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December 12, 2008

Kevin J. Martin, Chairman
Federal Communications Commission
445 Twelfth Street, SW
Washington, DC 20554

Re: MM Docket No. 99-25
Creation of a Low Power Radio Service

MB Docket No. 07-294
Promoting Diversification of Ownership in the Broadcasting Services

Supplemental Engineering Statement of Educational Media Foundation

Dear Chairman Martin:

Educational Media Foundation ("EMF") hereby submits the attached supplemental Engineering Statement expanding upon the analysis provided with the Comments of EMF, *et al.*, in the above-referenced proceedings.[1] The EMF, *et al.*, Comments urged that spectrum now reserved for TV Channels 5 and 6 be reassigned to FM radio use after the DTV transition – more specifically, that the FCC immediately reserve upper portions of TV Channel 6 in markets where there will be no full-power TV operation on that channel after the transition. The Comments requested reservation of three new FM channels adjacent to the current FM band, which many current commercially available radios receive, for LPFM facilities. EMF provided engineering

[1] The Comments of EMF, *et al.*, also were filed in MB Docket Nos. 06-121, 02-277, 01-235, 01-317, 00-244, and 04-228, which were companion proceedings as to the Report and Order and Third Further Notice of Proposed Rulemaking ("FNPRM") on Broadcast Diversity to which the Comments of EMF, *et al.*, responded. In addition, as the EMF, *et al.*, Comments addressed low-power FM ("LPFM") issues in Docket No. 99-25, they were submitted concurrently in that proceeding as well, as an attachment to a letter imploring the Commission to withhold action on the Second FNPRM in the LPFM proceeding until it fully considers the proposal to reallocate TV Channels 5 and 6 for FM broadcasting, as posited in the pending Diversification Third FNPRM.

analyses to show how the reassignment would provide a multitude of opportunities for new LPFM stations in virgin spectrum, thereby avoiding LPFM conflicts with FM translators and full-power FM improvements as currently debated in MM Docket 99-25. This showing was disputed in Reply Comments of Common Frequency in the Diversification docket, which argued, *inter alia*, that the EMF, *et al.*, engineering analyses overstated the number of LPFM stations the spectrum reassignment could accommodate, particularly in populated areas. EMF accordingly submits the attached further Engineering Statement, which reexamines the number of LPFMs that could be located in Northern California (the area EMF sampled in the engineering analysis attacked by Common Frequency), and reconfirms that the three FM channels that can be created in the upper portion of Channel 6 would offer vast opportunities for LPFM – far in excess of what Common Frequency predicted – without a need to displace existing FM translator services in the current FM band.

The attached supplemental Engineering Statement shows that, even using Common Frequency's definition of what is "an acceptable LPFM allocation" and its specifications for what it asserts are "real world" conditions, it significantly underestimated – by approximately ***100%*** in each case – the number of new LPFMs that can be located in the three FM channels that EMF proposes could be immediately fashioned from the upper portion of TV Channel 6 using the current LPFM spacing requirements.[2] The attached engineering also considered the alternative of using FCC translator spacing rules, based on interference computations (Undesired to Desired interference ratios or "U/D" showings). In that case, the "real world" facilities that would be available in Northern California on Channels 198-200 were so numerous that the study considered only facilities in the Arbitron-designated San Francisco market (and not the full Northern California broadcast area examined in the spacing analysis) and also examined only two of the three FM channels EMF suggested for reservation for LPFM stations. The results were that in the San Francisco market alone, 40 new LPFM could be carved out of Channel 6 on just these two new channels! This example addresses Common Frequency's concern about service to large markets such as San Francisco, and offers as well a clear example of the benefits of using these channels. These same results should be available in other markets where there is no post-transition Channel 6 TV station.

Common Frequency's comments continued to implore that LPFM service receive priority above FM translator service and thereby be permitted to displace existing translator service to the public, suggesting as an example that following its approach would facilitate (again, using the San Francisco/San Jose market) approximately 12 new LPFM facilities. But this pales in comparison to what could be accomplished under the framework advocated by the EMF, *et al.* Comments. As the supplemental Engineering Statement shows, using the translator rules (as in

[2] We reiterate, as explained in the EMF, *et al.* Comments and reinforced on Reply in the Diversification proceeding, that our proposal involves only the following: to the extent TV Channel 6 is vacated by full-power stations in most areas as of February 17, 2009, that spectrum – and only that spectrum not utilized for continued television broadcasting – should be reallocated to FM operation, with the top 2 or 3 FM channels reserved for LPFM.

Common Frequency's own study), EMF found at least 40 new facilities on Channels 200 and 199 alone, and that is just within the San Francisco market. And, unlike Common Frequency's approach, not one of these facilities would displace existing service. [3]

In sum, the supplemental Engineering Statement shows that, while Common Frequency continues to urge FCC elevation of LPFM to priority status over translators as necessary to meet its objectives for the LPFM service, the Commission can achieve not only the stated goals of Common Frequency and other LPFM advocates to increase the number of available LPFM opportunities, but by utilizing Channels 198-200 recaptured from TV Channel 6 post-DTV transition, it can provide substantially greater LPFM opportunities while protecting existing services in the FM band. This is a truly win-win proposition that allows for new LPFM service without having to deprive the public of any existing services on which they now rely. We therefore urge that the Commission move forward expeditiously to facilitate reallocation of the soon-to-be-vacated TV Channel 6 to FM broadcasting, while reserving the top 2 or 3 new FM channels of that reallocated spectrum for immediate LPFM use, which will allow reversal of the mass dismissal of FM translator applications in Auction No. 83 and abandonment of proposals in the LPFM proceeding that would harm existing and future translator and other FM services.

Should there be any questions concerning this matter, please contact the undersigned.

Respectfully submitted,

Davis Wright Tremaine LLP

David Oxenford/ml

David D. Oxenford
Counsel for Educational Media Foundation

cc: Michael J. Copps, Commissioner
Jonathan S. Adelstein, Commissioner
Deborah Taylor Tate, Commissioner
Robert M. McDowell, Commissioner

Enclosures

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[3] Nor would any one of these potential facilities cause undesirable interference to any other existing permitted facilities, or cause undesirable interference to each other. That is, the supplemental Engineering Statement also took into account interference from other LPFM stations identified in the study so that, for instance, proposals for new stations on channel 200 would not interfere with proposed facilities on Channel 199, and so on, so that the number of LPFM opportunities identified is cumulative.

Educational Media Foundation

Exhibit A

5700 West Oaks Boulevard ♦ Rocklin ♦ California ♦ 95765

Engineering Statement

Introduction

In MB Docket 07-294, Educational Media Foundation ("EMF") *et al*. suggested that the Commission consider reassigning the spectrum currently reserved for television channel 5 and channel 6 to radio uses after the digital transition is completed in February, 2009. Further, EMF requested that the Commission immediately act to use the upper portions of channel 6, in markets were there will be no full-power television operation on that channel after the transition, in that it be reassigned radio and reserved for LPFM facilities. This would avoid the conflict between LPFM and FM translators and full power FM station improvements in facilities that are currently of concern to the Commission in MM Docket 99-25.

In response to EMF's proposal, on August 29th, 2008 Common Frequency ("CF") submitted a reply to EMF's proposal, arguing that the number of LPFM stations that could operate in Northern California had been overstated by EMF. The following statement was prepared in response to CF's reply comments, and contains a reexamination of the number of LPFMs that could be located in Northern California, and reconfirms that the opportunities on the three FM channels that could be created in the upper portion of Channel 6 create vast opportunities for LPFM without the need to displace existing FM translator services in the current FM band.

Discussion

As set forth below in more detail, EMF studied the opportunities for new LPFM stations in Northern California using two methodologies. First, it looked at current LPFM spacing rules. Second, it looked at the broader opportunities that could be available to LPFM using an analysis of the Undesired to Desired ("U to D") interference ratios that are typically used for the location of FM translators. Because the use of these new frequencies will be outside of the current FM band and will have minimal effect on existing FM radio stations, the use of the U to D analysis seems particularly appropriate on these new FM channels.

In its Reply, CF presents a definition of "an acceptable LPFM allocation." CF states that the goal of LPFM is to "originate diverse local, geographic niche programming…" (pg. 5); that they desire to show "how stations would be likely licensed in real world circumstances" (pg. 8); and that a real world allocation would be a facility "placed… in central cities of over chiefly a thousand persons." (pg. 8). Therefore, CF's definition of a "real world" LPFM allocation appears to be a low power FM station that originates diverse local, geographic niche programming to a community of more than a thousand persons. In the analysis of available channels for LPFM stations, EMF has attempted here to place channels only in areas where they would serve communities of over a thousand people in keeping with CF's defined objectives.

LPFM Availability Using Current Spacing Rules

Exhibits A-1 through A-3 of this study have been carefully prepared using the specifications that CF used for their "real world" allocations in their exhibits CF A1 through CF A3 of their

Reply. In order to address CF's concerns that facilities might be placed "in areas of no population" (pg. 7) and that the facilities might "not adequately serve listeners" (pg. 7), 60 dBu contours were added to show coverage and determine population reached. Also considered were the pending NCE applications of MX Group 31 and the newly granted facility for KGUA. Finally, EMF has explicitly detailed the specific populations that would benefit from each allocation (these can be seen in Exhibits A-1A, A-2A and A-3A).

Using the current spacing tables and CF's definitions (ignoring LPFM opportunities in smaller communities of less than 1000 persons), EMF has found the following "real world" facilities would be available under its proposal:

Channel	# of new facilities	Population covered
200	20	273,810
199	39	2,664,299
198	40	2,001,150

Here are EMF's results compared to CF's:

	Channel 200	Channel 199	Channel 198	Total
CF "real world" channels	9	21	24	54
EMF "real world channels"	20	39	40	99

LPFM Availability Using 2nd and 3rd Adjacent U to D Ratios

In order to address CF's concern over the lack of LPFM availability, EMF has additionally prepared a set of exhibits showing the availability of allocations should LPFM service be allowed to use contour methodology instead of distance.

The number of "real world" facilities available in Northern California on channels 198-200 was so numerous, that this study was created only considering facilities within the Arbitron designated San Francisco MSA. This addresses CF's concern about service to large markets such as San Francisco, as well as allows for a clear example of the benefits of using these channels.

Exhibits A-4 and A-5 have been prepared using the standard interference methodology used in allocating FM translators. Facilities were placed at actual, existing tower sites in areas where they would cover a substantial population and would not cause interference to other facilities. In order to show the absence of interference to 2nd and 3rd adjacent stations, an Undesired to Desired ("U to D") interference ratio was used, and the interference area was verified to contain no population as described in 47 C.F.R. 74.1204(d). Exhibits A-4b and A-5b show the signal strength of the 2nd or 3rd adjacent facility, the calculated distance to the corresponding interference contour, and the distance to the nearest regularly occupied structure seen from aerial photos obtained from Google Earth.

Finally, EMF has explicitly detailed the specific populations that would benefit from each allocation (these can be seen in Exhibits A-4A and A-5A).

Using U to D ratios and CF's definition, EMF has found the following "real world" facilities available for channel 199 and 200 (similar results would be expected on channel 198):

Channel	# of new facilities	Population covered
200	19*	1,266,855
199	21*	786,144

*NOTE- This is for the San Francisco MSA only

In CF's Reply, they assert that, if "LPFM service was placed with priority above translator service" and they were allowed to displace existing translator service to the public, they would be able within the San Francisco/ San Jose market to have at least 12 new facilities. Using the translator rules (as CF did in their study) on channels 200 and 199, EMF found at least 40 new facilities within the San Francisco market alone. Also of note, not one of these facilities would displace existing service and not one of these facilities would cause undesirable interference to any other existing permitted facilities. This study also took into account interference from other LPFM stations identified in this study so that, for instance, those proposals for new stations on channel 200 would not interfere with the proposed facilities on channel 199, and so on. Thus, the number of LPFM opportunities identified below is cumulative, identifying the total number of opportunities that are available for new LPFM stations on these channels.

Conclusion

CF expressed concern that unless LPFM is given priority over translators, then the goals of LPFM service could not be met. EMF has shown in the attached exhibits that not only can CF's stated goals be met by utilizing channels 198-200, but that these channels would provide for a substantially greater opportunity while protecting existing services upon which the public has come to rely.

The statements made in this exhibit are all true and correct to the best of my knowledge and belief

Respectfully submitted,

David Velasquez
Signal Development Application Manager
Educational Media Foundation
November 12, 2008

Exhibit A-1

CH200 LPFM
Northern Californaia
Theoretical allotment

20 new allotments

Population Density

> 80.0 ppl/sq. km

40.0 - 80.0

20.0 - 40.0

0.0 - 20.0

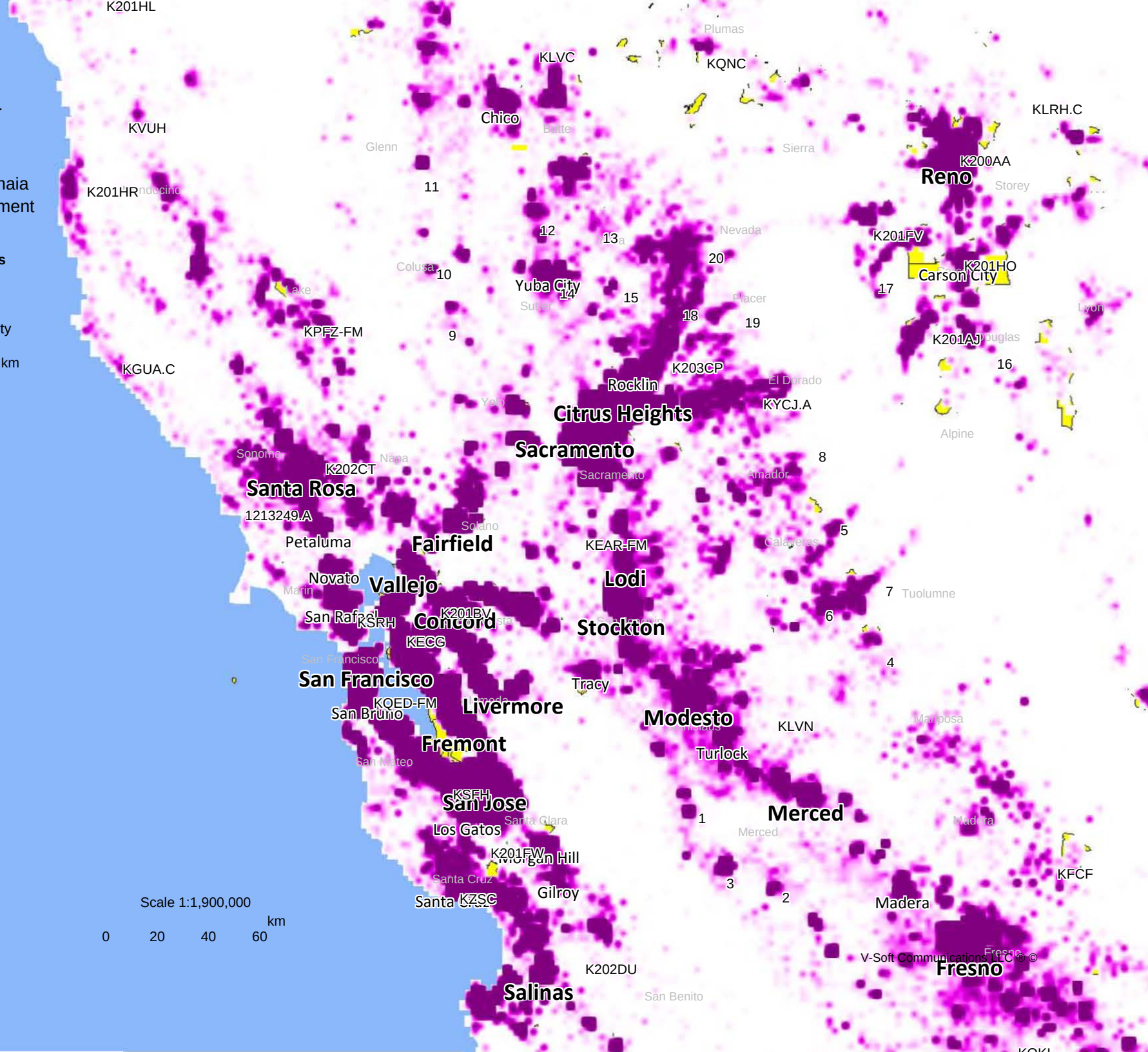


Exhibit A-1A

Population Report for All Contours

Population Database: 2000 US Census (SF1)

	Population	Housing Units	Area (sq. km)
1- Newman (200)			
FCC F(50-50) 60.00 dBu	13,323	4,566	148.5
2- Dos Palos (200)			
FCC F(50-50) 60.00 dBu	8,290	2,605	109.0
3- Los Banos (200)			
FCC F(50-50) 60.00 dBu	27,992	8,900	156.9
4- Groveland (200)			
FCC F(50-50) 60.00 dBu	3,717	3,080	167.7
5- Arnold (200)			
FCC F(50-50) 60.00 dBu	3,991	3,384	141.6
6- Sonora (200)			
FCC F(50-50) 60.00 dBu	17,056	6,076	307.3
7- Mi-Wuk (200)			
FCC F(50-50) 60.00 dBu	5,329	4,146	110.9
8- West Point (200)			
FCC F(50-50) 60.00 dBu	6,278	3,747	461.0
9- Arbuckle (200)			
FCC F(50-50) 60.00 dBu	3,636	1,160	243.7
10- Williams (200)			
FCC F(50-50) 60.00 dBu	3,876	1,053	141.4
11- Willows (200)			
FCC F(50-50) 60.00 dBu	7,987	3,069	155.4
12- Gridley (200)			
FCC F(50-50) 60.00 dBu	9,924	3,602	111.3
13- Loma Rica (200)			
FCC F(50-50) 60.00 dBu	4,248	1,654	320.3
14- Yuba City (200)			
FCC F(50-50) 60.00 dBu	87,102	31,813	143.1
15- Beale AFB (200)			
FCC F(50-50) 60.00 dBu	6,505	2,171	257.3
16- Gardnerville (200)			
FCC F(50-50) 60.00 dBu	22,503	9,047	465.0
17- King's Beach (200)			
FCC F(50-50) 60.00 dBu	7,076	8,846	335.3
18- Meadow Vista (200)			
FCC F(50-50) 60.00 dBu	16,324	6,322	259.0
19- Foresthill (200)			
FCC F(50-50) 60.00 dBu	8,443	3,352	329.8
20- Nevada City (200)			
FCC F(50-50) 60.00 dBu	10,210	4,465	102.2

Exhibit A-2

CH199 LPFM
Northern Californaia
Theoretical allotment

39 new allotments

Population Density

> 80.0 ppl/sq. km

40.0 - 80.0

20.0 - 40.0

0.0 - 20.0

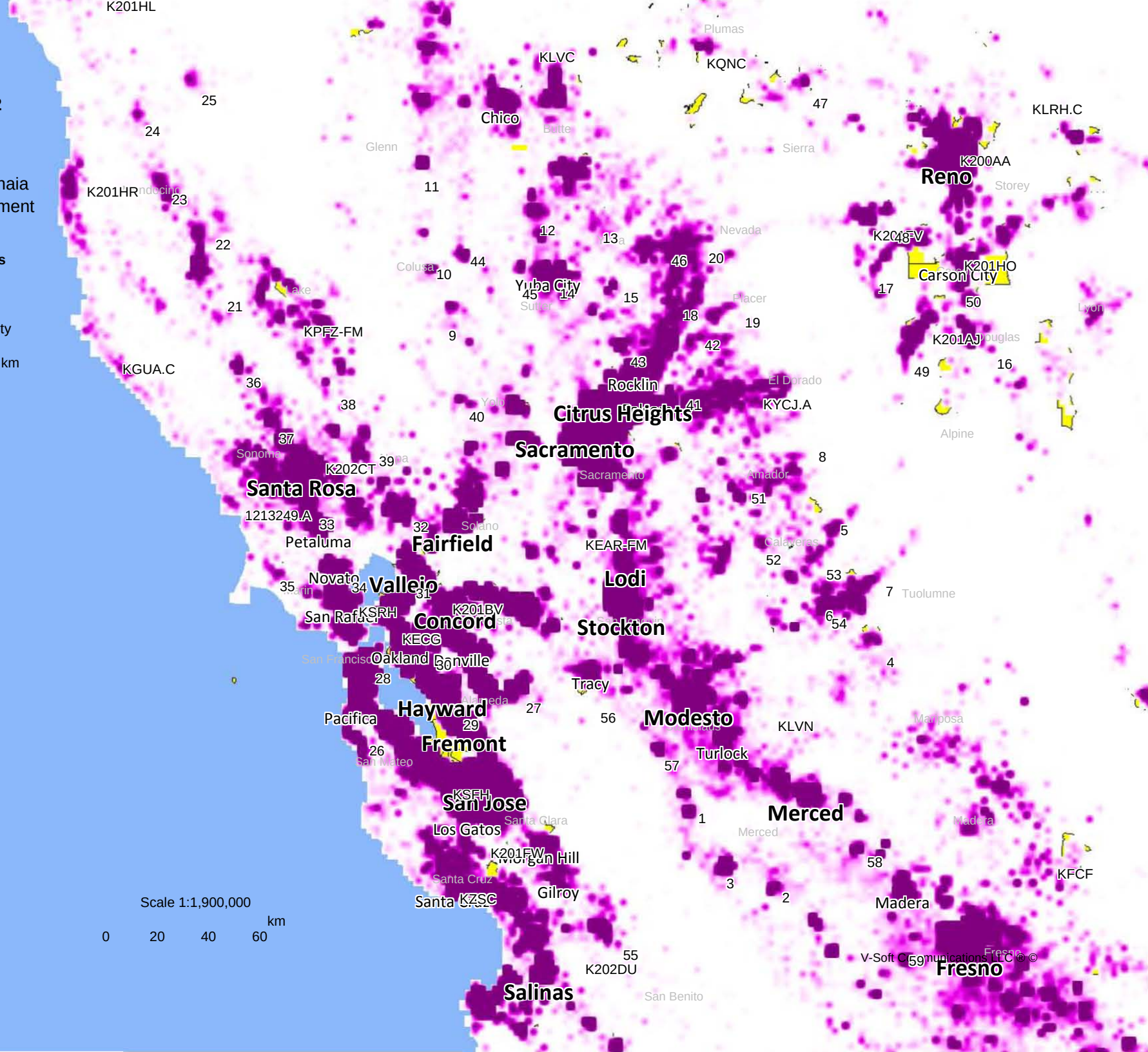


Exhibit A-2A

Population Report for All Contours

Population Database: 2000 US Census (SF1)

	Population	Housing Units	Area (sq. km)
21- Ukiah S (199)			
FCC F(50-50) 60.00 dBu	1,255	451	90.4
22- Ukiah N (199)			
FCC F(50-50) 60.00 dBu	38,689	14,807	962.5
23- Willits (199)			
FCC F(50-50) 60.00 dBu	10,587	4,239	252.9
24- Laytonville (199)			
FCC F(50-50) 60.00 dBu	2,146	956	270.8
25- Covello (199)			
FCC F(50-50) 60.00 dBu	2,099	901	227.6
26- San Mateo (199)			
FCC F(50-50) 60.00 dBu	287,101	114,405	971.3
27- Livermore (199)			
FCC F(50-50) 60.00 dBu	136,805	48,921	254.6
28- San Francisco (199)			
FCC F(50-50) 60.00 dBu	638,519	302,747	161.4
29- Hayward/Fremont (199)			
FCC F(50-50) 60.00 dBu	391,178	126,973	263.6
30- Oakland (199)			
FCC F(50-50) 60.00 dBu	260,118	96,255	107.0
31- Vallejo (199)			
FCC F(50-50) 60.00 dBu	92,698	35,632	187.4
32- Napa (199)			
FCC F(50-50) 60.00 dBu	90,873	34,759	364.7
33- Rohnert Park (199)			
FCC F(50-50) 60.00 dBu	100,586	37,729	202.7
34- Novato (199)			
FCC F(50-50) 60.00 dBu	47,675	19,299	213.4
35- Inverness (199)			
FCC F(50-50) 60.00 dBu	3,281	1,772	325.4
36- Cloverdale (199)			
FCC F(50-50) 60.00 dBu	10,476	4,138	276.3
37- Healdsburg (199)			
FCC F(50-50) 60.00 dBu	38,552	13,972	186.6
38- Middletown (199)			
FCC F(50-50) 60.00 dBu	5,712	2,407	255.7
39- Angwin (199)			
FCC F(50-50) 60.00 dBu	18,104	7,237	277.6
40- Esparto (199)			
FCC F(50-50) 60.00 dBu	3,822	1,240	271.5
41- Folsom (199)			
FCC F(50-50) 60.00 dBu	76,433	25,993	247.7
42- Auburn (199)			
FCC F(50-50) 60.00 dBu	33,261	13,775	267.9
43- Lincoln (199)			
FCC F(50-50) 60.00 dBu	12,857	4,747	183.6

44- Colusa (199)					
FCC	F(50-50)	60.00 dBu	6,834	2,610	111.5
45- Sutter (199)					
FCC	F(50-50)	60.00 dBu	3,355	1,136	149.4
46- Grass Valley (199)					
FCC	F(50-50)	60.00 dBu	24,989	11,235	330.9
47- Portola (199)					
FCC	F(50-50)	60.00 dBu	4,003	1,895	143.7
48- Truckee (199)					
FCC	F(50-50)	60.00 dBu	12,922	7,930	319.4
49- S Lake Tahoe (199)					
FCC	F(50-50)	60.00 dBu	38,058	24,079	437.5
50- Carson City (199)					
FCC	F(50-50)	60.00 dBu	70,526	28,588	532.9
51- Jackson (199)					
FCC	F(50-50)	60.00 dBu	11,761	5,361	338.2
52- San Andreas (199)					
FCC	F(50-50)	60.00 dBu	8,617	3,547	290.4
53- Murphys (199)					
FCC	F(50-50)	60.00 dBu	11,753	5,710	394.5
54- Mono Vista (199)					
FCC	F(50-50)	60.00 dBu	30,021	14,486	471.0
55- Hollister (199)					
FCC	F(50-50)	60.00 dBu	46,289	13,905	315.0
56- Tracy (199)					
FCC	F(50-50)	60.00 dBu	63,727	20,590	380.1
57- Patterson (199)					
FCC	F(50-50)	60.00 dBu	16,693	4,708	266.7
58- Chowchilla (199)					
FCC	F(50-50)	60.00 dBu	8,684	3,078	118.0
59- Kerman (199)					
FCC	F(50-50)	60.00 dBu	3,240	1,064	104.3

Exhibit A-3

CH198 LPFM
Northern Californaia
Theoretical allotment

40 new allotments

Population Density

> 80.0 ppl/sq. km

40.0 - 80.0

20.0 - 40.0

0.0 - 20.0

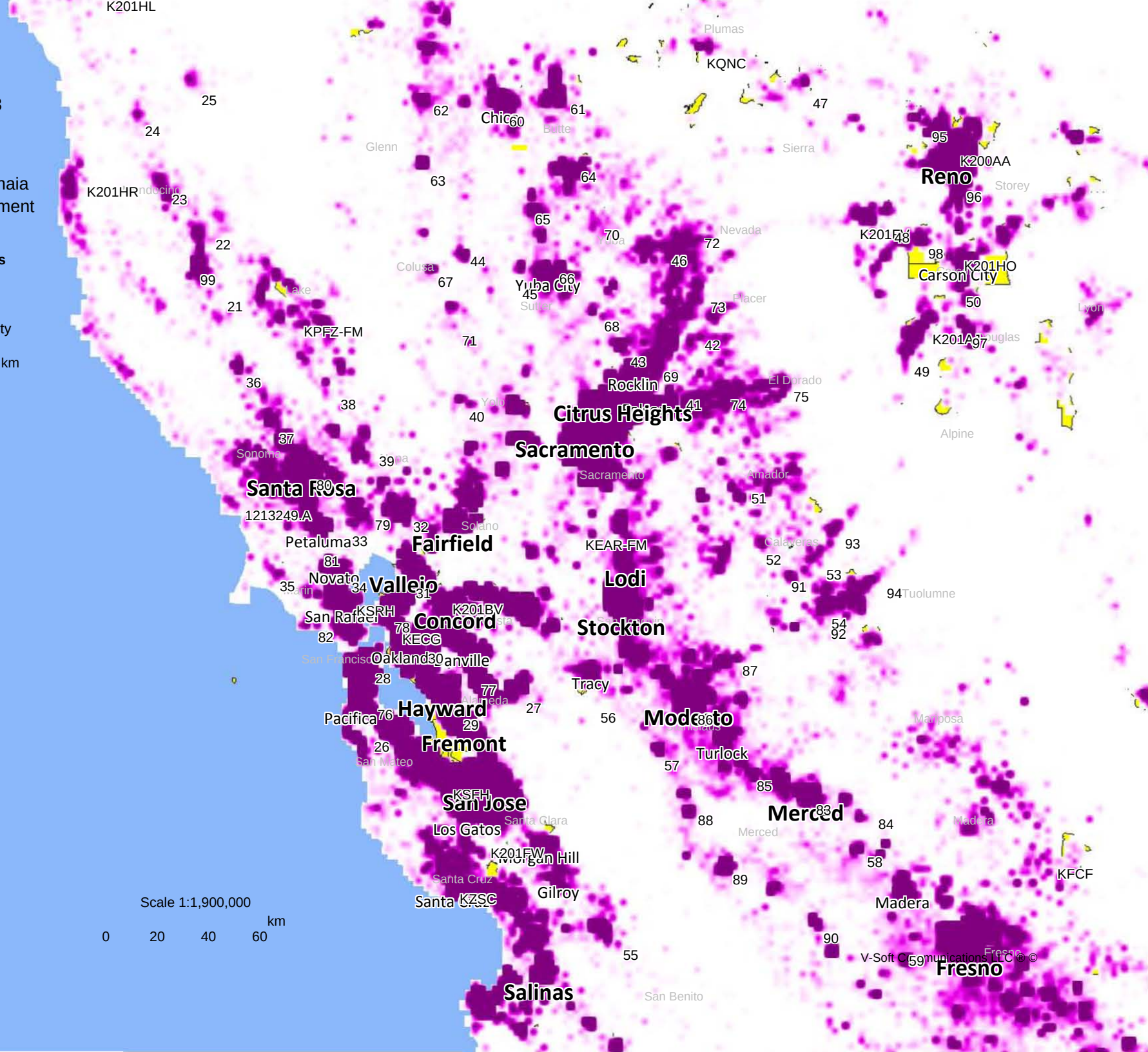


Exhibit A-3A

Population Report for All Contours

Population Database: 2000 US Census (SF1)

	Population	Housing Units	Area (sq. km)
60- Chico (198)			
FCC F(50-50) 60.00 dBu	88,138	36,447	196.5
61- Paradise (198)			
FCC F(50-50) 60.00 dBu	35,727	16,590	502.7
62- Orland (198)			
FCC F(50-50) 60.00 dBu	11,053	4,232	139.3
63- Willows (198)			
FCC F(50-50) 60.00 dBu	8,035	3,103	134.5
64- Oroville (198)			
FCC F(50-50) 60.00 dBu	38,516	15,516	307.7
65- Biggs (198)			
FCC F(50-50) 60.00 dBu	9,620	3,506	106.3
66- Yuba City (198)			
FCC F(50-50) 60.00 dBu	43,218	17,169	103.6
67- Williams (198)			
FCC F(50-50) 60.00 dBu	4,167	1,176	147.4
68- Wheatland (198)			
FCC F(50-50) 60.00 dBu	4,021	1,443	141.3
69- Rocklin (198)			
FCC F(50-50) 60.00 dBu	59,783	23,212	227.9
70- Loma Rica (198)			
FCC F(50-50) 60.00 dBu	4,739	1,832	348.1
71- Arbuckle (198)			
FCC F(50-50) 60.00 dBu	4,068	1,313	224.0
72- Nevada City (198)			
FCC F(50-50) 60.00 dBu	23,250	10,273	346.2
73- Coalfax (198)			
FCC F(50-50) 60.00 dBu	18,377	7,334	258.7
74- Placerville (198)			
FCC F(50-50) 60.00 dBu	31,441	12,739	281.4
75- Pollock Pines (198)			
FCC F(50-50) 60.00 dBu	19,094	8,191	371.8
76- Daly City (198)			
FCC F(50-50) 60.00 dBu	208,701	70,794	192.7
77- San Ramon (198)			
FCC F(50-50) 60.00 dBu	201,482	76,042	226.7
78- Richmond (198)			
FCC F(50-50) 60.00 dBu	170,529	60,814	200.7
79- Sonoma (198)			
FCC F(50-50) 60.00 dBu	38,571	16,566	243.0
80- Santa Rosa (198)			
FCC F(50-50) 60.00 dBu	210,783	80,091	280.8
81- Petaluma (198)			
FCC F(50-50) 60.00 dBu	29,032	11,678	176.8
82- Bolinas (198)			
FCC F(50-50) 60.00 dBu	2,291	1,460	279.1

83- Merced (198)					
	FCC	F(50-50)	60.00 dBu	76,173	25,507	119.6
84- Le Grand (198)					
	FCC	F(50-50)	60.00 dBu	2,361	691	158.2
85- Livingston (198)					
	FCC	F(50-50)	60.00 dBu	21,700	5,596	112.1
86- Modesto (198)					
	FCC	F(50-50)	60.00 dBu	150,715	49,493	106.1
87- Oakdale (198)					
	FCC	F(50-50)	60.00 dBu	20,210	7,598	135.2
88- Gustine (198)					
	FCC	F(50-50)	60.00 dBu	13,387	4,662	150.8
89- Los Banos (198)					
	FCC	F(50-50)	60.00 dBu	27,375	8,717	133.3
90- Firebaugh (198)					
	FCC	F(50-50)	60.00 dBu	7,224	2,021	109.6
91- Angel's Camp (198)					
	FCC	F(50-50)	60.00 dBu	4,728	2,174	198.8
92- Jamestown (198)					
	FCC	F(50-50)	60.00 dBu	11,141	3,208	304.7
93- Arnold (198)					
	FCC	F(50-50)	60.00 dBu	5,712	5,259	227.5
94- Twain Harte (198)					
	FCC	F(50-50)	60.00 dBu	8,721	5,919	193.0
95- Reno (198)					
	FCC	F(50-50)	60.00 dBu	29,401	10,593	237.6
96- Reno (198)					
	FCC	F(50-50)	60.00 dBu	271,218	114,856	437.8
97- Gardnerville (198)					
	FCC	F(50-50)	60.00 dBu	28,977	11,499	402.9
98- Incline Village (198)					
	FCC	F(50-50)	60.00 dBu	24,369	16,918	493.7
99- Ukiah (198)					
	FCC	F(50-50)	60.00 dBu	33,102	12,488	265.5

Exhibit A-4

CH200 LPFM
Northern Californaia
Theoretical allotment
Using U to D ratios

19 new allotments
within the SF MSA

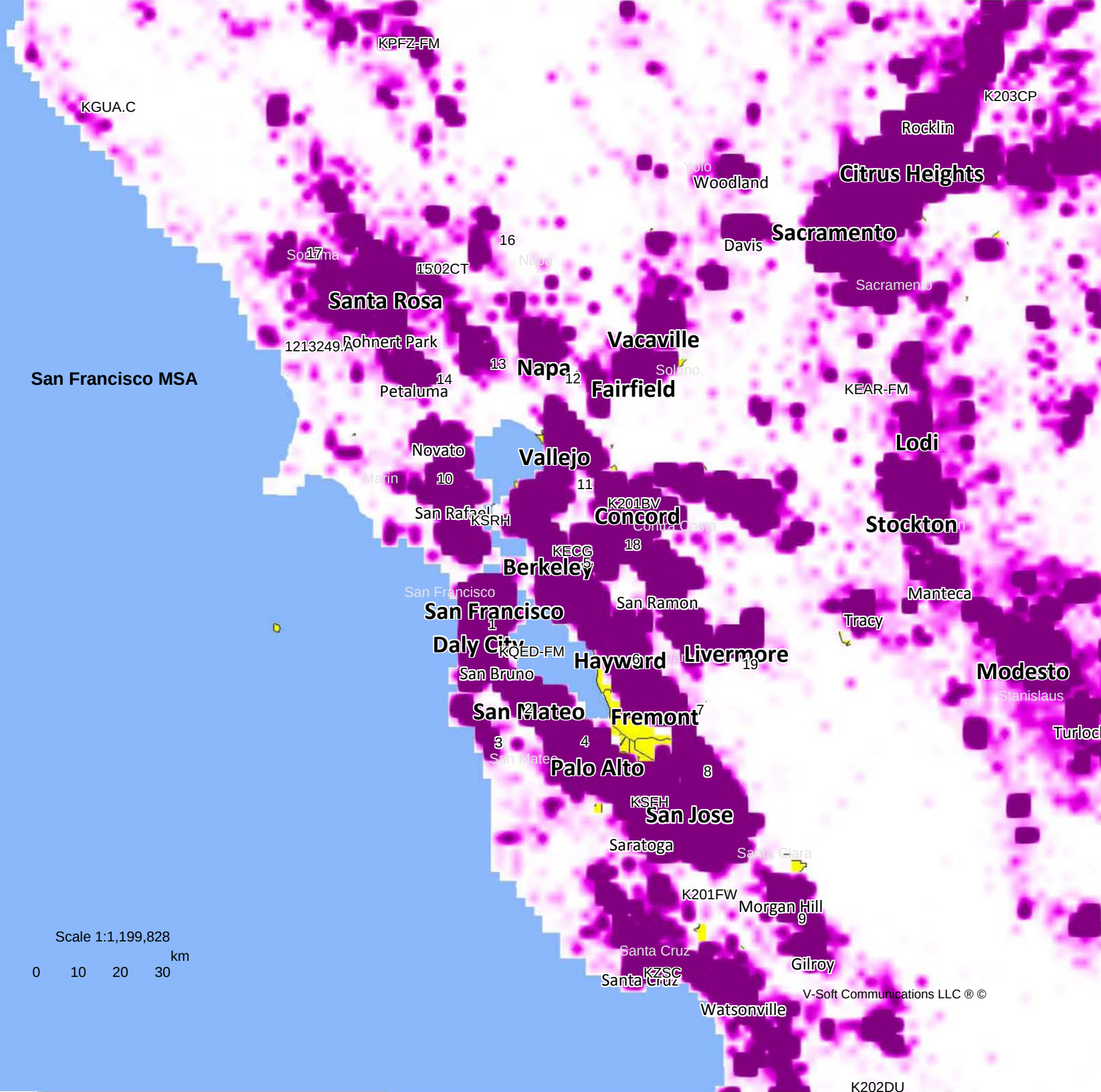
Population Density

> 80.0 ppl/sq. km

40.0 - 80.0

20.0 - 40.0

0.0 - 20.0



Scale 1:1,199,828

km

0 10 20 30

Exhibit A-4A

Population Report for All Contours

Population Database: 2000 US Census (SF1)

	Population	Housing Units	Area (sq. km)
1- San Francisco (200)			
FCC F(50-50) 60.00 dBu	526,828	219,691	92.1
2- San Mateo (200)			
FCC F(50-50) 60.00 dBu	65,803	27,307	27.9
3- El Granada (200)			
FCC F(50-50) 60.00 dBu	15,423	5,224	60.2
4- Redwood City (200)			
FCC F(50-50) 60.00 dBu	83,346	29,916	32.5
5- Piedmont (200)			
FCC F(50-50) 60.00 dBu	42,464	19,249	24.0
6- Hayward (200)			
FCC F(50-50) 60.00 dBu	198,028	71,899	70.4
7- Freemont (200)			
FCC F(50-50) 60.00 dBu	69,464	25,415	44.8
8- Milpitas (200)			
FCC F(50-50) 60.00 dBu	51,717	13,688	22.7
9- Morgan Hill (200)			
FCC F(50-50) 60.00 dBu	20,173	6,568	32.5
10- Novato (200)			
FCC F(50-50) 60.00 dBu	13,180	5,357	22.5
11- Vallejo (200)			
FCC F(50-50) 60.00 dBu	28,967	11,554	32.8
12- Napa (200)			
FCC F(50-50) 60.00 dBu	14,411	4,939	36.5
13- Sonoma (200)			
FCC F(50-50) 60.00 dBu	20,425	9,220	46.9
14- Petaluma (200)			
FCC F(50-50) 60.00 dBu	16,153	5,540	29.1
15- Santa Rosa (200)			
FCC F(50-50) 60.00 dBu	22,457	8,862	72.7
16- Angwin (200)			
FCC F(50-50) 60.00 dBu	2,336	585	18.3
17- Guerneville (200)			
FCC F(50-50) 60.00 dBu	2,840	1,769	19.1
18- Walnut Creek (200)			
FCC F(50-50) 60.00 dBu	57,070	26,726	43.4
19- Livermore (200)			
FCC F(50-50) 60.00 dBu	17,901	6,403	10.5

Exhibit A-4B

site #	Community served	60dB pop served	site # or owner	coordinates (NAD 27)	KQED signal	distance to int. contour	distance to nearest pop
1	San Francisco	525,309	1064387	37-44-55 N, 122-27-57 W	106.8 dBu	0.5 meters	3m AGL
2	San Mateo	65,734	1208427	37-41-23 N, 122-26-13 W	94.4 dBu	13.3 meters	20.9 meters
3	El Granada	15,423	1229202	37-29-46 N, 122-26-53 W	84.6 dBu	41.4 meters	47.8 meters
4	Redwood City	83,346	1244553	37-29-53 N, 122-13-01 W	84.9 dBu	40.0 meters	41.1 meters
5	Piedmont	42,412	1017279	37-51-54 N, 122-13-11 W	85.8 dBu	3.6 meters	217.7 meters
6	Hayward	197,690	1257795	37-40-44 N, 122-04-54 W	83.6 dBu	25.4 meters	30 m AGL
7	Freemont	69,040	ATC	37-33-55 N, 121 54 24 W	74.5 dBu	132.8 meters	379.4 meters
8	Milpitas	51,717	ATC	37-25-59 N, 121-53-16 W	70.7 dBu	45.6 meters	46.8 meters
9	Morgan Hill	20,173	ATC	37-07-02N, 121-38-15 W	n/a	n/a	n/a
10	Novato	13,180	1222927	38-03-35 N, 122-36-17 W	75.1 dBu	12.4 meters	1891.4 meters
11	Vallejo	29,095	ATC	38-02-53 N, 122 13 34 W	76.3 dBu	33.9 meters	234.9 meters
12	Napa	14,497	1213927	38-16-26 N, 122-15-30 W	65.5 dBu	117.2 meters	121.7 meters
13	Sonoma	20,425	ATC	38-18-17 N, 122-27-37 W	64.4 dBu	402.5 meters	416.2 meters
14	Petaluma	16,153	1202134	38-16-22 N, 122 36 24 W	64.4 dBu	112.1 meters	115 meters
15	Santa Rosa	22,435	K202CT site	38-30-31 N, 122-39-41 W	n/a	n/a	n/a
16	Angwin	2,336	1207611	38-34-14 N, 122-26-09 W	n/a	n/a	n/a
17	Guerneville	2,840	1015148	38-32-25 N, 122-57-40 W	n/a	n/a	n/a
18	Walnut Creek	57,149	ATC	37-55-06 N, 122-05-50 W	79.1 dBu	77.5 meters	90.2 meters
19	Livermore	17,901	1204495	37-42-41 N, 121-49-03 W	70.5 dBu	21 .0 meters	25.4 meters

Exhibit A-5

CH199 LPFM
Northern Californaia
Theoretical allotment
Using U to D ratios

21 new allotments
within the SF MSA

Population Density

> 80.0 ppl/sq. km

40.0 - 80.0

20.0 - 40.0

0.0 - 20.0

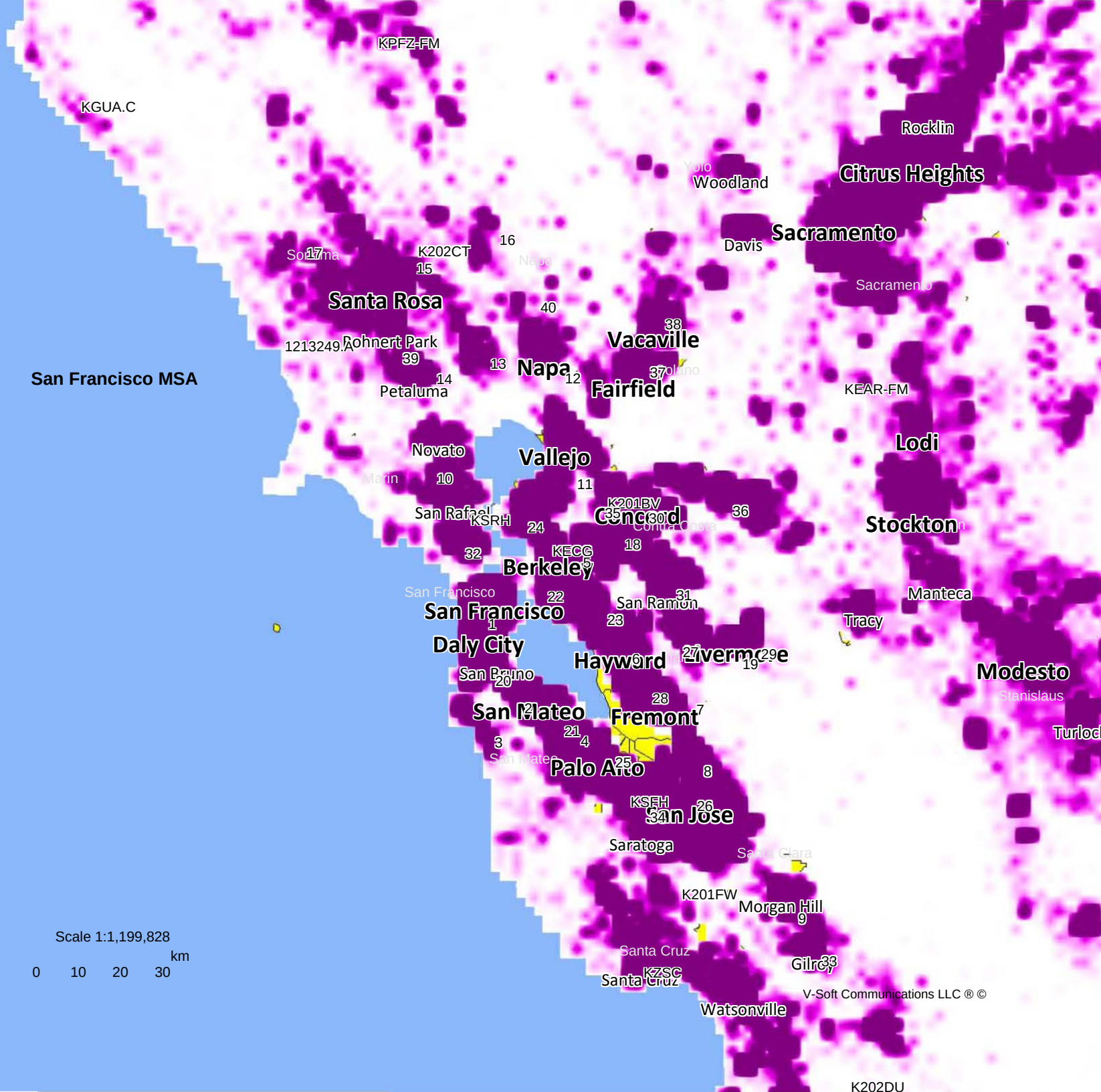


Exhibit A-5A

Population Report for All Contours

Population Database: 2000 US Census (SF1)

	Population	Housing Units	Area (sq. km)
20- S. San Francisco (199)			
FCC F(50-50) 60.00 dBu	70,412	24,547	37.1
21- San Carlos (199)			
FCC F(50-50) 60.00 dBu	11,169	4,711	10.1
22- Oakland (199)			
FCC F(50-50) 60.00 dBu	19,827	8,389	17.9
23- San Leandro (199)			
FCC F(50-50) 60.00 dBu	67,073	21,610	20.3
24- San Pablo (202)			
FCC F(50-50) 60.00 dBu	41,296	12,056	40.5
25- Palo Alto (202)			
FCC F(50-50) 60.00 dBu	39,648	15,569	16.8
26- San Jose (202)			
FCC F(50-50) 60.00 dBu	62,029	18,971	23.2
27-Dublin (202)			
FCC F(50-50) 60.00 dBu	23,200	8,344	32.9
28- Union City (201)			
FCC F(50-50) 60.00 dBu	42,471	13,249	13.3
29- Livermore (202)			
FCC F(50-50) 60.00 dBu	31,914	11,575	37.0
30- Concord (202)			
FCC F(50-50) 60.00 dBu	28,643	10,923	10.2
31- San Ramon (202)			
FCC F(50-50) 60.00 dBu	18,339	6,408	26.3
32- Mill Valley (202)			
FCC F(50-50) 60.00 dBu	38,342	17,136	40.8
33- Gilroy (200)			
FCC F(50-50) 60.00 dBu	44,834	13,065	86.1
34- Cupertino (203)			
FCC F(50-50) 60.00 dBu	39,297	14,782	14.3
35- Martinez (203)			
FCC F(50-50) 60.00 dBu	12,598	5,254	13.5
36- Antioch (203)			
FCC F(50-50) 60.00 dBu	71,535	24,388	52.0
37- Fairfield (203)			
FCC F(50-50) 60.00 dBu	47,015	16,437	26.9
38- Vacaville (203)			
FCC F(50-50) 60.00 dBu	23,305	8,728	41.5
39- Rohnert Park (203)			
FCC F(50-50) 60.00 dBu	38,020	14,576	31.6
40- Napa (203)			
FCC F(50-50) 60.00 dBu	15,177	6,119	74.0

Exhibit A-5B

site #	Community served	60dB pop served	site # or owner	coordinates (NAD 27)	2nd/3rd signal	distance to int. contour	distance to nearest pop
20	South San Francisco	70,412	1062211	37-37-39 N, 122-26-47 W	n/a	n/a	n/a
21	San Carlos	11,169	1015560	37-31-10 N, 122-15-41 W	n/a	n/a	n/a
22	Oakland	19,827	1013311	37-48-26 N, 122-18-20 W	n/a	n/a	n/a
23	San Leandro	67,073	1024426	37-45-26 N, 122-08-41 W	n/a	n/a	n/a
24	San Pablo	41,296	1017320	37-57-20 N, 122-21-32 W	n/a	n/a	n/a
25	Palo Alto	39,648	1001916	37-27-10 N, 122-07-30 W	n/a	n/a	n/a
26	San Jose	62,029	1214586	37-21-33 N, 121-54-22 W	n/a	n/a	n/a
27	Dublin	23,200	ATC	37-42-11 N, 121-55-56 W	n/a	n/a	n/a
28	Union City	42,471	ATC	37-35-21 N, 122-01-28 W	n/a	n/a	n/a
29	Livermore	31,914	1206940	37-40-59 N, 121-43-55 W	n/a	n/a	n/a
30	Concord	28,643	1017277	37-58-30 N, 122-01-57 W	n/a	n/a	n/a
31	San Ramon	18,339	AT&T	37-48-13 N, 121-57-22 W	n/a	n/a	n/a
32	Mill Valley	38,342	SBA	37-53-58 N, 122-31-42 W	n/a	n/a	n/a
33	Gilroy	44,834	AT&T	37-01-25 N, 121-33-55 W	n/a	n/a	n/a
34	Cupertino	39,297	1015266	37-20-06 N, 122-01-57 W	n/a	n/a	n/a
35	Martinez	12,598	K201BV site	38-00-25 N, 122-08-34 W	n/a	n/a	n/a
36	Antioch	71,535	1049602	37-59-20 N, 121-48-20 W	KEAR 64.9 dBu	79.5 meters	80.5 meters
37	Fairfield	47,015	1008559	38-17-10 N, 122-01-39 W	KEAR 61.2 dBu	105.8 meters	106.9 meters
38	Vacaville	23,305	1248188	38-23-19 N, 121-59-09 W	KEAR- 61.7 dBu	128.4 meters	138.8 meters
39	Rohnert Park	38,020	AT&T	38-18-58 N, 122-41-53 W	n/a	n/a	n/a
40	Napa	15,177	1050887	38-25-34 N, 122-19-29 W	n/a	n/a	n/a