

TECHNICAL EXHIBIT
MINOR CHANGE APPLICATION
RADIO STATION KASB(FM) (FACILITY ID 4631)
BELLEVUE, WASHINGTON

MARCH 15, 2006

CH 210D 60 W 18 M

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Technical Narrative

The technical exhibit of which this narrative is part was prepared on behalf of radio station KASB on channel 207D assigned to Bellevue, Washington. KASB is licensed for operation with a non-directional antenna maximum effective radiated power (ERP) of 8 watts (horizontal polarization only) and an antenna height above average terrain (HAAT) of 18 meters.¹

This minor change application is being filed concurrently with a minor change application for station KMIH(FM) (Mercer Island, WA) in order to allow KMIH to operate on channel 205D from its licensed transmitter site. This channel change for KASB is necessary to allow Class D station KMIH to preserve its service by relocating to Channel 205 at its current site (see KMIH minor change application being filed concurrently with this application). Due to the close proximity of KMIH and KASB, both stations cannot co-exist on a second-adjacent channel relationship and comply with Section 73.509(b). Thus, KASB hereby requests to change to Channel 210D.

Section 73.512 allows Class D stations to file for new channels provided compliance with the interference provisions of Section 73.509(b) are met. Due to the extreme congestion of the radio market, there are no channels available at the current site that meet the interference provisions of Section 73.509(b) (see Figure 4). However, studies indicate that

¹ See FCC File Number: BLED-941

Channel 210D is available on a waiver request. Therefore, as will be discussed herein, a waiver of Section 73.509(b) is respectfully requested for operation on channel 210D.

Proposed Transmitter Location

Station KASB proposes to remain at its existing transmitter site. It is proposed to operate non-directionally with an ERP of 60 watts and an antenna HAAT of 18 meters. A new single bay, circularly-polarized antenna will be installed at the same location on the existing supporting pole, atop the school building. The KASB transmitter site is uniquely described by the following geographic coordinates:

47° 36' 17" North Latitude
122° 11' 47" West Longitude

A sketch showing the proposed antenna and supporting structure is shown on Figure 1. As the structure is less than 200 feet (AGL) and meets the TOWAIR slope requirement, tower registration is not necessary.

Interference Concerns

The 115 dBu predicted "blanketing" contour of the proposed station is predicted to extend radially 97 meters from the transmitting site. The applicant recognizes its responsibility to resolve complaints of interference, including blanketing and receiver-induced interference as required by Sections 73.315(b), 73.316(e) and 73.318.

FCC Predicted Coverage Contour

The predicted coverage contour for the proposed operation was calculated in accordance with the provisions of Section 73.313. Pursuant with current FCC practice, the distances to the contour was calculated without consideration given to terrain roughness correction factors.

The average terrain elevations from 3 to 16 kilometers along eight radials evenly spaced at 45 degree intervals were obtained from the N.G.D.C. 30-second digitized terrain database. The terrain elevations were then used in combination with the effective radiated power for determining the distances to coverage contours. The 60 dBu coverage contour shown in Figure 2 encompasses all of Bellevue.

Based on the proposed reference facilities of 60 Watts and an overall HAAT of 18 meters, the 60 dBu reference contour extends a distance of 4.94 kilometers, or less than the minimum Class A distance of 5.5 kilometers.²

Allocation Study

Sheet 1 of Figure 3 summarizes the allocation study for the proposed facility based on Section 73.509(b). As the proposed operation is for a Class D facility, there are no minimum spacing requirements with respect to IF related facilities (less than 100 watts ERP). These separations shown are based on contour overlap distances to prevent interference to nearby co-channel and first, second, and third-adjacent channel facilities. There may be received interference. The three "short-spacings" shown are based on the proposed KASB transmitter site, antenna height and ERP level. For the purposes of the numerical study, the maximum HAAT and ERP values were used in determining the maximum distance in any direction to the predicted coverage and interfering contours.

As indicated in Sheet 1 of Figure 3, the proposed facility will be short-spaced to one proposed and two existing stations: BNPFT-20000121AAG, KNHC and KEXP-FM.

BNPFT-20000121AAG are two pending applications for a new FM translator on channel 210 at Medina, Washington. It is believed that Class D stations are not required to protect pending FM translator applications. Therefore, these two Medina applications have been ignored.

² It is noted that the proposed transmitter power output (tpo) will exceed 10 Watts. If a waiver of Section 73.506(a)(1) is necessary, it is respectfully requested.

Waiver of Section 73.509(b)

Station KNHC-FM is licensed to operate on channel 208C1 with a maximum directional ERP of 8.5 kilowatts and an HAAT of 372 meters at a location 9.6 kilometers southeast of the KASB site (BLED-20020402AAC). Station KEXP-FM is licensed to operate on channel 212C3 with a maximum directional ERP of 3.3 kilowatts and an HAAT of 211 meters at a location 8.5 kilometers west of the KASB site (BLED-20050125AJO). Station KEXP-FM is also authorized (CP, BPED-20050331BCK) to operate on channel 212C3 with a maximum directional ERP of 4.7 kilowatts and an HAAT of 211 meters at a location 8.5 kilometers west of the KASB site. The KASB site is located within the protected contour (60 dBu) for stations KNHC and KEXP-FM. Therefore, waiver of Section 73.509(b) is respectfully requested with regards to stations KNHC and KEXP-FM.

Station KNHC

Sheet 2 of Figure 3 depicts the KNHC 60 dBu contour and the proposed KASB 80 dBu contour. The KNHC 60 dBu contour encompasses 5,508 square kilometers (land area). It has been determined that the proposed KASB 80 dBu contour encompasses 8.3 square kilometers, or 0.15 percent, of this total KNHC land area. Furthermore, an analysis of the interference potential was also conducted based on the desired-to-undesired (D/U) signal strength ratio method. These types of showings have been accepted by the Commission for new and modified FM “secondary” translator and Class D proposals and therefore considered valid for the instant proposal.³ The predicted KNHC F(50,50) field strength is 92.7 dBu at the KASB site. The free-space distance to the resulting interfering contour (112.7 dBu using a -20 dB D/U ratio) is 126 meters. The calculated interference area encompasses 0.05 square kilometer, or 0.001 percent, of the total land area within the KNHC 60 dBu contour (see Sheet 3 of Figure 3). The FCC has previously approved prohibited contour overlap in cases where the interference area was “less than one percent” of the desired station’s service area.⁴

³ See FCC Letter dated April 10, 1995 to Sacred Heart University, ref. No. 1800B4-AJS (Alan J. Schneider, Auxiliary Services Branch). See also BPED-20000609ABC and BPED-20040614AFZ.

⁴ See WCPE(FM), 6 FCC Rcd. 2207 (1991). See also BPED-20000609ABC and BPED-20040614AFZ.

Therefore, as the overlap proposed herein also represents less than one percent and the resulting interference 0.001 percent, it is believed that waiver of Section 73.509(b) is justified for the same reason.

Since KASB currently operates on Channel 207D, which is first-adjacent to nearby station KNHC, this waiver request can be considered a “continued” waiver request. By changing channels alone, KASB will reduce the current interference with KNHC, both caused and received, by 26 dB. This is due to the difference in the D/U interference ratios between first adjacent stations (+6 dB) and second-adjacent stations (-20 dB). The modest 8.8 dB ERP increase requested in this proposal for KASB is considered insignificant as compared to the difference in D/U interference ratios. Thus, it is believed that the proposal will have less impact on station KNHC than the current KASB licensed operation on channel 207.

Station KEXP-FM

Sheet 2 of Figure 3 depicts the KEXP-FM licensed 60 dBu contour and the proposed KASB 80 dBu contour. The KEXP-FM 60 dBu contour encompasses 2,660 square kilometers (land area). It has been determined that the proposed KASB 80 dBu contour encompasses 8.3 square kilometers, or 0.31 percent, of this total KEXP-FM land area. Furthermore, an analysis of the interference potential was also conducted based on the desired-to-undesired (D/U) signal strength ratio method. The predicted KEXP-FM F(50,50) field strength is 84.9 dBu at the KASB site. The free-space distance to the resulting interfering contour (104.9 dBu using a -20 dB D/U ratio) is 309 meters. The calculated interference area encompasses 0.3 square kilometer, or 0.01 percent, of the total land area within the KEXP-FM 60 dBu contour (see Sheet 4 of Figure 3). Thus, a waiver of Section 73.509(b) is also justified.

Station KEXP-FM(CP)

Sheet 2 of Figure 3 depicts the KEXP-FM CP licensed 60 dBu contour and the proposed KASB 80 dBu contour. The KEXP-FM CP 60 dBu contour encompasses 2,993 square kilometers (land area). It has been determined that the proposed KASB 80 dBu contour encompasses 8.3 square kilometers, or 0.28 percent, of this total KEXP-FM CP land

area. Furthermore, an analysis of the interference potential was also conducted based on the desired-to-undesired (D/U) signal strength ratio method. The predicted KEXP-FM CP F(50,50) field strength is 86.5 dBu at the KASB site. Using the D/U ratio of -20 dB contained in Section 73.509(b), the calculated interference area based on the appropriate KASB F(50,10) contours encompasses 0.21 square kilometers, or less than 0.007 percent of the total land area within the KEXP-FM CP 60 dBu contour (see Sheet 5 of Figure 3). Thus, a waiver of Section 73.509(b) is also justified.

Use of -40 dB D/U Ratio

It is noted that the FCC's Rules specify a less restrictive -40 dB D/U ratio for second-adjacent channel relationships for all other classes of FM stations and also for other secondary stations (i.e., FM translators and boosters). The FCC recently relaxed this second-adjacent ratio to match the -40 dB ratio used for commercial stations. The FCC stated that, "...the commercial FM 100 dBu standard is a better gauge of potential second-adjacent channel interference than the 80 dBu standard, and that we were aware of no reason for continuing to impose more stringent standards on NCE FM and FM translator stations."⁵ However, the FCC did not relax the second-adjacent interference ratio for NCE Class D stations.

It is not logical for an NCE Class D station to have a more stringent interference ratio imposed on it than other classes of stations, since actual interference does not discriminate by station class. In light of this, we have also studied the potential impact to KNHC and KEXP-FM using a more realistic -40 dB D/U interference ratio. An analysis of the interference potential was conducted based on the desired-to-undesired (D/U) signal strength ratio method. To determine how the interference calculations described above were made, first the F(50,50) signal level for station KNHC was determined at the KASB site. Then, multiple F(50,10) FCC contours were generated for KASB based on a -40 dB D/U ratio. Multiple F(50,50) FCC contours for KNHC were also generated to be intersected with the appropriate KASB interfering contour. For example, the KNHC signal level was

⁵ See paragraph 39 of Second Report and Order in MM Docket No. 98-93, released November 1, 2000.

determined to be 92.7 dBu at the KASB site. Since the interfering contour values for KASB were so high (approximately 132.7 dBu), very minor increments (1/100 dB) had to be used to generate the interference region. The KNHC 92.69 dBu F(50,50) contour was intersected with the KASB 132.69 dBu F(50,10) interfering contour; the KNHC 92.70 dBu with the KASB 132.70 dBu and so on. The same process was used for KASB/KEXP-FM.

The attached map in Sheet 6 of Figure 3 shows the appropriate contours that were generated in the above example. Since the three interfering contours for KASB are practically superimposed upon themselves, the outer contour was deemed the boundary of the interference area, for a conservative approach. This was the 132.69 dBu contour for KASB with respect to KNHC.

Based on the above approach and a more reasonable -40 dB D/U ratio, the resulting interfering contours for KASB using a -40 dB D/U ratio is 132.7 dBu, 124.9 dBu and 126.5 dBu to KNHC, KEXP-FM and KEXP-FM CP, respectively. The free-space distance to these contours, based on 60 Watts will not exceed 13 meters. Therefore, based on a -40 dB D/U ratio, the predicted KASB interfering contour with respect to KNHC and KEXP-FM, will not cause any interference at ground level. Furthermore, using the radiation characteristics of the proposed 1-bay antenna, there is no expected interference (-40 dB) to be caused within any of the school buildings either.

Finally, the applicant is cognizant of the fact that as a “secondary” service it must correct any instances of actual interference that may occur.

Compliance with Section 73.215(a)(3)

A comprehensive search of the entire FM band (channels 200-300, 87.9-107.9 MHz) was conducted. A Class D FM station is authorized on a contour protection basis. The search was conducted using the geographic coordinates of the KASB transmitter site. Figure 4 summarizes the results of the channel search and tabulates each channel, the primary station precluding use of the channel and the distance between the primary station and the KASB site. Only the most restrictive station in each case is listed for each channel although there may be other restricting stations of lesser magnitude. The results indicated that channel 210

(89.9 MHz) is available for Class D use on a waiver basis. Channel 214 also initially appeared possible on a waiver basis. However, it would require one more waiver (to a 3rd adjacent station) than Channel 210 would require and also appears to be susceptible to more significant interference received than Channel 210 would be for KASB.

Radiofrequency Electromagnetic Field Exposure

The proposed KASB facilities were evaluated in terms of potential radio frequency (RF) energy exposure at ground level to workers and the general public. The radiation center for proposed 1-bay antenna is located 24 meters above ground level or 12 meters above rooftop level. The total ERP (horizontal & vertical polarizations) is 120 watts. Assuming a conservative downward relative field of 0.5, the calculated power density at a point 2 meters above rooftop level for the KASB antenna is 0.01 mW/cm^2 . This is 5% of the FCC's recommended limit of 0.2 mW/cm^2 for FM frequencies for an "uncontrolled" environment.

When it becomes necessary for workers to ascend the tower or access the rooftop, appropriate measures, such as reduction or shut down of power if necessary, shall be taken to ensure that the human exposure to radiofrequency electromagnetic will not exceed the FCC guidelines.

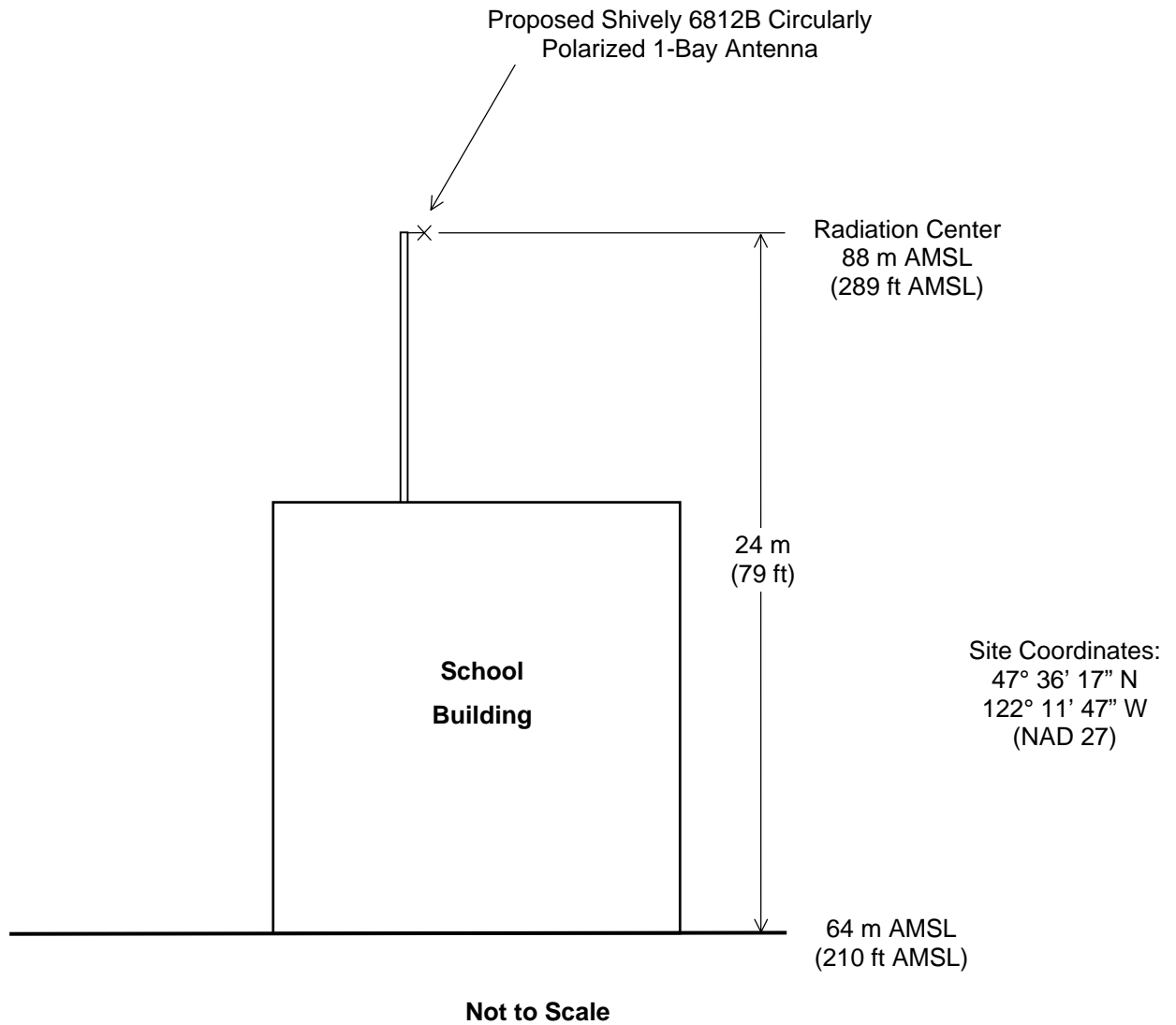
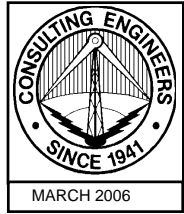


Jonathan N. Edwards

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March 15, 2006

Figure 1

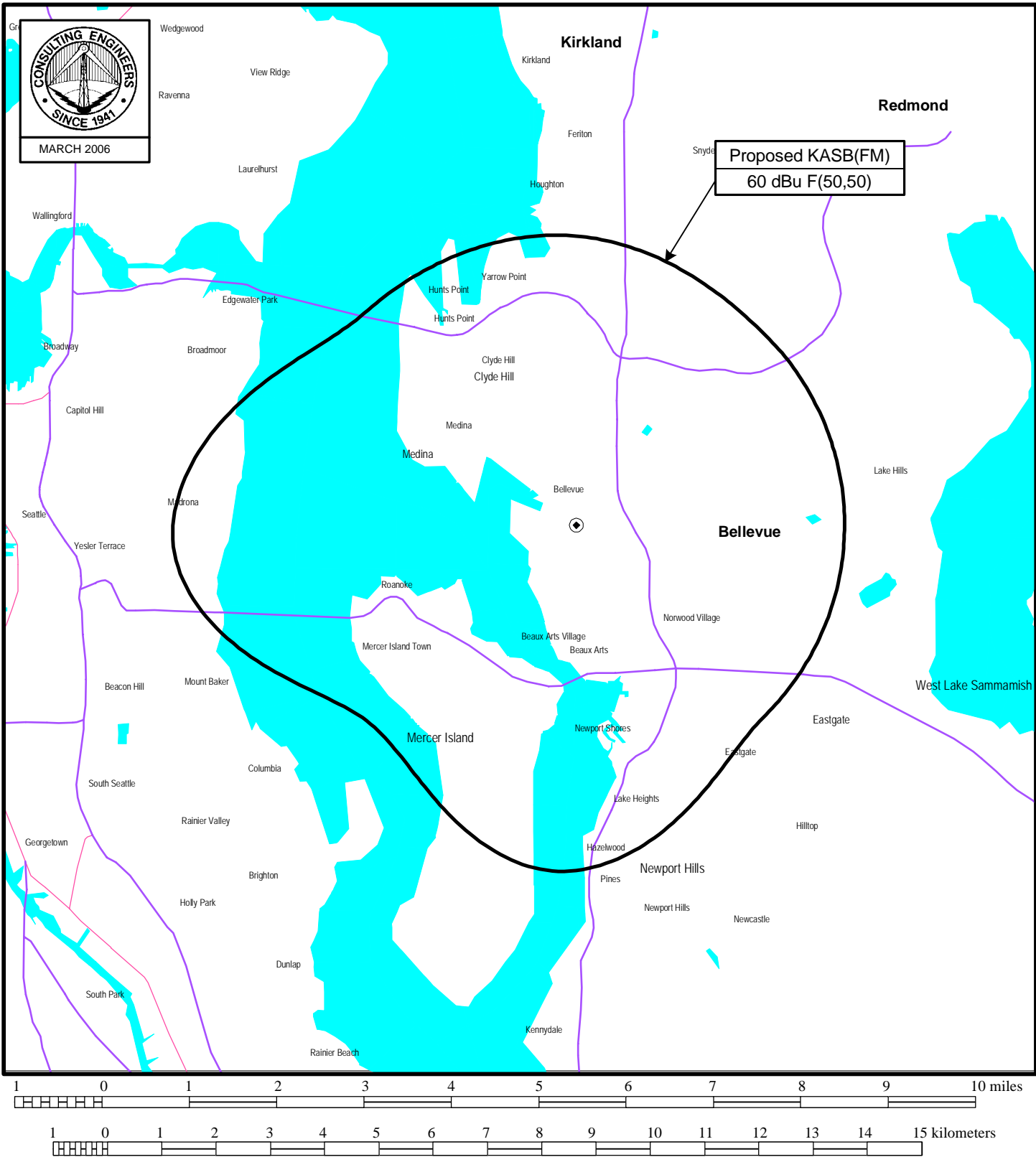


ANTENNA AND SUPPORTING STRUCTURE

RADIO STATION KASB
BELLEVUE, WASHINGTON
CH 210D 60 W 18 M

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Figure 2



PREDICTED COVERAGE CONTOURS

RADIO STATION KASB(FM)

BELLEVUE, WASHINGTON

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Allocation (Contour) Study

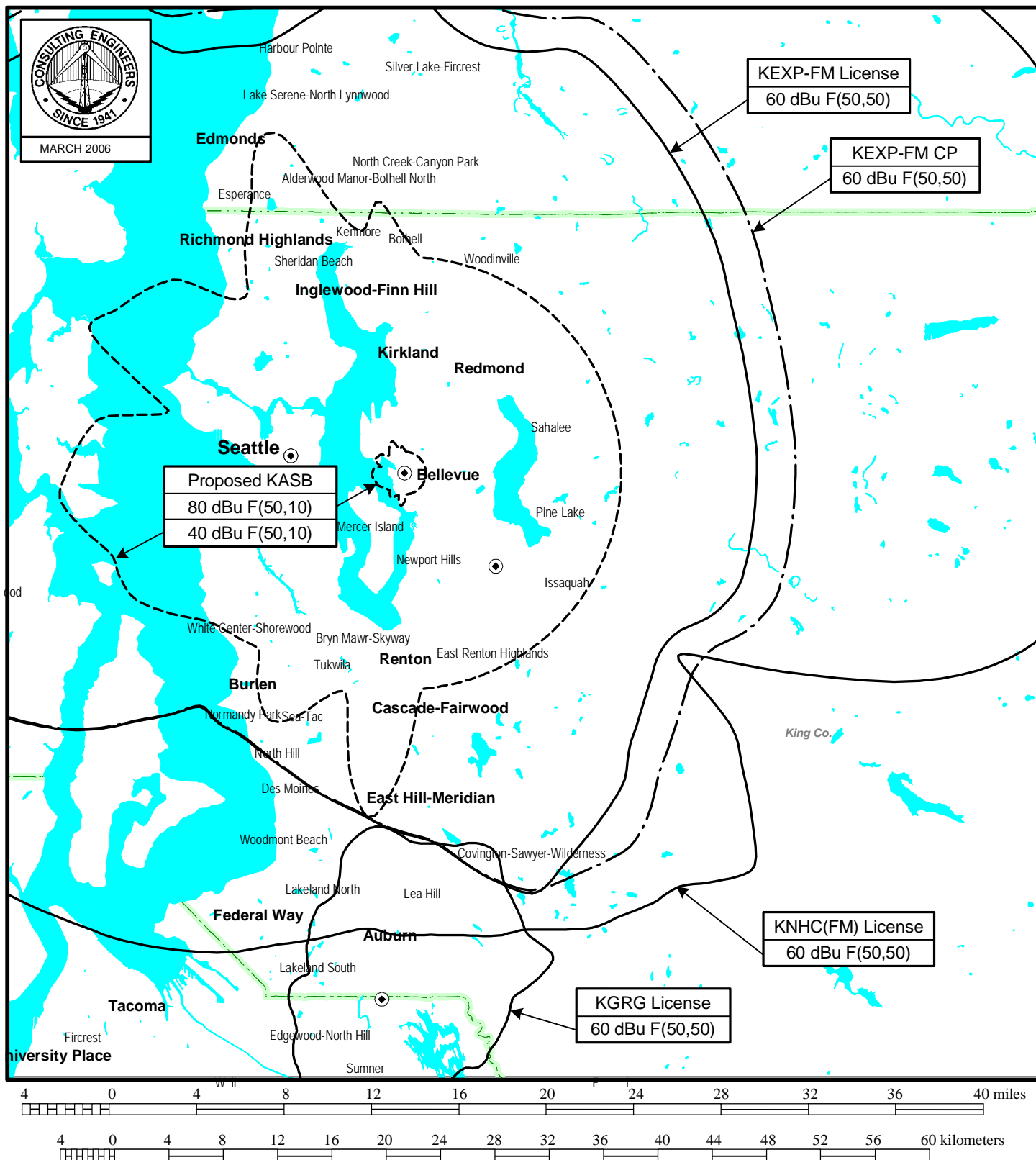
47° 36' 17" North Latitude
122° 11' 47" West Longitude

Call Id	City St	Status	File Num	Channel Freq	ERP HAAT	DA Id	Latitude Longitude	73 215	Bear	Dist. (km)	Req min
KASB 4631	BELLEVUE WA	LIC C	BLED 941	207 D 89.3	0.008 81	N	47-36-17 122-11-47	N	0.0	0.00	
KNHC 59526	SEATTLE WA	LIC C	BLED 20020402AA	208 C1 89.5	8.500 455	Y 43082	47-32-35 122-06-25	N	135.6	9.61 -48.72	58.0 Short ¹
NEW 122282	MEDINA WA	APP C	BNPFT 20000121AA	210 D 89.9	0.013 422	N 69303	47-32-37 122-06-35	N	136.2	9.42 -30.34	30.9 Short ²
NEW 122282	MEDINA WA	APP C	BNPFT 20000121AA	210 D 89.9	0.028 323	N 31004	47-36-17 122-19-46	N	270.0	10.01 -30.60	31.8 Short ²
KGRG 25168	AUBURN WA	LIC C	BLED 19950127KB	210 A 89.9	0.250 162	Y 13943	47-15-23 122-13-07	N	182.5	38.76 -4.98	34.9 Short ³
NEW 123085	MARYSVILLE WA	APP C	BNPED 20000331AA	210 A 89.9	0.200 170	N	48-04-39 122-06-10	N	7.5	53.03 18.67	34.4 Clear
KUPS 68996	TACOMA WA	LIC C	BLED 19950711KE	211 A 90.1	0.100 118	N	47-15-48 122-28-37	N	209.2	43.46 24.50	19.0 Clear
KEXP-FM 68668	SEATTLE WA	LIC C	BLED 20050125AJ	212 C3 90.3	3.300 246	Y 41900	47-36-58 122-18-28	N	278.7	8.47 -32.17	37.6 Short ¹
KEXP-FM 68668	SEATTLE WA	CP C	BPED 20050331BC	212 C3 90.3	4.700 246	Y 69310	47-36-58 122-18-28	N	278.7	8.47 -29.38	40.4 Short ¹

¹ Interference waiver requested . See Text.

² Pending FM translator application not protected. See Text

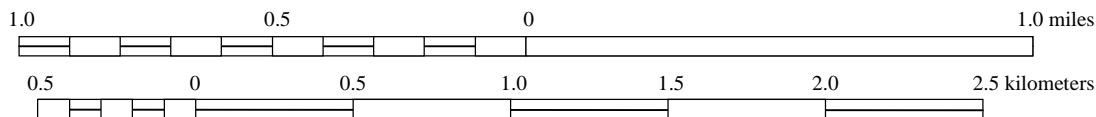
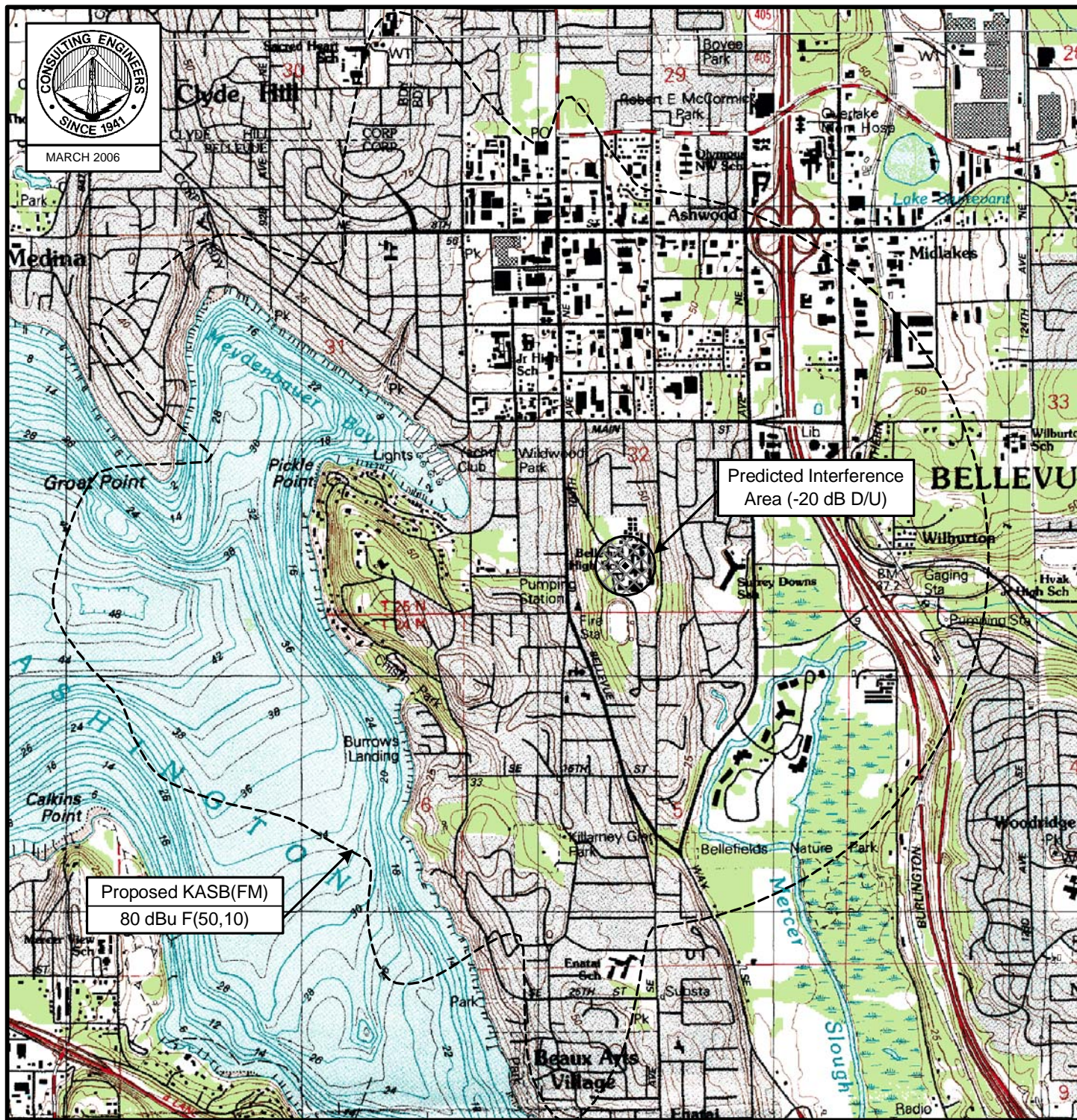
³ Contour protection provided. See Sheet 2 of Figure 3.



PREDICTED CONTOUR PROTECTION MAP

RADIO STATION KASB(FM)
BELLEVUE, WASHINGTON
CH 210D 60 W 18 M

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PREDICTED INTERFERENCE TO KNHC

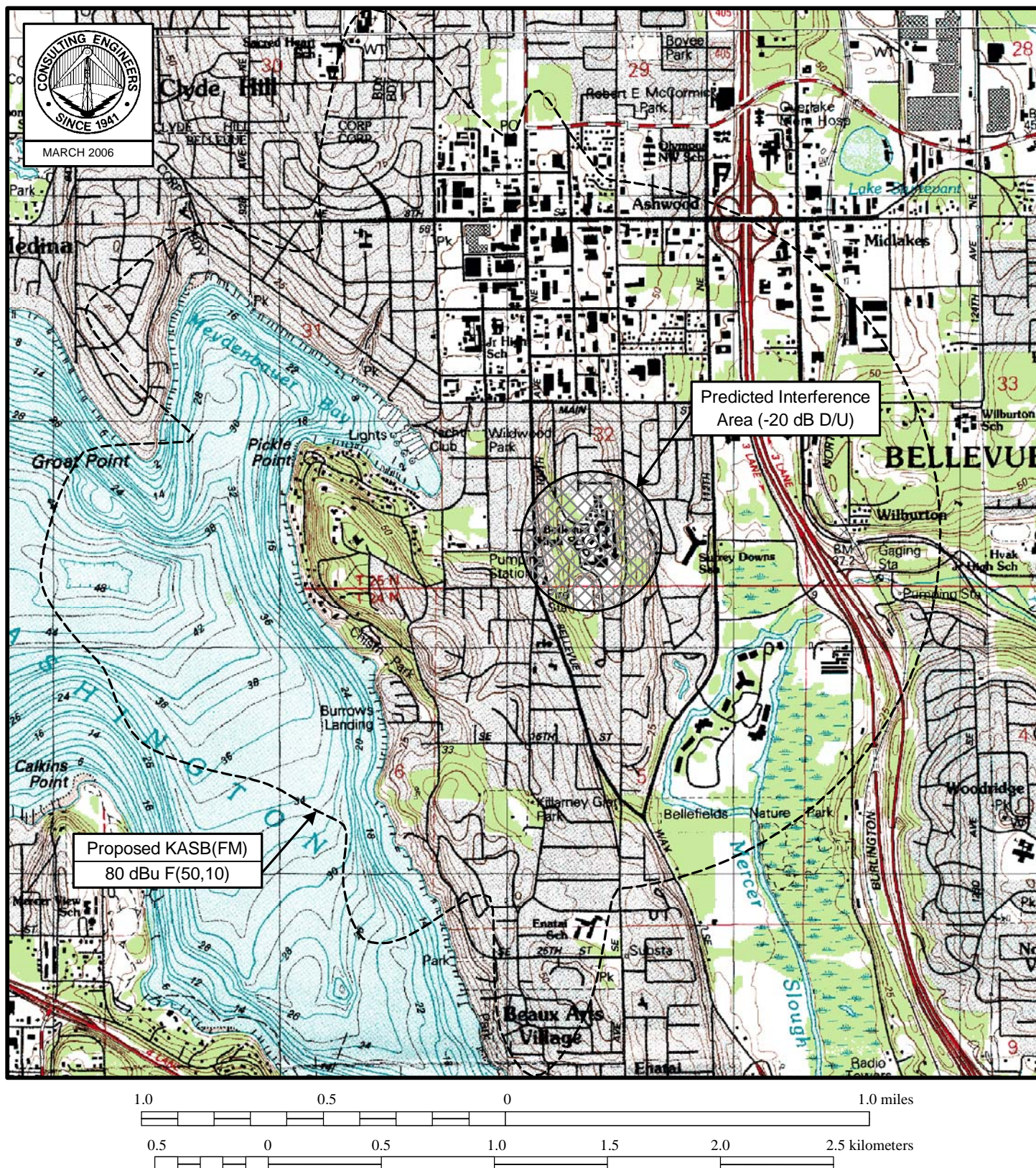
RADIO STATION KASB(FM)

BELLEVUE, WASHINGTON

CH 210D 60 W 18 M

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Figure 3
Sheet 4 of 6



PREDICTED INTERFERENCE TO KEXP

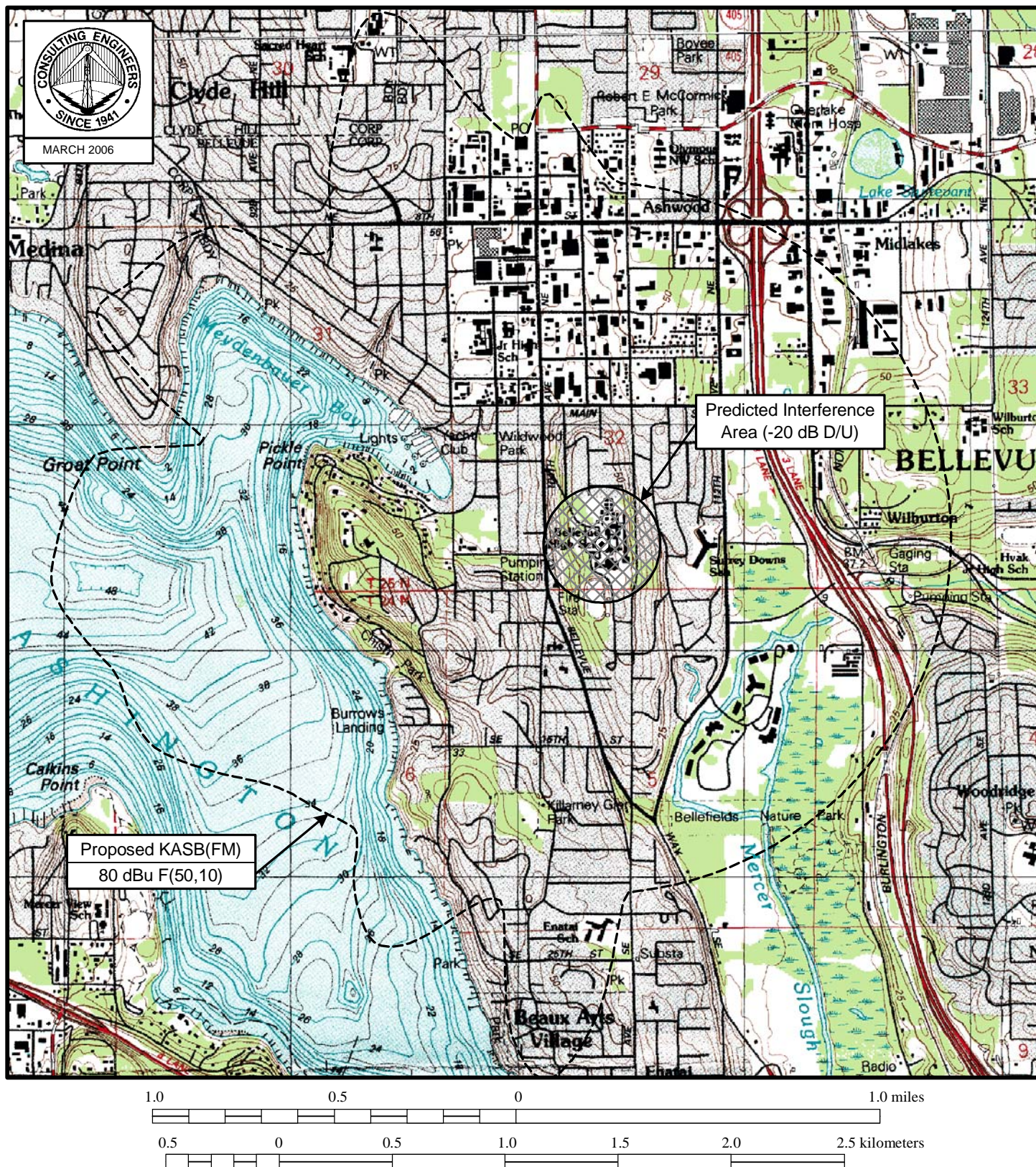
RADIO STATION KASB(FM)

BELLEVUE, WASHINGTON

CH 210D 60 W 18 M

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Figure 3
Sheet 5 of 6



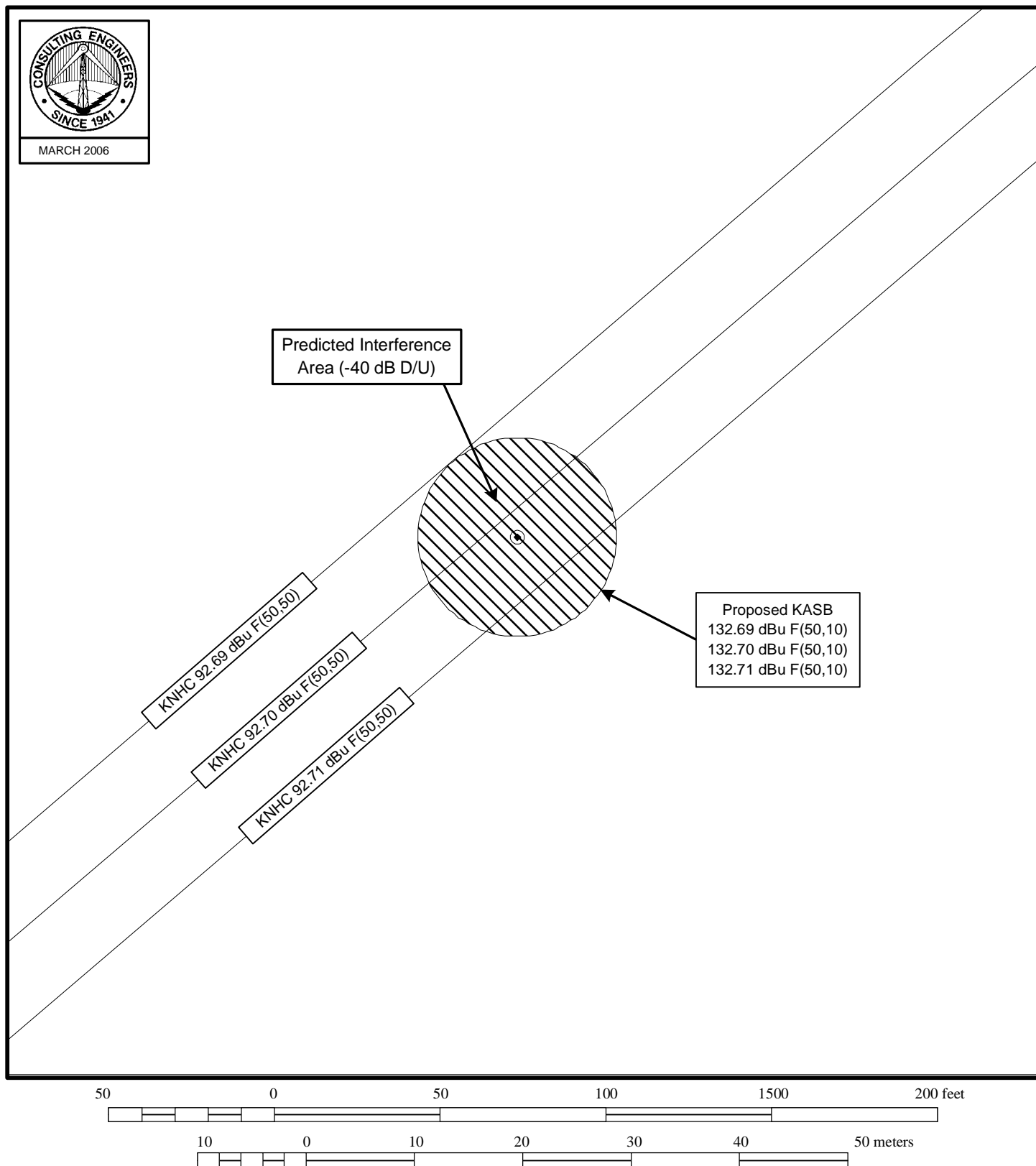
PREDICTED INTERFERENCE TO KEXP(CP)

RADIO STATION KASB(FM)

BELLEVUE, WASHINGTON

CH 210D 60 W 18 M

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PREDICTED INTERFERENCE TO KNHC

RADIO STATION KASB(FM)

BELLEVUE, WASHINGTON

CH 210D 60 W 18 M

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SUMMARY OF FM CHANNEL SEARCH

Channel Studied	Primary Assignment Precluding Channel	Channel	Distance (km) ¹
200 (87.9 MHz)	Canada		
201	K201AB, West Seattle, WA	201	28
202	KPLU-FM, Tacoma, WA	203C	20
203	KPLU-FM, Tacoma, WA	203C	20
204	KPLU-FM, Tacoma, WA	203C	20
205 (88.9 MHz)	KMIH, Mercer Island, WA (proposed)	205	4
206	K206CJ, Issaquah, WA	206	19
207	KNHC, Seattle, WA	208C1	10
208	KNHC, Seattle, WA	208C1	10
209	KNHC, Seattle, WA	208C1	10
210 (89.9 MHz)	Available on waiver basis		
211	KEXP-FM, Seattle, WA	212C3	9
212	KEXP-FM, Seattle, WA	212C3	9
213	KEXP-FM, Seattle, WA	212C3	9
214	KSER, Everett, WA	214A	47
215 (90.9 MHz)	KBCS, Bellevue, WA	217C3	4
216	KBCS, Bellevue, WA	217C3	4
217	KBCS, Bellevue, WA	217C3	4
218	KBCS, Bellevue, WA	217C3	4
219	KXOT, Tacoma, WA	219C2	37
220 (91.9 MHz)	KXOT, Tacoma, WA	219C2	37
221	KLSY-FM, Bellevue, WA	223C	20
222	KLSY-FM, Bellevue, WA	223C	20
223	KLSY-FM, Bellevue, WA	223C	20
224	KLSY-FM, Bellevue, WA	223C	20
225 (92.9 MHz)	KUBE, Seattle, WA	227C	10
226	KUBE, Seattle, WA	227C	10
227	KUBE, Seattle, WA	227C	10
228	KUBE, Seattle, WA	227C	10
229	KUBE, Seattle, WA	227C	10
230 (93.9 MHz)	KMPS-FM, Seattle, WA	231A	21
231	KMPS-FM, Seattle, WA	231A	21
232	KMPS-FM, Seattle, WA	231A	21
233	KUOW, Seattle, WA	235C1	9
234	KUOW, Seattle, WA	235C1	9
235 (94.9 MHz)	KUOW, Seattle, WA	235C1	9
236	KUOW, Seattle, WA	235C1	9
237	KUOW, Seattle, WA	235C1	9
238	KJR-FM, Seattle, WA	239C	10
239	KJR-FM, Seattle, WA	239C	10
240 (95.9 MHz)	KJR-FM, Seattle, WA	239C	10
241	KJR-FM, Seattle, WA	239C	10
242	KJAQ, Seattle, WA	243C	9
243	KJAQ, Seattle, WA	243C	9
244	KJAQ, Seattle, WA	243C	9
245 (96.9 MHz)	KBSG-FM, Tacoma, WA	247C	20
246	KBSG-FM, Tacoma, WA	247C	20
247	KBSG-FM, Tacoma, WA	247C	20
248	KBSG-FM, Tacoma, WA	247C	20
249	KBSG-FM, Tacoma, WA	247C	20
250 (97.9 MHz)	KING-FM, Seattle, WA	251C	20

251	KING-FM, Seattle, WA	251C	20
252	KING-FM, Seattle, WA	251C	20
253	KING-FM, Seattle, WA	251C	20
254	KWJZ, Seattle, WA	255C	20
255 (98.9 MHz)	KWJZ, Seattle, WA	255C	20
256	KWJZ, Seattle, WA	255C	20
257	KWJZ, Seattle, WA	255C	20
258	KISW, Seattle, WA	260C	20
259	KISW, Seattle, WA	260C	20
260 (99.9 MHz)	KISW, Seattle, WA	260C	20
261	KISW, Seattle, WA	260C	20
262	KISW, Seattle, WA	260C	20
263	KQBZ, Seattle, WA	264C	20
264	KQBZ, Seattle, WA	264C	20
265 (100.9 MHz)	KQBZ, Seattle, WA	264C	20
266	KPLZ-FM, Seattle, WA	268C	10
267	KPLZ-FM, Seattle, WA	268C	10
268	KPLZ-FM, Seattle, WA	268C	10
269	KPLZ-FM, Seattle, WA	268C	10
270 (101.9 MHz)	KPLZ-FM, Seattle, WA	268C	10
271	KZOK-FM, Seattle, WA	273C	21
272	KZOK-FM, Seattle, WA	273C	21
273	KZOK-FM, Seattle, WA	273C	21
274	KZOK-FM, Seattle, WA	273C	21
275 (102.9 MHz)	KZOK-FM, Seattle, WA	273C	21
276	K277AE, Seattle, WA	277D	10
277	K277AE, Seattle, WA	277D	10
278	KMTT, Tacoma, WA	279C	20
279	KMTT, Tacoma, WA	279C	20
280 (103.9 MHz)	KMTT, Tacoma, WA	279C	20
281	KMTT, Tacoma, WA	279C	20
282	KMCQ, Covington, WA	283C3	51
283	KMCQ, Covington, WA	283C3	51
284	KMCQ, Covington, WA	283C3	51
285 (104.9 MHz)	KCMS, Edmonds, WA	287C1	10
286	KCMS, Edmonds, WA	287C1	10
287	KCMS, Edmonds, WA	287C1	10
288	KCMS, Edmonds, WA	287C1	10
289	KCMS, Edmonds, WA	287C1	10
290 (105.9 MHz)	KBKS-FM, Tacoma, WA	291C	21
291	KBKS-FM, Tacoma, WA	291C	21
292	KBKS-FM, Tacoma, WA	291C	21
293	KRWM, Bremerton, WA	295C1	10
294	KRWM, Bremerton, WA	295C1	10
295 (106.9 MHz)	KRWM, Bremerton, WA	295C1	10
296	KRWM, Bremerton, WA	295C1	10
297	KRWM, Bremerton, WA	295C1	10
298	KNDD, Seattle, WA	299C	20
299	KNDD, Seattle, WA	299C	20
300 (107.9 MHz)	KNDD, Seattle, WA	299C	20

¹ Distance calculations from the existing KMIH transmitter site located at N47°36'17", W122°11'47".

Shively Labs

Antenna Mfr.: Shively Labs

Date: 12/30/2004

Antenna Type: 6812B or 6602B 1-Bay, full-wave-spaced

Frequency: 98.1

6812B Gain (Max) 0.46 -3.37 dB

6602B Gain (Max) 0.92 -0.36 dB

