.7 kW 425 m**

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July, 2007

New(FM) CP  
 BPED-19990917MM  
 Ch. 219A Woodstock, IL  
 60 dBμ F(50,50)  
 54 dBμ F(50,10)

Proposed WBEZ  
 54 dBμ F(50,10)  
 60 dBμ F(50,50)

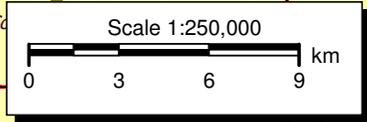
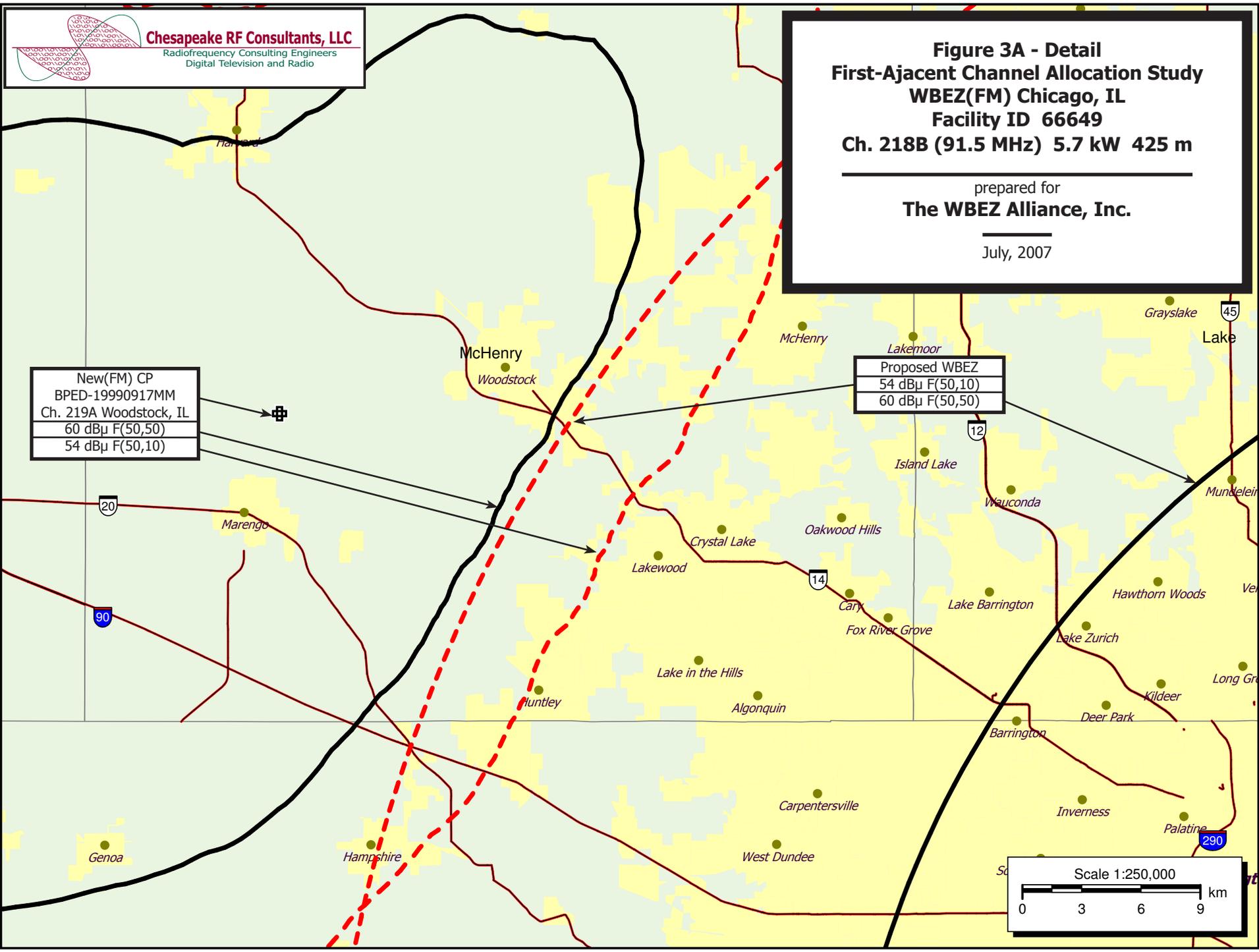


Table 1

**Contour Protection "FM Over" Report**  
**The WBEZ Alliance, Inc.**  
 WBEZ(FM) Chicago, IL  
 (page 1 of 3)



07-20-2007 NED 03 SEC Terrain Data

990917MM BPED19990917MM  
 Channel = 219A  
 Max ERP = 5 kW  
 RCAMSL = 365 M  
 N. Lat. 42 17 37.0  
 W. Lng. 88 35 13.0  
 Protected  
 60 dBu

WBEZ proposed  
 Channel = 218B  
 Max ERP = 5.7 kW  
 RCAMSL = 605.7 M  
 N. Lat. 41 53 56.0  
 W. Lng. 87 37 23.0  
 Interfering  
 54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
059.0	001.7334	0097.3	021.0	311.9	005.7000	0423.6	082.4	52.64
060.0	001.6474	0097.2	020.8	311.7	005.7000	0423.6	082.1	52.73
061.0	001.5809	0097.4	020.6	311.5	005.7000	0423.5	081.9	52.82
062.0	001.5158	0098.2	020.5	311.3	005.7000	0423.6	081.6	52.92
063.0	001.4521	0098.9	020.3	311.1	005.7000	0423.6	081.3	53.02
064.0	001.3897	0098.8	020.1	310.9	005.7000	0423.7	081.1	53.09
065.0	001.3287	0097.7	019.7	310.5	005.7000	0423.8	080.9	53.16
066.0	001.2691	0096.7	019.4	310.2	005.7000	0423.6	080.7	53.21
067.0	001.2108	0096.3	019.1	309.9	005.7000	0423.6	080.5	53.26
068.0	001.1539	0095.4	018.8	309.6	005.7000	0423.5	080.4	53.30
069.0	001.0984	0094.6	018.5	309.3	005.7000	0423.4	080.3	53.34
070.0	001.0442	0093.9	018.2	309.0	005.7000	0423.3	080.2	53.38
071.0	001.0017	0093.9	018.0	308.7	005.7000	0423.2	080.0	53.43
072.0	000.9601	0093.5	017.7	308.5	005.7000	0423.1	079.9	53.46
073.0	000.9193	0093.5	017.5	308.2	005.7000	0423.1	079.8	53.51
074.0	000.8795	0094.2	017.4	308.0	005.7000	0423.1	079.6	53.56
075.0	000.8405	0093.9	017.1	307.7	005.7000	0423.0	079.5	53.59
076.0	000.8024	0094.2	016.9	307.5	005.7000	0423.0	079.4	53.63
077.0	000.7652	0093.7	016.7	307.2	005.7000	0423.0	079.3	53.65
078.0	000.7289	0093.2	016.4	306.9	005.7000	0423.0	079.3	53.65
079.0	000.6934	0093.6	016.2	306.7	005.7000	0423.0	079.2	53.68
080.0	000.6588	0093.5	015.9	306.4	005.7000	0422.9	079.2	53.69
081.0	000.6323	0092.6	015.7	306.1	005.7000	0422.8	079.2	53.69
082.0	000.6062	0091.6	015.4	305.9	005.7000	0422.7	079.2	53.68
083.0	000.5807	0091.4	015.2	305.6	005.7000	0422.6	079.2	53.69
084.0	000.5558	0089.3	014.8	305.3	005.7000	0422.5	079.3	53.65
085.0	000.5314	0089.5	014.7	305.1	005.7000	0422.4	079.2	53.67
086.0	000.5075	0088.9	014.4	304.8	005.7000	0422.4	079.2	53.66
087.0	000.4842	0088.9	014.3	304.6	005.7000	0422.8	079.2	53.68
088.0	000.4615	0089.4	014.1	304.4	005.7000	0422.9	079.2	53.70
089.0	000.4393	0089.9	014.0	304.2	005.7000	0422.6	079.1	53.69
090.0	000.4176	0090.2	013.9	304.0	005.7000	0422.3	079.1	53.69
091.0	000.4007	0091.0	013.8	303.8	005.7000	0422.2	079.1	53.71
092.0	000.3842	0091.7	013.7	303.6	005.7000	0422.2	079.0	53.73
093.0	000.3680	0093.0	013.6	303.5	005.7000	0422.2	078.9	53.75
094.0	000.3522	0094.4	013.6	303.3	005.7000	0422.2	078.9	53.78
095.0	000.3367	0095.4	013.5	303.1	005.7000	0422.1	078.8	53.79
096.0	000.3216	0095.7	013.4	302.9	005.7000	0422.1	078.8	53.79
097.0	000.3068	0095.4	013.2	302.7	005.7000	0422.1	078.9	53.77
098.0	000.2923	0095.0	013.0	302.5	005.7000	0422.1	079.0	53.74
099.0	000.2782	0094.9	012.9	302.3	005.7000	0422.0	079.0	53.72

Table 1

**Contour Protection "FM Over" Report**  
**The WBEZ Alliance, Inc.**  
 WBEZ(FM) Chicago, IL  
 (page 2 of 3)



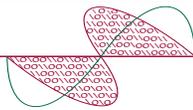
990917MM				BPED19990917MM				WBEZ proposed	
Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	
100.0	000.2645	0094.2	012.7	302.1	005.7000	0421.9	079.1	53.68	
101.0	000.2576	0093.7	012.6	301.9	005.7000	0421.8	079.1	53.67	
102.0	000.2509	0093.0	012.4	301.8	005.7000	0421.7	079.2	53.65	
103.0	000.2442	0093.2	012.4	301.6	005.7000	0421.7	079.2	53.66	
104.0	000.2376	0093.1	012.3	301.4	005.7000	0421.7	079.2	53.65	
105.0	000.2311	0093.8	012.2	301.3	005.7000	0421.7	079.2	53.66	
106.0	000.2247	0095.0	012.2	301.1	005.7000	0421.7	079.1	53.68	
107.0	000.2184	0096.0	012.2	301.0	005.7000	0421.8	079.1	53.69	
108.0	000.2122	0097.0	012.2	300.8	005.7000	0421.8	079.1	53.69	
109.0	000.2060	0097.1	012.1	300.7	005.7000	0421.8	079.1	53.68	
110.0	000.2000	0098.1	012.1	300.5	005.7000	0421.8	079.1	53.69	
111.0	000.1970	0099.1	012.1	300.4	005.7000	0421.8	079.1	53.70	
112.0	000.1940	0099.7	012.1	300.2	005.7000	0421.8	079.0	53.71	
113.0	000.1911	0100.0	012.1	300.0	005.7000	0421.8	079.0	53.71	
114.0	000.1882	0100.0	012.0	299.9	005.7000	0421.8	079.1	53.70	
115.0	000.1853	0100.9	012.0	299.7	005.7000	0421.8	079.0	53.71	
116.0	000.1824	0102.1	012.0	299.6	005.7000	0421.8	079.0	53.72	
117.0	000.1796	0104.0	012.1	299.4	005.7000	0421.7	078.9	53.74	
118.0	000.1767	0104.7	012.1	299.3	005.7000	0421.7	078.9	53.74	
119.0	000.1739	0105.8	012.1	299.1	005.7000	0421.7	078.9	53.74	
120.0	000.1711	0107.4	012.1	299.0	005.7000	0421.6	078.9	53.75	
121.0	000.1702	0108.1	012.2	298.8	005.7000	0421.6	078.9	53.76	
122.0	000.1693	0108.5	012.2	298.7	005.7000	0421.6	078.9	53.75	
123.0	000.1684	0108.4	012.1	298.5	005.7000	0421.5	078.9	53.74	
124.0	000.1674	0108.6	012.1	298.4	005.7000	0421.5	078.9	53.73	
125.0	000.1665	0109.2	012.2	298.2	005.7000	0421.5	079.0	53.73	
126.0	000.1656	0109.8	012.2	298.1	005.7000	0421.5	079.0	53.72	
127.0	000.1647	0109.2	012.1	297.9	005.7000	0421.4	079.1	53.69	
128.0	000.1638	0108.8	012.1	297.8	005.7000	0421.4	079.1	53.67	
129.0	000.1629	0108.7	012.1	297.6	005.7000	0421.4	079.2	53.65	
130.0	000.1620	0108.5	012.0	297.5	005.7000	0421.4	079.3	53.62	
131.0	000.1656	0108.1	012.1	297.3	005.7000	0421.3	079.3	53.62	
132.0	000.1693	0107.6	012.1	297.2	005.7000	0421.3	079.3	53.61	
133.0	000.1730	0107.0	012.2	297.0	005.7000	0421.3	079.3	53.60	
134.0	000.1767	0107.2	012.2	296.8	005.7000	0421.2	079.3	53.60	
135.0	000.1805	0107.4	012.3	296.7	005.7000	0421.2	079.3	53.60	
136.0	000.1843	0108.2	012.4	296.5	005.7000	0421.1	079.3	53.61	
137.0	000.1882	0109.2	012.5	296.3	005.7000	0421.1	079.2	53.62	
138.0	000.1921	0109.8	012.6	296.2	005.7000	0421.1	079.2	53.62	
139.0	000.1960	0110.0	012.7	296.0	005.7000	0421.0	079.3	53.61	
140.0	000.2000	0109.7	012.7	295.8	005.7000	0421.0	079.3	53.60	
141.0	000.2103	0108.7	012.8	295.6	005.7000	0420.9	079.3	53.59	
142.0	000.2209	0107.8	012.9	295.5	005.7000	0420.9	079.3	53.59	
143.0	000.2318	0106.3	013.0	295.3	005.7000	0420.8	079.4	53.57	
144.0	000.2429	0105.7	013.1	295.1	005.7000	0420.8	079.4	53.57	
145.0	000.2543	0105.2	013.2	294.9	005.7000	0420.8	079.4	53.56	
146.0	000.2659	0104.8	013.4	294.7	005.7000	0420.8	079.4	53.56	
147.0	000.2778	0104.7	013.5	294.5	005.7000	0420.8	079.4	53.55	
148.0	000.2899	0104.6	013.6	294.3	005.7000	0420.7	079.4	53.55	
149.0	000.3023	0103.9	013.7	294.2	005.7000	0420.7	079.5	53.53	
150.0	000.3150	0103.5	013.9	294.0	005.7000	0420.7	079.5	53.51	
151.0	000.3313	0102.9	014.0	293.8	005.7000	0420.6	079.6	53.50	

Table 1

**Contour Protection "FM Over" Report**  
**The WBEZ Alliance, Inc.**  
 WBEZ(FM) Chicago, IL  
 (page 3 of 3)



990917MM				BPED19990917MM				WBEZ proposed		
Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)		
152.0	000.3480	0102.4	014.1	293.6	005.7000	0420.6	079.6	53.48		
153.0	000.3650	0102.4	014.3	293.4	005.7000	0420.6	079.6	53.47		
154.0	000.3825	0101.8	014.4	293.2	005.7000	0420.5	079.7	53.45		
155.0	000.4004	0101.0	014.5	293.0	005.7000	0420.5	079.8	53.42		
156.0	000.4188	0100.2	014.7	292.8	005.7000	0420.5	079.9	53.39		
157.0	000.4375	0099.4	014.8	292.6	005.7000	0420.4	080.0	53.35		
158.0	000.4566	0098.6	014.9	292.4	005.7000	0420.4	080.1	53.31		
159.0	000.4762	0097.8	015.0	292.2	005.7000	0420.3	080.2	53.27		
160.0	000.4961	0096.7	015.0	292.1	005.7000	0420.3	080.4	53.22		
161.0	000.5220	0096.0	015.2	291.9	005.7000	0420.2	080.5	53.18		
162.0	000.5485	0095.7	015.4	291.7	005.7000	0420.2	080.6	53.15		
163.0	000.5756	0095.7	015.6	291.4	005.7000	0420.1	080.7	53.12		
164.0	000.6034	0095.2	015.7	291.2	005.7000	0420.1	080.8	53.08		
165.0	000.6319	0095.6	016.0	291.0	005.7000	0420.0	080.9	53.05		
166.0	000.6610	0095.3	016.1	290.7	005.7000	0420.0	081.0	53.01		
167.0	000.6908	0095.5	016.4	290.5	005.7000	0419.9	081.1	52.97		
168.0	000.7212	0095.4	016.6	290.3	005.7000	0419.9	081.2	52.92		
169.0	000.7523	0095.3	016.8	290.0	005.7000	0419.9	081.4	52.87		
170.0	000.7841	0095.6	017.0	289.8	005.7000	0419.8	081.5	52.82		
171.0	000.8250	0095.1	017.2	289.6	005.7000	0419.8	081.7	52.77		
172.0	000.8669	0095.8	017.5	289.3	005.7000	0419.8	081.8	52.72		
173.0	000.9099	0096.9	017.8	289.0	005.7000	0419.8	082.0	52.68		
174.0	000.9540	0097.7	018.1	288.7	005.7000	0419.7	082.1	52.63		
175.0	000.9990	0098.6	018.4	288.4	005.7000	0419.6	082.3	52.57		
176.0	001.0452	0099.5	018.8	288.1	005.7000	0419.6	082.5	52.51		
177.0	001.0923	0100.7	019.1	287.8	005.7000	0419.5	082.6	52.44		
178.0	001.1405	0101.8	019.4	287.5	005.7000	0419.4	082.9	52.37		
179.0	001.1897	0102.7	019.7	287.3	005.7000	0419.4	083.1	52.29		

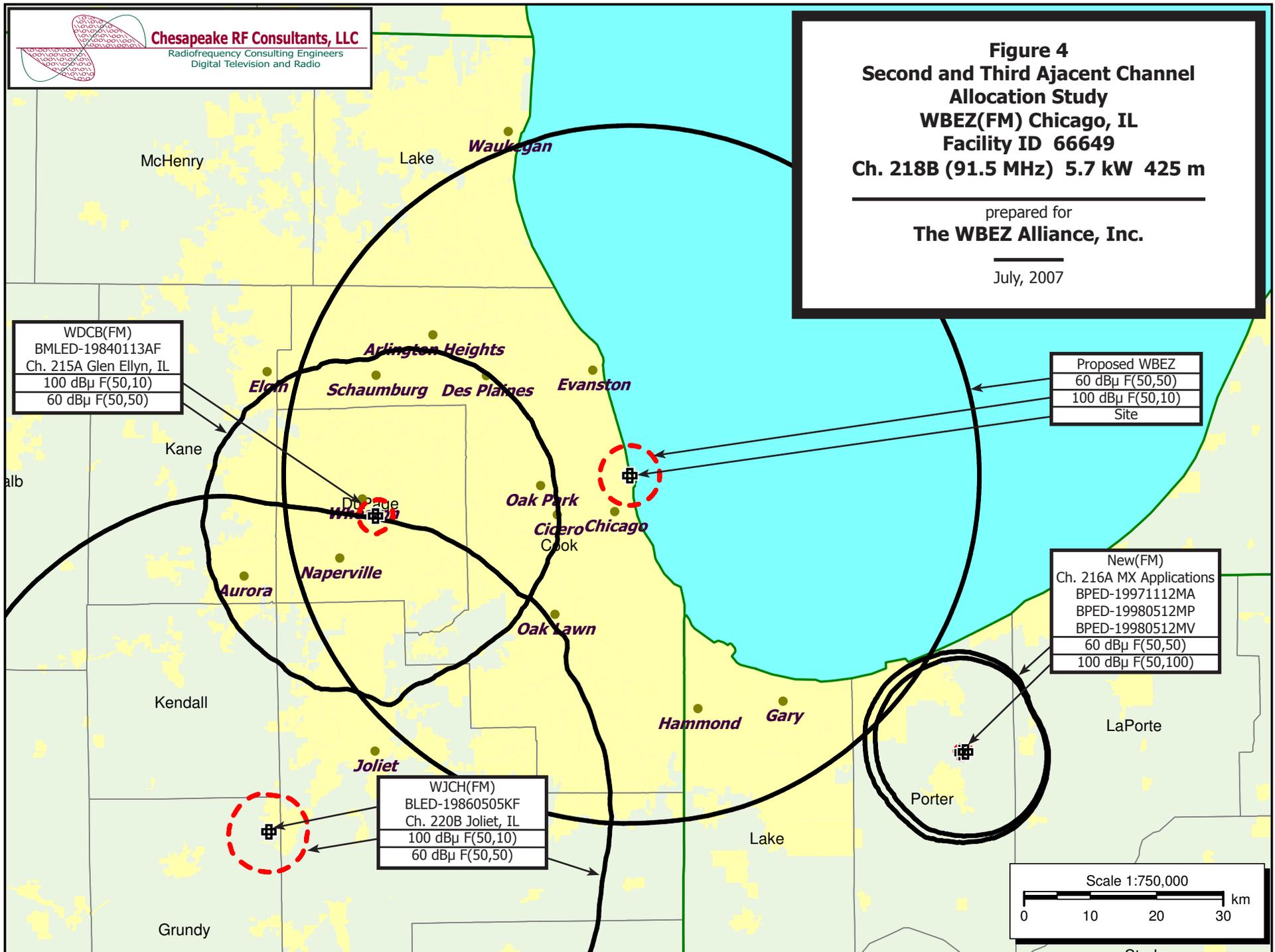


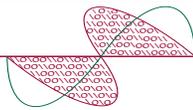
**Chesapeake RF Consultants, LLC**  
 Radiofrequency Consulting Engineers  
 Digital Television and Radio

**Figure 4**  
**Second and Third Adjacent Channel**  
**Allocation Study**  
**WBEZ(FM) Chicago, IL**  
**Facility ID 66649**  
**Ch. 218B (91.5 MHz) 5.7 kW 425 m**

prepared for  
**The WBEZ Alliance, Inc.**

July, 2007





**Chesapeake RF Consultants, LLC**  
 Radiofrequency Consulting Engineers  
 Digital Television and Radio

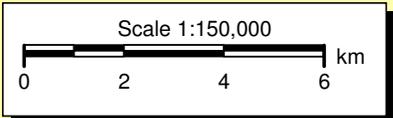
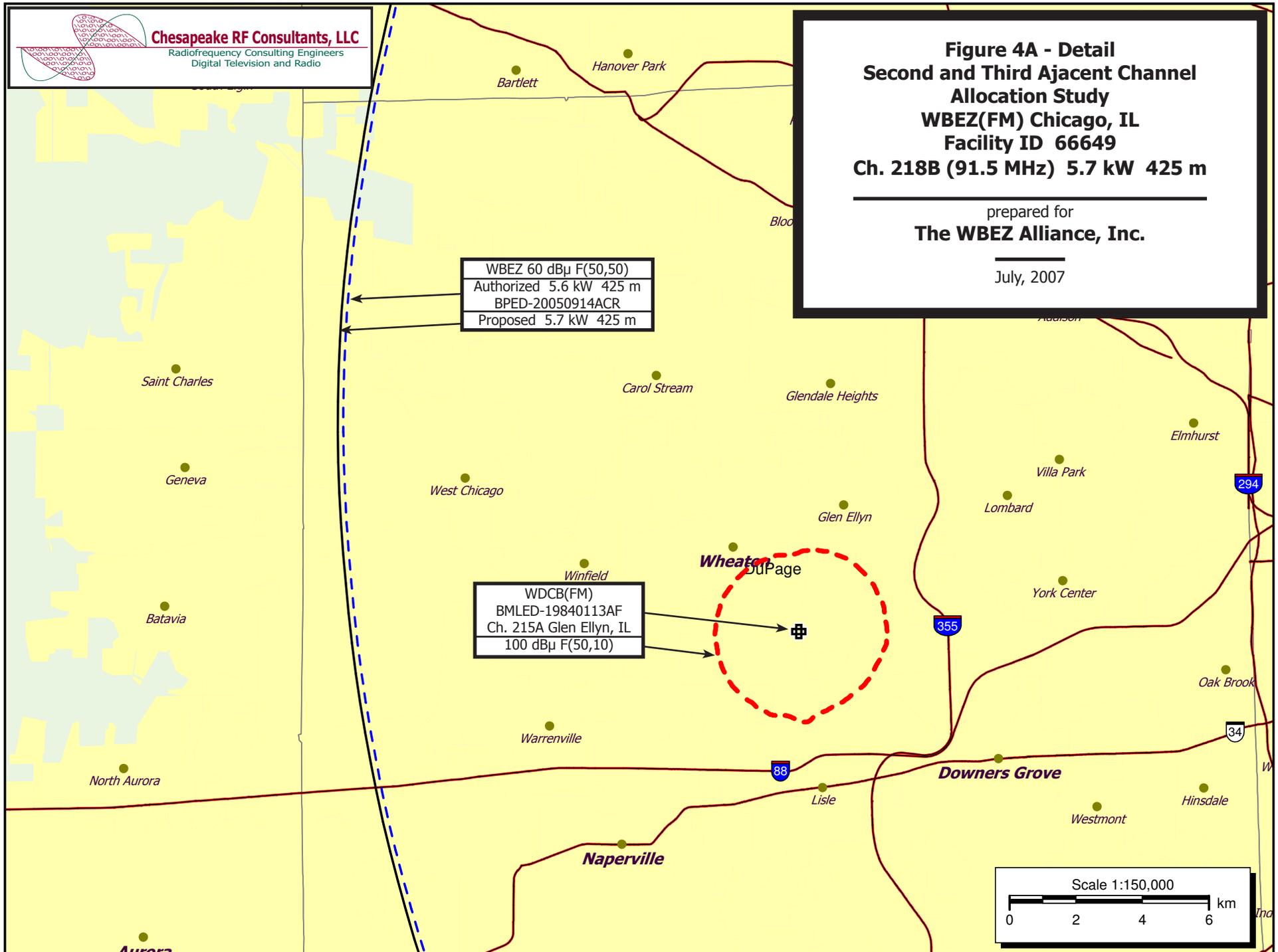
**Figure 4A - Detail  
 Second and Third Adjacent Channel  
 Allocation Study  
 WBEZ(FM) Chicago, IL  
 Facility ID 66649  
 Ch. 218B (91.5 MHz) 5.7 kW 425 m**

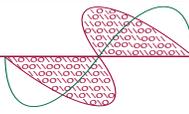
prepared for  
**The WBEZ Alliance, Inc.**

July, 2007

WBEZ 60 dB $\mu$  F(50,50)  
 Authorized 5.6 kW 425 m  
 BPED-20050914ACR  
 Proposed 5.7 kW 425 m

WDCB(FM)  
 BMLD-19840113AF  
 Ch. 215A Glen Ellyn, IL  
 100 dB $\mu$  F(50,10)





**Chesapeake RF Consultants, LLC**  
 Radiofrequency Consulting Engineers  
 Digital Television and Radio

**Figure 5**  
**TV Channel 6 Allocation Study**  
**WBEZ(FM) Chicago, IL**  
**Facility ID 66649**  
**Ch. 218B (91.5 MHz) 5.7 kW 425 m**

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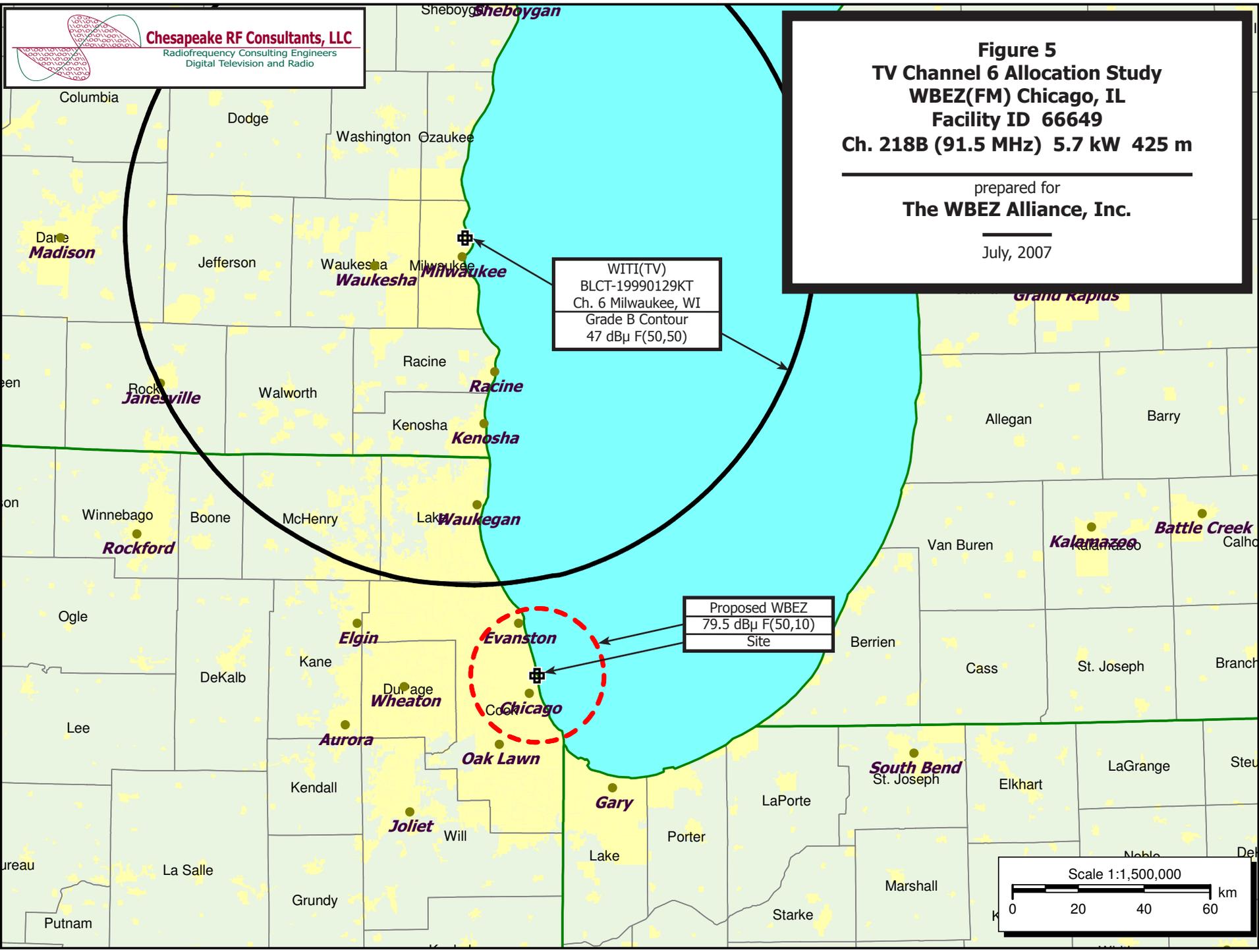
prepared for  
**The WBEZ Alliance, Inc.**

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July, 2007

WITI(TV)  
 BLCT-19990129KT  
 Ch. 6 Milwaukee, WI  
 Grade B Contour  
 47 dBμ F(50,50)

Proposed WBEZ  
 79.5 dBμ F(50,10)  
 Site



ELECTRONICS RESEARCH, INC.  
7777 GARDNER ROAD  
CHANDLER, IN. 47610

FIGURE 1

-----THEORETICAL-----  
VERTICAL PLANE RELATIVE FIELD

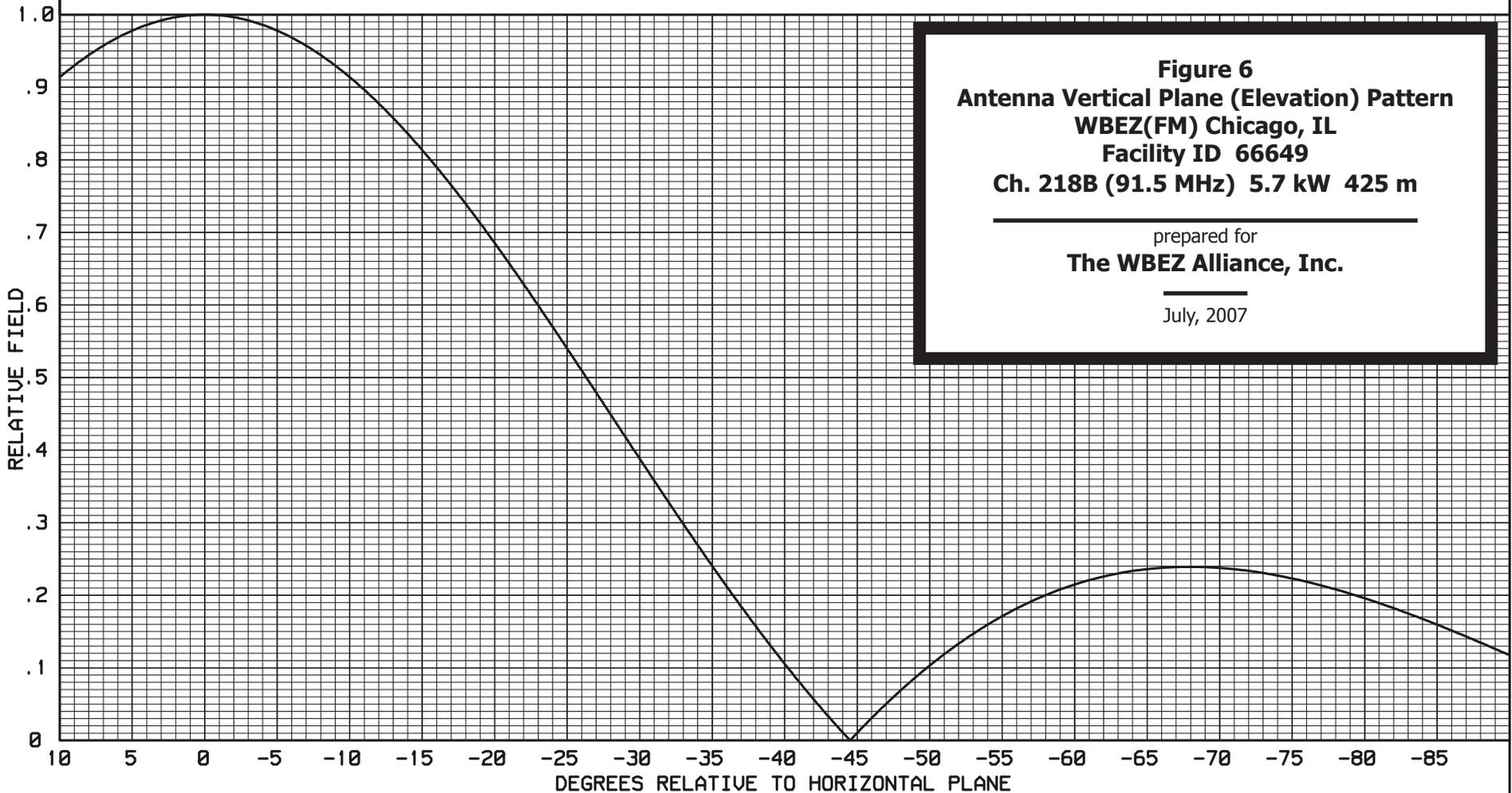
2 LEVELS OF TYPE 1080 ELEMENTS  
+0.00 DEGREE(S) BEAM TILT  
0 PERCENT FIRST NULL FILL  
0 PERCENT SECOND NULL FILL

POWER GAIN IS .870 IN THE HORIZONTAL PLANE (.870 IN THE MAX.)  
[ POWER GAINS AT 95% ANTENNA EFFICIENCY ]

APRIL 4, 2003

91.5 MHz.

BAY SPACING:  
92 INCHES



**Figure 6**  
**Antenna Vertical Plane (Elevation) Pattern**  
**WBEZ(FM) Chicago, IL**  
**Facility ID 66649**  
**Ch. 218B (91.5 MHz) 5.7 kW 425 m**

prepared for  
**The WBEZ Alliance, Inc.**

July, 2007

**Section VII Preparer's Certification**

I certify that I have prepared Section VII (Engineering Data) on behalf of the applicant, and that after such preparation, I have examined and found it to be accurate and true to the best of my knowledge and belief.

Name JOSEPH M. DAVIS, P.E.		Relationship to Applicant (e.g., Consulting Engineer) CONSULTING ENGINEER	
Signature		Date 07/20/2007	
Mailing Address CHESAPEAKE RF CONSULTANTS LLC 11993 KAHNS ROAD			
City MANASSAS	State or Country (if foreign address) VA		Zip Code 20112-
Telephone Number (include area code) 7036509600		E-Mail Address (if available) JOSEPH.DAVIS@RF-CONSULTANTS.COM	

WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. CODE, TITLE 47, SECTION 312(a)(1)), AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503).

**Section VII - FM Engineering**

**TECHNICAL SPECIFICATIONS**

Ensure that the specifications below are accurate. Contradicting data found elsewhere in this application will be disregarded. All items must be completed. The response "on file" is not acceptable.

**TECH BOX**

1. Channel Number: 218

2. Class (select one):  
 D  A  B1  B  C3  C2  C1  C0  C

3. Antenna Location Coordinates: (NAD 27)  
 Latitude:  
 Degrees 41 Minutes 53 Seconds 56  North  South  
 Longitude:  
 Degrees 87 Minutes 37 Seconds 23  West  East

4. Proposed Assignment Coordinates: (NAD 27) - RESERVED CHANNELS ABOVE 220 ONLY  Not Applicable  
 Latitude:  
 Degrees Minutes Seconds  North  South  
 Longitude:  
 Degrees Minutes Seconds  West  East

5. Antenna Structure Registration Number: 1009012  
 Not Applicable  Notification filed with FAA

6. Overall Tower Height Above Ground Level: 459 meters

7. Height of Radiation Center Above Mean Sea Level: 605.7 meters(H) 605.7 meters(V)

8. Height of Radiation Center Above Ground Level: 425 meters(H) 425 meters(V)

9. Height of Radiation Center Above Average Terrain: 425.1 meters(H) 425.1 meters(V)

10. Effective Radiated Power: 5.7 kW(H) 5.7 kW(V)

11. Maximum Effective Radiated Power: (Beam-Tilt Antenna ONLY)  Not Applicable kW(H) kW(V)

12. Directional Antenna Relative Field Values:  Not applicable (Nondirectional)  
 No Rotation  
 Rotation (Degrees):

Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value
0		10		20		30		40		50	
60		70		80		90		100		110	
120		130		140		150		160		170	
180		190		200		210		220		230	
240		250		260		270		280		290	
300		310		320		330		340		350	
Additional Azimuths											

Relative Field Polar Plot

<b>NOTE: In addition to the information called for in this section, an explanatory exhibit providing full particulars must be submitted for each question for which a "No" response is provided.</b>																																
<b>CERTIFICATION</b>																																
<b>AUXILIARY ANTENNA APPLICANTS ARE NOT REQUIRED TO RESPOND TO ITEMS 12-15.</b>																																
13.	<b>Main Studio Location.</b> The proposed main studio location complies with 47 C.F.R. Section 73.1125.	<input checked="" type="radio"/> Yes <input type="radio"/> No  See Explanation in [Exhibit 13]																														
14.	<b>Community Coverage.</b> The proposed facility complies with 47 C.F.R. Section 73.315. (Channels 221 and above) or 47 C.F.R. Section 73.515 (Channels 220 and below).	<input checked="" type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 14]																														
15.	<b>Interference.</b> The proposed facility complies with all of the following applicable rule sections. Check all that apply:	<input checked="" type="radio"/> Yes <input type="radio"/> No  See Explanation in [Exhibit 15]																														
<table border="1"> <tr> <td colspan="3"><b>Contour Overlap Requirements.</b></td> </tr> <tr> <td>a. <input type="checkbox"/></td> <td>47 C.F.R. Section 73.509 <b>Exhibit Required.</b></td> <td>[Exhibit 16]</td> </tr> <tr> <td colspan="3"><b>Spacing Requirements.</b></td> </tr> <tr> <td>b. <input type="checkbox"/></td> <td>47 C.F.R. Section 73.207 with respect to station(s)</td> <td></td> </tr> <tr> <td colspan="3"><b>Grandfathered Short-Spaced.</b></td> </tr> <tr> <td>c. <input type="checkbox"/></td> <td>47 C.F.R. Section 73.213(a) with respect to station(s) <b>Exhibit Required.</b></td> <td>[Exhibit 17]</td> </tr> <tr> <td colspan="3"><b>Contour Protection.</b></td> </tr> <tr> <td>d. <input type="checkbox"/></td> <td>47 C.F.R. Section 73.215(a) with respect to station(s) <b>Exhibit Required.</b></td> <td>[Exhibit 18]</td> </tr> <tr> <td colspan="3"><b>Television Channel 6 Protection.</b></td> </tr> <tr> <td>e. <input type="checkbox"/></td> <td>47 C.F.R. Section 73.525 with respect to station(s) <b>Exhibit Required.</b></td> <td>[Exhibit 19]</td> </tr> </table>			<b>Contour Overlap Requirements.</b>			a. <input type="checkbox"/>	47 C.F.R. Section 73.509 <b>Exhibit Required.</b>	[Exhibit 16]	<b>Spacing Requirements.</b>			b. <input type="checkbox"/>	47 C.F.R. Section 73.207 with respect to station(s)		<b>Grandfathered Short-Spaced.</b>			c. <input type="checkbox"/>	47 C.F.R. Section 73.213(a) with respect to station(s) <b>Exhibit Required.</b>	[Exhibit 17]	<b>Contour Protection.</b>			d. <input type="checkbox"/>	47 C.F.R. Section 73.215(a) with respect to station(s) <b>Exhibit Required.</b>	[Exhibit 18]	<b>Television Channel 6 Protection.</b>			e. <input type="checkbox"/>	47 C.F.R. Section 73.525 with respect to station(s) <b>Exhibit Required.</b>	[Exhibit 19]
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16.	<b>Reserved Channels Above 220.</b> a. <b>Availability of Channels.</b> The proposed facility complies with the assignment requirements of 47 C.F.R. Section 73.203.	<input type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 20]																														
17.	<b>International Borders.</b> The proposed antenna location is not within 320 kilometers of the common border between the United States and Canada or Mexico.  If "No," specify the country and provide an exhibit of compliance with all provisions of the relevant International Agreement.	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Canada <input type="radio"/> Mexico [Exhibit 21]																														
18.	<b>Environmental Protection Act.</b> The proposed facility is excluded from environmental processing under 47 C.F.R. Section 1.1306 (i.e., The facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments). Unless the applicant can determine compliance through the use of the RF worksheets in Worksheet #7, an <b>Exhibit is required.</b>  By checking "Yes" above, the applicant also certifies that it, in coordination with other users of the site, will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic exposure in excess of FCC guidelines.	<input checked="" type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 22]																														
19.	<b>Community of License Change - Section 307(b).</b> If the application is being submitted to change the facility's community of license, then the applicant certifies that it has attached an exhibit containing information demonstrating that the proposed community of license change comports with the fair distribution of service policies underlying Section 307(b) of the Communications Act of 1934, as amended (47 U.S.C. Section 307(b)).  An exhibit is required unless this question is not applicable.	<input type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> N/A [Exhibit 23]																														
<b>PREPARER'S CERTIFICATION ON PAGE 8 MUST BE COMPLETED AND SIGNED.</b>																																