



ENGINEERING STATEMENT OF CYNTHIA M. JACOBSON  
IN SUPPORT OF AN  
APPLICATION FOR CONSTRUCTION PERMIT  
WESX - SAUGUS, MASSACHUSETTS  
1230 kHz - 0.45 kW - ND-1  
Facility ID: 49301

Applicant: Principle Boston Holdco LLC

I am a Radio Engineer, an employee in the firm of Carl T. Jones Corporation, with offices located in Springfield, Virginia.

My education and experience are a matter of record with the Federal Communications Commission. I am a Registered Professional Engineer in the Commonwealth of Virginia, Registration No. 027914.

This office has been authorized by Principle Boston Holdco LLC ("PBH"), licensee of standard broadcast station WESX, Salem, Massachusetts, to prepare this statement and the attached exhibits in support of an Application for Construction Permit, seeking authority to relocate the WESX antenna system approximately 12.0 kilometers southwest of the licensed site, change the city of license, and reduce power. WESX is presently licensed to operate on 1230 kHz with a nominal power of 1.0 kilowatts, employing a non-directional antenna system.

The instant application proposes to diplex the WESX facility at the licensed transmitter site of WLYN. WLYN is licensed to Lynn, Massachusetts and operates on a frequency of 1360 kHz, at a daytime antenna input power of 0.7 kW and a nighttime power

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of 0.076 kW non-directionally. WESX proposes to operate at a non-directional power level of 0.45 kW during the day and night<sup>1</sup>. The current site has become unsuitable. In an attempt to identify a potential site, it was determined that the closest, technically feasible site was the WLYN antenna site. Because the WLYN tower is located 12.0 kilometers from the present WESX site, neither the daytime nor the nighttime requisite field strength contour encompasses a large portion of Salem, Massachusetts. Therefore, this application also requests the change of city of license from Salem, Massachusetts to Saugus, Massachusetts.

SECTION 307(b) COMPLIANCE

This application proposes to change the existing WESX(AM) facility community of license from Salem, Massachusetts to Saugus, Massachusetts. The technical facilities proposed are mutually exclusive with the licensed facilities of WESX.

The present number of stations licensed to Salem, Massachusetts is two while currently no stations are licensed to Saugus, Massachusetts. This proposal will result in one station licensed to Salem and one station licensed to Saugus.

The 2000 Census data delineates a population of 40,407 persons residing in Salem. The proposed community of license, Saugus, has a population of 26,074 persons.

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<sup>1</sup> This is equivalent to the Class C minimum operating at 1.0 kilowatts.

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Based on M-3 soil conductivities, the area and populations are tabulated below:

	DAY				NIGHT	
	0.5 mV/m Contour		2.0 mV/m Contour		26.6 mV/m Contour	
	Population	Area	Population	Area	Population	Area
	Census 2000	sq. km	Census 2000	sq. km	Census 2000	sq.km
Present WESX(AM) Salem, MA	2,560,433	3,280	739,614	999	86,472	55
Proposed WESX (AM) Saugus, MA	2,553,931	2,642	1,147,757	711	75,465	37

No less than eleven stations provide protected service<sup>2</sup> to the proposed and present community during daytime and nighttime hours. See Figure 9.

#### PROPOSED TRANSMITTER SITE AND VICINITY

The geographic coordinates (NAD-27) of the non-directional antenna are:

42 - 27 - 10 North Latitude

70 - 58 - 50 West Longitude

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<sup>2</sup>The protected service contour for Class B FM stations located within Zone I is the 54 dBu.  
The protected service contour of a Class A AM station during daytime hours is the 0.1 mV/m contour and during nighttime hours is the 0.5 mV/m.

The protected service contour for all other AM stations is the 2.0 mV/m contour because the size of the community exceeds 2,500 persons.

The protected service contour for all other AM stations during nighttime hours is the nighttime interference-free ("NIF") contour.

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The site elevation was obtained from data on file with the FCC. The antenna/transmitter site photographs are contained in the WLYN files at the FCC, and therefore not supplied herein. The tower is registered with the FCC (ASRN# 1005298).

ANTENNA SYSTEM & GROUND SYSTEM

The proposed antenna system is a single uniform cross-section, shunt-excited, guyed tower, 171.1 electrical degrees in height.

WESX currently operates with a controlled RMS of 300.95 mV/m @ 1km (equivalent to an input power of 0.614 kW and a theoretical efficiency of 384 mV/m @ 1 km).

The proposed ground system will consist of 120 evenly spaced, buried, copper wire radials. The radials will be 55.2 meters long, plus a 9.1 meter by 9.1 meter ground screen. The 55.2 meter long radials are 0.2265 wavelengths long at the frequency of 1230 kHz. A 6.4 mV/m correction has been applied to the efficiency of the antenna to account for the shortened ground system. Thus, a theoretical efficiency of 362.6 mV/m/kW @ 1 km defines the proposed efficiency of the antenna system (versus 369 mV/m/kW @ 1 km for a full 1/4 wavelength ground system).

The pertinent heights are supplied on FCC Form 301, along with the data on file for WLYN with the FCC and the FCC's antenna structure database.

### BLANKETING AND STATION INTERACTION

The proposed daytime 1000 mV/m contour is depicted in Figure 1. The population within the proposed WESX 1000 mV/m contour is less than 300 persons. In response to all complaints of blanketing interference, the applicant will undertake steps to mitigate the blanketing effects in accordance with the requirements of Section 73.88.

The proposed WESX antenna site is co-located with AM station WLYN. The proposed site is also within 3.2 kilometers of one licensed AM station, WROL Boston, MA operating on 950 kHz. There are 2 FM stations within 10 kilometers of the proposed site. It is expected that no detrimental interaction will occur with any station.

### COVERAGE CONTOURS

The present and proposed daytime service contours are shown in Figure 2. The proposed 5.0 mV/m daytime contour encompasses the entire community of license, Saugus, Massachusetts.

The present and proposed nighttime service contours are shown in Figure 8. The proposed 26.6 mV/m nighttime interference-free contour will provide service to 43.67% of the city of license. As prescribed under Section 73.182 of the Rules, WESX is designed to render to primary service area and is not required to provide service to the entire Community during the nighttime hours. Should the Commission deem it necessary, a waiver of Section 73.24(i) of the Rules during nighttime hours is requested.

JUSTIFICATION FOR WAIVER

The definition for a Class C (old Class IV) station is prescribed under Section 73.21(c)(1) of the Rules. "A Class C station is a station operating on a local channel and is designed to render service only over a primary service area that may be reduced as a consequence of interference in accordance with 73.182. The power shall not be less than 0.25 kW, not more than 1 kW. Class C stations that are licensed to operate with 0.1 kW may continue to do so." As stated in the definition of a Class C station, protection is not afforded this class of station at night. Class C stations are authorized nighttime power levels, notwithstanding Canadian, Mexican, or foreign stations, based on daytime separations without regard to mutual nighttime interference. A nighttime limit of 26.6 mV/m today for a Class C station may be increased at a later date. Though it is recognized that many Class C stations operate with a maximum nighttime power level of 1 kW, a transmitter site change or increase in the height of an antenna tower (thus an increase in the efficiency) of a co-channel station is likely to result in an increased nighttime interference-free service contour of another Class C station. Thus, the ability for a Class C station licensee to meet the requirements of Section 73.24(i) of the Rules can be reduced with time. For many of the Class IV stations that were originally authorized to operate with power levels of 250 W, nighttime coverage of an entire community was not a criteria. Even with the 1 kW nighttime power level now permitted for Class C stations, coverage of the community of license for several existing stations is much less than 80%. This is particularly true in larger metropolitan areas. Some examples are as follows:

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CALL	FREQUENCY (kHz)	CITY, STATE	NIGHTTIME INTERFERENCE- FREE CONTOUR	% OF COMMUNITY SERVED
WSBC	1240	Chicago, IL	20.6	29
WYCB	1340	Washington, DC	25.6	10
WOL	1450	Washington, DC	26.7	29

The proposal to share the existing WLYN(AM) support structure is the best site reasonably available for WESX to relocate. The only other existing AM tower in the area is a tower utilized by WNSH, 1570 kHz, located 4.7 kilometers away. Use of the WNSH tower is not a favorable height at WESX's frequency of 1230 kHz.

Investigation of the engineering files at the FCC for WYCB, Washington, DC reveals that the FCC further allowed the station to reduce its nighttime coverage of its community of license (File No. BP-891002AH) from that which exists today. While WESX proposes to cover its entire community during daytime hours, a nighttime coverage of 43.67% is significantly greater than that of 10%, which was permitted to WYCB.

Development of a new tower site, rather than using an existing tower, in order to encompass the whole city limits with the nighttime interference limited contour is further complicated by the maximum 1.0 kW power limitation and high levels of nighttime interference.

Therefore, it is submitted that the public interest would be served by a waiver of Section 73.24(i) of the Rules.

DAYTIME ALLOCATION STUDY

The results of the daytime study are shown in Figure 4 and 7. Thirteen stations were considered in detail regarding the daytime allocation. These stations are:

WKOX	1200 kHz	Framingham, Massachusetts;
WRIB	1220 kHz	Providence, Rhode Island;
WPHX	1220 kHz	Sanford, Maine;
WTSV	1230 kHz	Claremont, New Hampshire;
WNEB	1230 kHz	Worcester, Massachusetts;
WXNI	1230 kHz	Westerly, Rhode Island;
WOON	1240 kHz	Woonsocket, Rhode Island;
WCNM	1240 kHz	Lewistown, Maine;
WBUR	1240 kHz	West Yarmouth, Massachusetts;
WFTN	1240 kHz	Franklin, New Hampshire;
WARE	1250 kHz	Ware, Massachusetts;
WKBR	1250 kHz	Manchester, New Hampshire; and
WMKI	1260 kHz	Boston, Massachusetts.

The distances to all groundwave contours were calculated using the equivalent distance method. Contours were calculated at 5 degree intervals using ground conductivity values shown on the M-3 soil map, except for the use of measured ground conductivities



contained in Appendix A and B. A breakdown of the measured conductivities are tabulated in Appendix A. Appendix B contains a tabulation of the measurement data along with a presentation of the field strength graphs. Tabulations of distances to groundwave contours and conductivity profiles are not included herein but can be provided upon request.

#### CO-CHANNEL PROTECTION

Figure 4 depicts the daytime overlap study for co-channel stations. In determining overlap caused by the proposal, the proposal shall be considered operating at 250 watts and all other stations are considered at actual operating power.

WESX currently has overlap with WNEB. The total overlap area will be reduced to WNEB with the WESX proposal. There is no overlap with any of the other co-channel stations.

#### FIRST-ADJACENT CHANNEL PROTECTION

Figure 4 also depicts the daytime allocation study for the first-adjacent, 1240 kHz Class C stations. WESX currently has overlap to WBUR. The WESX proposal will reduce the amount of overlap, see Figure 4.

Figure 5 depicts the overlap study for first-adjacent stations on 1220 kHz. A small area of overlap currently exists with WRIB. The proposal will reduce the current area of overlap.

### SECOND-ADJACENT CHANNEL PROTECTION

Figure 6 depicts no prohibited overlap of the 5.0 mV/m contours will occur.

### THIRD-ADJACENT CHANNEL PROTECTION

As depicted on Figure 7, a small area of overlap will occur with WMKI. This area of overlap can be entirely attributed to a saltwater path and therefore should be disregarded.

### NIGHTTIME ALLOCATION STUDY

A nighttime channel study was not included herein because the separation required for daytime protection also determines the nighttime protections for domestic Class C stations. The proposed facility of WESX will not raise the RSS limit of any Canadian, Mexican or foreign station included in the Region 2 Agreement. The proposed WESX nighttime facility is compliant with current Commission allocation standards.

### FAA NOTIFICATION AND TOWER REGISTRATION

Since WESX is proposing to utilize an existing tower without alteration, notification to the Federal Aviation Administration is not necessary.

The proposed antenna is an existing, registered structure. The Tower Registration Number is 1005298.

### ENVIRONMENTAL IMPACT

This engineering statement certifies compliance with human exposure to radio-frequency radiation. The proposal described herein does not involve high intensity lighting as specified under Section 1.1307(a)(8), nor will it result in human exposure to radio-frequency radiation in excess of the standards specified in Section 1.1307(b). As an existing, unaltered structure, it is believed no other environmental review is necessary.

### RADIO-FREQUENCY IMPACT

On January 1, 1986, the FCC amended its Rules to implement the National Environmental Policy Act of 1969 (NEPA). This amendment established RF radiation protection guidelines to be used to determine if potentially harmful RF exposure is possible from an FCC-regulated transmission facility. Effective October 15, 1997, the FCC adopted revised guidelines and procedures for evaluating environmental effects of RF emissions. These revised guidelines incorporate two tiers of exposure limits based on whether exposure occurs in a “controlled” (occupational) situation or an “uncontrolled” (general population) situation. The FCC has also revised OET Bulletin No. 65 entitled, “Evaluating Compliance with FCC Guidelines for Human Exposure to Radio-frequency Electromagnetic Fields,” to aid in the radiation exposure analysis. This bulletin, as well as other current literature, provides detailed information for conducting an analysis including mathematical equations that can be used to determine compliance with the Commission’s guidelines.

The proposed WESX facility will be co-located with the 1360 kHz operation of WLYN. Thus, the proposed site is considered a multiple use site.

### CALCULATION METHODS

Verification of compliance with FCC-specified guidelines for human exposure to RF radiation was obtained from OET Bulletin No. 65. To obtain distance to compliance with the guidelines, Table 3, Section 1 of Supplement A was used as a worst-case. The proposed WESX facility will operate on 1230 kHz with a nominal power of less than 1.0 kW. Radio Station WLYN is licensed to operate on 1360 kHz with a nominal power of less than 1.0 kW. The combined worst-case power of both stations is 1.14 kW. Using Table 3 for a 0.5 wavelength radiator and the low end of the frequency band as the worst case condition for both stations, the predicted distance for compliance with FCC limits would be 2.0 meters to satisfy both the occupational/controlled and the general population/uncontrolled MPE limits.

Fencing insuring compliance with the general population protection requirement will be provided. The fence will be locked to preclude public access to the tower and appropriate warning signs will also be posted. It is expected that electromagnetic field strength measurements will be conducted to establish that the MPE limits specified by the FCC are not exceeded and that the fencing is appropriate.

It is submitted that the addition of the proposed WESX station to the WLYN system will not constitute a potential hazard to the quality of the human environment. Accordingly,

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the WESX proposal, as described herein, should be categorically excluded from RF environmental processing under Section 1.1307(b) of the Rules.

OCCUPATIONAL SAFETY

Access to the antenna supporting tower base will be restricted to authorized maintenance personnel only. The licensees, in a cooperative effort, will institute joint procedures to ensure protection of station personnel or tower contractors working in the vicinity of the tower, the station will reduce power and/or cease operation during times of service or maintenance of the transmission systems when necessary to avoid potentially harmful exposure to personnel.

In light of the above, the proposed facility should be categorically excluded from RF environmental processing under Section 1.1307(b) of the Commission's Rules.

CONCLUSION

This statement and Section III of FCC Form 301 and the attached exhibits were prepared by me or under my direct supervision and are believed to be true and correct.

It is submitted that the proposed operation described herein complies with the technical standards of the Rules and Regulations of the Commission.

DATED: March 6, 2007

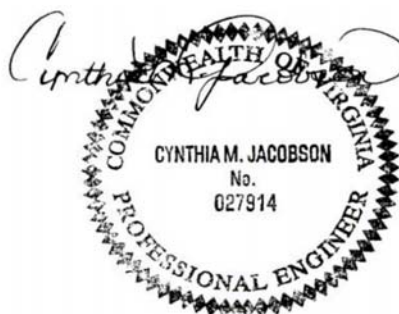
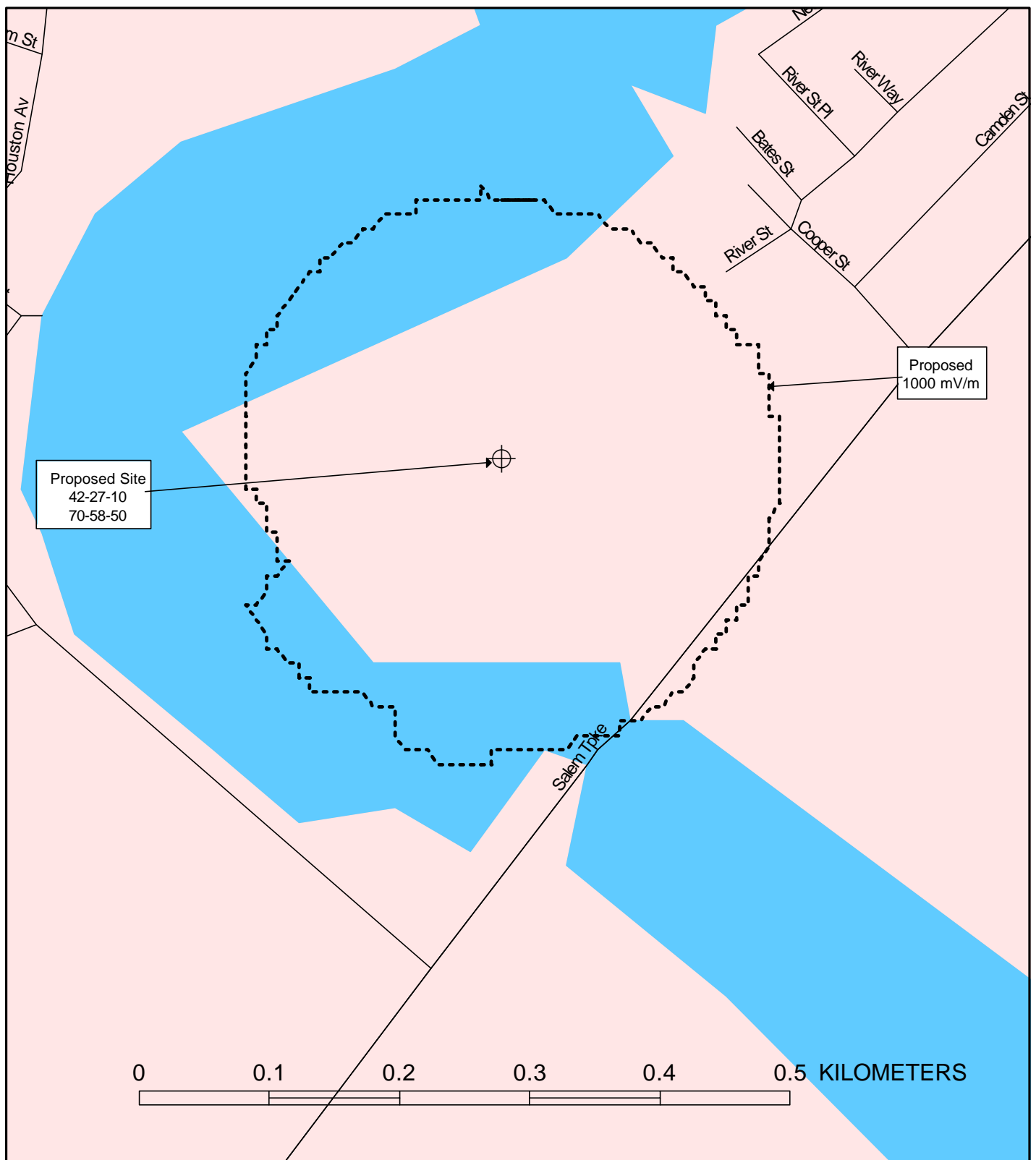
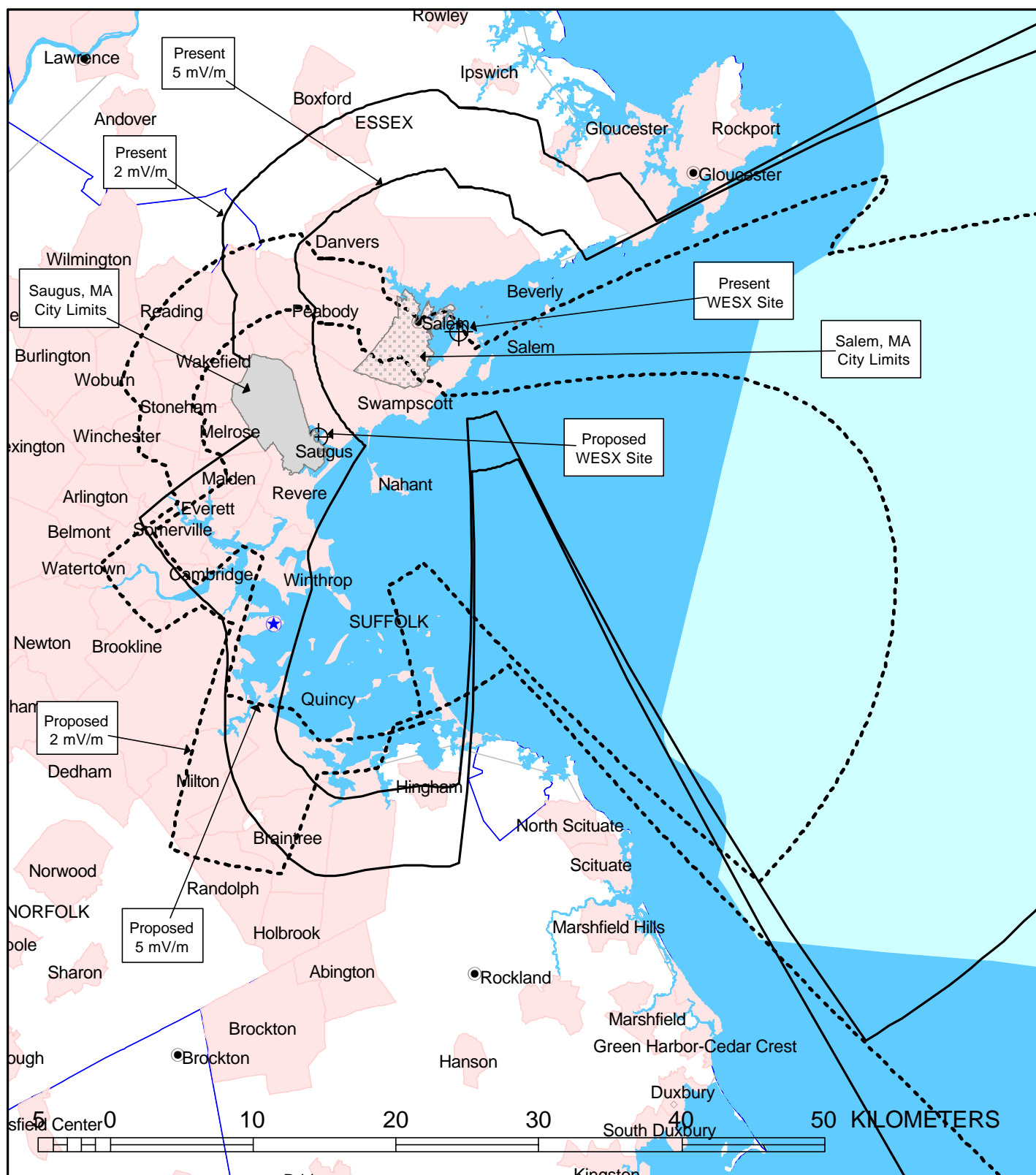


FIGURE 1



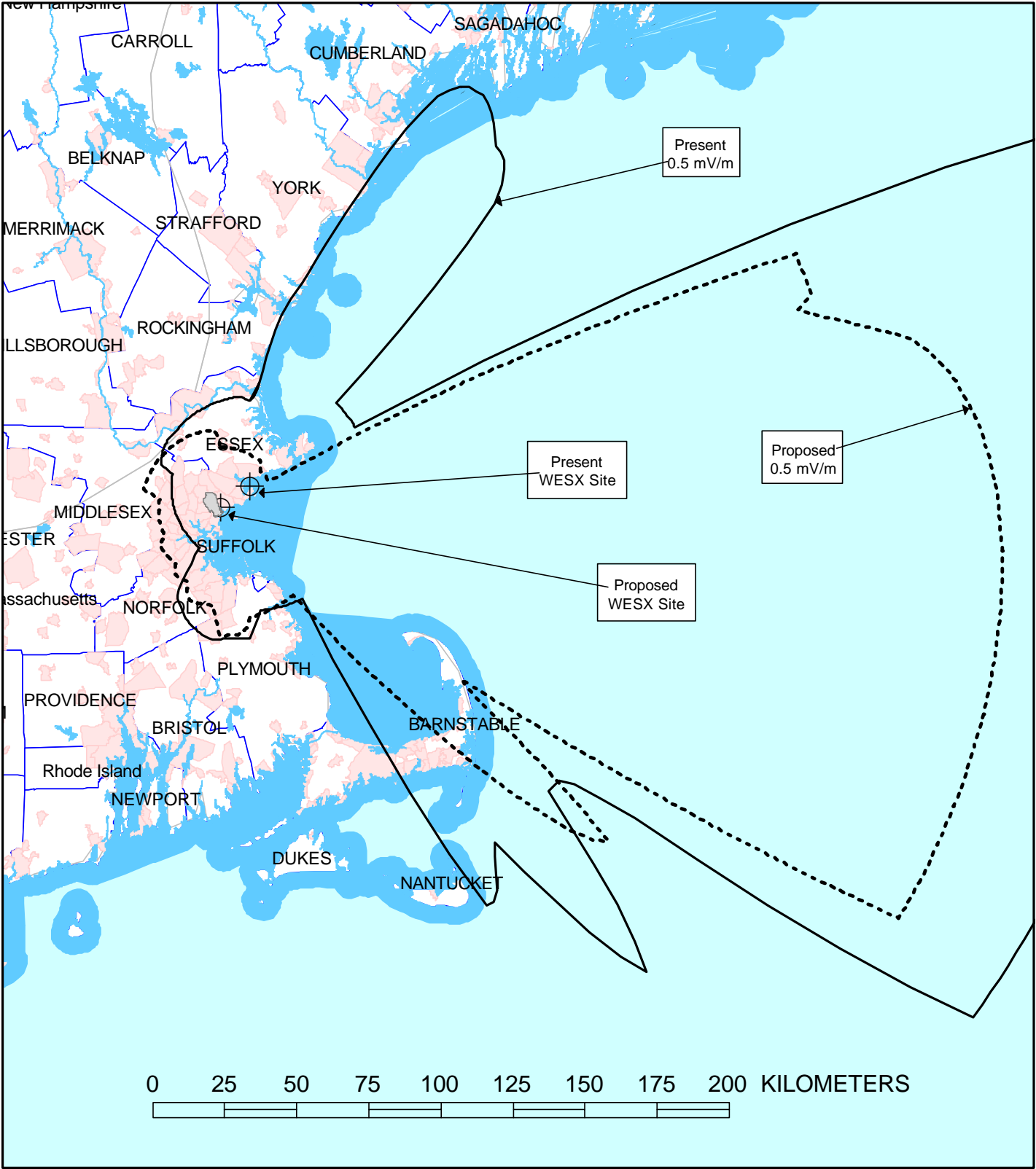
PROPOSED 1000 MV/M CONTOUR  
WESX(AM) - SAUGUS, MASSACHUSETTS  
1230 KHZ - 0.45 KW - ND1-U  
MARCH, 2007

FIGURE 2



PRESENT & PROPOSED DAYTIME  
2.0 MV/M AND 5.0 MV/M CONTOURS  
WESX(AM) - SAUGUS, MASSACHUSETTS  
1230 KHZ - 0.45 KW - ND1-U  
MARCH, 2007

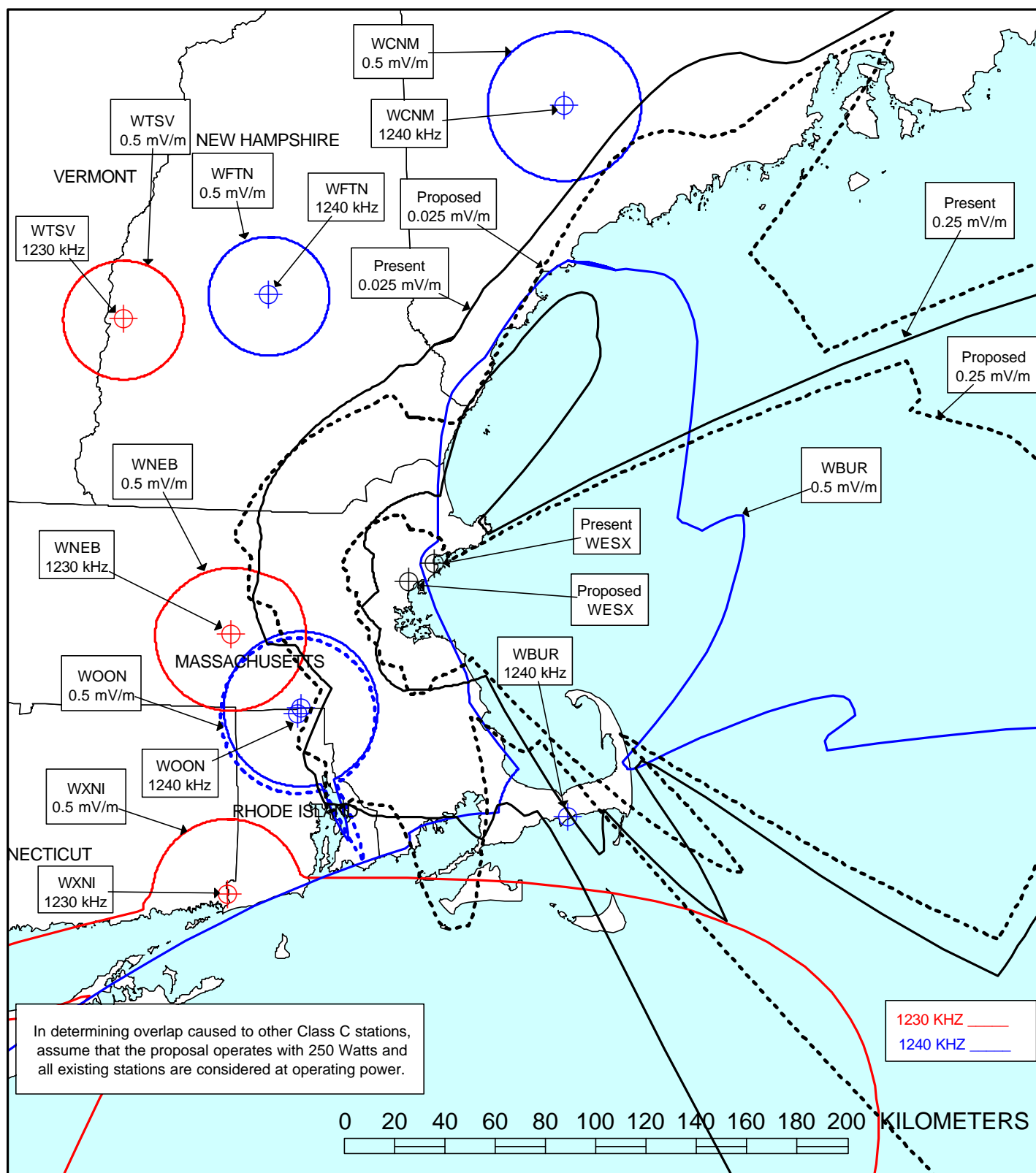
FIGURE 3



PRESENT & PROPOSED DAYTIME  
0.5 MV/M CONTOURS  
WESX(AM) - SAUGUS, MASSACHUSETTS  
1230 KHZ - 0.45 KW - ND1-U  
MARCH, 2007



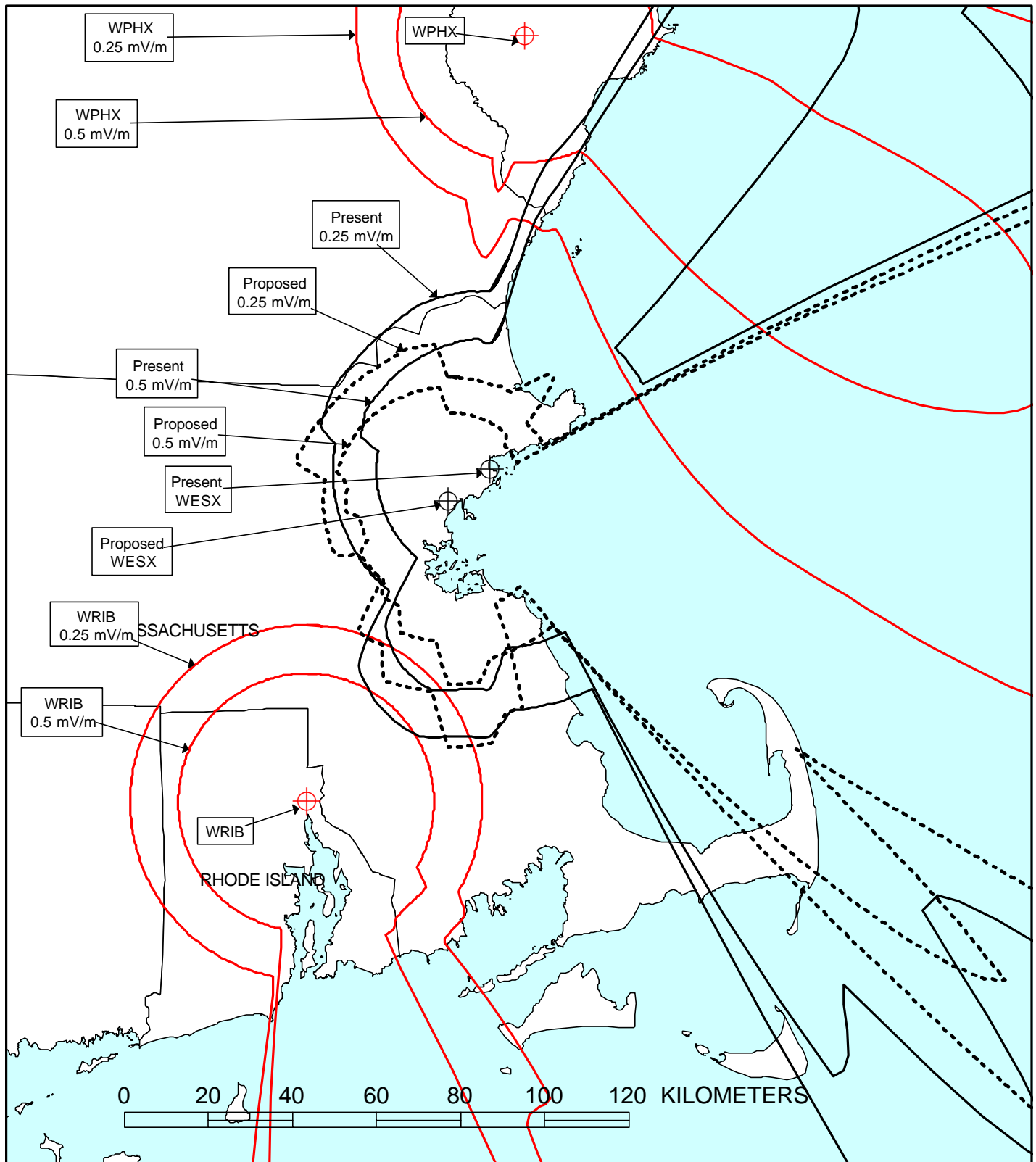
FIGURE 4



Everyone at operating power.  
WESX at 250 watts.

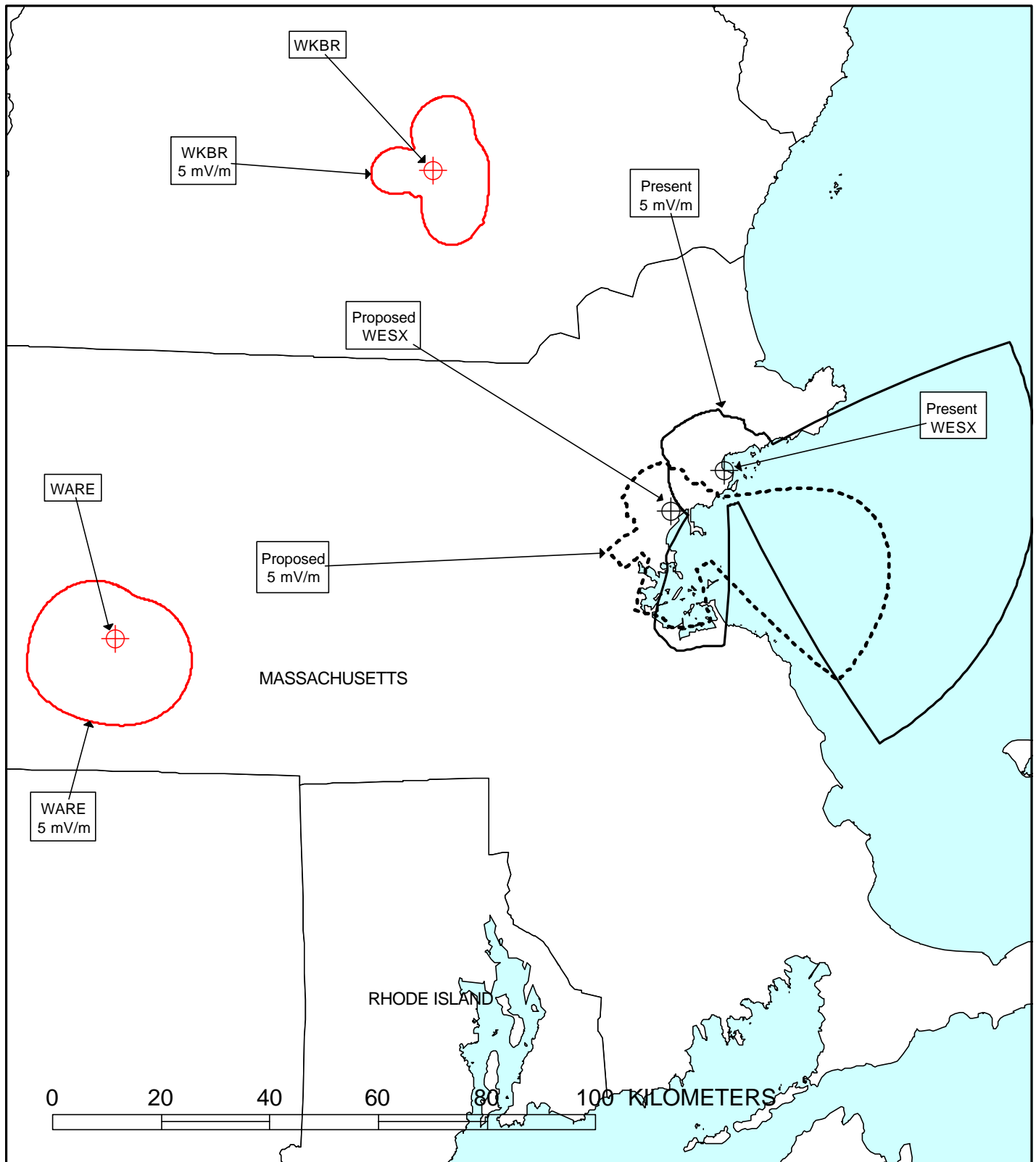
DAYTIME ALLOCATION STUDY  
INTERFERENCE CAUSED TO CO-CHANNEL AND 1240 KHZ FIRST ADJACENT STATIONS  
WESX(AM) - SAUGUS, MASSACHUSETTS  
1230 KHz - 0.45 KW - ND-U  
MARCH, 2007

FIGURE 5



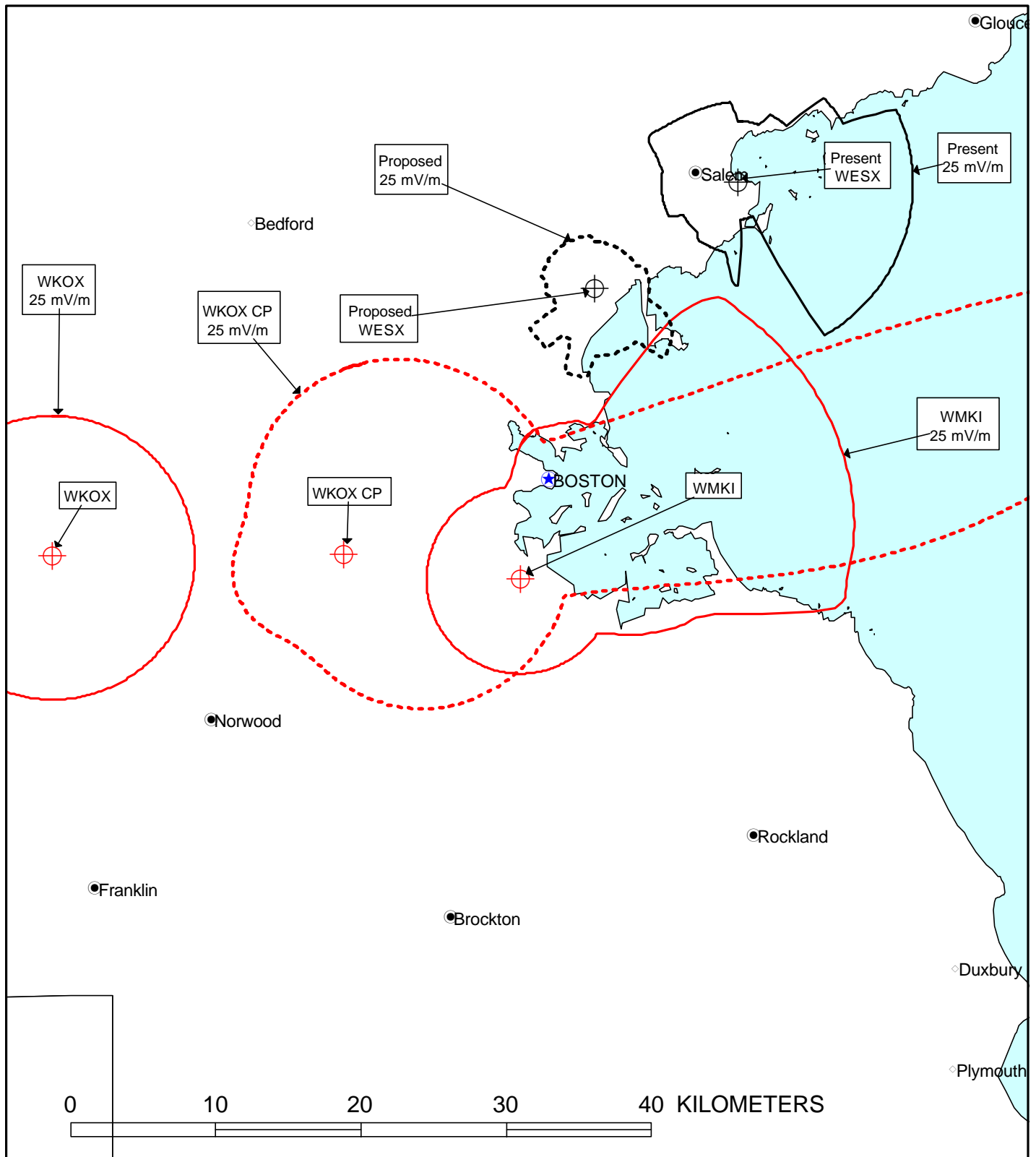
DAYTIME ALLOCATION STUDY  
 FIRST ADJACENT (1220 KHZ)  
 WESX(AM) - SAUGUS, MASSACHUSETTS  
 1230 KHZ - 0.45 KW - ND-U  
 MARCH, 2007

FIGURE 6



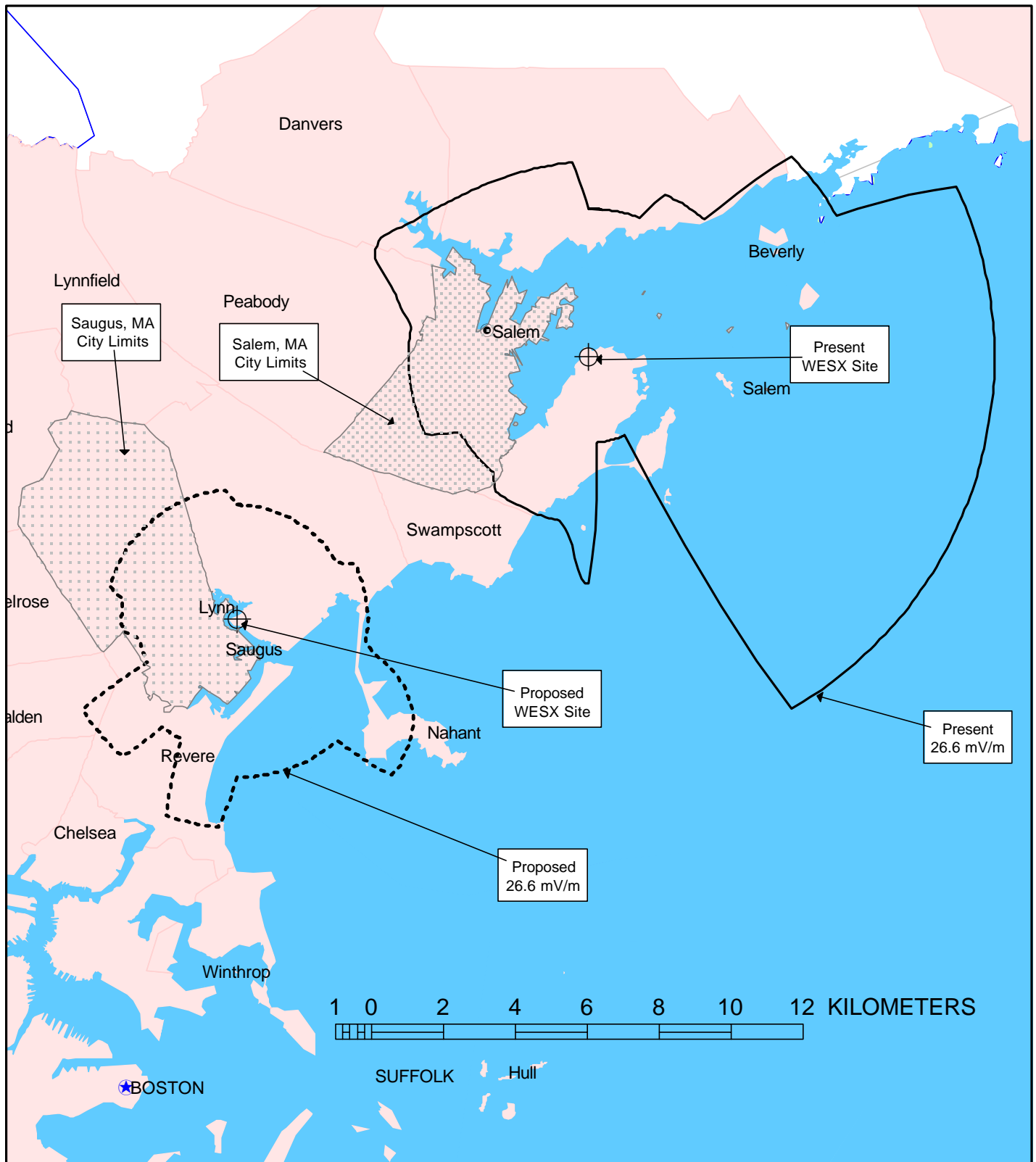
DAYTIME ALLOCATION STUDY  
SECOND ADJACENT 1250 KHZ  
WESX(AM) - SAUGUS, MASSACHUSETTS  
1230 KHZ - 0.45 KW - ND-U  
MARCH, 2007

FIGURE 7



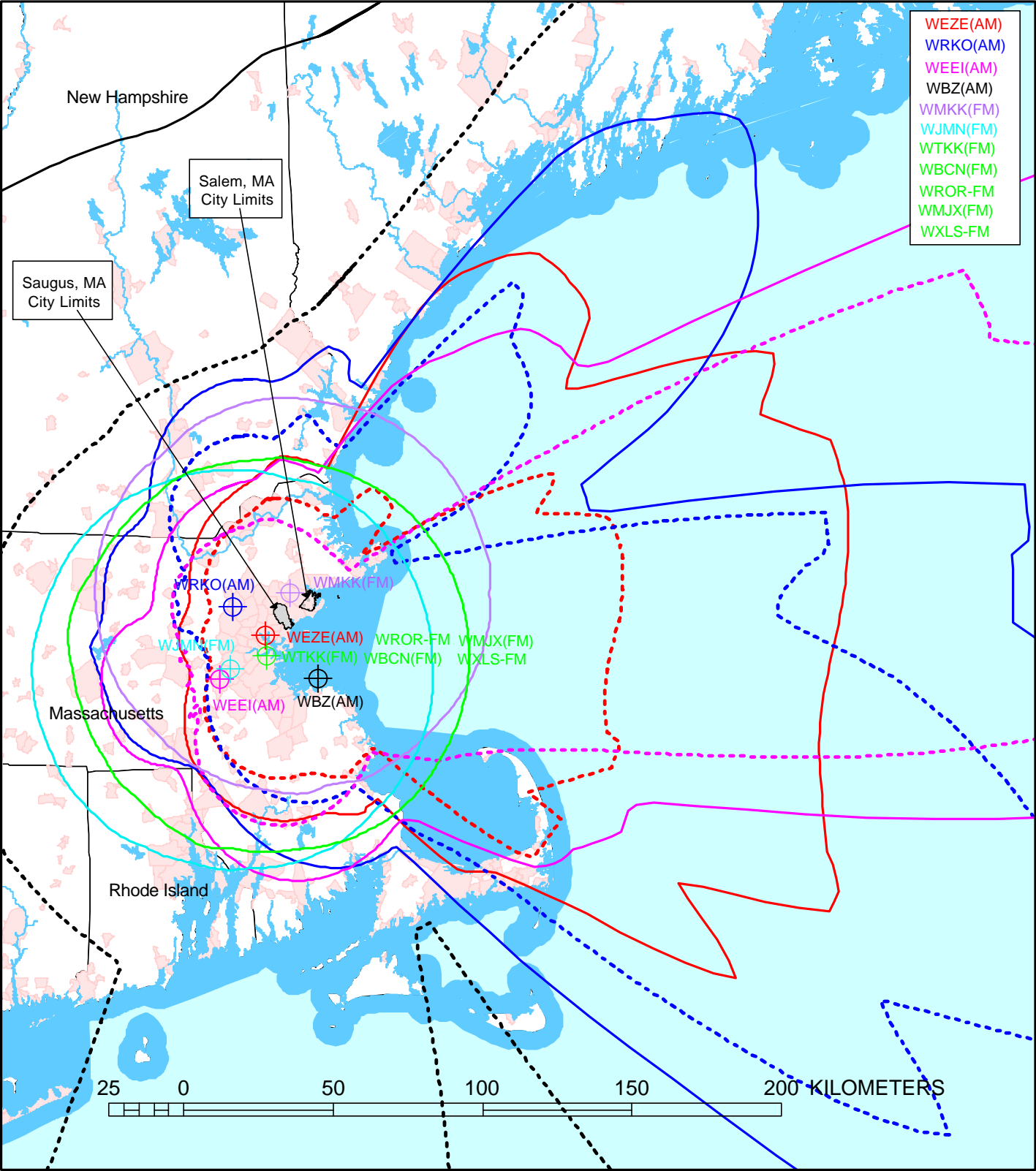
DAYTIME ALLOCATION STUDY  
 THIRD ADJACENT (1200 KHZ & 1260 KHZ)  
 WESX(AM) - SAUGUS, MASSACHUSETTS  
 1230 KHZ - 0.45 KW - ND-U  
 MARCH, 2007

FIGURE 8



PRESENT & PROPOSED NIGHTTIME  
INTERFERENCE-FREE CONTOURS  
WESX(AM) - SAUGUS, MASSACHUSETTS  
1230 KHZ - 0.45 KW - ND1-U  
MARCH, 2007

FIGURE 9



STATIONS PROVIDING PROTECTED SERVICE  
TO SALEM & SAUGUS, MASSACHUSETTS  
WESX(AM) - SAUGUS, MASSACHUSETTS  
1230 KHZ - 0.45 KW - ND1-U  
MARCH, 2007