TECHNICAL EXHIBIT
MINOR CHANGE APPLICATION
AM STATION WWGK (FACILITY ID 70659)
CLEVELAND, OHIO

MARCH 18, 2008

1540 KHZ 3 KW-D, 1.5 KW-CH DA-D D

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Technical Narrative

This Technical Exhibit supports an application for construction permit for AM Class D station WWGK, currently licensed on 1540 kilohertz (kHz) to Cleveland, Ohio. By means of this application, the applicant proposes to relocate its transmitter site, employ a directional antenna and increase its power.

Proposed Transmitter Location

It is proposed to diplex (share) transmitter sites with AM station WKNR (850 kHz), located 22 kilometers south-southwest of the current WWGK site. Two of the six existing WKNR towers will be used and two new, shorter towers will be constructed for WWGK. The Federal Aviation Administration (FAA) is not being notified, as the newly proposed towers as they are shorter than the existing towers on the property and are less than 200 feet and pass the FAA's TOWAIR minimum slope requirement.

The center of the 4-tower array for the proposed directional operation is located at the following NAD 27 geographic coordinates:

41° 19' 00" North Latitude
81° 43' 51" West Longitude

The two existing towers have an overall height of 80.2 meters (263 feet) and an electrical (steel only) height of 144.9 degrees (78.4 meters) at 1540 kHz. The two new (proposed) towers will have an overall height of 43.3 meters (142 feet) and an electrical (steel only) height of 78.9 degrees (42.7 meters) at 1540 kHz.

The ground system will consist of the existing WKNR ground system as well as 120 equally spaced copper wire radials about each new tower. The radials will extend at least ¼-λ (49 meters) from the tower base, except where truncated by the property boundary.

Blanketing

The population within the 1000 mV/m contour is 901 people. As AM station WKNR is co-located with the proposal, before and after measurements will be made on this station to ensure the proposed will not adversely impact it.

Daytime Coverage

The present and proposed daytime field strength contours are depicted in Figure 5. As indicated, the present daytime 5 mV/m contour does not entirely encompass Cleveland. The percentage coverage is 89% of the land area of Cleveland while the proposed 5 mV/m contour will also encompass 89% of the land area of Cleveland. The Cleveland city limits were obtained from information contained in the TIGER 2000 U.S. Census files. Ground conductivity data for the proposed WWGK operation were obtained from the last WKNR 1999 proof-of-performance (see Figure 7).

Daytime Allocation Study

A daytime allocation study was made utilizing FCC Figure M-3 as shown on Figure x. Daytime field strength contours were calculated in accordance with § 73.183. Ground conductivity data obtained from the WKNR 1999 proof-of-performance was used in determining the extent of coverage for all proposed WWGK contours (see Figure 7). Based on this analysis, the proposed facility will comply with all relevant allocation criteria. The stations of concern that are shown on the maps in Figure 5 are tabulated below:

WBCO, 1540 kHz, Bucyrus, OH
WRTK, 1540 kHz, Niles, OH
WBTC, 1540 kHz, Uhrichsville, OH
WJMP, 1520 kHz, Kent, OH

As tabulated below, the proposal will reduce the existing contour overlap with three other stations: WPJX, WWHN and WLUV.

	Overlap Received from WBCO	Overlap Caused to WBCO
Licensed WWGK	87 sq km	5353 sq km
Proposed WWGK	75 sq km	1595 sq km
Net Change	-12 sq km	-3758 sq km

	Overlap Received from WRTK	Overlap Caused to WRTK
Licensed WWGK	1108 sq km	3953 sq km
Proposed WWGK	836 sq km	3953 sq km
Net Change	-272 sq km	0 sq km

	Overlap Received from WBTC	Overlap Caused to WBTC
Licensed WWGK	2712 sq km	3450 sq km
Proposed WWGK	2667 sq km	2111 sq km
Net Change	-45 sq km	-1339 sq km

The proposed operation does not result in any prohibited contour overlap with any other station.

Critical Hours Operation

The critical hours operation will also protect the above listed stations in the daytime allocation study as well as station KXEL in Waterloo, Iowa. Specifically, the worst-case radiation limit towards KXEL is a value of 142 mV/m at a bearing of 285 degrees True. The reduced power, 1.5 kW critical hours operation (same directional antenna parameters as the daytime) will radiate 139 mV/m at this bearing.

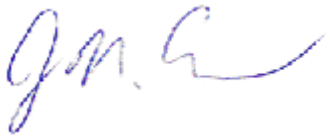
Canadian Allocation Studies

There are two Canadian Class A stations of concern. There are CBE, 1550 kHz, Windsor, Ontario and CHIN, 1540 kHz, Toronto, Ontario. The proposed site is 22

kilometers south-southwest of the current WWGK site and further away from both CBE and CHIN. Sheet 3 of Figure 6 is an allocation map showing the pertinent groundwave contours (using Region II conductivity data) for the proposal and also both Canadian stations. As can be seen, the predicted 0.025 mV/m interfering contour for the proposed WWGK operation (3 kW-daytime) will not overlap CHIN's 0.5 mV/m protected contour. Also, while the predicted 0.5 mV/m interfering contour for the proposed WWGK operation (3 kW-daytime) will overlap CBE's 0.5 mV/m protected contour over water (Lake Erie), it does not over any land areas. Thus, as there is no prohibited contour overlap predicted to occur, it is not believed that Canadian approval is required for this proposal.

Ground Level Radiofrequency Electromagnetic Field Exposure

Fences restricting access will be installed about each tower to assure that persons on the property outside the fenced area will not be exposed to radiofrequency field levels in excess of those recommended by ANSI. Once authorized and constructed, power density measurements will be made to determine the appropriate minimum distance needed for each fence. In addition, warning signs will be posted. It is noted that this statement only addresses the potential for radiofrequency electromagnetic field exposure.



Jonathan N. Edwards

du Treil, Lundin & Rackley, Inc.
201 Fletcher Avenue
Sarasota, Florida 34237
941.329.6000

March 18, 2008

SITE PLAT/AERIAL PHOTOGRAPH

AM STATION WWGK
CLEVELAND, OHIO
1540 KHZ 3 KW-D, 1.5 KW-CH DA-D D

300 0 300 600 900 1200 feet

60 0 60 120 180 240 300 meters

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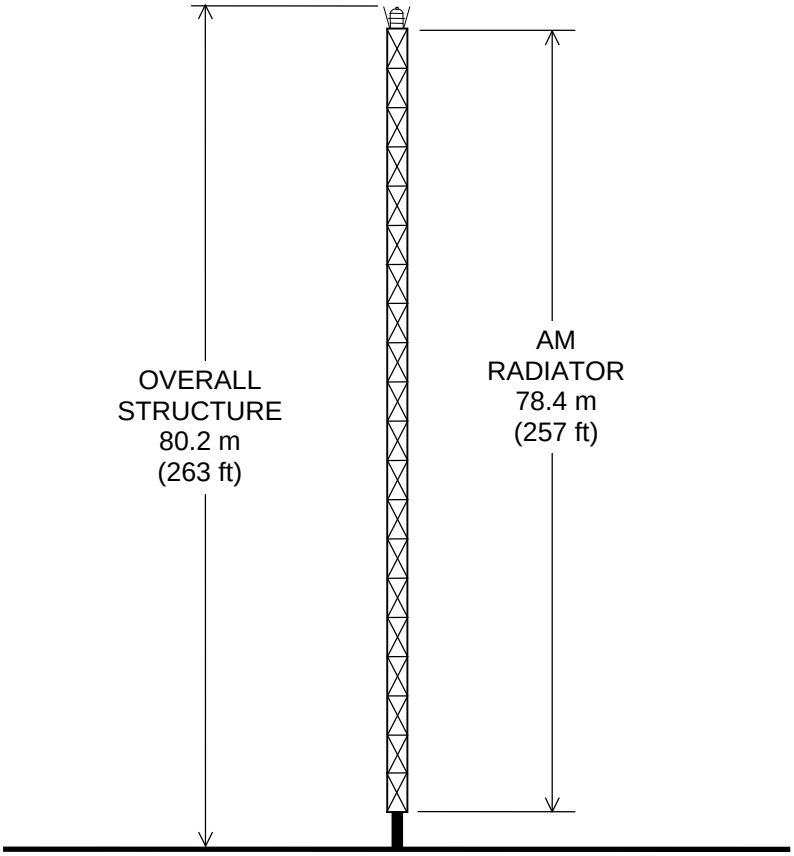
Registration Not Required



Not to Scale

SKETCH OF EXISTING ANTENNA ELEMENTS

AM STATION WWGK

CLEVELAND, OHIO

1540 KHZ 3 KW-D, 1.5 KW-CH DA-D D

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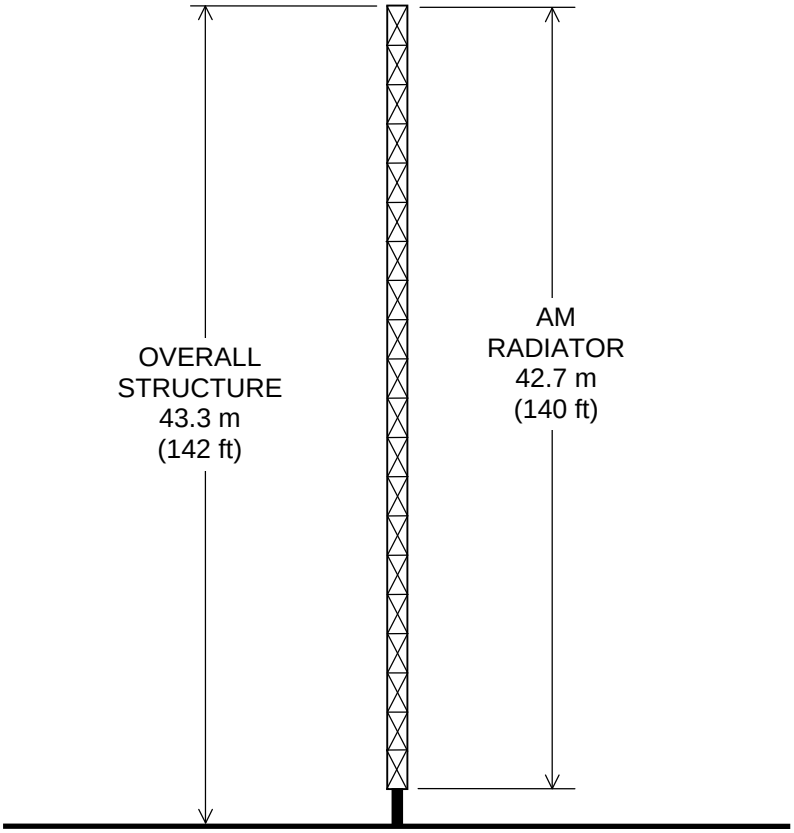
MARCH 2008

Registration Not Required



Not to Scale

SKETCH OF PROPOSED ANTENNA ELEMENTS

AM STATION WWGK

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Specifications for Directional Antenna System

Frequency	1540 kHz
Hours of Operation	Daytime
Power	3 kW (Day), 1.5 kW (Critical Hours)
Number of Towers	4
Type of Tower	Uniform cross-section, triangular, guyed, base-insulated
Existing:	
Electrical Height	144.9° (78.4 m)
Overall height above ground	80.2 m (263 ft)
Proposed:	
Electrical Height	78.9° (42.7 m)
Overall height above ground	43.3 m (142 ft)

Tower Arrangement

Tower No.	Spacing (deg.)/(m)	Orientation (deg. True)
1	0/0	0
2	176/95.2	113.0
3	82.7/44.7	338.2
4	187.5/101.4	93.4

Element Parameters

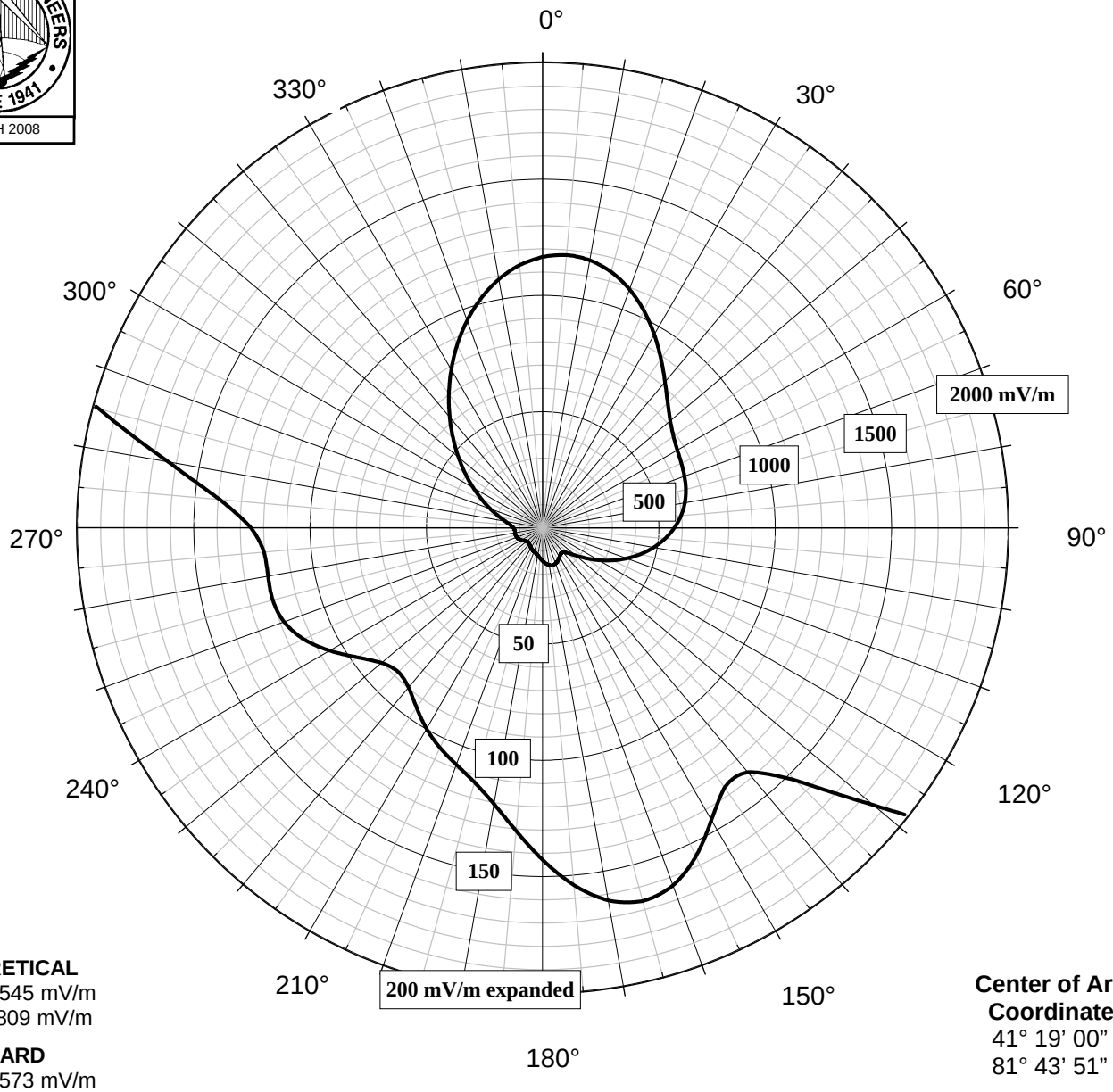
Tower No.	Field Ratio	Phase (degrees)
1	0.311	49.2
2	0.910	136.0
3	0.156	-68.9
4	1.000	0.0

Ground System:

Existing WKNR ground system as well as 120 evenly spaced radials, ¼-λ in length about each newly proposed tower. Radials will be truncated at the property line if necessary.

Geographic Coordinates of center of Antenna Array (NAD 27)	41° 19’ 00” North Longitude 81° 43’ 51” West Longitude

CONSULTING ENGINEERS SINCE 1941
MARCH 2008



THEORETICAL
RMS = 545 mV/m
RSS = 809 mV/m

STANDARD
RMS = 573 mV/m

Center of Array Coordinates:
41° 19’ 00” N
81° 43’ 51” W

DIRECTIONAL PATTERN PARAMETERS

TOWER	FIELD RATIO	PHASE (DEGREES)	SPACING (DEGREES)	ORIENTATION (DEGREES T.)	TOWER HEIGHT (DEGREES)
1	0.311	49.2	0.0	0.0	144.9
2	0.910	136.0	176.0	3.0	144.9
3	0.156	-68.9	82.7	116.1	78.9
4	1.000	0.0	187.5	93.4	78.9

PROPOSED DAYTIME HORIZONTAL PLANE STANDARD RADIATION PATTERN

AM STATION WWGK

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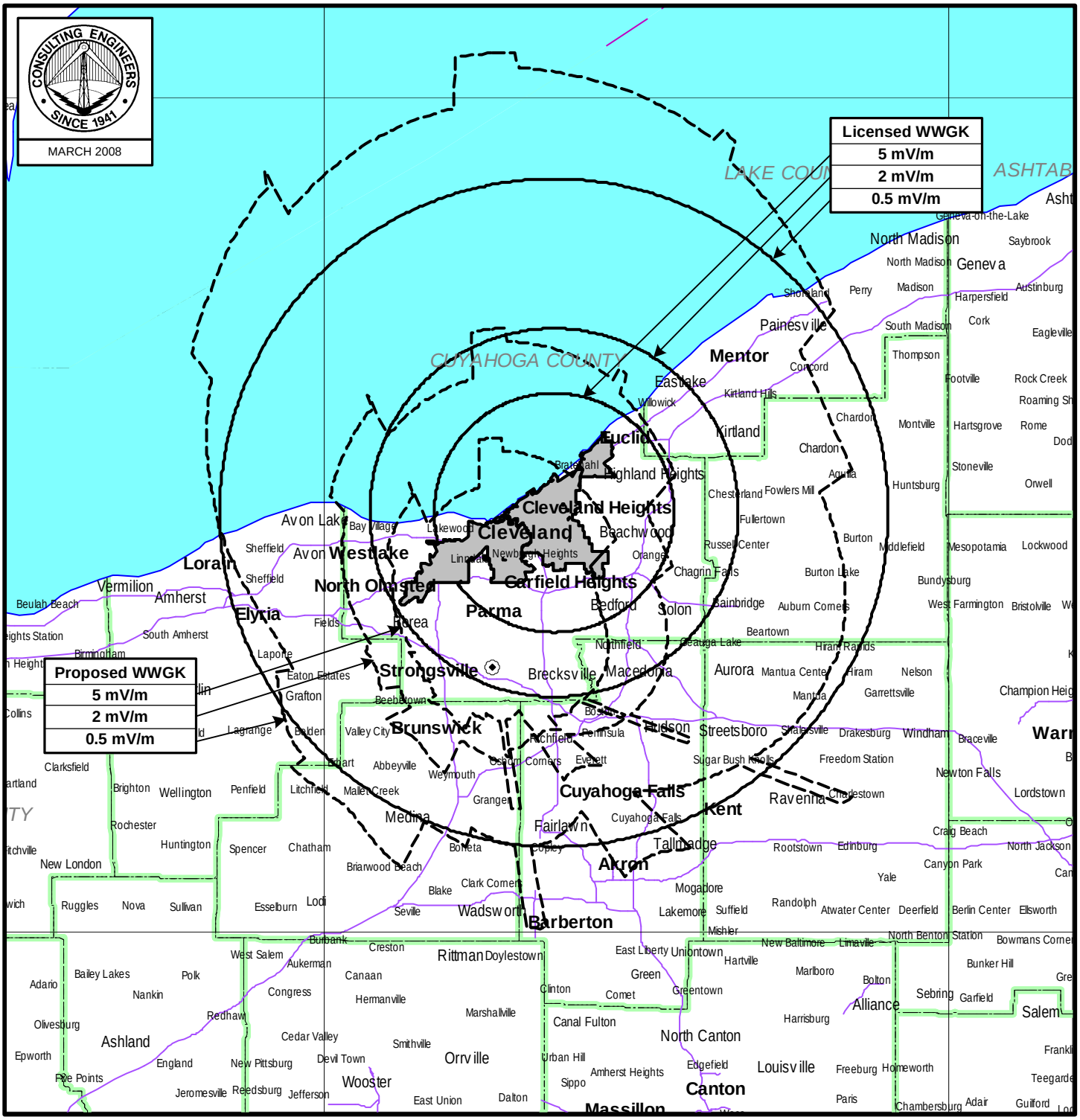
DAYTIME RADIATION PATTERN
(Radiation Values at One Kilometer)

Tower Number	Field Ratio	Phase (deg.)	Spacing (deg.)	Bearing (deg.)	Height (deg.)
1	0.311	49.2	0.0	0.0	144.9
2	0.910	136	176.0	113.0	144.9
3	0.156	-68.9	82.7	-21.8	78.9
4	1.000	0.0	187.5	93.4	78.9

Input Power (kW)	Loop Loss (ohms)	Theo. RMS (mV/m)	Theo. RSS (mV/m)	Q Factor (mV/m)	Standard RMS (mV/m)
3	1.0	545	808	20.2	573

Azimuth (mV/m)	Field (mV/m)	Azimuth (mV/m)	Field (mV/m)	Azimuth (mV/m)	Field (mV/m)	Azimuth (mV/m)	Field (mV/m)
0	1165	90	566	180	143	270	125
5	1177	95	529	185	131	275	139
10	1168	100	485	190	121	280	163
15	1139	105	437	195	113	285	197
20	1092	110	385	200	108	290	240
25	1030	115	331	205	104	295	289
30	960	120	278	210	100	300	344
35	887	125	229	215	94	305	405
40	818	130	185	220	90	310	472
45	760	135	154	225	88	315	544
50	716	140	137	230	90	320	621
55	686	145	136	235	97	325	702
60	668	150	145	240	106	330	785
65	658	155	156	245	113	335	868
70	649	160	164	250	118	340	948
75	637	165	166	255	120	345	1022
80	621	170	163	260	120	350	1085
85	597	175	154	265	120	355	1134



PREDICTED COVERAGE CONTOURS

AM STATION WWGK

CLEVELAND, OHIO

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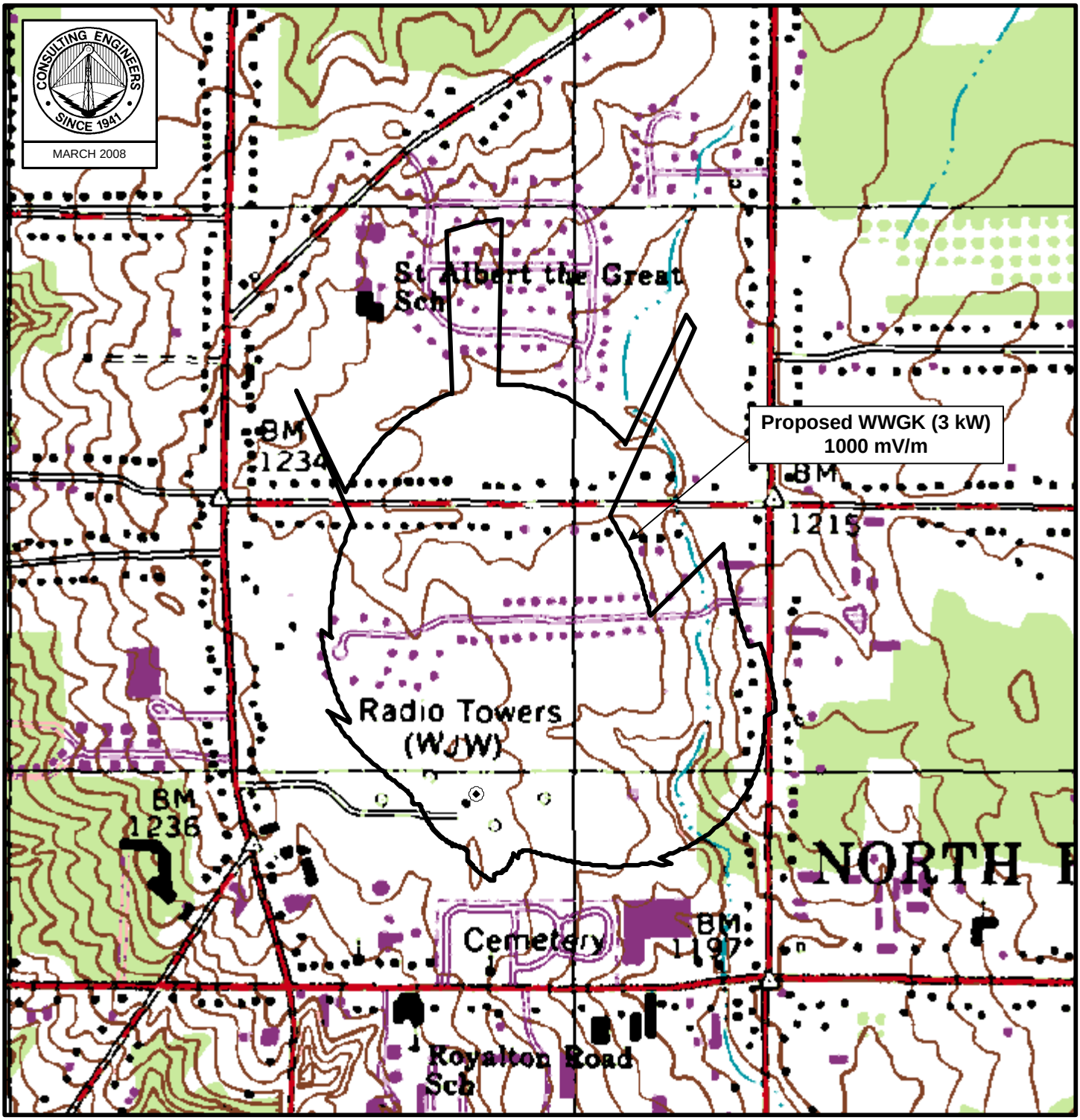
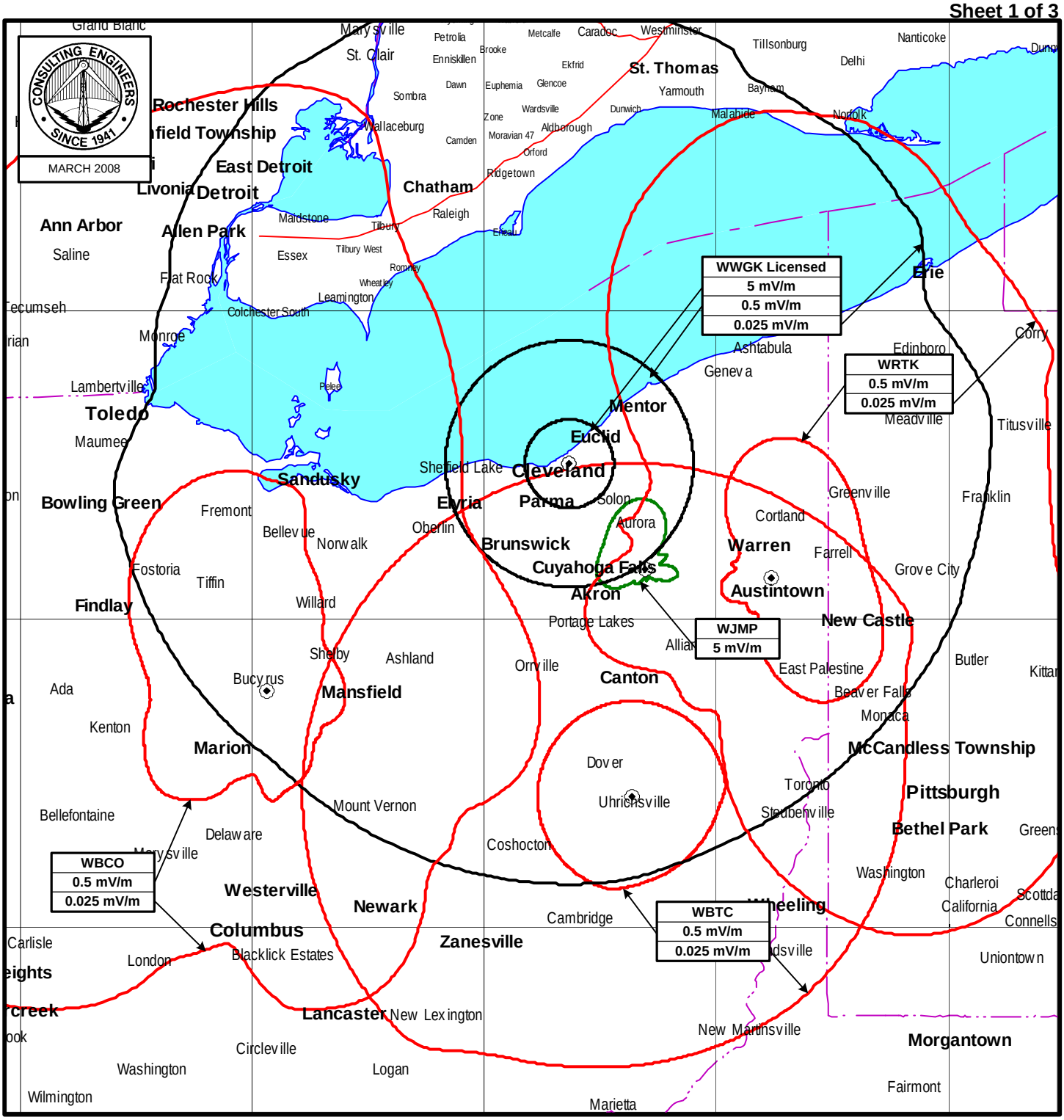


PREDICTED 1000 mV/m COVERAGE CONTOUR

AM STATION WWGK

CLEVELAND, OHIO

1540 KHZ 3 KW-D, 1.5 KW-CH DA-D D



ALLOCATION STUDY

AM STATION WWGK

CLEVELAND, OHIO

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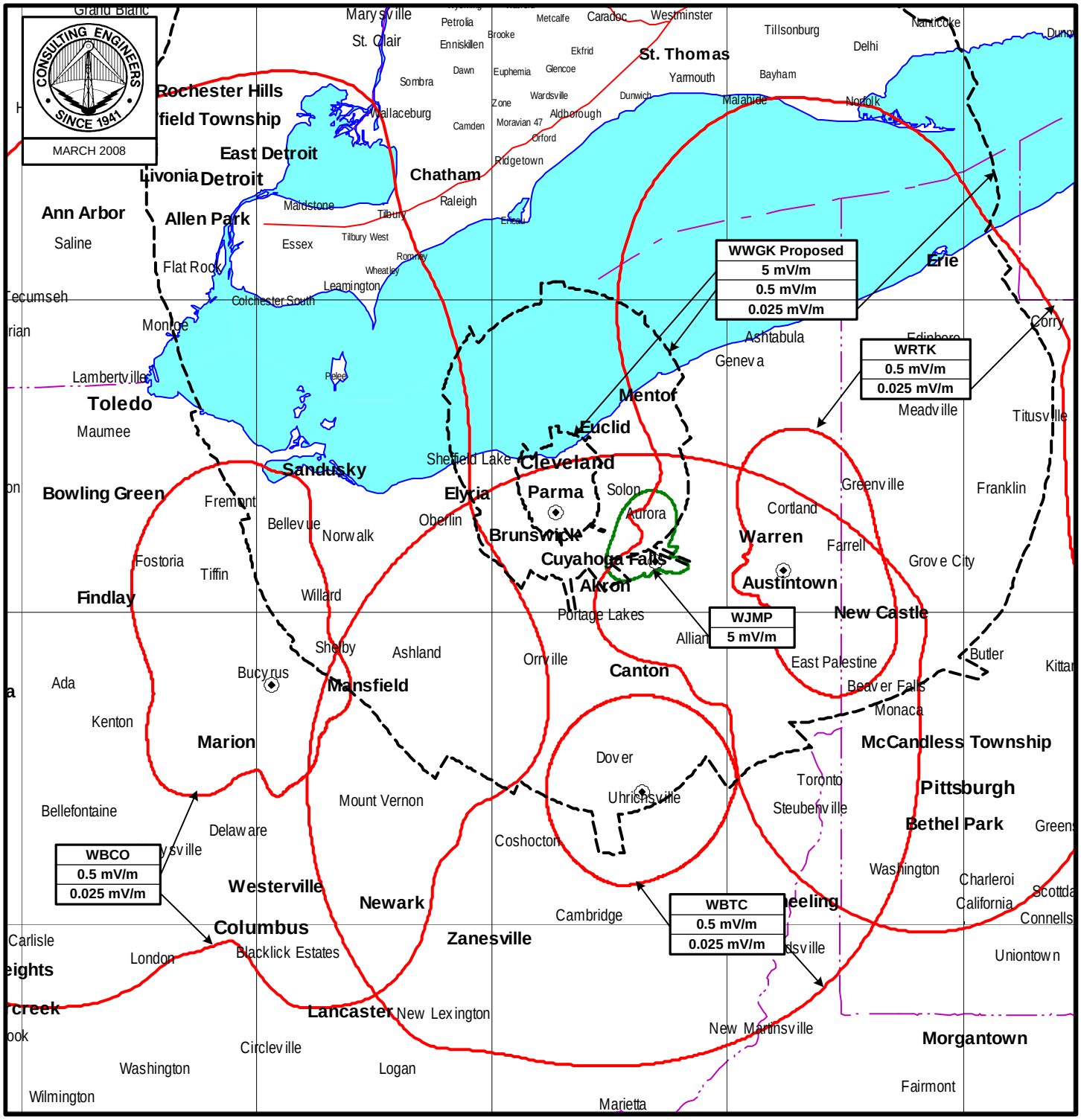

PROPOSED ALLOCATION STUDY

AM STATION WWGK

CLEVELAND, OHIO

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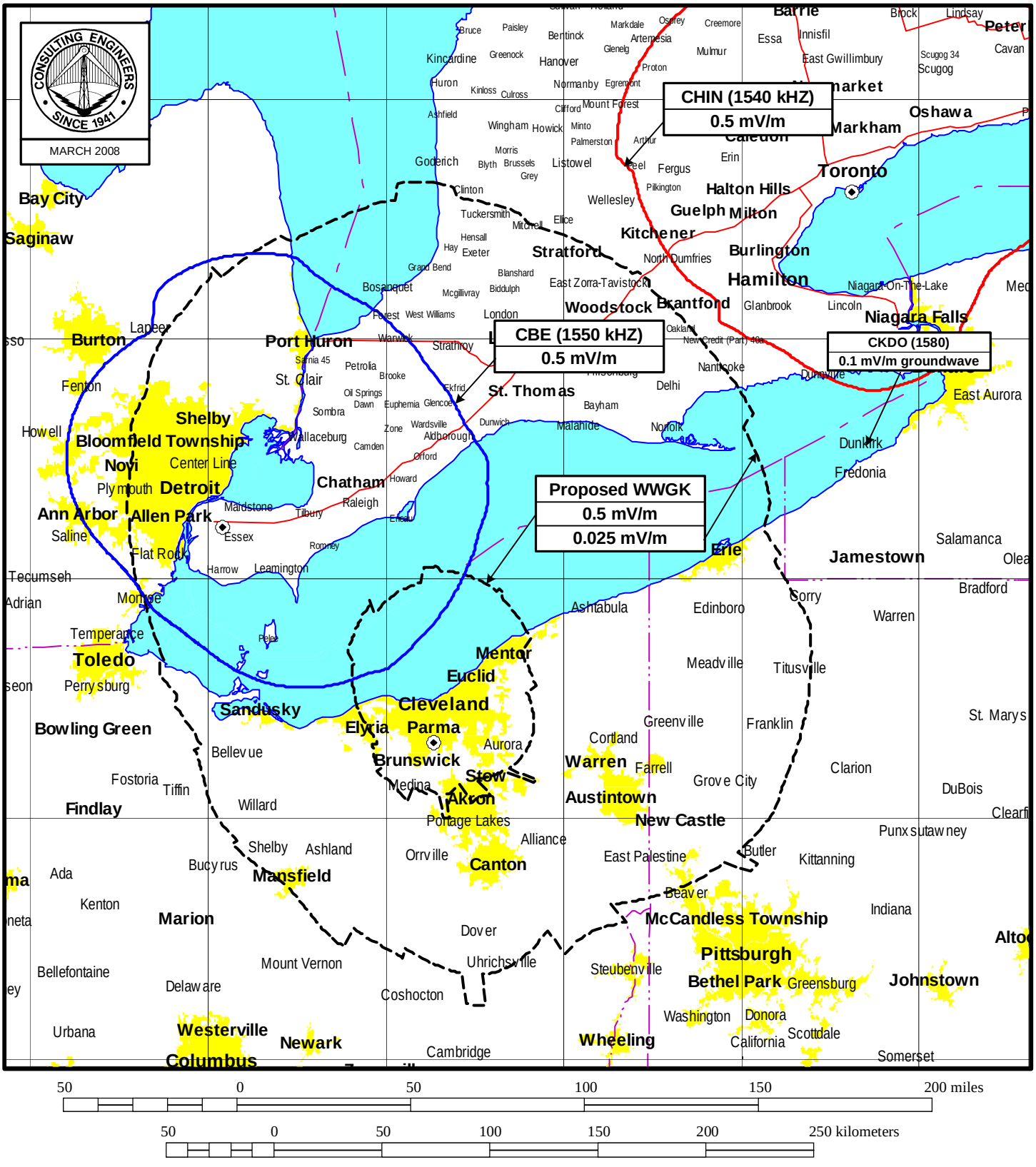

CANADIAN ALLOCATION STUDY

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Data Employed in Calculation of Groundwave Contours

With the exception of station WWGK, all groundwave contours were calculated using the appropriate directional or non-directional radiation and FCC Figure M-3 conductivity.

WWGK, Clvreland, Ohio

1540 kHz 3 kW-D, 1.5 kW-CH DA-D D

Proposed Coordinates: 41° 19' 00" N, 81° 43' 51" W

Standard pattern radiation applied along all azimuths. Measured conductivity applied +/- 10° from measured radial. FCC Figure M-3 conductivity applied beyond the extent of the measurements and on all other azimuths. Measured conductivities were obtained from May 1999 WKNR proof-of-performance (BL-19990512DC).

Azimuth(deg.T)	Conductivity/End Distance(mS/m/km)
12.5	2/2, 7/22.9
35	1/0.7,2/2.6,7/32.9
53	4/18,5/32.2
70	5/11,4/33.3
78.5	4/33.4
99	4/3.5,8/11,4/34.3
121.5	5/12,4/33.6
158	3/1.5,5/6,3/14,4/32.5
183.2	6/2.2,3/8,4/33.8
194	2/3,4/15,5/33.3
215	3/4,8/32.6
237	1.5/1.3,8/33.4
252	2/1.7,6/11,5/20,7/33.4
265.5	7/32.6
273	10/8,7/17,6/32.4
290	6/32.7
308	2/4,5/11,6/33.5
325	1.5/1.5,3/5,8/15,7/22.7
346	2/2.4,4/10,5/20.3