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ENGINEERING REPORT:

APPLICATION FOR FACILITIES CHANGES
KFMD-FM CHANNEL 239C, 95.7 MHz
DENVER, CO

CITICASTERS LICENSES, INC.

4/2003

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1. Purpose of Application

This Engineering Report is part of an application for facilities changes for FM station KFMD at Denver, Colorado, by Citicasters Licenses, Inc.. The proposed operation will be on FM Channel 239C (95.7 MHz) with a maximum lobe effective radiated power of 100 kilowatts (20.00 dBk) at an antenna height above average terrain of 487 meters. The ERP specified is the maximum for Class C facilities at this antenna height, as calculated in accordance with the Commission's Rules.

2. Allocation Considerations

The attached spacing study shows that the proposed operation meets the co-channel and adjacent channel spacing requirements for Class C stations as prescribed in §73.207 of the Commission's Rules.

FMSTUDY.EXE Copyright 2002, Hatfield & Dawson, LLC Version 1.60

SEARCH PARAMETERS FM Database Date: 030410
Channel: 239C 95.7 MHz
Latitude: 39 43 59
Longitude: 105 14 10
Safety Zone: 32 km
Job Title: KFMD 239C DENVER

Call Status	City St	FCC File No.	Channel Freq.	ERP(kW) HAAT(m)	Latitude Longitude	Bearing deg-True	Dist (km)	Req (km)
KRDO-FM	COLORADO SPRINGS		236C	65.000	38-44-45	163.5	114.29	105
LIC	CO	BLH-000503AAV	95.1	638.0	104-51-38		9.29	CLOSE
KRDO-FM1	CRIPPLE CREEK		236D	0.010 DA	38-45-00	178.1	109.19	0
LIC	CO	BLFTB-930630TF	95.1	203.0	105-11-42		0.00	BOOST
K237BI	BRECKENRIDGE, ETC.		237D	0.050 DA	39-27-50	245.1	70.71	0
LIC	CO	BLFT-860130TC	95.3	835.0	105-58-56		0.00	TRANS
K237AF	ESTES PARK, ETC.		237D	0.020 DA	40-25-13	347.0	78.34	0
LIC	CO	BLFT-78	95.3	659.0	105-26-39		0.00	TRANS
K237BL	VAIL, ETC.		237D	0.050 DA	39-36-56	263.2	104.90	0
LIC	CO	BLFT-880816TA	95.3	457.0	106-26-57		0.00	TRANS
KRVG	GLENWOOD SPRINGS		238C3	0.260	39-25-30	260.1	187.30	176
LIC	CO	BLH-010207AAJ	95.5	826.0	107-22-46	SS	11.30	CLEAR
K238AB	STEAMBOAT SPRINGS		238D	0.100	40-27-44	301.1	159.63	0
LIC	CO	BLFT-950814TC	95.5	482.0	106-50-58		0.00	TRANS
KRVG-FM1	WEST GLENWOOD		238D	0.500 DA	39-33-40	264.5	179.58	0
LIC	CO	BLFTB-010806ACA	95.5	0.0	107-18-59		0.00	BOOST
	PINE BLUFFS		238C3	0.000	41-00-23	35.9	175.63	176
VAC	WY	RM-10098	95.5	0.0	104-00-34		-0.37	SHORT
K239AE	BUENA VISTA, ETC		239D	0.250	38-26-48	205.3	157.75	0
LIC	CO	BLFT-980923TE	95.7	1277.0	106-00-38		0.00	TRANS
KFMD	DENVER		239C	100.000 DA	39-43-59	0.0	0.00	290
LIC	CO	BMLH-850717Z2	95.7	490.0	105-14-10		-290.00	SHORT
KFMD	DENVER		239C	100.000 DA	39-43-59	0.0	0.00	290
APP	CO	BPH-981204IE	95.7	490.0	105-14-10		-290.00	SHORT
KFMDaux	DENVER		239C	82.000 DA	40-05-47	35.2	49.48	0
APP	CO	BXPH-020905AAC	95.7	365.0	104-54-04		0.00	AUX

SEARCH PARAMETERS FM Database Date: 030410

Channel: 239C 95.7 MHz
Latitude: 39 43 59
Longitude: 105 14 10
Safety Zone: 32 km
Job Title: KFMD 239C DENVER

Call Status	City St	FCC File No.	Channel Freq.	ERP(kW) HAAT(m)		Latitude Longitude	Bearing deg-True	Dist (km)	Req (km)
	GERING		239C3	0.000		41-51-50	28.0	269.58	237
RSV	NE	RM-9071	95.7	0.0		103-42-20		32.58	CLEAR
	ARRIBA		240A	0.000		39-17-12	105.8	175.79	165
VAC	CO	RM-10098	95.9	0.0		103-16-30		10.79	CLEAR
K240CH	CRIPPLE CREEK		240D	0.050	DA	38-44-52	177.3	109.50	0
LIC	CO	BLFT-940314TE	95.9	562.0		105-10-36		0.00	TRANS
K240AB	CRYSTAL, ETC.		240D	0.070	DA	39-25-33	260.1	186.79	0
LIC	CO	BLFT-160	95.9	1224.0		107-22-25		0.00	TRANS
KIDN-FM	HAYDEN		240C3	6.000		40-31-16	297.2	196.18	176
CP	CO	BPH-010919AAF	95.9	198.0		107-17-46		20.18	CLEAR
KIDN-FM	HAYDEN		240C3	1.800		40-25-48	296.7	176.22	176
LIC	CO	BLH-920922KD	95.9	360.0		107-05-32		0.22	CLOSE
KMOM	FOUNTAIN		241C2	0.450		38-44-43	163.5	114.35	105
LIC	CO	BMLH-011002AAE	96.1	670.0		104-51-39	SS	9.35	CLOSE
KMOM	FOUNTAIN		241C2	0.450		38-44-44	163.5	114.30	105
APP	CO	BPH-021217ABB	96.1	661.0		104-51-42	SS	9.30	CLOSE
KMOM	FOUNTAIN		241C2	1.700	DA	38-44-43	163.5	114.35	105
CP MOD	CO	BMPH-970513IE	96.1	670.0		104-51-39	SS	9.35	CLOSE
KSME	GREELEY		241C1	100.000		40-40-50	13.2	108.14	105
LIC	CO	BLH-010411AAR	96.1	224.0		104-56-32		3.14	CLOSE

END OF FM SPACING STUDY FOR CHANNEL 239

3. Facilities Proposed

a. Facility Description

The proposed operation will be on Channel 239C (95.7 MHz) with a maximum lobe effective radiated power of 100 kilowatts. Operation is proposed with an 8-level circularly-polarized directional panel antenna (0.75 wavelength spacing at the KFMD frequency). The antenna will be side-mounted on an exiting tower at the Lookout Mountain transmitter site east of Denver. The FCC Antenna Structure Registration Number for the tower is 1033691.

b. Blanketing Contour

The 115 dBu contour for the proposed facilities extends 3.9 kilometers from the tower, based on the calculation methodology shown in §73.318 of the Commission's Rules. Much of the area within the blanketing contour is populated. The height of the proposed antenna above ground and its vertical radiation characteristics should mitigate any adverse effects to nearby residents or other communications facilities. If such adverse effects occur, the applicant will be responsible for their amelioration as prescribed in §73.318, including receiver-induced intermodulation to facilities in existence or authorized or receivers in use prior to grant of this application.

c. HAAT Calculation

The proposed operation is at the Lookout Mountain transmitter site east of Denver, Colorado. Consistent with prior precedent, the average terrain value calculation excludes the four radials which extend primarily over the Rocky Mountains. The Commission has long recognized this method of calculating HAAT in previous cases involving stations in the Denver area, and recently acknowledged the continued need to prevent improper skewing of the antenna HAAT values of stations in the area.[1] The present KFMD facility, at this same transmitter site, is authorized under such a waiver.

Precise average terrain figures for the proposed facility are provided in the attached table. The applicant respectfully requests a waiver of §73.313(d) of the Commission's Rules to permit exclusion of the terrain data on the four radials extending over the Rocky Mountains from the average terrain calculation for this facility.

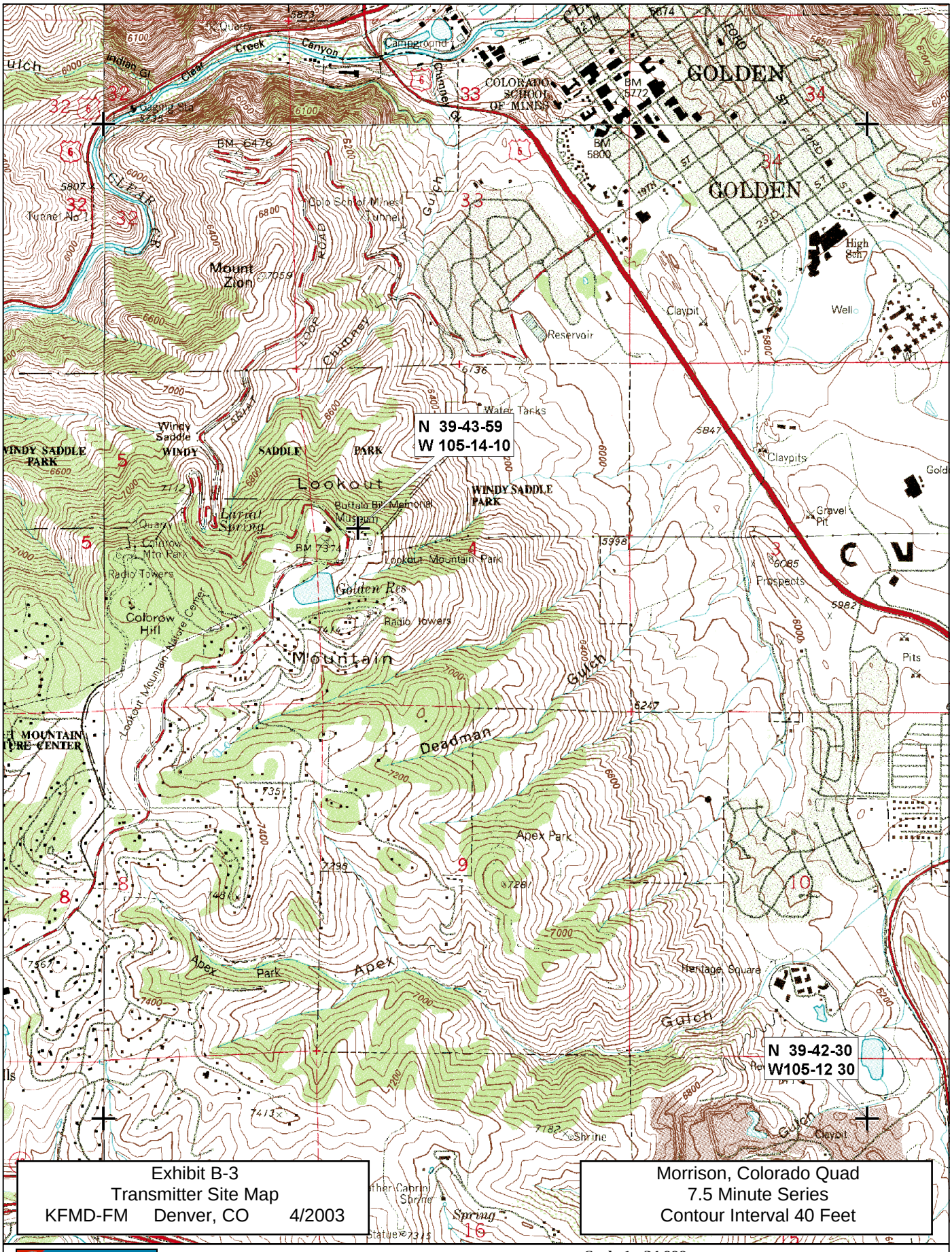
[1]Second Report and Order in MM Docket No. 98-93, *Streamlining of Radio Technical Rules in Parts 73 and 74 of the Commission's Rules*, released November 1, 2000.

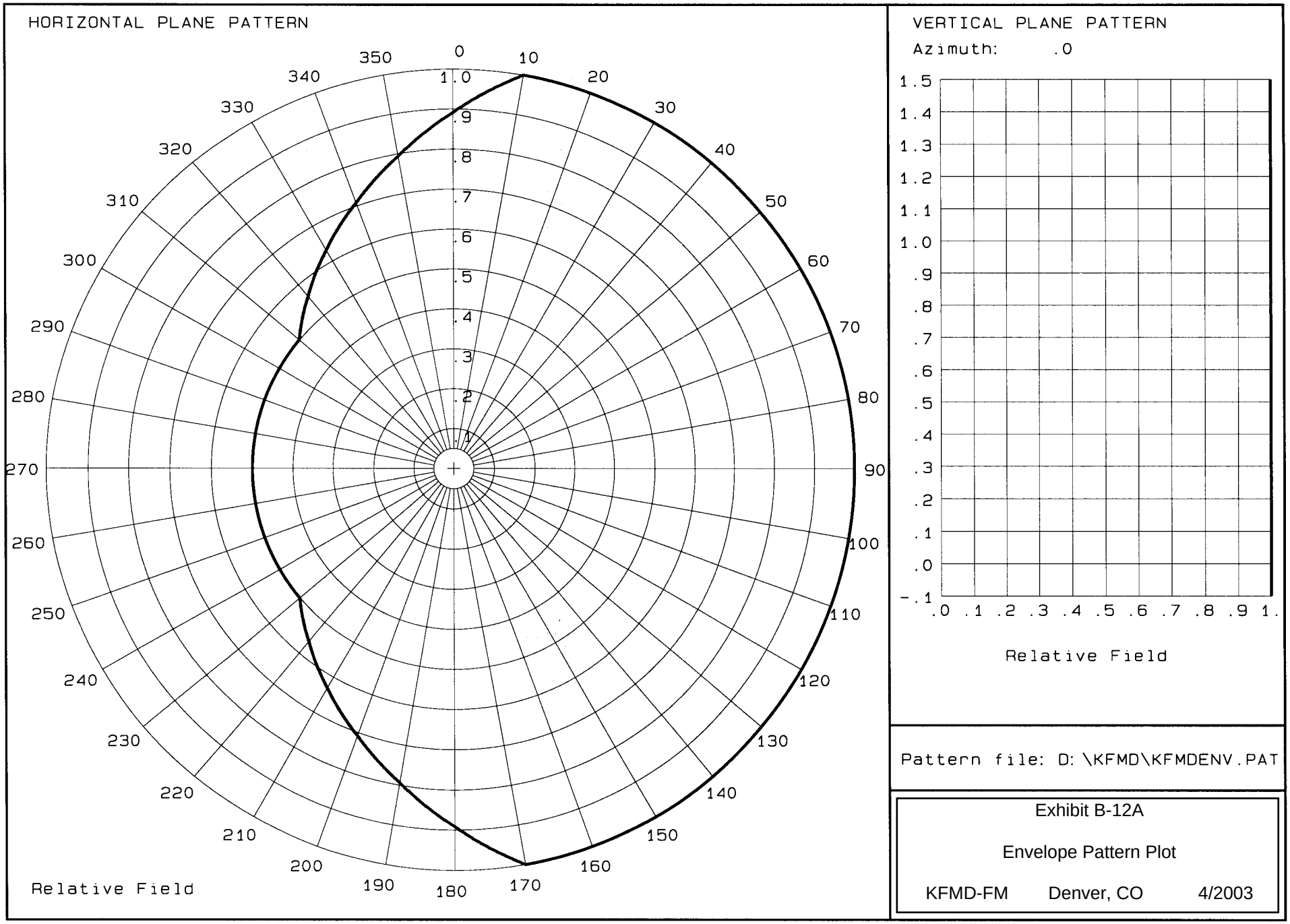
AVERAGE TERRAIN CALCULATION

Azimuth (degrees True)	Average Terrain
0	1848.5 m
45	1715.1 m
90	1713.4 m
135	1799.7 m
180*	2172.0 m
225*	2277.0 m
270*	2215.1 m
315*	2405.2 m

*Radial extends over the Rocky Mountains and is excluded from the average terrain calculation

Radiation Center	2256 meters AMSL
Average Terrain	1769 meters
HAAT	487 meters





Pattern file: D:\KFMD\KFMDENV.PAT

Exhibit B-12A

Envelope Pattern Plot

KFMD-FM Denver, CO 4/2003

Exhibit B-12B

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

FIGURE 4A

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

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

AUGUST 4, 2000

95.7 MHz

BAY SPACING
92.00 INCHES
(.7460 WAVELENGTH)

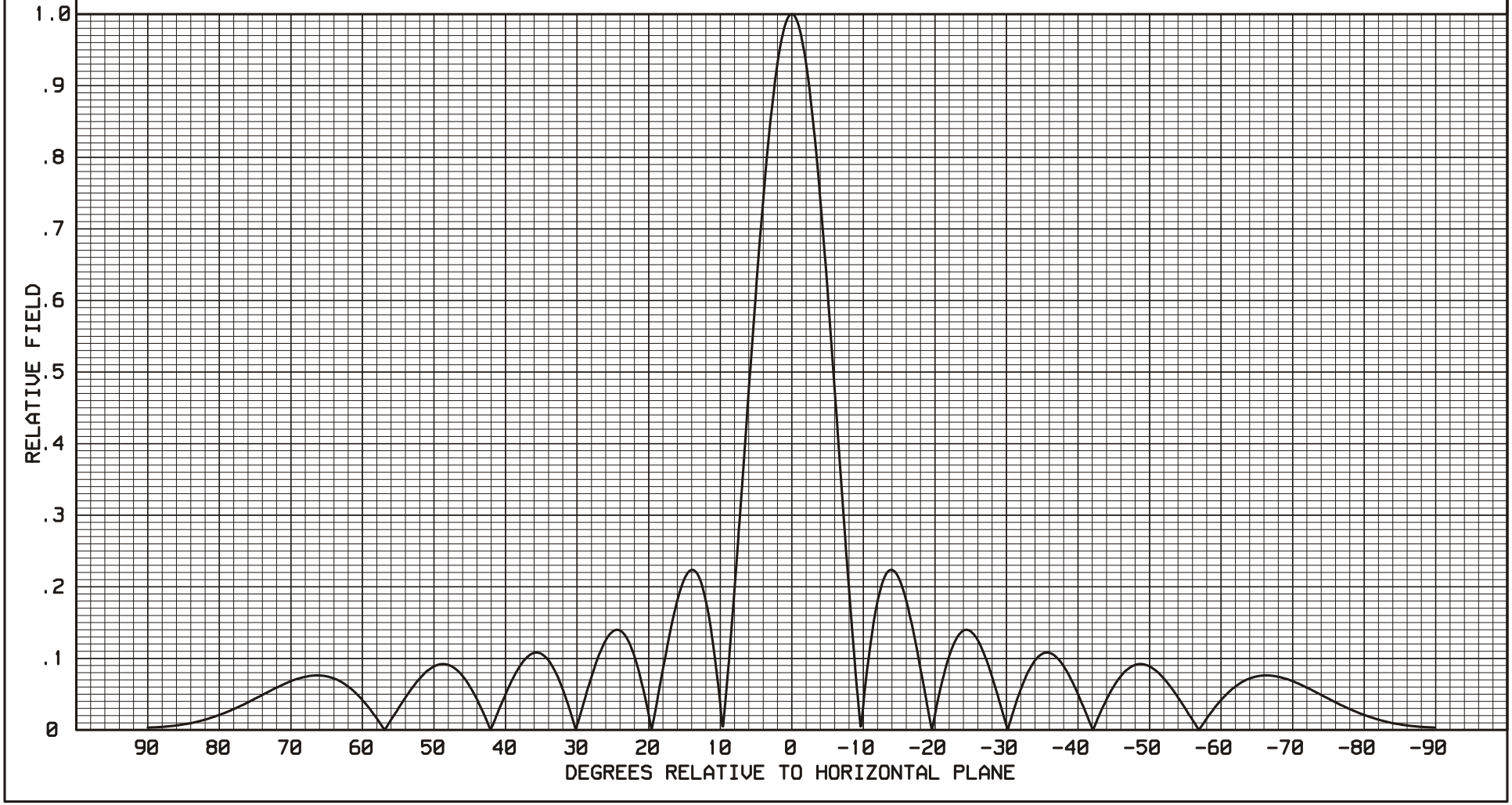


Exhibit B-12C
Directional Antenna Statement
KFMD-FM 239C Denver, Colorado

A directional antenna is proposed to allow combined operation with station KRFX, to limit radiation over the Table Mountain Radio Receiving Zone, and to avoid wasting energy over the Rocky Mountains. A waiver to permit use of a directional antenna in this instance is explicitly requested, if required. It should be noted that this directional antenna is not necessary for allocation purposes, and therefore will not be subject to the 85% RMS requirement.

The proposed antenna is an 8-level ERI panel antenna, which will be side mounted on an existing tower. The characteristics of the tower and intended orientation of the antenna will be specified by the manufacturer as a part of the design information submitted with the license application.

The proposed antenna will not be mounted at the top of a tower which contains a top-mounted platform, and no other antennas will be mounted with horizontal or vertical proximity less than that specified by the manufacturer.

A certification of the mounting and orientation of the antenna from a licensed surveyor, or in states where permitted, a licensed engineer authorized to perform surveying work, will be provided with the license application.

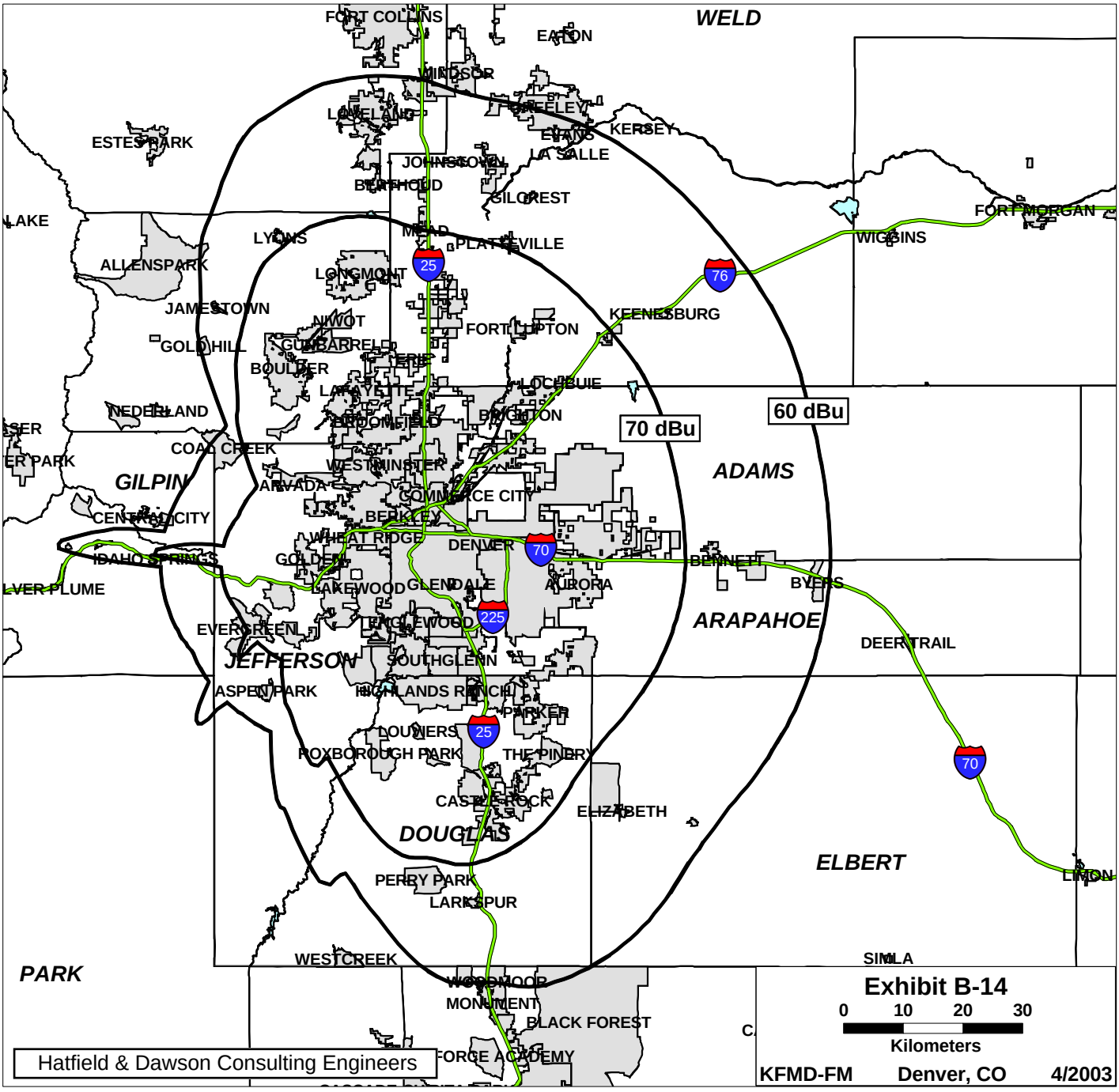

WELD
FORT COLLINS
EATON
WINDSOR
LOVELAND
GREELEY
EVANS
KERSEY
ESTES PARK
JOHNSTOWN
LA SALLE
BERTHOUD
GILCREST
FORT MORGAN
LAKE
LYONS
MEAD
PLATTEVILLE
WIGGINS
ALLENSPARK
LONGMONT
25
76
JAMESTOWN
NIWOT
KEENESBURG
FORT LUPTON
GOLD HILL
GUNBARREL
ERIE
BOULDER
LAFAYETTE
LOCHBUIE
NEDERLAND
BROOMFIELD
BRIGHTON
70 dBu
60 dBu
COAL CREEK
WESTMINSTER
ADAMS
GILPIN
ARVADA
COMMERCE CITY
CENTRAL CITY
BERKLEY
WHEAT RIDGE
DENVER
70
IDAHO SPRINGS
GOLDEN
BENNETT
LAKEWOOD
GLENDALE
AURORA
BYERS
225
EVERGREEN
ENGLEWOOD
ARAPAHOE
DEER TRAIL
JEFFERSON
SOUTHGLENN
ASPEN PARK
HIGHLANDS RANCH
PARKER
25
LOUVIERS
ROXBOROUGH PARK
THE PINERY
70
CASTLE ROCK
ELIZABETH
DOUGLAS
ELBERT
PERRY PARK
LARKSPUR
LIMON
SIMLA
PARK
WESTCREEK
WOODMOOR
MONUMENT
BLACK FOREST
FORCE ACADEMY
Hatfield & Dawson Consulting Engineers
Exhibit B-14
0 10 20 30
Kilometers
KFMD-FM Denver, CO 4/2003

Exhibit B-16
Protection of Table Mountain Radio Receiving Zone
KFMD-FM 239C Denver, Colorado

The requirements of §1.924(b) of the Commission's Rules require that new or changed facilities of FM broadcast stations located in the vicinity of the Table Mountain Radio Receiving Zone of the Research Laboratories of the Department of Commerce located in Boulder County, Colorado, maintain a field strength value of 80 dBu/Vm or less, except as noted in the following table.

The propagation path from the proposed KFMD facilities has been evaluated using a variety of propagation models, and the radiation pattern of the existing authorized antenna has been carefully reviewed. From this data, a specific value of effective radiated power can be determined which would overprotect Table Mountain, but there is at least 2 dB of ambiguity in this analysis. Therefore, a specific directional antenna pattern design for the purpose has not been proposed.

The directional antenna envelope pattern proposed herein shows a reduction below maximum radiation toward Table Mountain. If measurements after construction show that the measured field value at the Table Mountain location exceeds the maximum allowable, the directional antenna feed system has been configured to allow reduction of radiation in the Northeastern row of antenna elements, while at the same time maintaining the radiation within the envelope pattern.

GRANDFATHERED RADIO/TV STATIONS
TABLE MOUNTAIN MAXIMUM PERMISSIBLE MEASURED SIGNAL LEVELS

			Mean		Maximum*	
Call Sign	Frequency	Location	mV/m	dBuV/m	mV/m	dBuV/m
KLMO-FM	1060 kHz	Longmont	61.13	95.73	72.66	97.23
KRKS-FM	94.7 MHz	Boulder	16.30	84.24	18.99	85.57
KOSI-FM	101.1 MHz	Lookout Mtn	16.30	84.24	19.37	85.74
KRFX-FM	103.5 MHz	Lookout Mtn	12.90	82.21	15.33	83.71
KQKS-FM	104.3 MHz	Longmont	37.88	91.57	45.02	93.07
KBPI-FM	106.7 MHz	Lookout Mtn	22.40	87.00	26.62	88.50
KCNC-TV	67.25 MHz	Lookout Mtn	13.46	82.58	16.00	84.08
KRMA-TV	83.25 MHz	Lookout Mtn	10.30	80.26	12.24	81.76
KMGH-TV	175.25 MHz	Lookout Mtn	44.07	92.88	52.37	94.38
KUSA-TV	187.25 MHz	Lookout Mtn	43.58	92.79	51.79	94.28

*Maximum is mean times 1.5 dB

Exhibit B-17
NIER Analysis for:
KFMD-FM 239C Denver, Colorado
KRFX-FM 278C Denver, Colorado
KALC-FM 290C Denver, Colorado
KBPI-FM 294C Denver, Colorado

Facilities Proposed

The following ground-level NIER analysis pertains to facilities change applications being filed by four FM stations operating from the Lookout Mountain transmitter site.

The proposed KFMD operation will be on Channel 239C (95.7 MHz) with a maximum lobe effective radiated power of 100 kilowatts. Operation is proposed with an 8-level circularly-polarized directional panel antenna (0.75 wavelength spacing at the KFMD frequency) to be shared with KRFX. The antenna will be side-mounted on an existing tower at the Lookout Mountain transmitter site east of Denver. The FCC Antenna Structure Registration Number for the tower is 1033691.

The proposed KRFX operation will be on Channel 278C (103.5 MHz) with a maximum lobe effective radiated power of 100 kilowatts. Operation is proposed with an 8-level circularly-polarized directional panel antenna (0.81 wavelength spacing at the KRFX frequency) to be shared with KFMD. The antenna will be side-mounted on an existing tower at the Lookout Mountain transmitter site east of Denver. The FCC Antenna Structure Registration Number for the tower is 1033691.

The proposed KALC operation will be on Channel 290C (105.9 MHz) with an effective radiated power of 100 kilowatts. Operation is proposed with a 6-element circularly-polarized omni-directional antenna (0.87 wavelength spacing at the KALC frequency) to be shared with KBPI. The antenna will be side-mounted on an existing tower at the Lookout Mountain transmitter site east of Denver. The FCC Antenna Structure Registration Number for the tower is 1044149.

The proposed KBPI operation will be on Channel 294C (106.7 MHz) with an effective radiated power of 100 kilowatts. Operation is proposed with a 6-element circularly-polarized omni-directional antenna (0.88 wavelength spacing at the KBPI frequency) to be shared with KALC. The antenna will be side-mounted on an existing tower at the Lookout Mountain transmitter site east of Denver. The FCC Antenna Structure Registration Number for the tower is 1044149.

NIER Considerations

Several of the FM stations licensed with transmitter locations on Lookout Mountain have operated with Special Temporary Authority at reduced power for the last several months due to isolated instances where measurements of non-ionizing radiation density have exceeded the Commission's environmental threshold levels for general public exposure (47CFR1.1310). One of the underlying purposes of this group of concurrent applications for facilities changes for KFMD, KRFX, KALC, and KBPI is to provide antenna installations which sharply reduce ground-level non-ionizing radiation density levels. This has been accomplished by careful selection of horizontal plane and vertical radiation patterns, using antenna systems with reduced vertical interbay spacings. The implementation of Advanced Digital Television service by the television stations located on the site used by KALC and KBPI (which is owned by Tribune Corporation, licensee of KWGN-TV) has also resulted in antenna system changes by KWGN-TV, K33DN, and K57BT.

K33DN holds a construction permit to change to Channel 48 at a transmitter site 32 km from Lookout Mountain, and has filed an application to locate the Channel 48 operation at a transmitter site 12 km from Lookout Mountain. Therefore, since the instant NIER analysis has been made based on the "final configuration" of station changes at this transmitter site, K33DN has been excluded from this analysis. Additional broadcast stations operating from transmitter sites in excess of 1000 feet from the proposed FM operations are sufficiently distant that the operation of those additional stations have negligible impact on the ground-level NIER levels in the vicinity of the FM towers, and those stations are therefore excluded from this analysis.

The resulting analysis is shown below. All of the antennas, antenna locations, effective radiated powers and other technical details assume the final post-construction facilities for all those stations which are proposed to be modified. Therefore it is anticipated that the Media Bureau will wish to issue specific Special Temporary Authority grants to each station to facilitate the construction process and for the "program test authority," conditioned on actual measurement of ground level NIER values, and requiring reduced power operation if necessary until all changes have been accomplished and measurements confirm the reduction of levels to below the public standard in all publicly accessible areas.

The analysis below uses as its geographic database a digitized survey of the area surrounding the KFMD/KRFX antenna site, showing buildings, towers, surface features, and topography at 5 foot intervals. The assumptions and caveats recommended by OET-65 as revised have been employed in the analysis. As a calibration technique, existing antenna operations were modeled in the same fashion, and the results compared well with the measured values of NIER shown in the reports "Baseline RF Exposure Measurements Taken March 4, 2002, Lookout Mountain, Vicinity of KWGN-TV and KFMD Broadcast Towers" and "Electromagnetic Field Measurements at Publicly Accessible Areas near the KHIH-FM Tower Site on Lookout Mountain, Colorado" dated April 19, 2000[2].

According to this analysis, no location is predicted to have a maximum combined exposure (spatially averaged) of more than 36% of the uncontrolled environment standard.

Public access to the tower sites is restricted and the antenna towers are posted with warning signs. Pursuant to OET Bulletin No. 65, all station personnel and contractors are required to follow appropriate safety procedures before any work is commenced on the antenna tower, including reduction in power or discontinuance of operation before any tower maintenance work is undertaken.

[2]The call letters of station KHIH-FM are now KFMD-FM.

The permittee/licensee in coordination with other users of the site must reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency radiation in excess of FCC guidelines.

NIER Calculations

```
   EXPOSURE HEIGHT   =    2.0 METERS
   GRID SPACING      =    5.0 METERS
   PERCENT-OF-LIMIT VALUES (GRID DIMENSIONS IN METERS):

  -025      +000      +025      +050      +075      +100      +125
+025 . . . - - + + + + + + + + + + + + + + + - - - - - - - - - - - +025
+020 . . . - - + + + + + + + + + + + + + + + - - - - - - - - - - - +020
+015 . . . - - - + + + + + + + + + + + + + + + - - - - - - - - - - - +015
+010 . . . . - - + + + + + + + + + + + + + + + - - - - - - - - - - - +010
+005 . . . . . - + + + + + + * * * * + + + + + - - - - - - - - - - - +005
+000 . . . . . X + + * * + + * * * * + + + + + - - - - - - - - - - - +000
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-020 - - - - - + + * * * * * * * * * * + + + + + + + + + + - - - - - -020
-025 - - - - - + + + + * * * * * * * * + + + + + + + + + + + + - - - -025
-030 - - + + + + * * * * * * * * * * + + + + * + + + + + + + + + - - -030
-035 - - + + + + * * * * * * * * + + + * * * + + + + + + + + + - - -035
-040 - + + + + * * * * * * * * + + * * * * * * + + + + + + + + + - -040
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-105 - - - - + + + + + + + + + + + + + + + + + + + + + + + + + - - - -105
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-125 + - + - - - - - - + + + + + + + + + + + + + + + + + + + - - - - -125
  -025      +000      +025      +050      +075      +100      +125
```
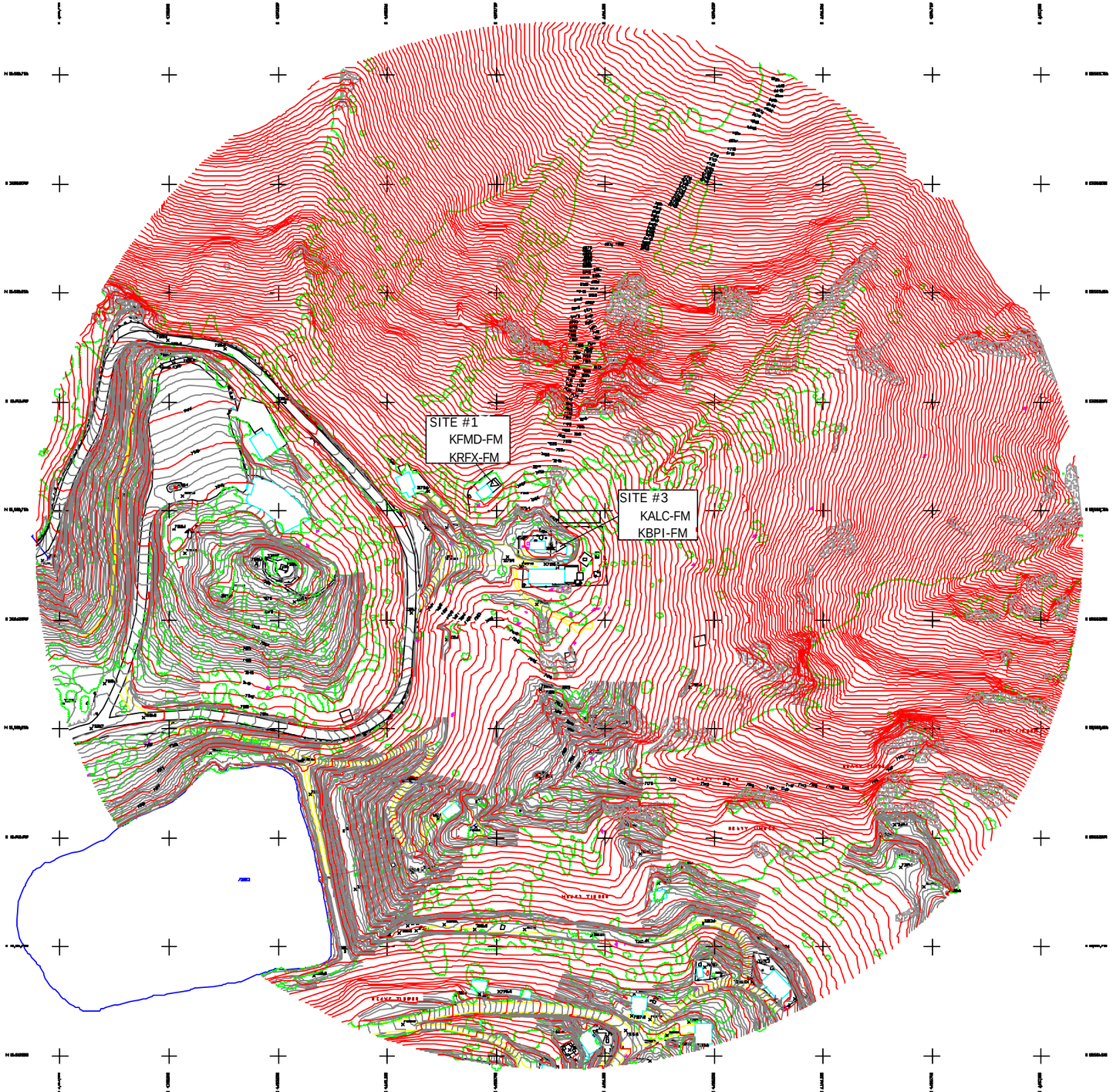

```
TABLE OF STATION DATA
STATION FREQ.(MHz) X(m)   Y(m)  ERP(kW) HT.(m) ANTENNA    SPACING M.P.E.
KFMD DA   95.700    0.0    0.0  200.000 2256.0 8 lvl panel 0.746   0.200
KRFX DA  103.500    0.0    0.0  200.000 2256.0 8 lvl panel 0.807   0.200
KALC ND  105.900   45.6  -43.8  200.000 2292.0 6 bay roto  0.868   0.200
KBPI ND  106.700   45.6  -43.8  200.000 2292.0 6 bay roto  0.874   0.200
KWGN-TV   55.250   45.6  -43.8   46.000 2342.0 RCA TF-4BL           0.200
KCEC-TV  687.250   45.6  -43.8 1155.000 2256.0 Bog BUI32N           0.458
K57BT    729.260   45.6  -43.8   22.490 2236.0 And ALP-16L6        0.486
KTFD-LP  645.260   63.0  -52.7   13.920 2242.0 Bog B16UC           0.430

 SPATIALLY AVERAGED: (BLANK) LESS THAN   1% OF UNCONTROLLED AREA M.P.E.
                   .   1% TO LESS THAN   5%
                   -   5% TO LESS THAN  10%
                   +  10% TO LESS THAN  20%
                   *  20% TO LESS THAN  50%
                   #  50% TO LESS THAN 100%
                   & 100% TO LESS THAN 500%
                   @ 500% TO LESS THAN 1000%
                   M     1000% OR HIGHER
                   X     TOWER LOCATION
```

TABLE OF INDIVIDUAL STATION MAXIMA

STATION	FREQ.(MHz)	X(m)	Y(m)	PEAK(%)	S.A.(%)	%@BASE OF TOWER
KFMD DA	95.700	20.0	-35.0	11.691	10.908	6.455
KRFX DA	103.500	10.0	-20.0	13.932	13.372	7.058
KALC ND	105.900	45.6	-43.8	3.896	3.795	3.534
KBPI ND	106.700	45.6	-43.8	4.067	3.961	3.690
KWGN-TV	55.250	-25.0	-45.0	0.232	0.228	0.016
KCEC-TV	687.250	55.0	-45.0	11.700	11.117	4.813
K57BT	729.260	50.0	-40.0	14.009	12.567	2.154
KTFD-LP	645.260	85.0	-55.0	0.259	0.238	0.003
MAXIMUM EXPOSURE		50.0	-50.0		35.700	

TOPOGRAPHIC SURVEY

Survey By
Clear Mountain Surveying LLC
Lakewood, Colorado



N

GRAPHIC SCALE
(IN FEET)

REVISIONS:

PROFESSIONAL LAND SURVEYORS
12960 W. CEDAR DR. 200A LAKEWOOD, CO 80228
PHONE (303) 984-7655 FAX (303) 984-7656

G310099.DWG
Drawn L.F.F.
Check P.C.M.
Scale 1"=120'

TOPOGRAPHIC SURVEY
KHH RADIO
JEFF CULICK
LOOK OUT MOUNTAIN ROAD
303-713-8840

Job No. G310099
Date: 10-06-00

SHEET 1 OF 1

Statement of Engineer

This Engineering Report, which is part of an application for facilities changes for FM station KFMD at Denver, Colorado, has been prepared by the undersigned. All representations contained herein are true to the best of my knowledge. I am a staff engineer in the firm of Hatfield and Dawson Consulting Engineers, and am enrolled as an EIT in the State of Washington.

Signed this 23rd day of April, 2003.

/S/

Erik C. Swanson