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Allocation Table  
Winona State University

REFERENCE		CH# 208C3 - 89.5 MHz, Pwr= 2.5 kW DA, HAAT= 210.3 M, COR= 480 M								DISPLAY DATES	
44 04 26.0 N.		Average Protected F(50-50)= 32.93 km								DATA	04-22-10
91 34 38.0 W.		Standard Directional								SEARCH	04-22-10
CH	CALL	TYPE	ANT	AZI	DI ST	LAT	PWR(kW)	INT(km)	PRO(km)	*IN*	*OUT*
CITY		STATE		<--	FILE #	LNG	HAAT(M)	COR(M)	LICENSEE	(Overlap in km)	
208C3	KQAL	LIC	DCN	227.4	7.0	44 01 52.0	1.800	80.1	28.0	-103.2*<	-106.3*<
Winona		MN		47.4	BLED19891030KB	91 38 31.0	191	476	Winona State University		
208C1	WCLQ	LIC	DCX	57.3	177.5	44 55 11.0	90.000	155.5	60.8	0.0	51.7
Wausau		WI		238.7	BLED20040225ABB	89 40 45.0	185	569	Christian Life Communicati		
205C2	WLSU	LIC	DCX	150.7	34.3	43 48 17.0	8.200	2.3	31.6	0.2	0.5
La Crosse		WI		330.9	BLED20030624ABF	91 22 06.0	283	546	Board Of Regents, Univ. Of		
208A	KLCD	LIC	_CN	191.5	86.0	43 18 56.0	0.100	26.5	7.9	32.2	0.2
Decorah		IA		11.3	BLED19811023AJ	91 47 18.0	55	387	Minnesota Public Radio		
207C3	WEQS	CP	DCX	105.3	77.4	43 53 09.0	7.500	46.5	30.9	0.5	0.3
Sparta		WI		286.0	BMPED20100323ACR	90 38 43.0	160	490	Crossfire Incorporated		
209C3	WUEC	LIC	_CN	6.2	81.1	44 47 58.0	5.200	54.9	37.1	1.2	6.5
Eau Claire		WI		186.3	BLED19960227KB	91 27 59.0	192	472	Board Of Regents, Universi		
207C1	KCMP	LIC	_CY	300.5	137.1	44 41 21.0	100.000	98.1	66.4	4.8	21.6
Northfield		MN		119.4	BLED20060308AIB	93 04 21.0	234	517	Minnesota Public Radio		
208C3	1227135	APP	DCX	110.5	151.1	43 35 03.2	25.000	105.8	32.4	12.4	31.2
Baraboo		WI		291.7	BNPED20071022ATB	89 49 11.2	76	364	Optima Enrichment, Inc.		
208C2	1216018	APP	DCX	114.2	170.8	43 25 43.0	10.000	116.0	47.3	21.4	34.6
Baraboo		WI		295.5	BNPED20071012AJK	89 38 50.0	254	542	Liberty And Freedom Inc.		
210C3	KRPR	LIC	_CX	266.8	61.1	44 02 28.0	3.200	2.7	30.2	22.9	28.0
Rochester		MN		86.3	BLED20030721ABL	92 20 25.0	180	534	Rochester Public Radio		
261A	WKBH-FM	LIC	_CN	129.5	39.0	43 51 02.0	3.600	10.2	47.0	11.5R	27.5M
West Salem		WI		309.7	BLH19970114KB	91 12 08.0	130	381	Mississippi Valley Broadca		
209C3	1271253	APP	DCX	105.6	114.9	43 47 16.0	10.500	49.0	32.8	34.8	35.0
Yuba		WI		286.5	BNPED20071022BHQ	90 11 52.0	122	426	Harvest Christian Fellowsh		
208B	1212400	APP	DCX	109.9	204.0	43 25 32.0	50.000	126.7	41.7	44.8	74.7
Columbus		WI		291.5	BNPED20071019AOP	89 12 04.0	65	353	Wisconsin Academy Seventh-		

Terrain database is USGS 03 SEC , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM  
In & Out distances between contours are shown at closest points. Reference zone = 2, Co to 3rd adjacent.  
Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, \_= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)  
"\*"affixed to 'IN' or 'OUT' values = site inside protected contour.

## HOW TO READ THE FM COMPUTER PRINT-OUT

### Full Service Stations

The computer printout should be self-explanatory for the most part. The parameters of the station being checked, (reference station) are printed in the heading. Contour distances are in kilometers and are predicted using the Commission's TVFMINT FORTRAN subroutine. When interference contour distances are less than 16 kilometers the F(50-50) tables are used. If signal contour distances are less than 1.6 km the free-space equation is used.

The column listed "IN " is the difference in kilometers between of the reference station's protected contour and the data file station's interference contour at the closest point between the contours. (All distances are derived by the method detailed in Sec. 73.208 of the Rules and Regulations as amended in Docket 80-90.) Therefore, "IN" column is a measure of incoming interference. Negative distances in this column indicate the presence of contour overlap. Listed antenna heights and power are those given in the FCC database. The column labeled "OUT " shows the greatest distance in kilometers of overlap or smallest of clearance between the reference station's interference contour and the database station's protected contour. Negative distance figures in this column indicate outgoing contour overlap.

Under the "AZI" column, the first row of numbers indicate the True North bearings from the reference station toward the database stations, while the numbers in the second row indicate the reverse bearings from the database stations to the reference station.

The columns labeled "INT" and "PRO" contain the distance in kilometers of the appropriate interference contour and the protected contour of a data base station.

For I.F. relationships, some channel-six TV relationships and relationships with commercial channel stations providing clearance the minimum spacings values the "IN" and "OUT" columns can change their significance. The letter "R" stands for the minimum **required** distance in kilometers, while the letter "M" in the next column follows the **available clear space** (or lack of it) in kilometers. Minimum separation distances when displayed are taken from Sec 73.207 of the rules as amended. Canadian and Mexican separation distances, U/D ratios and protected contour values are from the US/Mexican Working Agreement and the US/Canada Working Agreement".

The call letters of stations meeting the minimum separation distances under the rules will be flagged by the characters "<<" appended to the right-hand side of the call sign. The "^" character appended to the call sign means the station has been "max-classed" according to the provisions of section 73.525 of the Rules.

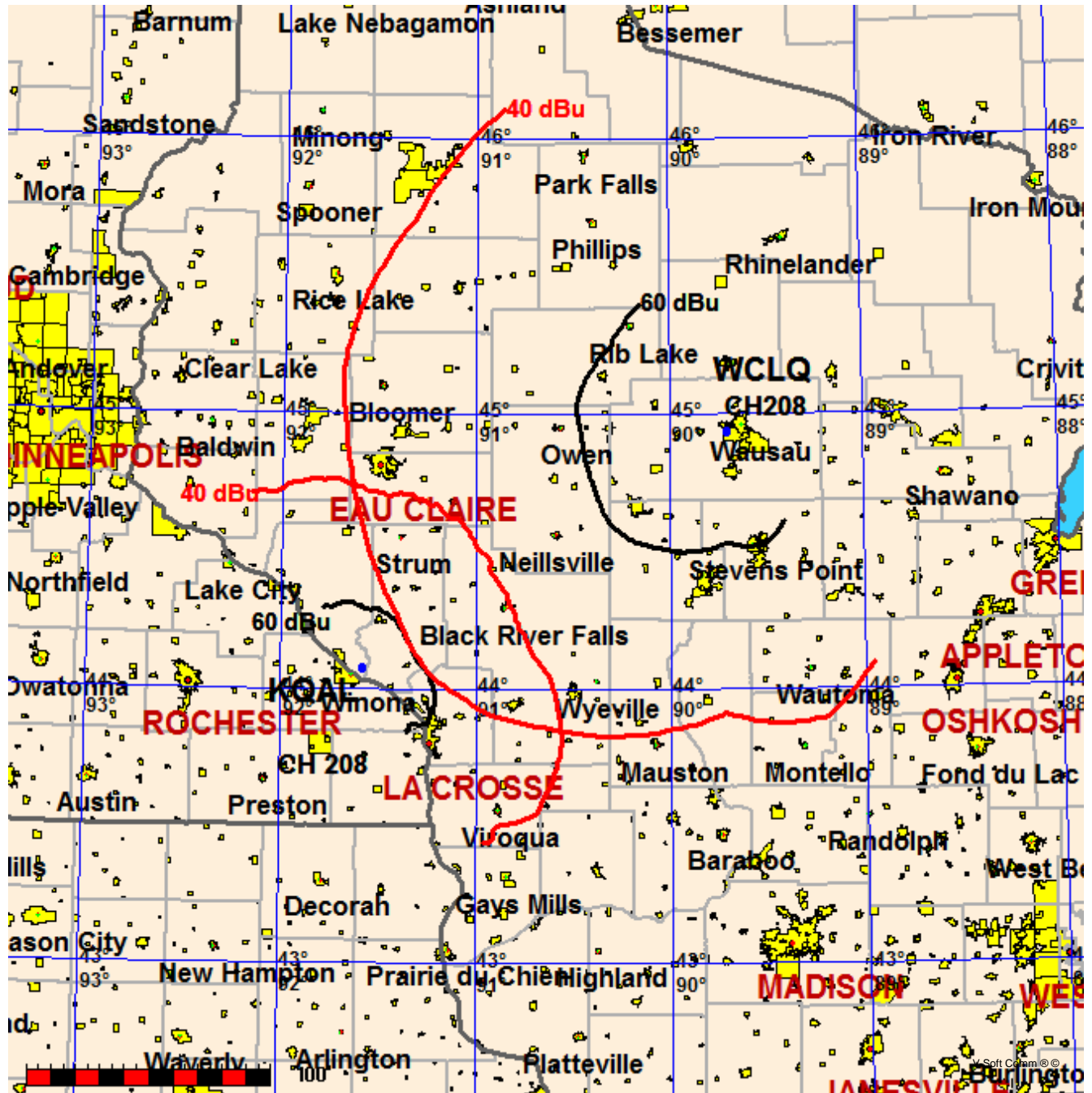
The first three letters of the "TYPE" column identify the current FCC status of the stations. The fourth letter will be a "D" if the facility is directional. "Z" indicates a 73.215 directional. An "N" indicates it is a 73.215 station that operates with an omni-directional antenna. The fifth letter will be an E, H or V depending on the type of antenna polarization. The sixth letter will be a "Y" if the antenna uses beam tilt or an "X" if the commission is not sure, otherwise it will be an "N" or left blank.

Allocation Map Study  
Winona State University

FMCommander Single Allocation Study - 04-22-2010 - USGS 03 SEC  
KQAL's Overlaps (In= 0.13 km, Out= 51.73 km)

KQAL CH 208 C3 DA  
Lat= 44 04 26.0, Lng= 91 34 38.0  
2.5 kW 214.5 M HAAT, 480 M COR  
Prot.= 60 dBu, Intef.= 40 dBu

WCLQ CH 208 C1 DA BLED20040225ABB  
Lat= 44 55 11.0, Lng= 89 40 45.0  
90.0 kW 185 M HAAT, 569 M COR  
Prot.= 60 dBu, Intef.= 40 dBu



04-22-2010

USGS 03 SEC Terrain Data

FMOver Analysis

KQAL

WCLQ BLED20040225ABB

Channel = 208C3  
 Max ERP = 2.5 kW  
 RCAMSL = 480 M  
 N. Lat. 44 04 26.0  
 W. Lng. 91 34 38.0  
 Protected  
 60 dBu

Channel = 208C1  
 Max ERP = 90 kW  
 RCAMSL = 569 M  
 N. Lat. 44 55 11.0  
 W. Lng. 89 40 45.0  
 Interfering  
 40 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
357.0	000.6760	0233.7	025.3	246.3	088.7965	0165.3	166.4	37.89	
358.0	000.6708	0232.1	025.2	246.2	088.7647	0165.5	166.0	37.96	
359.0	000.6708	0227.7	025.0	246.0	088.7215	0165.6	165.7	38.01	
000.0	000.6943	0221.4	024.8	245.9	088.6873	0165.7	165.4	38.08	
001.0	000.6726	0216.6	024.4	245.7	088.6224	0165.9	165.2	38.11	
002.0	000.6513	0211.5	023.9	245.5	088.5555	0166.1	165.0	38.14	
003.0	000.6303	0213.2	023.8	245.4	088.5250	0166.2	164.7	38.20	
004.0	000.6096	0218.9	024.0	245.4	088.5135	0166.2	164.3	38.28	
005.0	000.5893	0222.4	023.9	245.3	088.4891	0166.3	163.9	38.34	
006.0	000.5693	0226.0	023.9	245.2	088.4640	0166.3	163.6	38.41	
007.0	000.5497	0229.4	023.9	245.2	088.4365	0166.4	163.2	38.47	
008.0	000.5304	0228.6	023.7	245.0	088.3883	0166.5	163.0	38.51	
009.0	000.5114	0231.4	023.6	244.9	088.3553	0166.6	162.7	38.56	
010.0	000.4928	0237.2	023.7	244.8	088.3350	0166.7	162.3	38.63	
011.0	000.5135	0238.5	024.0	244.8	088.3325	0166.7	161.8	38.72	
012.0	000.5345	0238.7	024.2	244.8	088.3243	0166.8	161.4	38.81	
013.0	000.5560	0237.8	024.4	244.8	088.3094	0166.8	160.9	38.89	
014.0	000.5779	0232.7	024.4	244.7	088.2752	0167.0	160.6	38.95	
015.0	000.6003	0234.0	024.6	244.6	088.2672	0167.0	160.1	39.04	
016.0	000.6230	0230.2	024.7	244.5	088.2354	0167.2	159.8	39.09	
017.0	000.6462	0225.9	024.6	244.4	088.2000	0167.3	159.5	39.15	
018.0	000.6698	0218.2	024.4	244.3	088.1482	0167.6	159.3	39.18	
019.0	000.6938	0209.3	024.2	244.1	088.0901	0167.8	159.2	39.20	
020.0	000.7182	0208.0	024.3	244.0	088.0641	0167.9	158.8	39.26	
021.0	000.7320	0202.8	024.1	243.8	088.0138	0168.0	158.7	39.29	
022.0	000.7458	0201.8	024.1	243.7	087.9805	0168.1	158.4	39.34	
023.0	000.7598	0195.0	023.9	243.6	087.9232	0168.2	158.3	39.35	
024.0	000.7740	0196.3	024.0	243.5	087.8977	0168.3	157.9	39.42	
025.0	000.7882	0201.8	024.4	243.4	087.8874	0168.3	157.3	39.52	
026.0	000.8026	0199.1	024.4	243.3	087.8439	0168.4	157.1	39.55	
027.0	000.8171	0191.2	024.1	243.1	087.7807	0168.5	157.2	39.54	
028.0	000.8317	0185.8	023.8	242.9	087.7269	0168.7	157.1	39.56	
029.0	000.8465	0182.8	023.8	242.8	087.6818	0168.8	156.9	39.58	
030.0	000.8614	0178.5	023.6	242.6	087.6318	0168.9	156.8	39.60	
031.0	000.8364	0177.4	023.4	242.5	087.5776	0169.0	156.8	39.60	
032.0	000.8117	0184.5	023.6	242.4	087.5491	0169.1	156.4	39.67	

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
033.0	000.7874	0193.8	024.0	242.3	087.5256	0169.1	155.9	39.75
034.0	000.7634	0199.8	024.2	242.2	087.4906	0169.3	155.5	39.81
035.0	000.7398	0200.8	024.0	242.0	087.4402	0169.5	155.5	39.82
036.0	000.7166	0200.5	023.8	241.9	087.3861	0169.6	155.5	39.83
037.0	000.6938	0200.4	023.7	241.7	087.3331	0169.7	155.5	39.83
038.0	000.6713	0203.0	023.6	241.6	087.2866	0169.8	155.3	39.85
039.0	000.6492	0203.0	023.5	241.4	087.2337	0169.9	155.3	39.84
040.0	000.6275	0200.6	023.1	241.2	087.1763	0170.0	155.5	39.82
041.0	000.6027	0203.3	023.1	241.1	087.1286	0170.1	155.4	39.83
042.0	000.5808	0204.7	022.9	240.9	087.0792	0170.3	155.4	39.83
043.0	000.5593	0204.3	022.7	240.7	087.0269	0170.5	155.5	39.82
044.0	000.5406	0204.0	022.5	240.6	086.9760	0170.7	155.6	39.81
045.0	000.5221	0203.0	022.3	240.4	086.9247	0170.9	155.7	39.79
046.0	000.5062	0207.9	022.4	240.3	086.8827	0171.0	155.5	39.82
047.0	000.4906	0211.9	022.4	240.2	086.8388	0171.2	155.4	39.85
048.0	000.4752	0215.5	022.4	240.0	086.7940	0171.5	155.3	39.86
049.0	000.4623	0222.1	022.6	239.9	086.8240	0171.8	155.1	39.91
050.0	000.4494	0227.4	022.7	239.7	086.8656	0172.1	154.9	39.95
051.0	000.4389	0227.9	022.6	239.6	086.9108	0172.5	154.9	39.95
052.0	000.4285	0222.2	022.2	239.4	086.9592	0172.9	155.3	39.91
053.0	000.4182	0214.3	021.7	239.3	087.0071	0173.3	155.8	39.85
054.0	000.4121	0214.0	021.6	239.1	087.0496	0173.6	155.8	39.85
055.0	000.4040	0216.0	021.6	239.0	087.0914	0174.0	155.8	39.86
056.0	000.4000	0216.7	021.6	238.9	087.1332	0174.4	155.8	39.87
057.0	000.3940	0219.9	021.7	238.7	087.1750	0174.7	155.7	39.89
058.0	000.3901	0221.5	021.7	238.6	087.2169	0175.0	155.7	39.91
059.0	000.3861	0218.5	021.5	238.4	087.2583	0175.3	155.9	39.88
060.0	000.3822	0222.2	021.6	238.3	087.3005	0175.6	155.8	39.91
061.0	000.3783	0226.0	021.8	238.2	087.3433	0175.8	155.7	39.93
062.0	000.3744	0229.1	021.8	238.0	087.3863	0176.2	155.6	39.95
063.0	000.3725	0231.8	021.9	237.9	087.4296	0176.5	155.6	39.97
064.0	000.3706	0232.6	022.0	237.7	087.4720	0176.8	155.6	39.98
065.0	000.3706	0229.6	021.8	237.6	087.5118	0177.1	155.8	39.95
066.0	000.3706	0228.1	021.7	237.5	087.5523	0177.3	155.9	39.94
067.0	000.3706	0225.9	021.6	237.3	087.5916	0177.6	156.1	39.92
068.0	000.3822	0223.2	021.7	237.2	087.6334	0177.8	156.1	39.92
069.0	000.4040	0219.0	021.8	237.1	087.6766	0178.1	156.1	39.93
070.0	000.4306	0212.1	021.8	236.9	087.7174	0178.4	156.2	39.93
071.0	000.4601	0207.9	021.9	236.8	087.7621	0178.6	156.2	39.94
072.0	000.4862	0199.3	021.8	236.7	087.7983	0178.8	156.4	39.91
073.0	000.5018	0195.1	021.7	236.5	087.8368	0179.0	156.6	39.89
074.0	000.5040	0197.5	021.8	236.4	087.8817	0179.3	156.6	39.90
075.0	000.5018	0197.2	021.8	236.2	087.9201	0179.5	156.7	39.88
076.0	000.4973	0199.7	021.9	236.1	087.9627	0179.6	156.8	39.87
077.0	000.4928	0203.8	022.0	236.0	088.0086	0179.7	156.8	39.88
078.0	000.4884	0212.2	022.4	235.8	088.0642	0179.9	156.6	39.92
079.0	000.4862	0217.0	022.6	235.6	088.1137	0180.0	156.6	39.93
080.0	000.4862	0215.1	022.5	235.5	088.1488	0180.0	156.8	39.89
081.0	000.4862	0218.0	022.7	235.3	088.1951	0180.0	156.9	39.88
082.0	000.4862	0222.0	022.9	235.2	088.2444	0180.0	156.9	39.89
083.0	000.4884	0224.0	023.0	235.0	088.2897	0180.1	157.0	39.87

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
084.0	000.4906	0227.4	023.2	234.9	088.3391	0180.1	157.0	39.87
085.0	000.4973	0231.1	023.4	234.7	088.3921	0180.2	157.0	39.88
086.0	000.5085	0234.4	023.7	234.5	088.4474	0180.2	157.0	39.89
087.0	000.5221	0237.7	024.0	234.3	088.5047	0180.2	156.9	39.89
088.0	000.5406	0241.2	024.4	234.1	088.5661	0180.2	156.9	39.91
089.0	000.5593	0246.2	024.8	233.9	088.6326	0180.2	156.8	39.92
090.0	000.5857	0248.2	025.2	233.7	088.6954	0180.2	156.7	39.93
091.0	000.6133	0252.7	025.7	233.5	088.7672	0180.2	156.6	39.95
092.0	000.6422	0258.5	026.2	233.2	088.8447	0180.1	156.5	39.98
093.0	000.6725	0260.8	026.6	233.0	088.9118	0180.1	156.5	39.98
094.0	000.7041	0261.8	026.9	232.8	088.9753	0180.1	156.6	39.97
095.0	000.7373	0261.9	027.2	232.6	089.0362	0180.2	156.7	39.96
096.0	000.7721	0261.6	027.5	232.4	089.0956	0180.1	156.8	39.94
097.0	000.8085	0260.8	027.8	232.2	089.1537	0180.0	157.0	39.91
098.0	000.8466	0260.3	028.0	232.0	089.2128	0179.9	157.1	39.89
099.0	000.8865	0259.8	028.3	231.8	089.2722	0179.7	157.3	39.85
100.0	000.9282	0259.2	028.6	231.6	089.3311	0179.5	157.5	39.82
101.0	000.9720	0258.5	028.8	231.4	089.3895	0179.3	157.7	39.78
102.0	001.0178	0257.7	029.1	231.2	089.4477	0179.1	158.0	39.74
103.0	001.0658	0257.5	029.4	231.0	089.5088	0178.9	158.2	39.71
104.0	001.1160	0257.9	029.8	230.8	089.5732	0178.7	158.4	39.67
105.0	001.1686	0258.8	030.1	230.6	089.6397	0178.4	158.6	39.63
106.0	001.2237	0259.5	030.5	230.4	089.7062	0178.2	158.8	39.59
107.0	001.2813	0260.0	030.9	230.2	089.7716	0177.9	159.1	39.54
108.0	001.3417	0260.5	031.2	229.9	089.7087	0177.7	159.4	39.49
109.0	001.4050	0261.0	031.6	229.7	089.2822	0177.5	159.6	39.41
110.0	001.4712	0261.6	032.0	229.5	088.8522	0177.3	159.9	39.34
111.0	001.5027	0262.0	032.2	229.4	088.5506	0177.3	160.4	39.25
112.0	001.5347	0262.3	032.4	229.2	088.2583	0177.2	160.8	39.16
113.0	001.5669	0262.7	032.6	229.1	087.9725	0177.2	161.2	39.07
114.0	001.5995	0262.9	032.7	228.9	087.6984	0177.3	161.7	38.98
115.0	001.6324	0263.3	032.9	228.8	087.4293	0177.3	162.1	38.88
116.0	001.6656	0263.6	033.1	228.6	087.1669	0177.3	162.6	38.79

## 04-22-2010 USGS 03 SEC Terrain Data

WCLQ BLED20040225ABB

KQAL

Channel = 208C1  
 Max ERP = 90 kW  
 RCAMSL = 569 M  
 N. Lat. 44 55 11.0  
 W. Lng. 89 40 45.0  
 Protected  
 60 dBu

Channel = 208C3  
 Max ERP = 2.5 kW  
 RCAMSL = 480 M  
 N. Lat. 44 04 26.0  
 W. Lng. 91 34 38.0  
 Interfering  
 40 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
179.0	012.7848	0204.1	045.5	071.6	000.4757	0203.3	159.4	17.26	
180.0	012.3877	0205.8	045.3	071.5	000.4723	0204.7	158.7	17.39	
181.0	012.8936	0206.1	045.7	071.5	000.4734	0204.3	157.8	17.54	
182.0	013.4096	0206.4	046.0	071.5	000.4742	0203.9	157.0	17.68	
183.0	013.9358	0207.6	046.5	071.6	000.4755	0203.4	156.1	17.83	
184.0	014.4721	0209.5	047.0	071.7	000.4771	0202.7	155.1	17.99	
185.0	015.0185	0211.5	047.4	071.7	000.4785	0202.1	154.2	18.15	
186.0	015.5750	0212.6	047.9	071.7	000.4792	0201.8	153.3	18.30	
187.0	016.1417	0212.5	048.2	071.7	000.4788	0202.0	152.4	18.45	
188.0	016.7185	0211.9	048.4	071.7	000.4777	0202.4	151.5	18.60	
189.0	017.3054	0211.5	048.7	071.6	000.4766	0202.9	150.6	18.75	
190.0	017.9024	0210.8	049.0	071.6	000.4751	0203.5	149.8	18.89	
191.0	018.8376	0210.2	049.4	071.6	000.4748	0203.7	148.8	19.06	
192.0	019.7965	0210.1	049.8	071.6	000.4745	0203.8	147.9	19.23	
193.0	020.7792	0209.6	050.2	071.5	000.4736	0204.2	146.9	19.39	
194.0	021.7858	0208.3	050.5	071.5	000.4718	0204.9	146.0	19.56	
195.0	022.8161	0206.9	050.9	071.4	000.4697	0205.5	145.1	19.72	
196.0	023.8702	0206.0	051.2	071.3	000.4677	0206.1	144.2	19.88	
197.0	024.9482	0204.2	051.4	071.2	000.4646	0206.9	143.3	20.03	
198.0	026.0500	0203.5	051.8	071.1	000.4621	0207.5	142.4	20.19	
199.0	027.1755	0203.1	052.1	071.0	000.4593	0208.1	141.4	20.35	
200.0	028.3249	0202.6	052.4	070.9	000.4557	0208.4	140.5	20.50	
201.0	029.8080	0200.5	052.7	070.7	000.4515	0208.8	139.6	20.64	
202.0	031.3290	0198.4	053.0	070.6	000.4468	0209.2	138.8	20.77	
203.0	032.8878	0196.4	053.3	070.4	000.4420	0209.8	137.9	20.90	
204.0	034.4845	0194.2	053.5	070.2	000.4365	0210.7	137.0	21.03	
205.0	036.1190	0192.0	053.7	070.0	000.4307	0212.1	136.2	21.16	
206.0	037.7914	0189.9	054.0	069.8	000.4251	0213.8	135.4	21.30	
207.0	039.5016	0187.7	054.2	069.6	000.4191	0215.5	134.6	21.44	
208.0	041.2496	0186.9	054.5	069.4	000.4137	0216.9	133.7	21.58	
209.0	043.0355	0186.0	054.8	069.2	000.4080	0218.2	132.8	21.72	
210.0	044.8592	0185.1	055.1	068.9	000.4023	0219.4	132.0	21.85	
211.0	047.2149	0183.7	055.4	068.7	000.3972	0220.3	131.1	21.98	

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
212.0	049.6309	0182.3	055.7	068.4	000.3918	0221.3	130.3	22.11
213.0	052.1072	0181.1	056.1	068.2	000.3862	0222.5	129.4	22.24
214.0	054.6437	0180.2	056.4	067.9	000.3813	0223.5	128.6	22.37
215.0	057.2406	0180.8	056.9	067.7	000.3784	0224.4	127.7	22.55
216.0	059.8977	0181.0	057.3	067.4	000.3753	0225.1	126.8	22.70
217.0	062.6151	0180.6	057.7	067.1	000.3718	0225.8	125.9	22.84
218.0	065.3927	0180.6	058.1	066.8	000.3706	0226.2	125.1	23.00
219.0	068.2307	0181.4	058.5	066.5	000.3706	0227.1	124.2	23.20
220.0	071.1289	0181.3	058.9	066.2	000.3706	0227.8	123.4	23.38
221.0	072.9000	0180.8	059.1	065.8	000.3706	0228.1	122.8	23.51
222.0	074.6929	0179.9	059.2	065.4	000.3706	0228.6	122.2	23.63
223.0	076.5076	0178.4	059.3	064.9	000.3706	0229.8	121.8	23.76
224.0	078.3440	0177.1	059.4	064.5	000.3706	0231.5	121.3	23.90
225.0	080.2022	0176.4	059.5	064.1	000.3706	0232.5	120.8	24.02
226.0	082.0823	0176.7	059.8	063.6	000.3713	0233.1	120.2	24.16
227.0	083.9840	0177.7	060.1	063.2	000.3721	0232.4	119.6	24.28
228.0	085.9076	0177.5	060.3	062.7	000.3730	0231.1	119.1	24.36
229.0	087.8530	0177.2	060.4	062.3	000.3739	0229.7	118.7	24.43
230.0	089.8201	0177.8	060.7	061.8	000.3752	0228.5	118.2	24.52
231.0	089.5147	0178.9	060.8	061.3	000.3771	0227.1	117.9	24.57
232.0	089.2097	0179.9	060.8	060.8	000.3790	0225.3	117.6	24.61
233.0	088.9053	0180.1	060.8	060.3	000.3810	0223.6	117.5	24.62
234.0	088.6015	0180.2	060.8	059.8	000.3830	0221.4	117.4	24.62
235.0	088.2981	0180.1	060.8	059.3	000.3851	0219.4	117.3	24.60
236.0	087.9953	0179.7	060.7	058.7	000.3871	0218.7	117.3	24.61
237.0	087.6930	0178.2	060.5	058.2	000.3892	0220.9	117.4	24.66
238.0	087.3912	0176.2	060.3	057.7	000.3912	0222.2	117.6	24.67
239.0	087.0899	0174.0	060.0	057.2	000.3932	0220.5	117.9	24.60
240.0	086.7892	0171.5	059.7	056.7	000.3958	0219.1	118.2	24.53
241.0	087.1076	0170.2	059.6	056.2	000.3988	0217.1	118.4	24.48
242.0	087.4267	0169.5	059.6	055.7	000.4012	0216.7	118.5	24.47
243.0	087.7463	0168.6	059.5	055.2	000.4032	0216.3	118.7	24.44
244.0	088.0665	0167.9	059.5	054.7	000.4064	0216.2	118.9	24.44
245.0	088.3873	0166.5	059.4	054.2	000.4103	0215.1	119.1	24.39
246.0	088.7087	0165.6	059.3	053.7	000.4137	0212.9	119.4	24.33
247.0	089.0306	0164.7	059.2	053.3	000.4166	0213.0	119.7	24.30
248.0	089.3532	0163.9	059.2	052.8	000.4204	0215.8	120.0	24.34
249.0	089.6763	0163.0	059.1	052.3	000.4252	0219.4	120.3	24.41
250.0	090.0000	0163.2	059.1	051.8	000.4301	0223.5	120.6	24.50
251.0	090.0000	0163.1	059.1	051.4	000.4350	0226.3	120.9	24.55
252.0	090.0000	0162.1	059.0	050.9	000.4396	0228.1	121.4	24.54
253.0	090.0000	0161.5	058.9	050.5	000.4442	0229.0	121.8	24.52
254.0	090.0000	0161.4	058.9	050.0	000.4489	0227.7	122.2	24.45
255.0	090.0000	0161.5	058.9	049.6	000.4545	0225.7	122.6	24.38
256.0	090.0000	0162.4	059.0	049.1	000.4603	0223.1	122.9	24.31
257.0	090.0000	0163.1	059.1	048.7	000.4661	0219.9	123.3	24.21
258.0	090.0000	0163.7	059.2	048.3	000.4718	0217.2	123.8	24.11
259.0	090.0000	0164.2	059.3	047.8	000.4778	0214.6	124.2	24.01
260.0	090.0000	0164.6	059.3	047.4	000.4842	0213.4	124.7	23.95
261.0	090.0000	0164.7	059.3	047.0	000.4905	0212.0	125.3	23.86
262.0	090.0000	0164.6	059.3	046.6	000.4966	0210.2	125.8	23.76



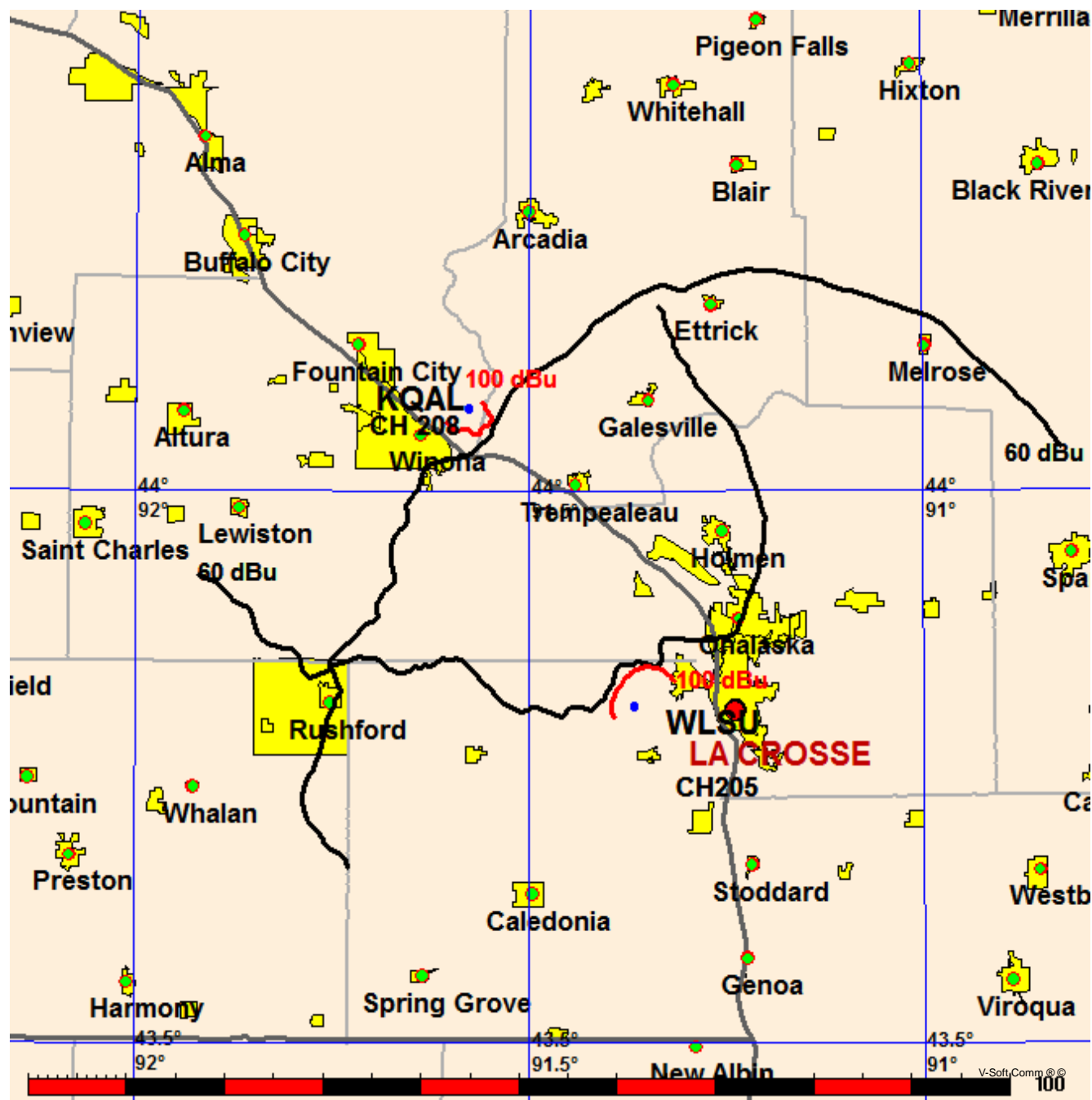
Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
263.0	090.0000	0164.2	059.3	046.2	000.5024	0208.9	126.5	23.66
264.0	090.0000	0164.3	059.3	045.9	000.5083	0207.4	127.1	23.55
265.0	090.0000	0164.9	059.3	045.5	000.5145	0205.5	127.7	23.45
266.0	090.0000	0166.1	059.5	045.1	000.5208	0203.3	128.2	23.34
267.0	090.0000	0168.3	059.7	044.7	000.5284	0202.4	128.7	23.29
268.0	090.0000	0168.8	059.8	044.3	000.5351	0203.0	129.4	23.23
269.0	090.0000	0169.1	059.8	044.0	000.5415	0204.1	130.0	23.17
270.0	090.0000	0169.4	059.8	043.6	000.5478	0204.5	130.8	23.09
271.0	090.0000	0170.6	060.0	043.3	000.5545	0204.8	131.4	23.02
272.0	090.0000	0173.2	060.2	042.9	000.5623	0204.1	132.0	22.95
273.0	090.0000	0177.6	060.7	042.4	000.5719	0204.2	132.5	22.93
274.0	090.0000	0181.6	061.1	042.0	000.5809	0204.7	133.1	22.90
275.0	090.0000	0184.0	061.3	041.6	000.5888	0204.7	133.8	22.82
276.0	090.0000	0187.1	061.6	041.3	000.5970	0204.0	134.5	22.73
277.0	090.0000	0188.9	061.8	040.9	000.6043	0203.2	135.3	22.61
278.0	090.0000	0190.3	061.9	040.6	000.6118	0202.6	136.1	22.50
279.0	090.0000	0191.9	062.0	040.3	000.6192	0201.6	136.9	22.37
280.0	090.0000	0193.0	062.1	040.1	000.6260	0200.8	137.8	22.23
281.0	090.0000	0193.5	062.2	039.8	000.6315	0200.7	138.7	22.09
282.0	090.0000	0193.3	062.2	039.6	000.6362	0201.2	139.6	21.95
283.0	090.0000	0191.9	062.0	039.4	000.6397	0201.7	140.6	21.79
284.0	090.0000	0190.0	061.9	039.3	000.6427	0202.1	141.7	21.63
285.0	090.0000	0188.6	061.7	039.2	000.6458	0202.6	142.7	21.47
286.0	090.0000	0188.0	061.7	039.0	000.6493	0203.0	143.7	21.32
287.0	090.0000	0187.1	061.6	038.9	000.6524	0203.4	144.7	21.16
288.0	090.0000	0185.7	061.5	038.7	000.6549	0203.6	145.8	20.99
289.0	090.0000	0184.8	061.4	038.6	000.6576	0203.7	146.8	20.83
290.0	090.0000	0183.0	061.2	038.5	000.6594	0203.7	147.8	20.65
291.0	090.0000	0180.8	061.0	038.5	000.6608	0203.6	148.9	20.48
292.0	090.0000	0178.2	060.8	038.4	000.6616	0203.6	150.0	20.30
293.0	090.0000	0177.0	060.6	038.4	000.6633	0203.5	151.0	20.13
294.0	090.0000	0174.5	060.4	038.3	000.6637	0203.5	152.1	19.95
295.0	090.0000	0171.8	060.1	038.3	000.6637	0203.5	153.2	19.77
296.0	090.0000	0169.4	059.8	038.3	000.6638	0203.5	154.3	19.59
297.0	090.0000	0168.8	059.8	038.3	000.6652	0203.4	155.3	19.42
298.0	090.0000	0167.7	059.7	038.2	000.6661	0203.3	156.3	19.25

Allocation Map Study  
Winona State University

FMCommander Single Allocation Study - 04-22-2010 - USGS 03 SEC  
KQAL's Overlaps (In= 0.21 km, Out= 0.5 km)

KQAL CH 208 C3 DA  
Lat= 44 04 26.0, Lng= 91 34 38.0  
2.5 kW 214.5 M HAAT, 480 M COR  
Prot.= 60 dBu, Intef.= 100 dBu

WLSU CH 205 C2 DA BLED20030624ABF  
Lat= 43 48 17.0, Lng= 91 22 06.0  
8.2 kW 283 M HAAT, 546 M COR  
Prot.= 60 dBu, Intef.= 100 dBu



04-22-2010

USGS 03 SEC Terrain Data

FMOver Analysis

KQAL

WLSU BLED20030624ABF

Channel = 208C3

Max ERP = 2.5 kW

RCAMSL = 480 M

N. Lat. 44 04 26.0

W. Lng. 91 34 38.0

Protected

60 dBu

Channel = 205C2

Max ERP = 8.2 kW

RCAMSL = 546 M

N. Lat. 43 48 17.0

W. Lng. 91 22 06.0

Interfering

100 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
091.0	000.6133	0252.7	025.7	016.7	005.7897	0310.0	030.8	69.41	
092.0	000.6422	0258.5	026.2	017.9	005.9153	0311.2	030.5	69.69	
093.0	000.6725	0260.8	026.6	018.8	006.0137	0310.7	030.2	69.94	
094.0	000.7041	0261.8	026.9	019.7	006.1035	0309.1	029.8	70.17	
095.0	000.7373	0261.9	027.2	020.5	006.1844	0308.7	029.4	70.43	
096.0	000.7721	0261.6	027.5	021.3	006.2607	0308.7	029.0	70.72	
097.0	000.8085	0260.8	027.8	022.0	006.3355	0309.2	028.6	71.02	
098.0	000.8466	0260.3	028.0	022.8	006.4141	0309.2	028.2	71.33	
099.0	000.8865	0259.8	028.3	023.6	006.4952	0309.4	027.8	71.64	
100.0	000.9282	0259.2	028.6	024.4	006.5772	0308.2	027.4	71.93	
101.0	000.9720	0258.5	028.8	025.2	006.6604	0306.4	027.0	72.21	
102.0	001.0178	0257.7	029.1	026.0	006.7452	0305.8	026.6	72.53	
103.0	001.0658	0257.5	029.4	026.9	006.8400	0306.3	026.1	72.89	
104.0	001.1160	0257.9	029.8	027.9	006.9461	0308.3	025.7	73.30	
105.0	001.1686	0258.8	030.1	029.0	007.0612	0309.5	025.3	73.70	
106.0	001.2237	0259.5	030.5	030.1	007.1752	0310.0	024.9	74.08	
107.0	001.2813	0260.0	030.9	031.2	007.2439	0312.0	024.5	74.48	
108.0	001.3417	0260.5	031.2	032.4	007.3156	0314.0	024.0	74.90	
109.0	001.4050	0261.0	031.6	033.6	007.3905	0316.7	023.6	75.33	
110.0	001.4712	0261.6	032.0	034.9	007.4695	0318.9	023.1	75.77	
111.0	001.5027	0262.0	032.2	035.7	007.5207	0321.9	022.6	76.24	
112.0	001.5347	0262.3	032.4	036.5	007.5723	0324.6	022.1	76.73	
113.0	001.5669	0262.7	032.6	037.3	007.6252	0326.7	021.6	77.20	
114.0	001.5995	0262.9	032.7	038.2	007.6779	0328.1	021.1	77.66	
115.0	001.6324	0263.3	032.9	039.0	007.7325	0328.4	020.6	78.10	
116.0	001.6656	0263.6	033.1	039.9	007.7886	0327.9	020.1	78.53	
117.0	001.6992	0264.2	033.3	040.8	007.8282	0327.0	019.6	78.94	
118.0	001.7332	0264.8	033.5	041.8	007.8669	0324.4	019.1	79.31	
119.0	001.7674	0265.4	033.7	042.8	007.9066	0322.3	018.5	79.70	
120.0	001.8020	0266.0	033.8	043.8	007.9472	0321.0	018.0	80.12	
121.0	001.8114	0266.6	033.9	044.5	007.9752	0320.0	017.5	80.57	
122.0	001.8207	0267.6	034.0	045.3	008.0073	0320.2	016.9	81.05	
123.0	001.8301	0269.1	034.1	046.2	008.0436	0321.5	016.4	81.56	
124.0	001.8396	0269.8	034.2	046.9	008.0747	0322.8	015.8	82.09	
125.0	001.8490	0271.4	034.4	047.9	008.1145	0324.0	015.2	82.61	
126.0	001.8585	0273.8	034.5	049.1	008.1638	0324.0	014.7	83.19	

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
127.0	001.8680	0277.5	034.8	050.7	008.2000	0325.8	014.2	83.90
128.0	001.8775	0279.4	034.9	051.9	008.2000	0328.3	013.6	84.69
129.0	001.8870	0281.3	035.1	053.1	008.2000	0332.3	013.1	85.55
130.0	001.8966	0282.6	035.2	054.3	008.2000	0334.3	012.5	86.40
131.0	001.8473	0281.1	034.9	053.7	008.2000	0333.1	011.8	87.33
132.0	001.7986	0276.1	034.4	051.8	008.2000	0328.1	011.1	88.25
133.0	001.7506	0272.9	034.0	050.2	008.2000	0325.7	010.5	89.20
134.0	001.7032	0266.9	033.5	047.3	008.0907	0323.4	009.8	90.12
135.0	001.6565	0261.0	032.9	044.0	007.9552	0320.8	009.3	90.96
136.0	001.6104	0254.7	032.3	039.9	007.7906	0327.9	008.7	91.92
137.0	001.5650	0248.5	031.7	035.3	007.4975	0320.4	008.3	92.38
138.0	001.5202	0242.4	031.1	030.3	007.1856	0310.3	007.9	92.65
139.0	001.4761	0237.1	030.5	025.1	006.6515	0306.5	007.6	92.80
140.0	001.4326	0238.1	030.4	022.3	006.3629	0309.3	007.2	93.44
141.0	001.4558	0244.8	030.9	024.1	006.5519	0308.8	006.5	94.98
142.0	001.4792	0258.0	031.8	029.9	007.1565	0309.6	005.6	97.28
143.0	001.5027	0261.6	032.2	031.1	007.2356	0311.8	004.9	98.84
144.0	001.5265	0256.8	032.0	026.3	006.7752	0305.7	004.5	99.54
145.0	001.5504	0242.3	031.2	014.2	005.5369	0307.0	004.5	98.74
146.0	001.5745	0232.7	030.7	004.8	004.5923	0286.0	004.5	97.70
147.0	001.5988	0229.7	030.6	358.3	003.9797	0272.0	004.2	97.54
148.0	001.6233	0224.7	030.4	350.4	003.2917	0236.5	004.2	96.31
149.0	001.6480	0219.0	030.1	342.5	002.7327	0232.6	004.3	95.05
150.0	001.6728	0217.1	030.1	335.5	002.3286	0216.5	004.3	94.19
151.0	001.7140	0221.9	030.6	328.0	001.9704	0206.0	003.7	95.03
152.0	001.7682	0226.3	031.1	317.9	001.6152	0248.6	003.3	96.57
153.0	001.9228	0223.1	031.5	306.1	001.4384	0228.2	003.1	96.55
154.0	002.1437	0215.5	031.8	295.0	001.4190	0200.4	003.2	95.60
155.0	002.4157	0210.7	032.4	280.5	001.4251	0240.7	003.2	96.26
156.0	002.4503	0209.5	032.4	275.3	001.4355	0241.1	003.6	94.59
157.0	002.4800	0212.2	032.7	267.4	001.4465	0252.2	004.0	93.48
158.0	002.4950	0211.5	032.7	265.1	001.4465	0258.1	004.6	91.95
159.0	002.5000	0206.1	032.3	267.8	001.4465	0251.3	005.2	90.08
160.0	002.5000	0202.9	032.0	268.6	001.4465	0247.0	005.9	88.46
161.0	002.5000	0200.7	031.8	268.6	001.4465	0246.9	006.4	87.08
162.0	002.5000	0203.3	032.0	265.5	001.4465	0257.2	006.9	86.31
163.0	002.5000	0207.8	032.4	261.7	001.4465	0271.0	007.4	85.70
164.0	002.5000	0204.0	032.1	263.4	001.4465	0262.9	008.0	84.29
165.0	002.5000	0198.9	031.7	265.6	001.4465	0257.1	008.6	82.96
166.0	002.5000	0194.0	031.3	267.4	001.4465	0252.3	009.2	81.69
167.0	002.5000	0188.9	030.8	269.2	001.4465	0242.6	009.8	80.27
168.0	002.5000	0188.1	030.8	268.9	001.4465	0244.5	010.4	79.41
169.0	002.5000	0190.4	031.0	267.5	001.4465	0252.1	010.9	78.84
170.0	002.5000	0191.1	031.0	266.8	001.4465	0253.5	011.4	78.04
171.0	002.5000	0188.4	030.8	267.6	001.4465	0251.9	012.0	77.11
172.0	002.5000	0181.7	030.3	269.6	001.4465	0240.4	012.6	75.82
173.0	002.4773	0177.1	029.9	271.2	001.4440	0240.2	013.1	74.98
174.0	002.3658	0176.1	029.5	272.5	001.4412	0230.9	013.7	73.86
175.0	002.2593	0169.5	028.7	275.5	001.4351	0241.1	014.3	73.41
176.0	002.1576	0164.4	028.0	277.8	001.4304	0255.0	015.0	73.15
177.0	002.0605	0165.4	027.8	278.2	001.4295	0255.3	015.5	72.94

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
178.0	001.9678	0159.5	027.0	280.5	001.4252	0241.1	016.1	71.96
179.0	001.8792	0154.8	026.4	282.3	001.4228	0230.1	016.7	71.07
180.0	001.7946	0153.2	026.0	283.2	001.4215	0223.4	017.2	70.36
181.0	001.7307	0150.6	025.6	284.2	001.4202	0219.2	017.7	69.75
182.0	001.6679	0150.0	025.3	284.6	001.4196	0219.0	018.2	69.33
183.0	001.6063	0150.7	025.2	284.8	001.4193	0219.0	018.7	68.95
184.0	001.5459	0154.7	025.3	284.4	001.4199	0218.7	019.1	68.60
185.0	001.4866	0158.3	025.3	284.0	001.4204	0219.8	019.5	68.30
186.0	001.4285	0161.1	025.3	283.9	001.4206	0220.3	020.0	67.97
187.0	001.3715	0168.4	025.6	283.0	001.4218	0224.9	020.4	67.82
188.0	001.3157	0179.2	026.0	281.6	001.4237	0233.1	020.8	67.80
189.0	001.2611	0186.0	026.2	281.1	001.4244	0236.4	021.2	67.57
190.0	001.2076	0190.2	026.2	281.0	001.4245	0236.7	021.7	67.22
191.0	001.2076	0195.8	026.5	280.1	001.4257	0243.3	022.1	67.09
192.0	001.2250	0195.2	026.6	280.0	001.4258	0243.7	022.6	66.75
193.0	001.3348	0195.6	027.1	278.8	001.4284	0254.1	023.1	66.71
194.0	001.3786	0197.8	027.5	278.0	001.4299	0255.2	023.6	66.37
195.0	001.4232	0196.1	027.6	278.0	001.4301	0255.2	024.1	66.01
196.0	001.4684	0192.0	027.5	278.3	001.4294	0255.3	024.6	65.68
197.0	001.5144	0189.8	027.5	278.3	001.4293	0255.3	025.0	65.33
198.0	001.5610	0185.0	027.4	278.8	001.4284	0253.9	025.5	64.96
199.0	001.6084	0177.6	027.1	279.6	001.4267	0245.9	025.9	64.41
200.0	001.6565	0171.9	026.9	280.3	001.4255	0242.7	026.3	64.00
201.0	001.7331	0167.4	026.8	280.5	001.4251	0240.7	026.8	63.63
202.0	001.8114	0167.9	027.1	280.1	001.4257	0243.5	027.3	63.38
203.0	001.8914	0165.7	027.3	280.1	001.4257	0243.4	027.8	63.06
204.0	001.9731	0163.4	027.3	280.2	001.4257	0243.1	028.3	62.74
205.0	002.0566	0165.3	027.7	279.6	001.4266	0245.7	028.8	62.48
206.0	002.1418	0168.2	028.2	279.0	001.4279	0252.1	029.4	62.33
207.0	002.2288	0170.4	028.6	278.5	001.4289	0254.8	030.0	62.07
208.0	002.3175	0174.6	029.2	277.8	001.4303	0255.0	030.7	61.70
209.0	002.4079	0183.1	030.1	276.6	001.4328	0246.6	031.5	60.99
210.0	002.5000	0190.4	031.0	275.6	001.4349	0241.1	032.3	60.40

## 04-22-2010 USGS 03 SEC Terrain Data

WLSU BLED20030624ABF

KQAL

Channel = 205C2  
 Max ERP = 8.2 kW  
 RCAMSL = 546 M  
 N. Lat. 43 48 17.0  
 W. Lng. 91 22 06.0  
 Protected  
 60 dBu

Channel = 208C3  
 Max ERP = 2.5 kW  
 RCAMSL = 480 M  
 N. Lat. 44 04 26.0  
 W. Lng. 91 34 38.0  
 Interfering  
 100 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
271.0	001.4444	0240.5	030.6	205.2	002.0707	0166.0	032.5	58.69	
272.0	001.4423	0235.2	030.2	205.0	002.0555	0165.3	031.8	58.95	
273.0	001.4403	0230.4	029.9	204.8	002.0405	0164.6	031.2	59.21	
274.0	001.4382	0235.4	030.2	205.7	002.1173	0167.7	030.9	59.75	
275.0	001.4362	0240.3	030.5	206.6	002.1922	0169.5	030.5	60.22	
276.0	001.4341	0242.3	030.6	207.2	002.2422	0170.5	030.0	60.63	
277.0	001.4321	0249.4	031.1	208.3	002.3415	0176.5	029.7	61.34	
278.0	001.4300	0255.2	031.4	209.3	002.4317	0185.2	029.3	62.13	
279.0	001.4279	0252.3	031.2	209.3	002.4361	0185.5	028.7	62.52	
280.0	001.4259	0243.9	030.7	208.7	002.3807	0180.2	028.0	62.61	
281.0	001.4245	0237.0	030.3	208.2	002.3344	0176.0	027.4	62.74	
282.0	001.4232	0231.4	029.9	207.8	002.2971	0173.2	026.8	62.93	
283.0	001.4218	0224.7	029.5	207.1	002.2403	0170.4	026.2	63.09	
284.0	001.4204	0219.8	029.1	206.7	002.2004	0169.7	025.6	63.38	
285.0	001.4191	0218.9	029.1	206.8	002.2088	0170.0	025.1	63.77	
286.0	001.4177	0216.0	028.9	206.5	002.1884	0169.3	024.5	64.07	
287.0	001.4163	0208.9	028.4	205.6	002.1082	0167.4	024.0	64.22	
288.0	001.4150	0199.7	027.8	204.3	001.9964	0163.6	023.4	64.18	
289.0	001.4136	0197.2	027.6	204.0	001.9712	0163.5	022.9	64.49	
290.0	001.4122	0201.4	027.9	204.8	002.0368	0164.5	022.4	65.04	
291.0	001.4136	0205.2	028.1	205.5	002.1012	0167.2	022.0	65.68	
292.0	001.4150	0205.7	028.2	205.7	002.1176	0167.7	021.5	66.11	
293.0	001.4163	0203.4	028.0	205.4	002.0898	0166.7	021.0	66.39	
294.0	001.4177	0203.3	028.0	205.4	002.0939	0166.9	020.5	66.79	
295.0	001.4191	0200.3	027.8	204.9	002.0498	0165.0	020.0	66.98	
296.0	001.4204	0195.7	027.5	204.0	001.9763	0163.4	019.5	67.11	
297.0	001.4218	0193.4	027.4	203.5	001.9354	0164.3	019.1	67.45	
298.0	001.4232	0197.3	027.6	204.2	001.9932	0163.5	018.6	67.93	
299.0	001.4245	0204.0	028.1	205.6	002.1037	0167.3	018.1	68.80	
300.0	001.4259	0211.1	028.6	207.0	002.2305	0170.4	017.5	69.65	
301.0	001.4279	0214.7	028.8	207.8	002.2982	0173.3	017.0	70.36	
302.0	001.4300	0220.1	029.2	209.0	002.4039	0182.7	016.5	71.46	
303.0	001.4321	0224.0	029.5	209.8	002.4817	0189.0	016.0	72.32	

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
304.0	001.4341	0225.4	029.6	210.1	002.5000	0190.9	015.5	72.88
305.0	001.4362	0227.6	029.7	210.5	002.5000	0193.7	014.9	73.25
306.0	001.4382	0228.1	029.8	210.5	002.5000	0193.7	014.4	73.86
307.0	001.4403	0226.7	029.7	209.9	002.4953	0190.0	013.9	74.32
308.0	001.4423	0224.1	029.5	209.0	002.4061	0182.9	013.4	74.49
309.0	001.4444	0227.3	029.7	209.6	002.4609	0187.5	012.9	75.54
310.0	001.4465	0234.6	030.2	211.4	002.5000	0198.2	012.3	76.93
311.0	001.4672	0241.0	030.7	213.4	002.5000	0191.7	011.7	77.56
312.0	001.4881	0240.2	030.8	213.3	002.5000	0192.5	011.1	78.45
313.0	001.5091	0240.8	030.9	213.6	002.5000	0190.4	010.6	79.27
314.0	001.5303	0239.1	030.9	213.1	002.5000	0194.1	010.1	80.35
315.0	001.5516	0239.9	031.1	213.3	002.5000	0192.5	009.5	81.27
316.0	001.5731	0242.3	031.3	214.2	002.5000	0186.1	008.9	82.06
317.0	001.5947	0245.6	031.6	215.4	002.5000	0180.6	008.3	82.95
318.0	001.6165	0248.6	031.9	216.7	002.5000	0180.9	007.7	84.18
319.0	001.6384	0248.5	032.0	216.5	002.5000	0180.7	007.1	85.44
320.0	001.6605	0242.7	031.8	213.3	002.5000	0192.3	006.7	87.05
321.0	001.6976	0235.9	031.5	209.4	002.4456	0186.3	006.2	87.81
322.0	001.7351	0230.8	031.3	205.7	002.1197	0167.7	005.8	87.59
323.0	001.7730	0225.1	031.1	200.9	001.7275	0167.5	005.5	87.72
324.0	001.8114	0219.0	030.8	195.1	001.4274	0195.8	005.2	88.71
325.0	001.8501	0216.3	030.7	190.6	001.2076	0193.6	004.8	88.98
326.0	001.8893	0210.2	030.4	183.4	001.5810	0151.9	004.7	88.91
327.0	001.9288	0206.7	030.3	177.1	002.0468	0165.0	004.5	91.31
328.0	001.9688	0206.0	030.4	171.5	002.5000	0185.5	004.2	94.00
329.0	002.0092	0205.2	030.5	164.8	002.5000	0200.1	003.9	95.29
330.0	002.0500	0203.8	030.5	157.1	002.4811	0212.2	003.8	96.08
331.0	002.0995	0204.3	030.8	148.8	001.6430	0220.4	003.5	95.32
332.0	002.1496	0205.8	031.0	139.2	001.4687	0236.6	003.3	95.91
333.0	002.2003	0209.6	031.5	126.9	001.8672	0277.3	003.0	98.24
334.0	002.2515	0212.6	032.0	113.6	001.5874	0262.8	003.0	97.66
335.0	002.3034	0214.6	032.3	101.8	001.0079	0257.8	003.1	94.99
336.0	002.3558	0218.2	032.8	089.7	000.5785	0247.7	003.4	91.58
337.0	002.4089	0222.5	033.3	079.3	000.4862	0216.2	003.8	88.93
338.0	002.4625	0226.1	033.7	071.9	000.4828	0200.6	004.3	86.76
339.0	002.5167	0229.1	034.1	066.9	000.3706	0226.0	004.9	84.53
340.0	002.5715	0229.7	034.3	065.0	000.3706	0229.5	005.5	82.99
341.0	002.6362	0228.8	034.4	064.3	000.3706	0232.0	006.1	81.53
342.0	002.7017	0231.9	034.8	061.5	000.3764	0227.6	006.8	79.91
343.0	002.7680	0232.5	035.1	060.6	000.3798	0224.6	007.4	78.42
344.0	002.8351	0230.7	035.1	061.2	000.3777	0226.6	008.0	77.23
345.0	002.9030	0229.3	035.2	061.5	000.3763	0227.8	008.6	76.08
346.0	002.9717	0230.0	035.4	061.0	000.3781	0226.2	009.3	74.84
347.0	003.0412	0231.0	035.7	060.6	000.3799	0224.5	010.0	73.61
348.0	003.1115	0229.9	035.8	061.0	000.3783	0226.0	010.6	72.57
349.0	003.1827	0229.8	036.0	061.1	000.3777	0226.5	011.2	71.52
350.0	003.2546	0233.8	036.4	060.1	000.3820	0222.5	012.0	70.24
351.0	003.3378	0237.0	036.8	059.3	000.3849	0219.6	012.7	69.06
352.0	003.4220	0240.3	037.2	058.7	000.3872	0218.8	013.5	68.01
353.0	003.5073	0248.3	037.9	057.2	000.3931	0220.5	014.3	67.01
354.0	003.5936	0257.3	038.7	055.8	000.4007	0216.8	015.3	66.22

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
355.0	003.6810	0260.2	039.0	055.8	000.4007	0216.7	016.0	65.57
356.0	003.7694	0265.2	039.5	055.5	000.4019	0216.7	016.9	64.88
357.0	003.8589	0264.7	039.7	056.2	000.3986	0217.2	017.6	64.30
358.0	003.9494	0270.0	040.2	056.0	000.4000	0216.7	018.4	63.59
359.0	004.0410	0274.8	040.7	055.9	000.4002	0216.7	019.3	62.90
000.0	004.1336	0279.4	041.1	056.0	000.4002	0216.7	020.1	62.21
001.0	004.2273	0283.7	041.6	056.1	000.3995	0216.9	020.9	61.54
002.0	004.3220	0285.7	041.9	056.5	000.3967	0218.3	021.7	60.97
003.0	004.4178	0288.9	042.2	056.9	000.3948	0219.7	022.5	60.38
004.0	004.5146	0288.4	042.4	057.7	000.3914	0222.2	023.2	59.92
005.0	004.6125	0284.9	042.3	058.8	000.3869	0218.5	023.8	59.30
006.0	004.7114	0278.7	042.1	060.2	000.3814	0223.3	024.2	59.07
007.0	004.8114	0277.2	042.2	061.1	000.3781	0226.2	024.9	58.68
008.0	004.9124	0282.1	042.7	061.2	000.3776	0226.7	025.8	58.07
009.0	005.0145	0287.4	043.2	061.3	000.3771	0227.1	026.7	57.47
010.0	005.1176	0293.1	043.7	061.4	000.3766	0227.5	027.6	56.87
011.0	005.2153	0296.1	044.0	061.9	000.3749	0228.7	028.4	56.38
012.0	005.3138	0298.9	044.4	062.3	000.3738	0229.8	029.2	55.91
013.0	005.4133	0303.2	044.8	062.7	000.3731	0230.9	030.0	55.43
014.0	005.5137	0306.4	045.1	063.1	000.3722	0232.1	030.9	55.00
015.0	005.6150	0308.9	045.4	063.6	000.3712	0233.1	031.7	54.60
016.0	005.7172	0309.7	045.6	064.3	000.3706	0232.0	032.4	54.17
017.0	005.8204	0310.3	045.8	065.0	000.3706	0229.6	033.1	53.72
018.0	005.9245	0311.2	046.0	065.6	000.3706	0228.2	033.8	53.29
019.0	006.0295	0310.4	046.2	066.4	000.3706	0227.3	034.5	52.93
020.0	006.1354	0308.8	046.2	067.2	000.3732	0225.4	035.1	52.57
021.0	006.2351	0308.5	046.3	068.0	000.3817	0223.3	035.8	52.25
022.0	006.3357	0309.2	046.5	068.6	000.3956	0220.6	036.5	51.94
023.0	006.4370	0309.2	046.7	069.3	000.4125	0217.2	037.2	51.64
024.0	006.5391	0309.0	046.8	070.0	000.4316	0211.8	037.9	51.27
025.0	006.6420	0306.5	046.8	070.9	000.4571	0208.3	038.5	51.08
026.0	006.7457	0305.8	046.9	071.6	000.4767	0202.9	039.1	50.70
027.0	006.8502	0306.4	047.0	072.3	000.4906	0196.3	039.8	50.18
028.0	006.9556	0308.4	047.3	072.8	000.4992	0195.0	040.6	49.84
029.0	007.0617	0309.5	047.5	073.5	000.5028	0196.4	041.3	49.60
030.0	007.1686	0309.8	047.7	074.1	000.5037	0197.3	042.0	49.34

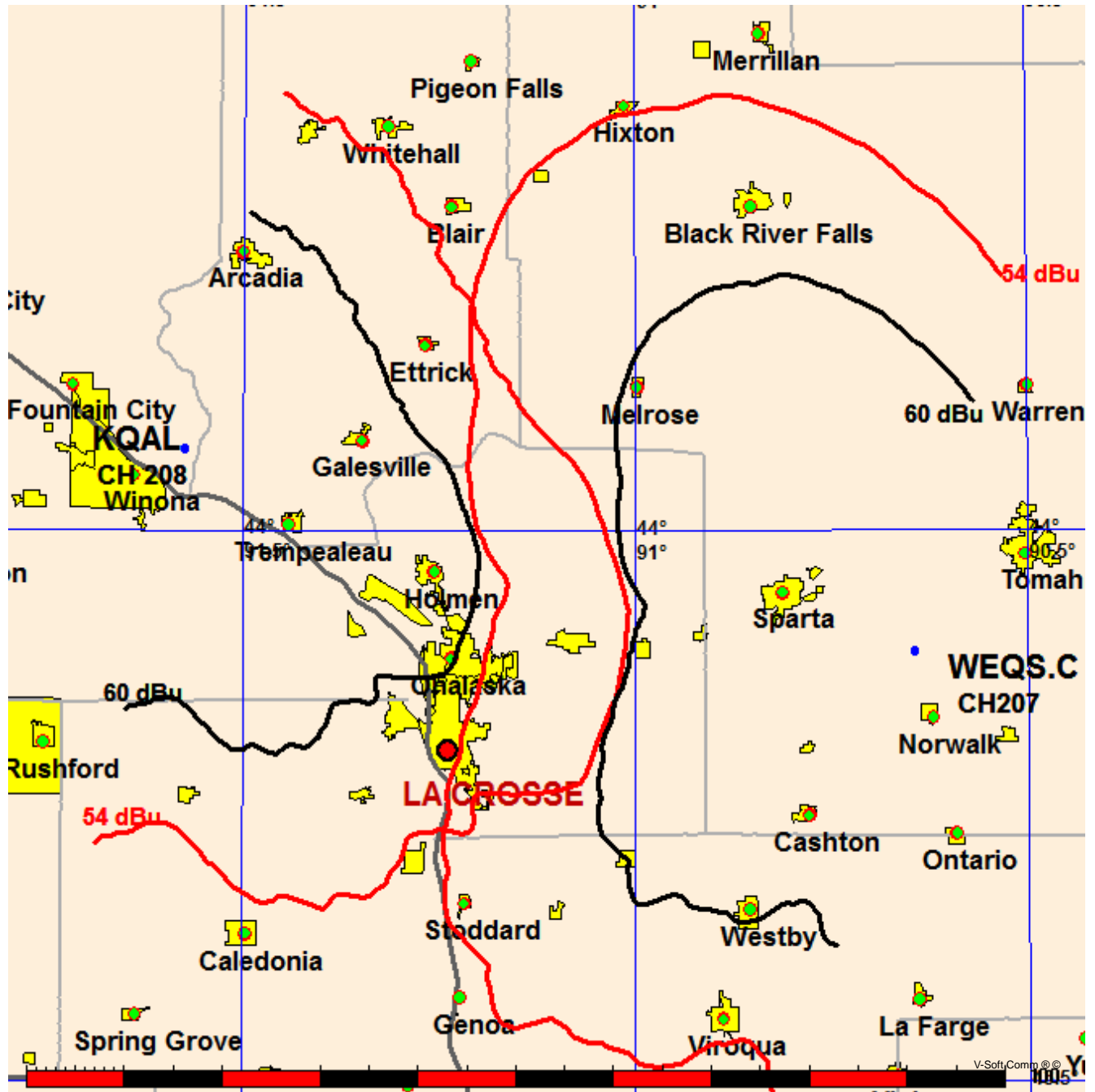


Allocation Map Study  
Winona State University

FMCommander Single Allocation Study - 04-22-2010 - USGS 03 SEC  
KQAL's Overlaps (In= 0.52 km, Out= 0.28 km)

KQAL CH 208 C3 DA  
Lat= 44 04 26.0, Lng= 91 34 38.0  
2.5 kW 214.5 M HAAT, 480 M COR  
Prot.= 60 dBu, Intef.= 54 dBu

WEQS-C CH 207 C3 DA BMPED20100323ACR  
Lat= 43 53 09.0, Lng= 90 38 43.0  
7.5 kW 160 M HAAT, 490 M COR  
Prot.= 60 dBu, Intef.= 54 dBu



04-22-2010

USGS 03 SEC Terrain Data

FMOver Analysis

KQAL

WEQS-C BMPED20100323ACR

Channel = 208C3

Max ERP = 2.5 kW

RCAMSL = 480 M

N. Lat. 44 04 26.0

W. Lng. 91 34 38.0

Protected

60 dBu

Channel = 207C3

Max ERP = 7.5 kW

RCAMSL = 490 M

N. Lat. 43 53 09.0

W. Lng. 90 38 43.0

Interfering

54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
045.0	000.5221	0203.0	022.3	302.2	004.0431	0204.0	069.3	48.29	
046.0	000.5062	0207.9	022.4	302.2	004.0432	0204.0	068.9	48.43	
047.0	000.4906	0211.9	022.4	302.2	004.0325	0203.9	068.5	48.54	
048.0	000.4752	0215.5	022.4	302.1	004.0165	0203.7	068.1	48.64	
049.0	000.4623	0222.1	022.6	302.1	004.0261	0203.8	067.7	48.80	
050.0	000.4494	0227.4	022.7	302.1	004.0227	0203.8	067.3	48.93	
051.0	000.4389	0227.9	022.6	301.9	003.9844	0203.3	066.9	48.99	
052.0	000.4285	0222.2	022.2	301.5	003.8988	0202.2	066.7	48.93	
053.0	000.4182	0214.3	021.7	301.0	003.7964	0200.9	066.5	48.82	
054.0	000.4121	0214.0	021.6	300.8	003.7583	0200.5	066.2	48.86	
055.0	000.4040	0216.0	021.6	300.6	003.7316	0200.1	065.9	48.93	
056.0	000.4000	0216.7	021.6	300.5	003.7022	0199.7	065.5	48.99	
057.0	000.3940	0219.9	021.7	300.4	003.6848	0199.6	065.2	49.09	
058.0	000.3901	0221.5	021.7	300.2	003.6590	0199.5	064.8	49.17	
059.0	000.3861	0218.5	021.5	299.9	003.6025	0199.5	064.6	49.19	
060.0	000.3822	0222.2	021.6	299.9	003.5915	0199.6	064.2	49.31	
061.0	000.3783	0226.0	021.8	299.8	003.5796	0199.7	063.8	49.43	
062.0	000.3744	0229.1	021.8	299.7	003.5625	0199.8	063.5	49.55	
063.0	000.3725	0231.8	021.9	299.5	003.5451	0200.0	063.1	49.66	
064.0	000.3706	0232.6	022.0	299.4	003.5171	0200.2	062.8	49.75	
065.0	000.3706	0229.6	021.8	299.0	003.4728	0200.6	062.5	49.79	
066.0	000.3706	0228.1	021.7	298.8	003.4349	0201.0	062.3	49.85	
067.0	000.3706	0225.9	021.6	298.5	003.3934	0201.4	062.0	49.90	
068.0	000.3822	0223.2	021.7	298.3	003.3646	0201.7	061.7	49.98	
069.0	000.4040	0219.0	021.8	298.1	003.3408	0201.8	061.4	50.09	
070.0	000.4306	0212.1	021.8	297.9	003.3065	0202.1	061.1	50.15	
071.0	000.4601	0207.9	021.9	297.7	003.2847	0202.2	060.7	50.26	
072.0	000.4862	0199.3	021.8	297.4	003.2356	0202.6	060.6	50.28	
073.0	000.5018	0195.1	021.7	297.1	003.1950	0203.0	060.3	50.32	
074.0	000.5040	0197.5	021.8	296.9	003.1712	0203.4	060.0	50.44	
075.0	000.5018	0197.2	021.8	296.6	003.1303	0203.9	059.7	50.49	
076.0	000.4973	0199.7	021.9	296.4	003.0986	0204.3	059.4	50.58	
077.0	000.4928	0203.8	022.0	296.2	003.0726	0204.9	059.1	50.70	
078.0	000.4884	0212.2	022.4	296.1	003.0626	0205.0	058.5	50.89	
079.0	000.4862	0217.0	022.6	295.9	003.0378	0205.4	058.1	51.03	
080.0	000.4862	0215.1	022.5	295.6	002.9878	0206.0	058.0	51.04	

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
081.0	000.4862	0218.0	022.7	295.3	002.9554	0206.3	057.6	51.13
082.0	000.4862	0222.0	022.9	295.1	002.9256	0206.6	057.3	51.25
083.0	000.4884	0224.0	023.0	294.8	002.8889	0207.0	056.9	51.33
084.0	000.4906	0227.4	023.2	294.6	002.8557	0207.3	056.6	51.44
085.0	000.4973	0231.1	023.4	294.3	002.8249	0207.6	056.2	51.57
086.0	000.5085	0234.4	023.7	294.1	002.7943	0208.0	055.7	51.71
087.0	000.5221	0237.7	024.0	293.9	002.7630	0208.4	055.3	51.86
088.0	000.5406	0241.2	024.4	293.6	002.7330	0209.0	054.7	52.03
089.0	000.5593	0246.2	024.8	293.4	002.7041	0209.5	054.2	52.23
090.0	000.5857	0248.2	025.2	293.1	002.6690	0210.2	053.7	52.40
091.0	000.6133	0252.7	025.7	292.9	002.6374	0210.7	053.1	52.61
092.0	000.6422	0258.5	026.2	292.6	002.6059	0211.3	052.4	52.85
093.0	000.6725	0260.8	026.6	292.3	002.5638	0211.9	051.9	53.01
094.0	000.7041	0261.8	026.9	291.9	002.5169	0212.3	051.4	53.14
095.0	000.7373	0261.9	027.2	291.5	002.4664	0212.5	051.0	53.22
096.0	000.7721	0261.6	027.5	291.1	002.4131	0212.8	050.6	53.29
097.0	000.8085	0260.8	027.8	290.6	002.3576	0212.9	050.3	53.35
098.0	000.8466	0260.3	028.0	290.1	002.3008	0213.3	049.9	53.41
099.0	000.8865	0259.8	028.3	289.6	002.2606	0213.5	049.5	53.48
100.0	000.9282	0259.2	028.6	289.1	002.2257	0213.6	049.2	53.55
101.0	000.9720	0258.5	028.8	288.6	002.1898	0213.7	048.8	53.62
102.0	001.0178	0257.7	029.1	288.0	002.1529	0213.5	048.5	53.67
103.0	001.0658	0257.5	029.4	287.4	002.1153	0213.1	048.2	53.71
104.0	001.1160	0257.9	029.8	286.9	002.0767	0212.5	047.8	53.75
105.0	001.1686	0258.8	030.1	286.2	002.0369	0211.8	047.4	53.78
106.0	001.2237	0259.5	030.5	285.6	001.9960	0210.6	047.1	53.79
107.0	001.2813	0260.0	030.9	284.9	001.9538	0208.8	046.7	53.75
108.0	001.3417	0260.5	031.2	284.2	001.9105	0206.7	046.4	53.69
109.0	001.4050	0261.0	031.6	283.5	001.8662	0205.1	046.1	53.65
110.0	001.4712	0261.6	032.0	282.8	001.8207	0203.2	045.7	53.58
111.0	001.5027	0262.0	032.2	282.0	001.7767	0201.0	045.6	53.42
112.0	001.5347	0262.3	032.4	281.3	001.7327	0198.2	045.6	53.21
113.0	001.5669	0262.7	032.6	280.6	001.6889	0194.9	045.5	52.96
114.0	001.5995	0262.9	032.7	279.8	001.6577	0190.9	045.5	52.71
115.0	001.6324	0263.3	032.9	279.0	001.6615	0187.8	045.4	52.58
116.0	001.6656	0263.6	033.1	278.3	001.6652	0187.3	045.4	52.57
117.0	001.6992	0264.2	033.3	277.5	001.6690	0188.1	045.5	52.61
118.0	001.7332	0264.8	033.5	276.7	001.6729	0188.9	045.5	52.64
119.0	001.7674	0265.4	033.7	276.0	001.6767	0190.9	045.5	52.72
120.0	001.8020	0266.0	033.8	275.2	001.6805	0193.1	045.6	52.81
121.0	001.8114	0266.6	033.9	274.5	001.6841	0195.4	045.8	52.85
122.0	001.8207	0267.6	034.0	273.8	001.6876	0195.9	046.0	52.81
123.0	001.8301	0269.1	034.1	273.1	001.6912	0195.3	046.2	52.71
124.0	001.8396	0269.8	034.2	272.4	001.6946	0196.2	046.4	52.66
125.0	001.8490	0271.4	034.4	271.7	001.6982	0197.7	046.6	52.66
126.0	001.8585	0273.8	034.5	270.9	001.7018	0198.7	046.8	52.64
127.0	001.8680	0277.5	034.8	270.1	001.7057	0200.0	047.0	52.64
128.0	001.8775	0279.4	034.9	269.5	001.7428	0200.0	047.2	52.63
129.0	001.8870	0281.3	035.1	268.8	001.7886	0198.6	047.5	52.57
130.0	001.8966	0282.6	035.2	268.1	001.8321	0196.8	047.8	52.46
131.0	001.8473	0281.1	034.9	267.8	001.8528	0195.8	048.4	52.22

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
132.0	001.7986	0276.1	034.4	267.7	001.8597	0195.5	049.2	51.91
133.0	001.7506	0272.9	034.0	267.6	001.8709	0195.1	049.9	51.65
134.0	001.7032	0266.9	033.5	267.6	001.8703	0195.1	050.7	51.33
135.0	001.6565	0261.0	032.9	267.6	001.8681	0195.2	051.6	51.01
136.0	001.6104	0254.7	032.3	267.7	001.8626	0195.4	052.4	50.68
137.0	001.5650	0248.5	031.7	267.8	001.8553	0195.7	053.2	50.36
138.0	001.5202	0242.4	031.1	267.9	001.8478	0196.1	054.0	50.05
139.0	001.4761	0237.1	030.5	268.0	001.8415	0196.4	054.8	49.75
140.0	001.4326	0238.1	030.4	267.8	001.8564	0195.7	055.3	49.56
141.0	001.4558	0244.8	030.9	267.0	001.9093	0194.0	055.4	49.57
142.0	001.4792	0258.0	031.8	265.9	001.9868	0193.6	055.3	49.74
143.0	001.5027	0261.6	032.2	265.3	002.0305	0193.5	055.6	49.73
144.0	001.5265	0256.8	032.0	265.1	002.0407	0193.4	056.2	49.52
145.0	001.5504	0242.3	031.2	265.5	002.0129	0193.6	057.0	49.14
146.0	001.5745	0232.7	030.7	265.7	002.0009	0193.5	057.8	48.84
147.0	001.5988	0229.7	030.6	265.5	002.0133	0193.6	058.3	48.68
148.0	001.6233	0224.7	030.4	265.5	002.0161	0193.6	058.8	48.47
149.0	001.6480	0219.0	030.1	265.5	002.0141	0193.6	059.4	48.25
150.0	001.6728	0217.1	030.1	265.3	002.0277	0193.6	059.9	48.09
151.0	001.7140	0221.9	030.6	264.7	002.0752	0192.6	060.2	48.05
152.0	001.7682	0226.3	031.1	264.0	002.1244	0192.1	060.5	48.03
153.0	001.9228	0223.1	031.5	263.5	002.1640	0191.9	060.9	47.96
154.0	002.1437	0215.5	031.8	263.1	002.1939	0192.3	061.3	47.88
155.0	002.4157	0210.7	032.4	262.4	002.2434	0193.3	061.7	47.89
156.0	002.4503	0209.5	032.4	262.2	002.2551	0193.6	062.2	47.74
157.0	002.4800	0212.2	032.7	261.8	002.2868	0194.5	062.7	47.67
158.0	002.4950	0211.5	032.7	261.7	002.2958	0194.7	063.2	47.50
159.0	002.5000	0206.1	032.3	262.0	002.2759	0194.3	063.9	47.22
160.0	002.5000	0202.9	032.0	262.1	002.2660	0194.0	064.5	46.99
161.0	002.5000	0200.7	031.8	262.2	002.2611	0193.8	065.1	46.77
162.0	002.5000	0203.3	032.0	261.9	002.2818	0194.4	065.6	46.66
163.0	002.5000	0207.8	032.4	261.5	002.3118	0195.0	066.1	46.58
164.0	002.5000	0204.0	032.1	261.7	002.2962	0194.7	066.7	46.33

## 04-22-2010 USGS 03 SEC Terrain Data

WEQS-C BMPED20100323ACR

KQAL

Channel = 207C3  
 Max ERP = 7.5 kW  
 RCAMSL = 490 M  
 N. Lat. 43 53 09.0  
 W. Lng. 90 38 43.0  
 Protected  
 60 dBu

Channel = 208C3  
 Max ERP = 2.5 kW  
 RCAMSL = 480 M  
 N. Lat. 44 04 26.0  
 W. Lng. 91 34 38.0  
 Interfering  
 54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
226.0	007.5000	0153.2	036.3	133.3	001.7381	0272.5	067.0	47.86	
227.0	007.5000	0165.6	037.6	134.4	001.6845	0263.8	066.4	47.66	
228.0	007.5000	0170.7	038.2	134.8	001.6643	0261.8	065.7	47.78	
229.0	007.5000	0171.0	038.2	134.8	001.6649	0261.9	065.0	48.02	
230.0	007.5000	0168.4	037.9	134.5	001.6778	0263.2	064.4	48.32	
231.0	007.3537	0166.4	037.6	134.2	001.6959	0265.4	063.7	48.67	
232.0	007.2089	0164.0	037.1	133.7	001.7174	0269.5	063.2	49.08	
233.0	007.0655	0163.4	036.9	133.4	001.7309	0271.7	062.5	49.41	
234.0	006.9235	0157.8	036.1	132.6	001.7697	0273.7	062.1	49.76	
235.0	006.7830	0161.0	036.3	132.6	001.7674	0273.6	061.4	50.00	
236.0	006.6439	0163.9	036.5	132.7	001.7673	0273.6	060.7	50.24	
237.0	006.5063	0168.0	036.7	132.8	001.7623	0273.3	060.1	50.48	
238.0	006.3701	0170.0	036.8	132.6	001.7683	0273.6	059.4	50.75	
239.0	006.2353	0174.3	037.0	132.7	001.7652	0273.4	058.7	51.00	
240.0	006.1020	0177.5	037.1	132.6	001.7685	0273.6	058.1	51.27	
241.0	005.8530	0179.1	036.9	132.2	001.7869	0274.8	057.5	51.57	
242.0	005.6091	0180.6	036.7	131.8	001.8071	0277.2	057.0	51.91	
243.0	005.3704	0180.2	036.3	131.2	001.8361	0280.5	056.5	52.28	
244.0	005.1369	0181.0	036.0	130.7	001.8615	0281.7	056.1	52.57	
245.0	004.9086	0179.2	035.5	130.0	001.8961	0282.6	055.7	52.82	
246.0	004.6855	0181.6	035.3	129.5	001.8920	0282.1	055.2	52.99	
247.0	004.4676	0184.9	035.2	129.1	001.8882	0281.5	054.7	53.16	
248.0	004.2548	0187.2	035.0	128.6	001.8835	0280.5	054.3	53.29	
249.0	004.0473	0187.7	034.6	128.0	001.8772	0279.3	053.9	53.37	
250.0	003.8449	0187.0	034.1	127.2	001.8699	0278.0	053.7	53.42	
251.0	003.6887	0185.8	033.7	126.5	001.8629	0275.7	053.4	53.42	
252.0	003.5356	0188.5	033.6	126.0	001.8585	0273.8	053.0	53.52	
253.0	003.3859	0191.2	033.5	125.5	001.8539	0272.5	052.6	53.63	
254.0	003.2393	0191.7	033.1	124.9	001.8476	0271.1	052.3	53.67	
255.0	003.0960	0192.1	032.8	124.2	001.8412	0269.9	052.1	53.71	
256.0	002.9560	0190.9	032.3	123.4	001.8335	0269.5	052.0	53.72	
257.0	002.8192	0189.5	031.8	122.5	001.8258	0268.5	051.9	53.70	
258.0	002.6856	0191.8	031.6	122.0	001.8203	0267.6	051.7	53.76	

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
259.0	002.5553	0194.5	031.5	121.4	001.8149	0266.8	051.4	53.82
260.0	002.4282	0196.2	031.2	120.7	001.8089	0266.5	051.2	53.87
261.0	002.3503	0195.5	030.9	120.1	001.8026	0266.0	051.1	53.89
262.0	002.2737	0194.2	030.6	119.3	001.7794	0265.6	051.0	53.85
263.0	002.1984	0192.4	030.2	118.6	001.7542	0265.2	051.0	53.77
264.0	002.1243	0192.1	029.9	118.0	001.7318	0264.8	050.9	53.74
265.0	002.0515	0193.2	029.8	117.4	001.7118	0264.4	050.8	53.74
266.0	001.9799	0193.6	029.5	116.7	001.6907	0264.0	050.7	53.71
267.0	001.9097	0194.0	029.3	116.1	001.6698	0263.7	050.6	53.67
268.0	001.8407	0196.4	029.2	115.6	001.6514	0263.5	050.4	53.69
269.0	001.7729	0199.3	029.2	115.0	001.6335	0263.3	050.2	53.71
270.0	001.7065	0200.1	029.0	114.4	001.6130	0263.1	050.2	53.67
271.0	001.7015	0198.5	028.9	113.8	001.5937	0262.9	050.1	53.65
272.0	001.6965	0197.1	028.7	113.2	001.5747	0262.7	050.0	53.62
273.0	001.6915	0195.4	028.6	112.6	001.5555	0262.6	050.0	53.58
274.0	001.6865	0196.0	028.6	112.1	001.5384	0262.4	049.8	53.60
275.0	001.6815	0193.8	028.5	111.5	001.5190	0262.1	049.8	53.54
276.0	001.6765	0190.8	028.2	110.9	001.4993	0262.0	049.9	53.44
277.0	001.6716	0188.3	028.1	110.3	001.4804	0261.7	049.9	53.36
278.0	001.6666	0187.6	028.0	109.7	001.4532	0261.4	049.9	53.29
279.0	001.6617	0187.7	028.0	109.2	001.4166	0261.1	049.8	53.20
280.0	001.6567	0192.0	028.2	108.7	001.3841	0260.8	049.5	53.23
281.0	001.7151	0196.9	028.8	108.2	001.3538	0260.6	048.8	53.38
282.0	001.7744	0200.9	029.3	107.7	001.3217	0260.3	048.3	53.49
283.0	001.8347	0203.8	029.8	107.1	001.2877	0260.0	047.8	53.57
284.0	001.8961	0206.1	030.2	106.5	001.2528	0259.8	047.3	53.62
285.0	001.9584	0209.0	030.6	105.9	001.2172	0259.5	046.9	53.67
286.0	002.0218	0211.4	031.0	105.2	001.1810	0259.0	046.4	53.70
287.0	002.0861	0212.7	031.4	104.5	001.1445	0258.3	046.1	53.68
288.0	002.1515	0213.5	031.7	103.8	001.1079	0257.8	045.8	53.63
289.0	002.2179	0213.6	031.9	103.1	001.0719	0257.5	045.6	53.56
290.0	002.2853	0213.4	032.1	102.4	001.0365	0257.4	045.5	53.48
291.0	002.4044	0212.8	032.5	101.6	001.0005	0258.0	045.2	53.46
292.0	002.5265	0212.2	032.8	100.8	000.9647	0258.6	045.0	53.42
293.0	002.6516	0210.5	033.1	100.1	000.9305	0259.2	044.8	53.34
294.0	002.7798	0208.2	033.3	099.3	000.8978	0259.7	044.8	53.23
295.0	002.9110	0206.8	033.5	098.5	000.8651	0260.1	044.7	53.12
296.0	003.0452	0205.3	033.8	097.7	000.8334	0260.5	044.6	53.00
297.0	003.1824	0203.2	034.0	096.9	000.8034	0260.9	044.6	52.84
298.0	003.3227	0202.0	034.2	096.0	000.7733	0261.5	044.6	52.71
299.0	003.4660	0200.7	034.4	095.2	000.7445	0261.9	044.6	52.55
300.0	003.6123	0199.5	034.7	094.4	000.7167	0261.9	044.7	52.37
301.0	003.8021	0201.0	035.2	093.4	000.6841	0261.2	044.4	52.24
302.0	003.9968	0203.5	035.8	092.3	000.6511	0259.6	044.2	52.07
303.0	004.1963	0205.6	036.4	091.2	000.6196	0254.0	044.0	51.74
304.0	004.4007	0206.5	036.8	090.2	000.5912	0248.7	044.0	51.37
305.0	004.6099	0208.5	037.4	089.1	000.5625	0246.4	043.9	51.10
306.0	004.8240	0210.5	037.9	088.0	000.5410	0241.4	043.9	50.76
307.0	005.0430	0211.7	038.3	087.0	000.5219	0237.6	044.0	50.44
308.0	005.2668	0212.3	038.7	086.0	000.5084	0234.3	044.1	50.14
309.0	005.4955	0212.8	039.1	085.0	000.4973	0231.1	044.3	49.83

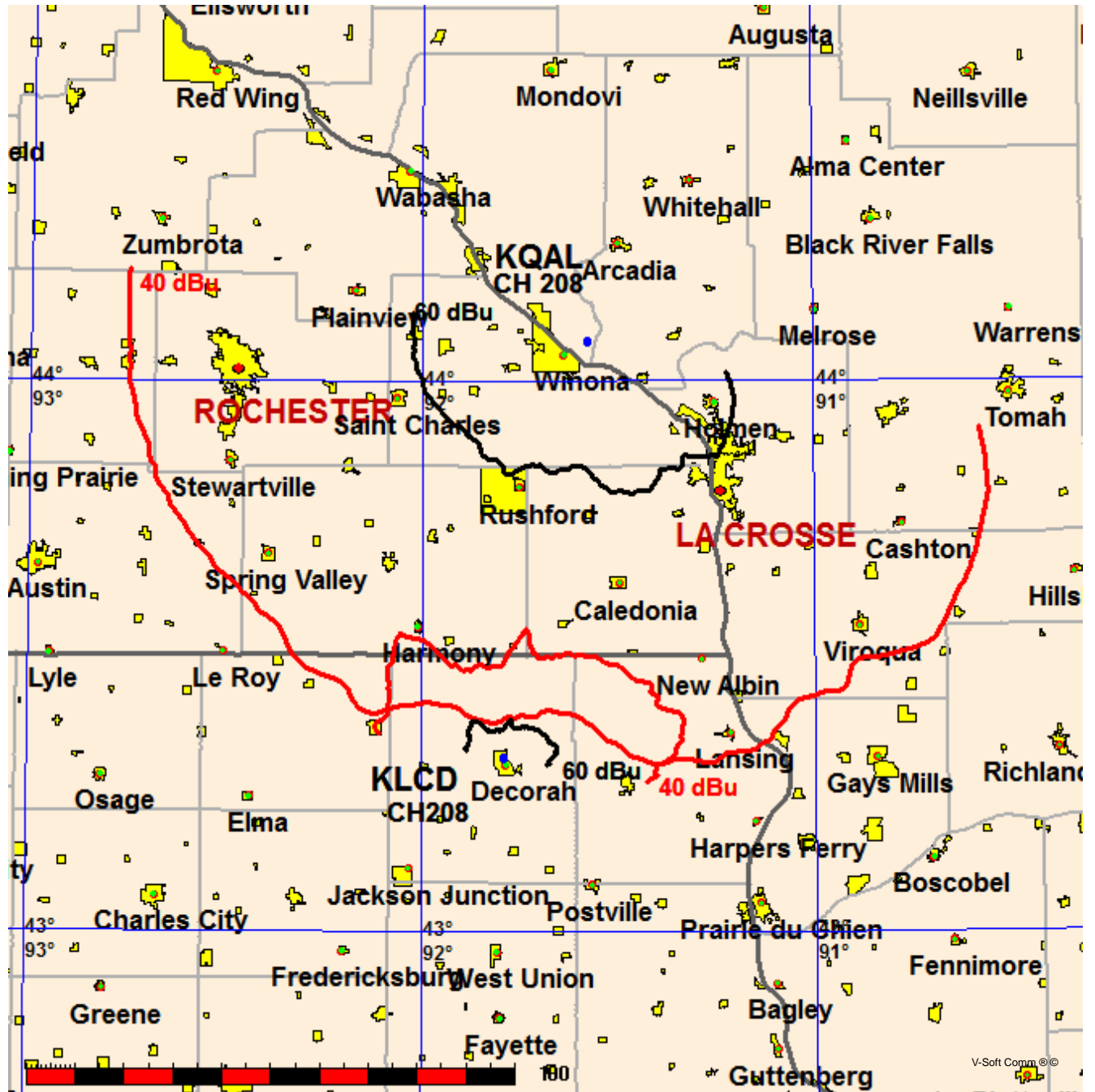
Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
310.0	005.7291	0213.2	039.5	084.0	000.4909	0227.5	044.5	49.53
311.0	005.8954	0213.4	039.7	083.2	000.4889	0224.7	044.8	49.25
312.0	006.0642	0214.9	040.0	082.3	000.4869	0222.6	045.1	49.01
313.0	006.2353	0216.1	040.4	081.4	000.4862	0219.5	045.5	48.73
314.0	006.4089	0216.5	040.6	080.6	000.4862	0216.1	045.9	48.40
315.0	006.5848	0217.8	040.9	079.8	000.4862	0215.0	046.2	48.19
316.0	006.7631	0218.5	041.2	079.0	000.4862	0217.0	046.7	48.10
317.0	006.9437	0218.9	041.4	078.3	000.4878	0214.1	047.2	47.79
318.0	007.1268	0218.4	041.6	077.7	000.4899	0208.6	047.7	47.34
319.0	007.3122	0218.1	041.8	077.0	000.4927	0203.9	048.2	46.93
320.0	007.5000	0219.2	042.1	076.3	000.4958	0200.7	048.7	46.61
321.0	007.5000	0220.2	042.2	075.9	000.4979	0199.1	049.4	46.30
322.0	007.5000	0220.1	042.2	075.5	000.4994	0197.8	050.0	46.00
323.0	007.5000	0220.2	042.2	075.2	000.5009	0197.2	050.7	45.72
324.0	007.5000	0220.2	042.2	074.9	000.5020	0197.3	051.4	45.47
325.0	007.5000	0219.2	042.1	074.7	000.5025	0197.4	052.1	45.20
326.0	007.5000	0219.0	042.1	074.4	000.5031	0197.0	052.8	44.91
327.0	007.5000	0219.7	042.1	074.1	000.5038	0197.4	053.5	44.67
328.0	007.5000	0219.7	042.1	073.9	000.5037	0197.5	054.2	44.40
329.0	007.5000	0219.3	042.1	073.7	000.5033	0197.0	054.9	44.10
330.0	007.5000	0218.4	042.0	073.6	000.5030	0196.6	055.6	43.80
331.0	007.3805	0217.5	041.8	073.6	000.5031	0196.7	056.4	43.52
332.0	007.2619	0215.3	041.5	073.7	000.5034	0197.1	057.1	43.24
333.0	007.1443	0214.1	041.3	073.8	000.5035	0197.3	057.9	42.97
334.0	007.0277	0214.4	041.2	073.8	000.5035	0197.2	058.6	42.69
335.0	006.9120	0211.4	040.8	074.0	000.5040	0197.5	059.4	42.43
336.0	006.7973	0208.0	040.5	074.2	000.5035	0197.1	060.1	42.12
337.0	006.6835	0208.6	040.4	074.2	000.5035	0197.1	060.8	41.86
338.0	006.5707	0210.8	040.4	074.1	000.5037	0197.3	061.5	41.63
339.0	006.4589	0213.0	040.4	074.0	000.5039	0197.5	062.2	41.39
340.0	006.3480	0213.6	040.3	074.1	000.5039	0197.4	062.9	41.13
341.0	006.0966	0213.8	040.0	074.3	000.5033	0197.0	063.7	40.86
342.0	005.8503	0213.7	039.7	074.6	000.5027	0197.3	064.4	40.62
343.0	005.6091	0212.7	039.2	074.9	000.5020	0197.3	065.1	40.38
344.0	005.3729	0210.6	038.7	075.3	000.5003	0197.4	065.8	40.13
345.0	005.1419	0208.8	038.3	075.7	000.4985	0198.3	066.4	39.92

Allocation Map Study  
Winona State University

FMCommander Single Allocation Study - 04-22-2010 - USGS 03 SEC  
KQAL's Overlaps (In= 32.05 km, Out= 0.34 km)

KQAL CH 208 C3 DA  
Lat= 44 04 26.0, Lng= 91 34 38.0  
2.5 kW 214.5 M HAAT, 480 M COR  
Prot.= 60 dBu, Intef.= 40 dBu

KLCD CH 208 A BLED19811023AJ  
Lat= 43 18 56.0, Lng= 91 47 18.0  
0.1 kW 55 M HAAT, 387 M COR  
Prot.= 60 dBu, Intef.= 40 dBu





04-22-2010

USGS 03 SEC Terrain Data

FMOver Analysis

KQAL

KLCD BLED19811023AJ

Channel = 208C3

Max ERP = 2.5 kW

RCAMSL = 480 M

N. Lat. 44 04 26.0

W. Lng. 91 34 38.0

Protected

60 dBu

Channel = 208A

Max ERP = 0.1 kW

RCAMSL = 387 M

N. Lat. 43 18 56.0

W. Lng. 91 47 18.0

Interfering

40 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
131.0	001.8473	0281.1	034.9	035.0	000.1000	0053.2	075.1	22.73	
132.0	001.7986	0276.1	034.4	034.6	000.1000	0052.8	074.6	22.85	
133.0	001.7506	0272.9	034.0	034.2	000.1000	0053.0	074.0	22.99	
134.0	001.7032	0266.9	033.5	033.7	000.1000	0053.5	073.5	23.14	
135.0	001.6565	0261.0	032.9	033.2	000.1000	0053.8	073.1	23.27	
136.0	001.6104	0254.7	032.3	032.6	000.1000	0053.6	072.7	23.37	
137.0	001.5650	0248.5	031.7	032.1	000.1000	0052.9	072.3	23.40	
138.0	001.5202	0242.4	031.1	031.5	000.1000	0052.0	071.9	23.43	
139.0	001.4761	0237.1	030.5	031.0	000.1000	0051.5	071.5	23.48	
140.0	001.4326	0238.1	030.4	030.7	000.1000	0051.0	071.1	23.55	
141.0	001.4558	0244.8	030.9	031.0	000.1000	0051.5	070.4	23.75	
142.0	001.4792	0258.0	031.8	031.5	000.1000	0052.0	069.6	23.99	
143.0	001.5027	0261.6	032.2	031.6	000.1000	0052.1	068.9	24.15	
144.0	001.5265	0256.8	032.0	031.3	000.1000	0051.9	068.5	24.25	
145.0	001.5504	0242.3	031.2	030.5	000.1000	0050.7	068.3	24.19	
146.0	001.5745	0232.7	030.7	030.0	000.1000	0049.4	068.0	24.15	
147.0	001.5988	0229.7	030.6	029.7	000.1000	0048.8	067.6	24.20	
148.0	001.6233	0224.7	030.4	029.3	000.1000	0048.0	067.2	24.22	
149.0	001.6480	0219.0	030.1	028.9	000.1000	0047.5	066.9	24.24	
150.0	001.6728	0217.1	030.1	028.6	000.1000	0047.3	066.5	24.32	
151.0	001.7140	0221.9	030.6	028.8	000.1000	0047.4	065.7	24.50	
152.0	001.7682	0226.3	031.1	028.9	000.1000	0047.6	065.0	24.70	
153.0	001.9228	0223.1	031.5	029.0	000.1000	0047.6	064.3	24.86	
154.0	002.1437	0215.5	031.8	028.9	000.1000	0047.5	063.7	25.00	
155.0	002.4157	0210.7	032.4	029.0	000.1000	0047.7	062.9	25.20	
156.0	002.4503	0209.5	032.4	028.7	000.1000	0047.3	062.5	25.28	
157.0	002.4800	0212.2	032.7	028.6	000.1000	0047.3	061.8	25.44	
158.0	002.4950	0211.5	032.7	028.3	000.1000	0047.0	061.4	25.52	
159.0	002.5000	0206.1	032.3	027.7	000.1000	0046.5	061.2	25.51	
160.0	002.5000	0202.9	032.0	027.1	000.1000	0045.9	061.0	25.50	
161.0	002.5000	0200.7	031.8	026.6	000.1000	0045.1	060.7	25.48	
162.0	002.5000	0203.3	032.0	026.4	000.1000	0044.6	060.2	25.57	
163.0	002.5000	0207.8	032.4	026.3	000.1000	0044.3	059.5	25.70	
164.0	002.5000	0204.0	032.1	025.7	000.1000	0043.6	059.4	25.66	
165.0	002.5000	0198.9	031.7	025.0	000.1000	0043.1	059.3	25.62	
166.0	002.5000	0194.0	031.3	024.4	000.1000	0042.5	059.3	25.55	

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
167.0	002.5000	0188.9	030.8	023.7	000.1000	0043.0	059.3	25.62
168.0	002.5000	0188.1	030.8	023.3	000.1000	0043.2	059.0	25.70
169.0	002.5000	0190.4	031.0	022.9	000.1000	0042.9	058.6	25.78
170.0	002.5000	0191.1	031.0	022.5	000.1000	0042.2	058.2	25.79
171.0	002.5000	0188.4	030.8	022.0	000.1000	0041.2	058.1	25.69
172.0	002.5000	0181.7	030.3	021.2	000.1000	0040.3	058.3	25.53
173.0	002.4773	0177.1	029.9	020.6	000.1000	0039.7	058.4	25.42
174.0	002.3658	0176.1	029.5	020.0	000.1000	0039.7	058.5	25.39
175.0	002.2593	0169.5	028.7	019.2	000.1000	0039.3	059.1	25.22
176.0	002.1576	0164.4	028.0	018.5	000.1000	0039.9	059.5	25.18
177.0	002.0605	0165.4	027.8	018.0	000.1000	0041.2	059.5	25.33
178.0	001.9678	0159.5	027.0	017.3	000.1000	0041.6	060.0	25.26
179.0	001.8792	0154.8	026.4	016.7	000.1000	0041.5	060.5	25.14
180.0	001.7946	0153.2	026.0	016.2	000.1000	0041.2	060.7	25.05
181.0	001.7307	0150.6	025.6	015.7	000.1000	0041.9	061.0	25.06
182.0	001.6679	0150.0	025.3	015.2	000.1000	0043.2	061.1	25.17
183.0	001.6063	0150.7	025.2	014.8	000.1000	0043.9	061.2	25.24
184.0	001.5459	0154.7	025.3	014.4	000.1000	0044.6	061.0	25.35
185.0	001.4866	0158.3	025.3	014.0	000.1000	0045.6	060.9	25.49
186.0	001.4285	0161.1	025.3	013.6	000.1000	0046.7	060.9	25.62
187.0	001.3715	0168.4	025.6	013.2	000.1000	0048.0	060.5	25.85
188.0	001.3157	0179.2	026.0	012.8	000.1000	0049.4	060.0	26.14
189.0	001.2611	0186.0	026.2	012.4	000.1000	0051.3	059.8	26.38
190.0	001.2076	0190.2	026.2	012.0	000.1000	0053.1	059.8	26.57
191.0	001.2076	0195.8	026.5	011.5	000.1000	0056.3	059.5	26.98
192.0	001.2250	0195.2	026.6	011.1	000.1000	0058.7	059.4	27.21
193.0	001.3348	0195.6	027.1	010.6	000.1000	0060.0	058.9	27.47
194.0	001.3786	0197.8	027.5	010.2	000.1000	0059.7	058.6	27.55
195.0	001.4232	0196.1	027.6	009.7	000.1000	0058.4	058.5	27.44
196.0	001.4684	0192.0	027.5	009.2	000.1000	0056.4	058.6	27.23
197.0	001.5144	0189.8	027.5	008.8	000.1000	0054.3	058.7	27.02
198.0	001.5610	0185.0	027.4	008.3	000.1000	0052.0	058.9	26.73
199.0	001.6084	0177.6	027.1	007.9	000.1000	0050.3	059.2	26.45
200.0	001.6565	0171.9	026.9	007.5	000.1000	0049.3	059.5	26.26
201.0	001.7331	0167.4	026.8	007.1	000.1000	0048.6	059.7	26.14
202.0	001.8114	0167.9	027.1	006.6	000.1000	0047.1	059.5	26.02
203.0	001.8914	0165.7	027.3	006.1	000.1000	0045.3	059.6	25.81
204.0	001.9731	0163.4	027.3	005.7	000.1000	0043.6	059.6	25.60
205.0	002.0566	0165.3	027.7	005.1	000.1000	0043.0	059.4	25.58
206.0	002.1418	0168.2	028.2	004.5	000.1000	0042.6	059.1	25.60
207.0	002.2288	0170.4	028.6	003.9	000.1000	0041.7	058.9	25.55
208.0	002.3175	0174.6	029.2	003.2	000.1000	0040.0	058.6	25.41
209.0	002.4079	0183.1	030.1	002.4	000.1000	0037.3	058.0	25.22
210.0	002.5000	0190.4	031.0	001.6	000.1000	0035.4	057.5	25.08
211.0	002.5000	0197.0	031.5	000.8	000.1000	0033.5	057.3	24.86
212.0	002.5000	0197.3	031.5	000.3	000.1000	0032.1	057.6	24.60
213.0	002.5000	0194.4	031.3	000.0	000.1000	0031.3	058.1	24.40
214.0	002.5000	0187.5	030.7	359.9	000.1000	0031.0	058.8	24.19
215.0	002.5000	0181.5	030.3	359.7	000.1000	0030.6	059.5	23.99
216.0	002.5000	0180.3	030.2	359.3	000.1000	0030.0	059.9	23.83
217.0	002.5000	0181.6	030.3	358.9	000.1000	0029.0	060.1	23.78

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
218.0	002.5000	0184.9	030.5	358.3	000.1000	0028.0	060.3	23.75
219.0	002.5000	0188.0	030.8	357.8	000.1000	0026.9	060.4	23.72
220.0	002.5000	0192.0	031.1	357.2	000.1000	0026.2	060.5	23.70
221.0	002.5000	0195.0	031.3	356.7	000.1000	0024.9	060.7	23.66
222.0	002.5000	0195.4	031.4	356.3	000.1000	0024.0	061.1	23.58
223.0	002.5000	0196.0	031.4	355.9	000.1000	0023.5	061.5	23.51
224.0	002.5000	0194.2	031.3	355.7	000.1000	0023.2	062.0	23.41
225.0	002.5000	0190.0	030.9	355.6	000.1000	0023.2	062.6	23.28
226.0	002.5000	0185.5	030.6	355.5	000.1000	0023.1	063.2	23.16
227.0	002.5000	0180.6	030.2	355.5	000.1000	0023.1	063.9	23.04
228.0	002.5000	0179.7	030.1	355.3	000.1000	0022.9	064.4	22.95
229.0	002.5000	0182.4	030.3	354.8	000.1000	0022.3	064.7	22.89
230.0	002.5000	0184.5	030.5	354.5	000.1000	0022.0	065.0	22.83
231.0	002.5000	0188.1	030.8	354.0	000.1000	0021.8	065.3	22.77
232.0	002.5000	0187.8	030.8	353.8	000.1000	0021.8	065.8	22.69
233.0	002.5000	0188.2	030.8	353.5	000.1000	0021.9	066.2	22.60
234.0	002.5000	0190.2	030.9	353.2	000.1000	0022.1	066.6	22.53
235.0	002.5000	0191.4	031.0	352.9	000.1000	0022.3	067.0	22.45
236.0	002.5000	0192.8	031.2	352.6	000.1000	0022.5	067.4	22.38
237.0	002.5000	0197.6	031.6	352.1	000.1000	0023.3	067.8	22.32
238.0	002.5000	0202.6	032.0	351.6	000.1000	0024.6	068.1	22.26
239.0	002.5000	0206.7	032.3	351.1	000.1000	0025.6	068.5	22.19
240.0	002.5000	0207.3	032.3	350.9	000.1000	0026.1	069.0	22.09
241.0	002.5000	0206.8	032.3	350.8	000.1000	0026.5	069.5	22.00
242.0	002.5000	0210.2	032.6	350.4	000.1000	0027.4	070.0	21.92
243.0	002.5000	0213.4	032.8	350.1	000.1000	0028.0	070.5	21.83
244.0	002.5000	0216.4	033.1	349.8	000.1000	0028.6	070.9	21.75
245.0	002.5000	0217.8	033.2	349.6	000.1000	0028.9	071.5	21.65
246.0	002.5000	0219.0	033.3	349.4	000.1000	0029.2	072.0	21.55
247.0	002.5000	0221.3	033.5	349.2	000.1000	0029.6	072.5	21.46
248.0	002.5000	0226.1	033.8	348.8	000.1000	0029.9	073.0	21.37
249.0	002.5000	0228.8	034.0	348.6	000.1000	0030.2	073.6	21.29
250.0	002.5000	0226.7	033.9	348.6	000.1000	0030.2	074.2	21.17

## 04-22-2010 USGS 03 SEC Terrain Data

KLCD BLED19811023AJ

KQAL

Channel = 208A

Max ERP = 0.1 kW

RCAMSL = 387 M

N. Lat. 43 18 56.0

W. Lng. 91 47 18.0

Protected

60 dBu

Channel = 208C3

Max ERP = 2.5 kW

RCAMSL = 480 M

N. Lat. 44 04 26.0

W. Lng. 91 34 38.0

Interfering

40 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
311.0	000.1000	0076.9	009.1	197.0	001.5135	0189.9	081.9	39.33	
312.0	000.1000	0079.0	009.2	197.0	001.5152	0189.8	081.7	39.40	
313.0	000.1000	0081.1	009.3	197.0	001.5165	0189.7	081.5	39.46	
314.0	000.1000	0082.7	009.4	197.1	001.5167	0189.7	081.3	39.52	
315.0	000.1000	0084.7	009.5	197.1	001.5175	0189.7	081.1	39.58	
316.0	000.1000	0085.8	009.6	197.0	001.5166	0189.7	080.9	39.64	
317.0	000.1000	0088.2	009.7	197.1	001.5178	0189.7	080.7	39.71	
318.0	000.1000	0089.2	009.8	197.0	001.5164	0189.8	080.5	39.76	
319.0	000.1000	0090.2	009.8	197.0	001.5150	0189.8	080.4	39.82	
320.0	000.1000	0089.3	009.8	196.9	001.5105	0190.0	080.3	39.85	
321.0	000.1000	0084.1	009.5	196.7	001.4996	0190.4	080.3	39.83	
322.0	000.1000	0081.0	009.3	196.5	001.4918	0190.4	080.2	39.82	
323.0	000.1000	0078.3	009.1	196.3	001.4844	0190.7	080.2	39.82	
324.0	000.1000	0075.3	009.0	196.2	001.4766	0191.4	080.2	39.83	
325.0	000.1000	0071.9	008.8	196.0	001.4681	0192.1	080.2	39.83	
326.0	000.1000	0066.3	008.4	195.7	001.4561	0193.0	080.3	39.80	
327.0	000.1000	0058.8	007.9	195.4	001.4410	0194.6	080.5	39.74	
328.0	000.1000	0050.5	007.3	195.0	001.4235	0196.0	080.9	39.65	
329.0	000.1000	0043.8	006.8	194.7	001.4086	0196.8	081.1	39.54	
330.0	000.1000	0039.8	006.4	194.5	001.3989	0197.3	081.3	39.48	
331.0	000.1000	0039.2	006.4	194.4	001.3952	0197.5	081.2	39.49	
332.0	000.1000	0039.1	006.4	194.3	001.3924	0197.7	081.2	39.51	
333.0	000.1000	0038.5	006.3	194.2	001.3890	0197.8	081.1	39.52	
334.0	000.1000	0034.7	006.0	194.0	001.3800	0197.8	081.3	39.44	
335.0	000.1000	0032.5	005.8	193.9	001.3740	0197.7	081.4	39.39	
336.0	000.1000	0032.0	005.8	193.8	001.3707	0197.2	081.3	39.37	
337.0	000.1000	0032.9	005.9	193.8	001.3696	0197.0	081.2	39.40	
338.0	000.1000	0031.9	005.8	193.7	001.3655	0196.3	081.2	39.35	
339.0	000.1000	0031.0	005.7	193.6	001.3617	0195.6	081.2	39.31	
340.0	000.1000	0031.3	005.7	193.6	001.3595	0195.3	081.1	39.32	
341.0	000.1000	0031.6	005.8	193.5	001.3573	0195.2	081.1	39.33	
342.0	000.1000	0031.9	005.8	193.5	001.3551	0195.1	081.0	39.35	
343.0	000.1000	0032.2	005.8	193.4	001.3528	0195.1	080.9	39.36	

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
344.0	000.1000	0032.7	005.9	193.4	001.3505	0195.0	080.8	39.38
345.0	000.1000	0033.7	005.9	193.3	001.3490	0195.0	080.7	39.41
346.0	000.1000	0033.4	005.9	193.3	001.3458	0195.1	080.7	39.41
347.0	000.1000	0032.2	005.8	193.2	001.3416	0195.3	080.7	39.39
348.0	000.1000	0030.9	005.7	193.1	001.3374	0195.5	080.8	39.37
349.0	000.1000	0029.8	005.6	193.0	001.3318	0195.6	080.8	39.35
350.0	000.1000	0028.2	005.6	192.9	001.3246	0195.6	080.8	39.34
351.0	000.1000	0025.9	005.6	192.8	001.3174	0195.6	080.7	39.33
352.0	000.1000	0023.5	005.6	192.8	001.3101	0195.5	080.7	39.31
353.0	000.1000	0022.2	005.6	192.7	001.3028	0195.4	080.7	39.29
354.0	000.1000	0021.8	005.6	192.6	001.2955	0195.3	080.6	39.27
355.0	000.1000	0022.5	005.6	192.6	001.2881	0195.2	080.6	39.26
356.0	000.1000	0023.6	005.6	192.5	001.2807	0195.1	080.6	39.24
357.0	000.1000	0025.6	005.6	192.4	001.2733	0195.0	080.5	39.22
358.0	000.1000	0027.2	005.6	192.4	001.2659	0194.9	080.5	39.19
359.0	000.1000	0029.2	005.6	192.3	001.2585	0194.8	080.5	39.17
000.0	000.1000	0031.3	005.7	192.3	001.2528	0194.8	080.4	39.19
001.0	000.1000	0034.1	006.0	192.2	001.2485	0194.8	080.1	39.26
002.0	000.1000	0036.6	006.2	192.2	001.2433	0194.9	079.9	39.31
003.0	000.1000	0039.1	006.4	192.1	001.2374	0195.0	079.7	39.37
004.0	000.1000	0041.8	006.6	192.1	001.2312	0195.1	079.5	39.42
005.0	000.1000	0042.9	006.7	192.0	001.2247	0195.2	079.4	39.44
006.0	000.1000	0044.7	006.8	191.9	001.2234	0195.3	079.2	39.49
007.0	000.1000	0048.5	007.1	191.8	001.2222	0195.5	078.9	39.59
008.0	000.1000	0050.5	007.3	191.8	001.2208	0195.8	078.7	39.65
009.0	000.1000	0055.5	007.7	191.7	001.2194	0196.1	078.3	39.79
010.0	000.1000	0059.4	007.9	191.6	001.2177	0196.6	078.1	39.89
011.0	000.1000	0059.0	007.9	191.5	001.2160	0196.8	078.1	39.89
012.0	000.1000	0052.9	007.5	191.4	001.2143	0196.8	078.5	39.73
013.0	000.1000	0048.7	007.1	191.3	001.2127	0196.6	078.9	39.61
014.0	000.1000	0045.6	006.9	191.2	001.2113	0196.4	079.1	39.52
015.0	000.1000	0043.6	006.7	191.1	001.2099	0196.2	079.3	39.45
016.0	000.1000	0041.2	006.5	191.1	001.2087	0196.0	079.5	39.38
017.0	000.1000	0041.6	006.6	191.0	001.2076	0195.7	079.5	39.37
018.0	000.1000	0041.1	006.5	190.9	001.2076	0195.3	079.5	39.33
019.0	000.1000	0039.2	006.4	190.8	001.2076	0194.8	079.7	39.26
020.0	000.1000	0039.7	006.4	190.8	001.2076	0194.3	079.7	39.24
021.0	000.1000	0040.1	006.5	190.7	001.2076	0193.8	079.6	39.23
022.0	000.1000	0041.3	006.5	190.6	001.2076	0193.3	079.6	39.23
023.0	000.1000	0043.0	006.7	190.5	001.2076	0192.7	079.5	39.24
024.0	000.1000	0042.7	006.7	190.4	001.2076	0192.3	079.5	39.21
025.0	000.1000	0043.1	006.7	190.3	001.2076	0191.8	079.5	39.19
026.0	000.1000	0043.9	006.8	190.2	001.2076	0191.2	079.5	39.18
027.0	000.1000	0045.7	006.9	190.1	001.2076	0190.6	079.4	39.19
028.0	000.1000	0046.8	007.0	190.0	001.2078	0190.2	079.3	39.19
029.0	000.1000	0047.7	007.1	189.9	001.2131	0189.8	079.3	39.20
030.0	000.1000	0049.4	007.2	189.8	001.2195	0189.3	079.2	39.23
031.0	000.1000	0051.6	007.4	189.6	001.2263	0188.8	079.1	39.27
032.0	000.1000	0052.7	007.5	189.5	001.2322	0188.2	079.1	39.28
033.0	000.1000	0053.9	007.5	189.4	001.2382	0187.8	079.0	39.29
034.0	000.1000	0053.2	007.5	189.4	001.2420	0187.5	079.1	39.26

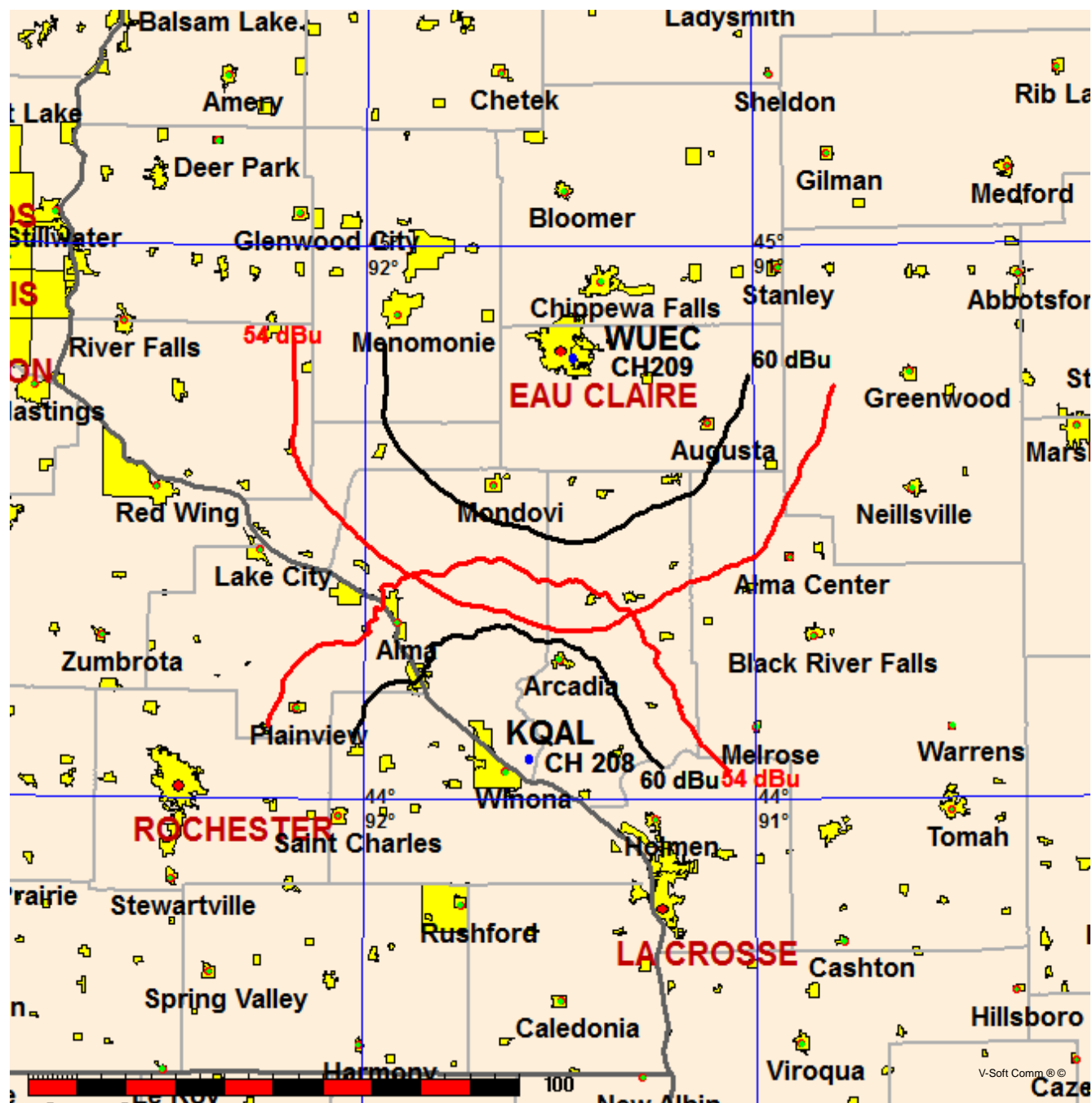
Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
035.0	000.1000	0053.1	007.5	189.3	001.2465	0187.2	079.2	39.24
036.0	000.1000	0056.7	007.8	189.1	001.2560	0186.5	079.0	39.30
037.0	000.1000	0058.5	007.9	189.0	001.2630	0185.8	079.0	39.32
038.0	000.1000	0059.4	007.9	188.9	001.2689	0185.2	079.0	39.31
039.0	000.1000	0060.2	008.0	188.7	001.2748	0184.5	079.0	39.29
040.0	000.1000	0062.0	008.1	188.6	001.2820	0183.8	079.0	39.29
041.0	000.1000	0063.2	008.2	188.5	001.2885	0183.1	079.0	39.29
042.0	000.1000	0065.1	008.3	188.4	001.2961	0182.2	078.9	39.28
043.0	000.1000	0066.7	008.4	188.2	001.3032	0181.2	078.9	39.26
044.0	000.1000	0067.3	008.5	188.1	001.3089	0180.3	079.0	39.23
045.0	000.1000	0067.8	008.5	188.0	001.3143	0179.4	079.1	39.19
046.0	000.1000	0068.1	008.5	187.9	001.3197	0178.6	079.1	39.15
047.0	000.1000	0068.6	008.5	187.8	001.3250	0177.7	079.2	39.11
048.0	000.1000	0070.0	008.6	187.7	001.3320	0176.4	079.2	39.07
049.0	000.1000	0072.2	008.8	187.6	001.3403	0174.9	079.2	39.03
050.0	000.1000	0074.8	008.9	187.4	001.3492	0173.3	079.2	39.00
051.0	000.1000	0076.6	009.0	187.3	001.3570	0171.9	079.2	38.95
052.0	000.1000	0078.3	009.1	187.1	001.3644	0170.2	079.3	38.89
053.0	000.1000	0078.3	009.1	187.0	001.3690	0169.0	079.4	38.82
054.0	000.1000	0078.9	009.2	186.9	001.3745	0167.7	079.5	38.75
055.0	000.1000	0079.4	009.2	186.9	001.3799	0166.6	079.6	38.69
056.0	000.1000	0080.2	009.3	186.8	001.3856	0165.6	079.7	38.63
057.0	000.1000	0080.5	009.3	186.7	001.3904	0164.7	079.8	38.58
058.0	000.1000	0081.1	009.3	186.6	001.3957	0163.8	079.9	38.52
059.0	000.1000	0081.5	009.3	186.5	001.4005	0163.3	080.0	38.48
060.0	000.1000	0083.5	009.4	186.4	001.4082	0162.5	080.1	38.45
061.0	000.1000	0087.5	009.7	186.2	001.4196	0161.7	080.1	38.45
062.0	000.1000	0089.9	009.8	186.0	001.4280	0161.2	080.1	38.43
063.0	000.1000	0093.6	010.0	185.8	001.4387	0160.5	080.2	38.42
064.0	000.1000	0094.7	010.1	185.7	001.4445	0160.2	080.3	38.39
065.0	000.1000	0092.5	009.9	185.7	001.4442	0160.2	080.5	38.32
066.0	000.1000	0090.3	009.8	185.7	001.4436	0160.2	080.7	38.26
067.0	000.1000	0092.3	009.9	185.6	001.4509	0160.0	080.8	38.24
068.0	000.1000	0095.5	010.1	185.5	001.4602	0159.7	080.9	38.23
069.0	000.1000	0095.0	010.1	185.4	001.4625	0159.6	081.1	38.18
070.0	000.1000	0092.6	009.9	185.4	001.4611	0159.7	081.3	38.11

Allocation Map Study  
Winona State University

FMCommander Single Allocation Study - 04-22-2010 - USGS 03 SEC  
KQAL's Overlaps (In= 1.91 km, Out= 7.31 km)

KQAL CH 208 C3 DA  
Lat= 44 04 26.0, Lng= 91 34 38.0  
2.5 kW 214.5 M HAAT, 480 M COR  
Prot.= 60 dBu, Intef.= 54 dBu

WUEC CH 209 C3 BLED19960227KB  
Lat= 44 47 58.0, Lng= 91 27 59.0  
5.2 kW 192 M HAAT, 472 M COR  
Prot.= 60 dBu, Intef.= 54 dBu



04-22-2010

USGS 03 SEC Terrain Data

FMOver Analysis

KQAL

WUEC BLED19960227KB

Channel = 208C3

Max ERP = 2.5 kW

RCAMSL = 480 M

N. Lat. 44 04 26.0

W. Lng. 91 34 38.0

Protected

60 dBu

Channel = 209C3

Max ERP = 5.2 kW

RCAMSL = 472 M

N. Lat. 44 47 58.0

W. Lng. 91 27 59.0

Interfering

54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
306.0	002.5000	0146.4	027.4	205.7	005.2000	0186.8	071.5	47.92	
307.0	002.5000	0145.2	027.3	205.6	005.2000	0186.7	071.1	48.06	
308.0	002.5000	0144.4	027.3	205.4	005.2000	0186.7	070.7	48.21	
309.0	002.5000	0150.7	027.8	205.8	005.2000	0186.9	070.1	48.41	
310.0	002.5000	0155.6	028.2	206.0	005.2000	0187.1	069.5	48.62	
311.0	002.5000	0152.8	028.0	205.7	005.2000	0186.8	069.1	48.74	
312.0	002.5000	0150.6	027.8	205.4	005.2000	0186.7	068.7	48.87	
313.0	002.5000	0156.6	028.3	205.7	005.2000	0186.8	068.1	49.09	
314.0	002.5000	0163.4	028.8	206.0	005.2000	0187.2	067.4	49.32	
315.0	002.5000	0155.8	028.2	205.4	005.2000	0186.7	067.1	49.39	
316.0	002.5000	0156.4	028.3	205.3	005.2000	0186.7	066.7	49.55	
317.0	002.5000	0164.0	028.9	205.6	005.2000	0186.7	066.0	49.78	
318.0	002.5000	0173.4	029.6	206.1	005.2000	0187.2	065.2	50.06	
319.0	002.5000	0183.2	030.4	206.5	005.2000	0187.7	064.4	50.34	
320.0	002.5000	0180.1	030.2	206.2	005.2000	0187.3	064.0	50.46	
321.0	002.5000	0175.0	029.8	205.6	005.2000	0186.7	063.7	50.54	
322.0	002.5000	0168.6	029.3	205.0	005.2000	0186.5	063.5	50.61	
323.0	002.5000	0169.0	029.3	204.8	005.2000	0186.3	063.0	50.76	
324.0	002.5000	0173.0	029.6	204.9	005.2000	0186.3	062.4	50.98	
325.0	002.5000	0171.1	029.5	204.5	005.2000	0186.1	062.1	51.10	
326.0	002.5000	0168.8	029.3	204.1	005.2000	0185.8	061.7	51.21	
327.0	002.5000	0168.1	029.2	203.8	005.2000	0185.5	061.3	51.34	
328.0	002.4377	0170.5	029.2	203.6	005.2000	0185.2	060.9	51.48	
329.0	002.3280	0170.2	028.9	203.0	005.2000	0184.5	060.7	51.53	
330.0	002.2232	0171.2	028.7	202.6	005.2000	0184.0	060.4	51.60	
331.0	002.1231	0171.5	028.4	202.1	005.2000	0183.2	060.2	51.65	
332.0	002.0276	0167.3	027.8	201.3	005.2000	0181.2	060.2	51.55	
333.0	001.9363	0165.4	027.4	200.7	005.2000	0179.7	060.1	51.51	
334.0	001.8492	0166.7	027.2	200.3	005.2000	0178.7	059.9	51.55	
335.0	001.7659	0168.4	027.0	199.8	005.2000	0177.9	059.7	51.60	
336.0	001.6865	0175.9	027.3	199.7	005.2000	0177.6	059.2	51.77	
337.0	001.6105	0182.9	027.5	199.5	005.2000	0177.3	058.7	51.93	
338.0	001.5381	0190.1	027.6	199.2	005.2000	0176.9	058.2	52.08	
339.0	001.4688	0195.5	027.7	198.9	005.2000	0176.5	057.9	52.19	
340.0	001.4027	0199.3	027.7	198.5	005.2000	0176.6	057.6	52.30	
341.0	001.3396	0199.8	027.4	198.0	005.2000	0176.7	057.5	52.34	



Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
342.0	001.2793	0204.0	027.4	197.6	005.2000	0176.8	057.2	52.45
343.0	001.2217	0208.6	027.4	197.2	005.2000	0176.8	057.0	52.55
344.0	001.1667	0213.2	027.4	196.8	005.2000	0177.2	056.7	52.67
345.0	001.1142	0218.6	027.5	196.4	005.2000	0177.2	056.4	52.78
346.0	001.0641	0221.9	027.4	195.9	005.2000	0176.8	056.2	52.82
347.0	001.0162	0225.6	027.3	195.5	005.2000	0176.1	056.0	52.86
348.0	000.9705	0225.5	027.0	194.9	005.2000	0175.0	056.1	52.79
349.0	000.9268	0225.1	026.7	194.4	005.2000	0174.8	056.2	52.75
350.0	000.8851	0231.6	026.8	194.0	005.2000	0175.2	055.9	52.88
351.0	000.8381	0239.8	026.9	193.6	005.2000	0176.7	055.6	53.06
352.0	000.8037	0243.3	026.8	193.1	005.2000	0178.5	055.5	53.18
353.0	000.7701	0244.0	026.6	192.5	005.2000	0180.2	055.6	53.24
354.0	000.7371	0241.4	026.2	192.0	005.2000	0180.7	055.8	53.17
355.0	000.7102	0238.2	025.8	191.4	005.2000	0181.2	056.0	53.11
356.0	000.6891	0235.2	025.5	190.9	005.2000	0181.6	056.2	53.05
357.0	000.6760	0233.7	025.3	190.4	005.2000	0182.1	056.3	53.04
358.0	000.6708	0232.1	025.2	189.9	005.2000	0182.4	056.3	53.05
359.0	000.6708	0227.7	025.0	189.4	005.2000	0182.8	056.5	53.01
000.0	000.6943	0221.4	024.8	189.0	005.2000	0183.1	056.5	53.00
001.0	000.6726	0216.6	024.4	188.5	005.2000	0183.8	056.9	52.89
002.0	000.6513	0211.5	023.9	188.0	005.2000	0184.8	057.3	52.78
003.0	000.6303	0213.2	023.8	187.6	005.2000	0185.4	057.3	52.79
004.0	000.6096	0218.9	024.0	187.2	005.2000	0185.9	057.2	52.87
005.0	000.5893	0222.4	023.9	186.8	005.2000	0186.5	057.2	52.90
006.0	000.5693	0226.0	023.9	186.3	005.2000	0187.2	057.2	52.93
007.0	000.5497	0229.4	023.9	185.9	005.2000	0187.9	057.2	52.95
008.0	000.5304	0228.6	023.7	185.5	005.2000	0188.5	057.5	52.88
009.0	000.5114	0231.4	023.6	185.1	005.2000	0189.3	057.6	52.88
010.0	000.4928	0237.2	023.7	184.7	005.2000	0189.9	057.5	52.93
011.0	000.5135	0238.5	024.0	184.2	005.2000	0190.5	057.3	53.04
012.0	000.5345	0238.7	024.2	183.8	005.2000	0191.1	057.1	53.14
013.0	000.5560	0237.8	024.4	183.3	005.2000	0191.7	057.0	53.21
014.0	000.5779	0232.7	024.4	182.9	005.2000	0192.1	057.1	53.18
015.0	000.6003	0234.0	024.6	182.5	005.2000	0192.5	056.9	53.27
016.0	000.6230	0230.2	024.7	182.0	005.2000	0192.9	057.0	53.26
017.0	000.6462	0225.9	024.6	181.6	005.2000	0193.1	057.1	53.22
018.0	000.6698	0218.2	024.4	181.3	005.2000	0193.1	057.4	53.10
019.0	000.6938	0209.3	024.2	180.9	005.2000	0193.0	057.8	52.94
020.0	000.7182	0208.0	024.3	180.5	005.2000	0193.0	057.8	52.93
021.0	000.7320	0202.8	024.1	180.2	005.2000	0192.9	058.2	52.81
022.0	000.7458	0201.8	024.1	179.8	005.2000	0192.9	058.3	52.77
023.0	000.7598	0195.0	023.9	179.5	005.2000	0192.9	058.7	52.62
024.0	000.7740	0196.3	024.0	179.1	005.2000	0193.0	058.7	52.62
025.0	000.7882	0201.8	024.4	178.5	005.2000	0193.2	058.5	52.69
026.0	000.8026	0199.1	024.4	178.2	005.2000	0193.1	058.8	52.60
027.0	000.8171	0191.2	024.1	178.0	005.2000	0193.0	059.3	52.41
028.0	000.8317	0185.8	023.8	177.7	005.2000	0192.9	059.6	52.26
029.0	000.8465	0182.8	023.8	177.4	005.2000	0192.8	059.9	52.16
030.0	000.8614	0178.5	023.6	177.1	005.2000	0192.7	060.3	52.02
031.0	000.8364	0177.4	023.4	176.9	005.2000	0192.5	060.7	51.87
032.0	000.8117	0184.5	023.6	176.5	005.2000	0192.1	060.7	51.84

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
033.0	000.7874	0193.8	024.0	176.0	005.2000	0191.9	060.7	51.84
034.0	000.7634	0199.8	024.2	175.6	005.2000	0192.1	060.8	51.80
035.0	000.7398	0200.8	024.0	175.3	005.2000	0192.2	061.2	51.68
036.0	000.7166	0200.5	023.8	175.1	005.2000	0192.3	061.6	51.53
037.0	000.6938	0200.4	023.7	175.0	005.2000	0192.5	062.0	51.39
038.0	000.6713	0203.0	023.6	174.7	005.2000	0192.7	062.3	51.29
039.0	000.6492	0203.0	023.5	174.5	005.2000	0192.8	062.7	51.15
040.0	000.6275	0200.6	023.1	174.5	005.2000	0192.8	063.2	50.98
041.0	000.6027	0203.3	023.1	174.3	005.2000	0193.0	063.6	50.87
042.0	000.5808	0204.7	022.9	174.1	005.2000	0193.1	063.9	50.74
043.0	000.5593	0204.3	022.7	174.0	005.2000	0193.1	064.4	50.59
044.0	000.5406	0204.0	022.5	173.9	005.2000	0193.2	064.8	50.45
045.0	000.5221	0203.0	022.3	173.9	005.2000	0193.2	065.3	50.29
046.0	000.5062	0207.9	022.4	173.6	005.2000	0193.2	065.5	50.21
047.0	000.4906	0211.9	022.4	173.4	005.2000	0193.2	065.8	50.11
048.0	000.4752	0215.5	022.4	173.2	005.2000	0193.0	066.1	50.00
049.0	000.4623	0222.1	022.6	172.8	005.2000	0192.6	066.3	49.91
050.0	000.4494	0227.4	022.7	172.6	005.2000	0192.2	066.6	49.80
051.0	000.4389	0227.9	022.6	172.5	005.2000	0191.9	067.0	49.65
052.0	000.4285	0222.2	022.2	172.6	005.2000	0192.2	067.5	49.48
053.0	000.4182	0214.3	021.7	172.8	005.2000	0192.5	068.1	49.30
054.0	000.4121	0214.0	021.6	172.7	005.2000	0192.4	068.5	49.17
055.0	000.4040	0216.0	021.6	172.6	005.2000	0192.1	068.8	49.05
056.0	000.4000	0216.7	021.6	172.4	005.2000	0191.8	069.2	48.92
057.0	000.3940	0219.9	021.7	172.2	005.2000	0191.2	069.5	48.79
058.0	000.3901	0221.5	021.7	172.1	005.2000	0190.6	069.8	48.66
059.0	000.3861	0218.5	021.5	172.1	005.2000	0190.7	070.2	48.52
060.0	000.3822	0222.2	021.6	171.9	005.2000	0190.0	070.5	48.39
061.0	000.3783	0226.0	021.8	171.7	005.2000	0189.3	070.8	48.26
062.0	000.3744	0229.1	021.8	171.5	005.2000	0188.8	071.2	48.13
063.0	000.3725	0231.8	021.9	171.3	005.2000	0188.4	071.5	48.00
064.0	000.3706	0232.6	022.0	171.2	005.2000	0188.1	071.9	47.87
065.0	000.3706	0229.6	021.8	171.3	005.2000	0188.2	072.3	47.74

## 04-22-2010 USGS 03 SEC Terrain Data

WUEC BLED19960227KB

KQAL

Channel = 209C3  
 Max ERP = 5.2 kW  
 RCAMSL = 472 M  
 N. Lat. 44 47 58.0  
 W. Lng. 91 27 59.0  
 Protected  
 60 dBu

Channel = 208C3  
 Max ERP = 2.5 kW  
 RCAMSL = 480 M  
 N. Lat. 44 04 26.0  
 W. Lng. 91 34 38.0  
 Interfering  
 54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
126.0	005.2000	0174.6	035.5	031.9	000.8130	0184.0	070.6	40.07	
127.0	005.2000	0176.0	035.7	032.0	000.8120	0184.4	069.9	40.30	
128.0	005.2000	0176.2	035.7	032.0	000.8126	0184.2	069.3	40.50	
129.0	005.2000	0178.6	035.9	032.1	000.8095	0185.2	068.7	40.74	
130.0	005.2000	0180.8	036.1	032.2	000.8072	0186.1	068.0	40.98	
131.0	005.2000	0181.9	036.2	032.2	000.8070	0186.2	067.4	41.20	
132.0	005.2000	0184.1	036.4	032.3	000.8054	0186.8	066.7	41.43	
133.0	005.2000	0185.7	036.5	032.3	000.8048	0187.0	066.1	41.66	
134.0	005.2000	0188.8	036.8	032.4	000.8019	0188.0	065.4	41.92	
135.0	005.2000	0190.2	036.9	032.4	000.8023	0187.9	064.7	42.13	
136.0	005.2000	0190.4	036.9	032.3	000.8051	0186.9	064.1	42.32	
137.0	005.2000	0189.7	036.8	032.1	000.8098	0185.1	063.5	42.48	
138.0	005.2000	0187.4	036.6	031.8	000.8174	0182.7	062.9	42.61	
139.0	005.2000	0184.8	036.4	031.4	000.8261	0180.0	062.4	42.73	
140.0	005.2000	0182.3	036.2	031.1	000.8350	0177.5	061.8	42.86	
141.0	005.2000	0180.3	036.0	030.7	000.8436	0177.3	061.3	43.08	
142.0	005.2000	0176.8	035.7	030.2	000.8556	0177.7	060.8	43.33	
143.0	005.2000	0174.0	035.5	029.8	000.8581	0179.4	060.4	43.59	
144.0	005.2000	0172.6	035.3	029.4	000.8529	0180.7	059.9	43.81	
145.0	005.2000	0172.3	035.3	029.2	000.8488	0182.0	059.3	44.04	
146.0	005.2000	0171.6	035.2	028.8	000.8440	0183.4	058.8	44.27	
147.0	005.2000	0170.1	035.1	028.4	000.8380	0184.4	058.3	44.46	
148.0	005.2000	0169.5	035.0	028.1	000.8330	0185.3	057.8	44.66	
149.0	005.2000	0167.6	034.8	027.6	000.8262	0187.6	057.4	44.89	
150.0	005.2000	0165.6	034.6	027.1	000.8188	0190.4	057.0	45.12	
151.0	005.2000	0162.8	034.3	026.5	000.8105	0194.4	056.6	45.38	
152.0	005.2000	0160.8	034.1	026.0	000.8029	0198.9	056.3	45.68	
153.0	005.2000	0161.7	034.2	025.7	000.7988	0200.8	055.7	45.94	
154.0	005.2000	0162.4	034.3	025.4	000.7944	0201.5	055.2	46.15	
155.0	005.2000	0162.8	034.3	025.1	000.7892	0201.8	054.7	46.33	
156.0	005.2000	0162.2	034.3	024.6	000.7827	0200.3	054.3	46.38	
157.0	005.2000	0162.3	034.3	024.2	000.7769	0197.6	053.9	46.41	
158.0	005.2000	0161.9	034.2	023.7	000.7702	0195.3	053.5	46.42	

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
159.0	005.2000	0163.6	034.4	023.4	000.7659	0194.6	052.9	46.58
160.0	005.2000	0166.8	034.7	023.2	000.7628	0194.7	052.3	46.82
161.0	005.2000	0169.6	035.0	022.9	000.7589	0195.3	051.6	47.07
162.0	005.2000	0171.6	035.2	022.6	000.7538	0198.3	051.1	47.40
163.0	005.2000	0172.4	035.3	022.1	000.7473	0201.6	050.6	47.69
164.0	005.2000	0173.6	035.4	021.6	000.7408	0201.9	050.2	47.85
165.0	005.2000	0174.8	035.5	021.2	000.7341	0202.1	049.7	48.01
166.0	005.2000	0175.3	035.6	020.6	000.7265	0205.3	049.3	48.27
167.0	005.2000	0176.2	035.7	020.1	000.7191	0207.8	048.9	48.50
168.0	005.2000	0177.8	035.8	019.5	000.7070	0208.8	048.4	48.66
169.0	005.2000	0180.7	036.1	019.1	000.6953	0209.1	047.9	48.81
170.0	005.2000	0184.3	036.4	018.6	000.6837	0211.6	047.3	49.09
171.0	005.2000	0187.4	036.6	018.0	000.6709	0217.7	046.8	49.50
172.0	005.2000	0190.3	036.9	017.5	000.6573	0221.9	046.3	49.81
173.0	005.2000	0192.8	037.1	016.9	000.6429	0226.6	045.8	50.10
174.0	005.2000	0193.1	037.1	016.1	000.6259	0229.6	045.5	50.23
175.0	005.2000	0192.4	037.1	015.3	000.6081	0233.7	045.4	50.35
176.0	005.2000	0192.0	037.0	014.6	000.5904	0233.2	045.2	50.28
177.0	005.2000	0192.5	037.1	013.8	000.5736	0233.3	044.9	50.26
178.0	005.2000	0193.0	037.1	013.0	000.5566	0237.6	044.7	50.40
179.0	005.2000	0193.1	037.1	012.2	000.5394	0238.9	044.6	50.38
180.0	005.2000	0192.8	037.1	011.4	000.5221	0238.6	044.4	50.28
181.0	005.2000	0193.0	037.1	010.6	000.5052	0238.5	044.3	50.19
182.0	005.2000	0192.9	037.1	009.8	000.4970	0235.8	044.2	50.05
183.0	005.2000	0192.0	037.0	008.9	000.5126	0231.0	044.2	49.99
184.0	005.2000	0190.9	036.9	008.1	000.5285	0228.7	044.3	50.01
185.0	005.2000	0189.5	036.8	007.3	000.5445	0229.2	044.3	50.13
186.0	005.2000	0187.7	036.7	006.4	000.5607	0228.0	044.5	50.15
187.0	005.2000	0186.2	036.5	005.6	000.5768	0224.5	044.6	50.06
188.0	005.2000	0184.8	036.4	004.8	000.5930	0221.8	044.7	50.00
189.0	005.2000	0183.1	036.3	004.0	000.6091	0219.0	044.9	49.91
190.0	005.2000	0182.4	036.2	003.2	000.6254	0214.6	045.0	49.77
191.0	005.2000	0181.5	036.2	002.5	000.6416	0211.4	045.2	49.67
192.0	005.2000	0180.7	036.1	001.7	000.6578	0212.7	045.4	49.76
193.0	005.2000	0178.9	035.9	001.0	000.6735	0216.9	045.7	49.94
194.0	005.2000	0175.0	035.6	000.3	000.6878	0219.8	046.1	49.97
195.0	005.2000	0175.1	035.6	359.6	000.6839	0224.3	046.3	50.08
196.0	005.2000	0176.8	035.7	358.8	000.6708	0229.4	046.3	50.21
197.0	005.2000	0177.0	035.8	358.0	000.6708	0232.0	046.5	50.24
198.0	005.2000	0176.8	035.7	357.3	000.6743	0233.6	046.7	50.23
199.0	005.2000	0176.6	035.7	356.6	000.6809	0234.2	047.0	50.20
200.0	005.2000	0178.2	035.9	355.9	000.6919	0235.4	047.1	50.27
201.0	005.2000	0180.4	036.1	355.1	000.7086	0237.9	047.2	50.44
202.0	005.2000	0183.0	036.3	354.3	000.7297	0240.6	047.2	50.63
203.0	005.2000	0184.5	036.4	353.5	000.7523	0242.9	047.4	50.77
204.0	005.2000	0185.7	036.5	352.8	000.7762	0244.2	047.7	50.86
205.0	005.2000	0186.4	036.6	352.1	000.7991	0243.7	048.0	50.85
206.0	005.2000	0187.1	036.6	351.5	000.8219	0241.5	048.3	50.77
207.0	005.2000	0187.9	036.7	350.8	000.8467	0238.8	048.6	50.66
208.0	005.2000	0188.1	036.7	350.2	000.8752	0233.8	049.0	50.46
209.0	005.2000	0187.2	036.6	349.7	000.8983	0229.2	049.4	50.20

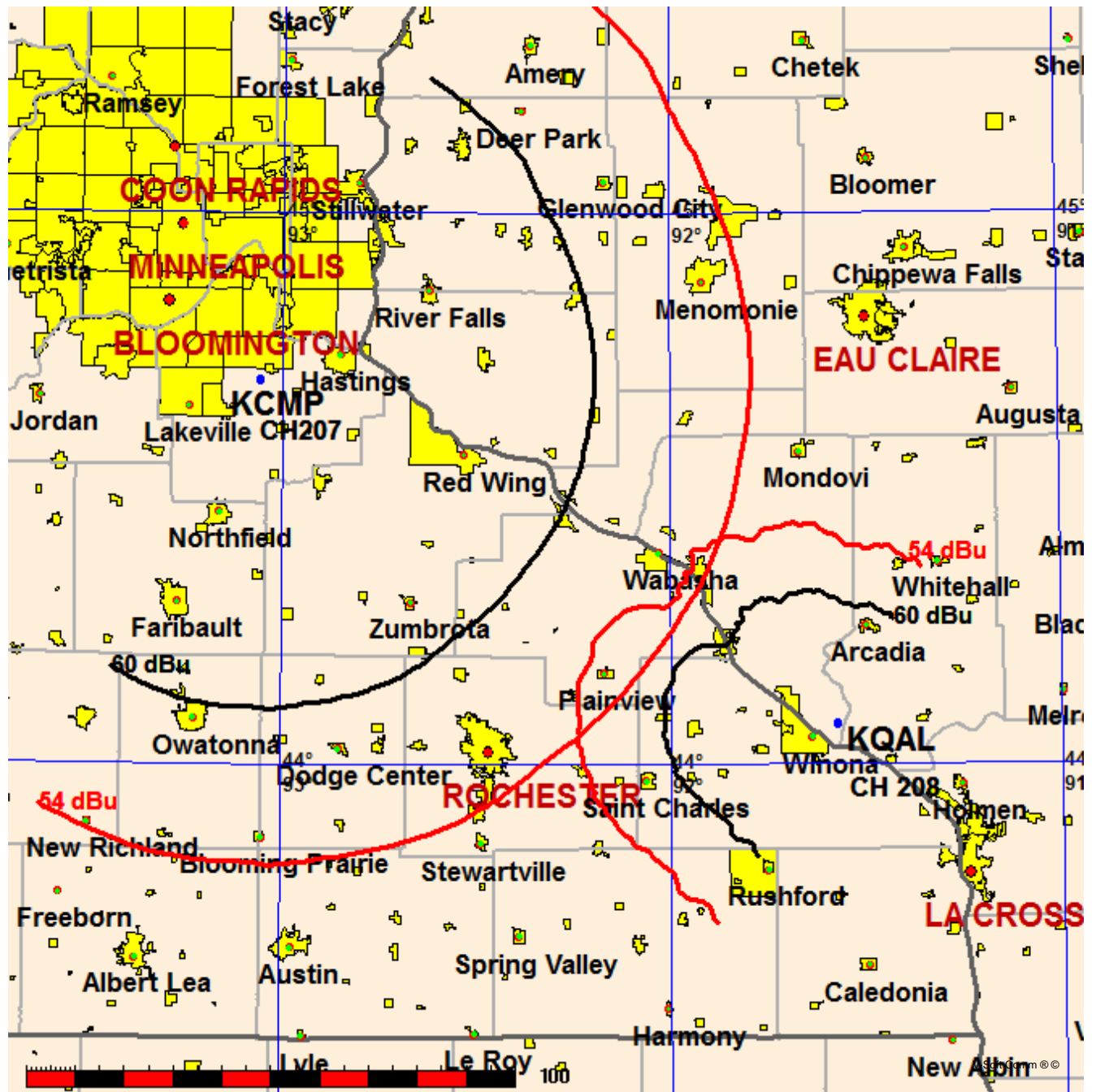
Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
210.0	005.2000	0187.4	036.6	349.1	000.9221	0225.5	049.8	50.00
211.0	005.2000	0187.9	036.7	348.5	000.9469	0225.2	050.2	49.94
212.0	005.2000	0188.1	036.7	348.0	000.9708	0225.5	050.6	49.89
213.0	005.2000	0188.1	036.7	347.5	000.9938	0226.4	051.1	49.85
214.0	005.2000	0187.9	036.7	347.0	001.0158	0225.7	051.6	49.72
215.0	005.2000	0187.5	036.7	346.6	001.0370	0224.0	052.1	49.54
216.0	005.2000	0188.1	036.7	346.1	001.0608	0222.0	052.5	49.37
217.0	005.2000	0189.8	036.8	345.5	001.0882	0220.2	052.9	49.24
218.0	005.2000	0191.9	037.0	344.9	001.1170	0218.4	053.3	49.12
219.0	005.2000	0192.7	037.1	344.5	001.1410	0216.5	053.8	48.94
220.0	005.2000	0193.3	037.1	344.1	001.1637	0213.6	054.3	48.70
221.0	005.2000	0194.8	037.2	343.6	001.1894	0210.5	054.8	48.47
222.0	005.2000	0195.8	037.3	343.2	001.2131	0208.9	055.3	48.29
223.0	005.2000	0197.0	037.4	342.7	001.2367	0208.5	055.8	48.15
224.0	005.2000	0198.5	037.5	342.3	001.2612	0206.5	056.3	47.95
225.0	005.2000	0200.2	037.7	341.9	001.2859	0203.1	056.9	47.68
226.0	005.2000	0201.3	037.8	341.5	001.3083	0200.9	057.4	47.45
227.0	005.2000	0202.3	037.8	341.2	001.3286	0200.0	058.0	47.27
228.0	005.2000	0202.9	037.9	340.9	001.3468	0199.7	058.6	47.09
229.0	005.2000	0204.5	038.0	340.5	001.3691	0199.7	059.1	46.95
230.0	005.2000	0206.1	038.1	340.2	001.3902	0199.4	059.7	46.79
231.0	005.2000	0206.5	038.2	340.0	001.4057	0199.1	060.3	46.60
232.0	005.2000	0206.7	038.2	339.7	001.4192	0198.6	060.9	46.39
233.0	005.2000	0207.8	038.3	339.5	001.4361	0198.1	061.6	46.20
234.0	005.2000	0209.7	038.4	339.2	001.4553	0196.8	062.2	45.99
235.0	005.2000	0211.0	038.5	339.0	001.4714	0195.2	062.8	45.75
236.0	005.2000	0212.9	038.7	338.7	001.4892	0193.4	063.4	45.50
237.0	005.2000	0215.7	038.9	338.4	001.5106	0192.0	064.0	45.29
238.0	005.2000	0218.9	039.1	338.1	001.5322	0190.6	064.7	45.09
239.0	005.2000	0221.0	039.2	337.9	001.5484	0189.3	065.3	44.85
240.0	005.2000	0222.8	039.4	337.7	001.5621	0187.9	066.0	44.61
241.0	005.2000	0224.7	039.5	337.5	001.5755	0186.5	066.6	44.36
242.0	005.2000	0227.0	039.7	337.3	001.5895	0185.1	067.3	44.12
243.0	005.2000	0229.3	039.8	337.1	001.6025	0183.8	068.0	43.87
244.0	005.2000	0231.2	039.9	337.0	001.6124	0182.8	068.7	43.63
245.0	005.2000	0232.1	040.0	336.9	001.6180	0182.4	069.4	43.39

Allocation Map Study  
Winona State University

FMCommander Single Allocation Study - 04-22-2010 - USGS 03 SEC  
KQAL's Overlaps (In= 4.85 km, Out= 21.61 km)

KQAL CH 208 C3 DA  
Lat= 44 04 26.0, Lng= 91 34 38.0  
2.5 kW 214.5 M HAAT, 480 M COR  
Prot.= 60 dBu, Intef.= 54 dBu

KCMP CH 207 C1 BLED20060308AIB  
Lat= 44 41 21.0, Lng= 93 04 21.0  
100.0 kW 234 M HAAT, 517 M COR  
Prot.= 60 dBu, Intef.= 54 dBu



04-22-2010

USGS 03 SEC Terrain Data

FMOver Analysis

KQAL

KCMP BLED20060308AIB

Channel = 208C3

Max ERP = 2.5 kW

RCAMSL = 480 M

N. Lat. 44 04 26.0

W. Lng. 91 34 38.0

Protected

60 dBu

Channel = 207C1

Max ERP = 100 kW

RCAMSL = 517 M

N. Lat. 44 41 21.0

W. Lng. 93 04 21.0

Interfering

54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
240.0	002.5000	0207.3	032.3	132.5	100.0000	0227.8	124.2	47.52	
241.0	002.5000	0206.8	032.3	132.4	100.0000	0227.8	123.7	47.62	
242.0	002.5000	0210.2	032.6	132.4	100.0000	0227.8	123.1	47.75	
243.0	002.5000	0213.4	032.8	132.5	100.0000	0227.8	122.5	47.88	
244.0	002.5000	0216.4	033.1	132.5	100.0000	0227.8	121.9	48.00	
245.0	002.5000	0217.8	033.2	132.4	100.0000	0227.8	121.3	48.12	
246.0	002.5000	0219.0	033.3	132.4	100.0000	0227.8	120.7	48.24	
247.0	002.5000	0221.3	033.5	132.3	100.0000	0227.9	120.1	48.37	
248.0	002.5000	0226.1	033.8	132.4	100.0000	0227.8	119.4	48.51	
249.0	002.5000	0228.8	034.0	132.3	100.0000	0227.9	118.8	48.64	
250.0	002.5000	0226.7	033.9	132.2	100.0000	0228.0	118.3	48.74	
251.0	002.5000	0231.5	034.2	132.2	100.0000	0228.0	117.6	48.89	
252.0	002.5000	0237.6	034.6	132.2	100.0000	0227.9	116.9	49.04	
253.0	002.5000	0239.9	034.8	132.1	100.0000	0228.0	116.3	49.17	
254.0	002.5000	0235.4	034.5	131.8	100.0000	0228.0	115.9	49.25	
255.0	002.5000	0239.4	034.7	131.8	100.0000	0228.0	115.3	49.40	
256.0	002.5000	0240.3	034.8	131.7	100.0000	0227.8	114.7	49.51	
257.0	002.5000	0236.8	034.6	131.4	100.0000	0227.6	114.4	49.59	
258.0	002.5000	0238.3	034.7	131.3	100.0000	0227.5	113.8	49.71	
259.0	002.5000	0242.6	034.9	131.2	100.0000	0227.5	113.2	49.86	
260.0	002.5000	0247.0	035.2	131.1	100.0000	0227.5	112.5	50.00	
261.0	002.5000	0247.8	035.3	130.9	100.0000	0227.4	112.0	50.12	
262.0	002.5000	0247.6	035.3	130.7	100.0000	0227.2	111.5	50.22	
263.0	002.5000	0248.3	035.3	130.5	100.0000	0227.1	111.0	50.34	
264.0	002.5000	0249.9	035.4	130.4	100.0000	0227.1	110.5	50.46	
265.0	002.5000	0256.0	035.8	130.3	100.0000	0227.1	109.8	50.64	
266.0	002.5000	0254.0	035.7	130.0	100.0000	0227.1	109.4	50.73	
267.0	002.5000	0250.0	035.4	129.7	100.0000	0227.1	109.2	50.79	
268.0	002.5000	0251.6	035.5	129.5	100.0000	0227.2	108.7	50.92	
269.0	002.5000	0249.5	035.4	129.2	100.0000	0227.4	108.4	51.00	
270.0	002.5000	0249.6	035.4	128.9	100.0000	0227.6	108.0	51.11	
271.0	002.5000	0250.0	035.4	128.7	100.0000	0227.7	107.6	51.22	
272.0	002.5000	0252.3	035.5	128.5	100.0000	0227.8	107.1	51.36	
273.0	002.5000	0253.1	035.6	128.2	100.0000	0228.0	106.7	51.47	
274.0	002.5000	0253.0	035.6	128.0	100.0000	0228.3	106.3	51.57	
275.0	002.5000	0254.1	035.7	127.7	100.0000	0228.5	105.9	51.69	

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
276.0	002.5000	0256.0	035.8	127.5	100.0000	0228.7	105.5	51.81
277.0	002.5000	0258.4	035.9	127.2	100.0000	0228.9	105.0	51.94
278.0	002.5000	0258.8	035.9	126.9	100.0000	0229.1	104.7	52.04
279.0	002.5000	0258.0	035.9	126.6	100.0000	0229.2	104.4	52.12
280.0	002.5000	0255.0	035.7	126.3	100.0000	0229.2	104.3	52.16
281.0	002.5000	0248.6	035.3	125.8	100.0000	0229.3	104.4	52.14
282.0	002.5000	0246.5	035.2	125.5	100.0000	0229.4	104.2	52.18
283.0	002.5000	0243.4	035.0	125.2	100.0000	0229.7	104.1	52.21
284.0	002.5000	0239.3	034.7	124.8	100.0000	0230.1	104.2	52.22
285.0	002.5000	0239.9	034.8	124.5	100.0000	0230.3	103.9	52.29
286.0	002.5000	0242.7	034.9	124.2	100.0000	0230.4	103.5	52.40
287.0	002.5000	0245.5	035.1	123.9	100.0000	0230.6	103.2	52.51
288.0	002.5000	0245.5	035.1	123.6	100.0000	0230.9	103.0	52.57
289.0	002.5000	0241.8	034.9	123.2	100.0000	0231.3	103.0	52.57
290.0	002.5000	0236.6	034.6	122.9	100.0000	0231.7	103.2	52.53
291.0	002.5000	0232.8	034.3	122.5	100.0000	0231.8	103.3	52.50
292.0	002.5000	0229.1	034.0	122.1	100.0000	0231.9	103.5	52.47
293.0	002.5000	0225.8	033.8	121.8	100.0000	0232.4	103.6	52.44
294.0	002.5000	0222.0	033.5	121.5	100.0000	0233.0	103.8	52.41
295.0	002.5000	0218.9	033.3	121.1	100.0000	0233.5	103.9	52.38
296.0	002.5000	0214.6	032.9	120.8	100.0000	0234.0	104.2	52.32
297.0	002.5000	0210.4	032.6	120.5	100.0000	0234.2	104.5	52.24
298.0	002.5000	0207.1	032.3	120.1	100.0000	0234.4	104.7	52.18
299.0	002.5000	0198.7	031.6	119.8	100.0000	0234.6	105.4	52.00
300.0	002.5000	0189.4	030.9	119.5	100.0000	0234.8	106.1	51.81
301.0	002.5000	0178.5	030.0	119.2	100.0000	0234.9	107.0	51.58
302.0	002.5000	0165.7	029.0	119.0	100.0000	0235.3	108.0	51.31
303.0	002.5000	0154.2	028.1	118.7	100.0000	0235.6	109.0	51.07
304.0	002.5000	0149.6	027.7	118.5	100.0000	0236.1	109.4	50.98
305.0	002.5000	0147.9	027.5	118.2	100.0000	0236.6	109.6	50.95
306.0	002.5000	0146.4	027.4	118.0	100.0000	0236.9	109.8	50.91
307.0	002.5000	0145.2	027.3	117.8	100.0000	0237.2	110.0	50.88
308.0	002.5000	0144.4	027.3	117.5	100.0000	0237.5	110.1	50.85
309.0	002.5000	0150.7	027.8	117.2	100.0000	0237.5	109.7	50.96
310.0	002.5000	0155.6	028.2	116.9	100.0000	0237.7	109.4	51.04
311.0	002.5000	0152.8	028.0	116.7	100.0000	0237.8	109.7	50.96
312.0	002.5000	0150.6	027.8	116.5	100.0000	0238.2	110.0	50.90
313.0	002.5000	0156.6	028.3	116.2	100.0000	0239.1	109.6	51.01
314.0	002.5000	0163.4	028.8	115.8	100.0000	0240.0	109.2	51.13
315.0	002.5000	0155.8	028.2	115.7	100.0000	0240.3	110.0	50.95
316.0	002.5000	0156.4	028.3	115.4	100.0000	0240.7	110.1	50.93
317.0	002.5000	0164.0	028.9	115.1	100.0000	0240.9	109.7	51.04
318.0	002.5000	0173.4	029.6	114.7	100.0000	0241.0	109.2	51.18
319.0	002.5000	0183.2	030.4	114.3	100.0000	0241.0	108.7	51.31
320.0	002.5000	0180.1	030.2	114.1	100.0000	0241.2	109.1	51.20
321.0	002.5000	0175.0	029.8	113.9	100.0000	0241.4	109.7	51.06
322.0	002.5000	0168.6	029.3	113.8	100.0000	0241.6	110.4	50.89
323.0	002.5000	0169.0	029.3	113.6	100.0000	0241.9	110.6	50.84
324.0	002.5000	0173.0	029.6	113.2	100.0000	0242.0	110.6	50.86
325.0	002.5000	0171.1	029.5	113.1	100.0000	0241.9	111.0	50.76
326.0	002.5000	0168.8	029.3	112.9	100.0000	0241.8	111.4	50.65



Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
327.0	002.5000	0168.1	029.2	112.7	100.0000	0241.6	111.7	50.56
328.0	002.4377	0170.5	029.2	112.5	100.0000	0241.4	112.0	50.50
329.0	002.3280	0170.2	028.9	112.3	100.0000	0241.3	112.5	50.36
330.0	002.2232	0171.2	028.7	112.2	100.0000	0241.2	113.0	50.25
331.0	002.1231	0171.5	028.4	112.1	100.0000	0241.1	113.5	50.12
332.0	002.0276	0167.3	027.8	112.1	100.0000	0241.1	114.3	49.94
333.0	001.9363	0165.4	027.4	112.0	100.0000	0241.1	115.0	49.80
334.0	001.8492	0166.7	027.2	111.9	100.0000	0241.0	115.4	49.70
335.0	001.7659	0168.4	027.0	111.8	100.0000	0241.0	115.8	49.60
336.0	001.6865	0175.9	027.3	111.5	100.0000	0241.1	116.0	49.57
337.0	001.6105	0182.9	027.5	111.3	100.0000	0241.4	116.2	49.54
338.0	001.5381	0190.1	027.6	111.1	100.0000	0241.7	116.4	49.49
339.0	001.4688	0195.5	027.7	110.9	100.0000	0241.9	116.7	49.43
340.0	001.4027	0199.3	027.7	110.7	100.0000	0242.0	117.1	49.35
341.0	001.3396	0199.8	027.4	110.7	100.0000	0242.0	117.6	49.24
342.0	001.2793	0204.0	027.4	110.5	100.0000	0242.1	118.0	49.16
343.0	001.2217	0208.6	027.4	110.4	100.0000	0242.3	118.4	49.08
344.0	001.1667	0213.2	027.4	110.2	100.0000	0242.4	118.7	49.01
345.0	001.1142	0218.6	027.5	110.1	100.0000	0242.6	119.1	48.94
346.0	001.0641	0221.9	027.4	110.0	100.0000	0242.7	119.5	48.84
347.0	001.0162	0225.6	027.3	109.9	100.0000	0242.8	119.9	48.76
348.0	000.9705	0225.5	027.0	109.9	100.0000	0242.8	120.5	48.64
349.0	000.9268	0225.1	026.7	109.9	100.0000	0242.8	121.1	48.52
350.0	000.8851	0231.6	026.8	109.7	100.0000	0242.9	121.4	48.45
351.0	000.8381	0239.8	026.9	109.6	100.0000	0243.0	121.8	48.38
352.0	000.8037	0243.3	026.8	109.5	100.0000	0243.1	122.2	48.29
353.0	000.7701	0244.0	026.6	109.5	100.0000	0243.1	122.7	48.18
354.0	000.7371	0241.4	026.2	109.6	100.0000	0243.0	123.3	48.06
355.0	000.7102	0238.2	025.8	109.6	100.0000	0243.0	123.9	47.94
356.0	000.6891	0235.2	025.5	109.7	100.0000	0243.0	124.5	47.83
357.0	000.6760	0233.7	025.3	109.7	100.0000	0243.0	124.9	47.73
358.0	000.6708	0232.1	025.2	109.6	100.0000	0243.0	125.4	47.64
359.0	000.6708	0227.7	025.0	109.7	100.0000	0243.0	125.9	47.54

04-22-2010 USGS 03 SEC Terrain Data

KCMP BLED20060308AIB

KQAL

Channel = 207C1  
 Max ERP = 100 kW  
 RCAMSL = 517 M  
 N. Lat. 44 41 21.0  
 W. Lng. 93 04 21.0  
 Protected  
 60 dBu

Channel = 208C3  
 Max ERP = 2.5 kW  
 RCAMSL = 480 M  
 N. Lat. 44 04 26.0  
 W. Lng. 91 34 38.0  
 Interfering  
 54 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
059.0	100.0000	0243.2	067.7	329.8	002.2460	0170.6	119.9	30.55	
060.0	100.0000	0242.5	067.6	329.8	002.2426	0170.6	118.6	30.79	
061.0	100.0000	0242.3	067.6	329.8	002.2454	0170.6	117.4	31.02	
062.0	100.0000	0242.8	067.6	329.8	002.2461	0170.6	116.2	31.25	
063.0	100.0000	0243.6	067.7	329.8	002.2466	0170.6	115.1	31.49	
064.0	100.0000	0244.2	067.8	329.7	002.2492	0170.5	113.9	31.73	
065.0	100.0000	0243.7	067.7	329.7	002.2576	0170.4	112.7	31.97	
066.0	100.0000	0243.3	067.7	329.6	002.2666	0170.3	111.6	32.23	
067.0	100.0000	0243.1	067.7	329.5	002.2764	0170.3	110.4	32.49	
068.0	100.0000	0243.3	067.7	329.4	002.2858	0170.3	109.2	32.76	
069.0	100.0000	0243.6	067.7	329.3	002.2955	0170.3	108.1	33.04	
070.0	100.0000	0243.8	067.7	329.2	002.3075	0170.2	106.9	33.32	
071.0	100.0000	0244.8	067.8	329.1	002.3174	0170.1	105.7	33.61	
072.0	100.0000	0245.2	067.8	329.0	002.3316	0170.2	104.6	33.92	
073.0	100.0000	0245.2	067.8	328.8	002.3490	0170.3	103.4	34.23	
074.0	100.0000	0245.9	067.9	328.7	002.3650	0170.4	102.3	34.55	
075.0	100.0000	0246.4	067.9	328.5	002.3840	0170.6	101.1	34.89	
076.0	100.0000	0246.5	067.9	328.3	002.4064	0170.9	100.0	35.24	
077.0	100.0000	0247.4	068.0	328.1	002.4267	0170.7	098.9	35.57	
078.0	100.0000	0248.1	068.1	327.9	002.4446	0170.4	097.7	35.90	
079.0	100.0000	0248.2	068.1	327.6	002.4603	0169.9	096.6	36.22	
080.0	100.0000	0248.3	068.1	327.4	002.4771	0169.1	095.5	36.53	
081.0	100.0000	0248.7	068.1	327.1	002.4943	0168.3	094.4	36.84	
082.0	100.0000	0249.1	068.2	326.8	002.5000	0168.1	093.3	37.16	
083.0	100.0000	0249.6	068.2	326.5	002.5000	0168.0	092.3	37.47	
084.0	100.0000	0250.1	068.2	326.2	002.5000	0168.6	091.2	37.81	
085.0	100.0000	0250.6	068.3	325.8	002.5000	0169.3	090.1	38.15	
086.0	100.0000	0250.7	068.3	325.4	002.5000	0170.1	089.1	38.49	
087.0	100.0000	0250.9	068.3	325.0	002.5000	0171.0	088.1	38.83	
088.0	100.0000	0251.0	068.3	324.6	002.5000	0172.0	087.1	39.18	
089.0	100.0000	0251.2	068.3	324.2	002.5000	0173.1	086.1	39.52	
090.0	100.0000	0251.0	068.3	323.7	002.5000	0172.3	085.1	39.78	
091.0	100.0000	0250.7	068.3	323.2	002.5000	0169.3	084.2	39.94	

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
092.0	100.0000	0249.9	068.2	322.6	002.5000	0168.0	083.3	40.16
093.0	100.0000	0249.5	068.2	322.1	002.5000	0168.5	082.5	40.46
094.0	100.0000	0248.9	068.2	321.5	002.5000	0171.2	081.6	40.84
095.0	100.0000	0248.4	068.1	320.9	002.5000	0176.0	080.8	41.30
096.0	100.0000	0247.7	068.1	320.2	002.5000	0179.4	080.0	41.69
097.0	100.0000	0247.1	068.0	319.6	002.5000	0182.1	079.2	42.05
098.0	100.0000	0246.3	067.9	318.9	002.5000	0183.0	078.5	42.32
099.0	100.0000	0245.4	067.9	318.2	002.5000	0176.3	077.8	42.26
100.0	100.0000	0245.2	067.8	317.5	002.5000	0167.5	077.1	42.11
101.0	100.0000	0245.2	067.8	316.8	002.5000	0162.6	076.4	42.11
102.0	100.0000	0244.4	067.8	316.0	002.5000	0156.5	075.8	42.02
103.0	100.0000	0244.7	067.8	315.3	002.5000	0154.8	075.1	42.15
104.0	100.0000	0244.9	067.8	314.5	002.5000	0159.2	074.5	42.56
105.0	100.0000	0245.3	067.9	313.7	002.5000	0163.3	073.9	42.94
106.0	100.0000	0245.4	067.9	312.9	002.5000	0155.4	073.3	42.75
107.0	100.0000	0244.9	067.8	312.0	002.5000	0150.7	072.9	42.67
108.0	100.0000	0244.1	067.8	311.2	002.5000	0152.4	072.5	42.88
109.0	100.0000	0243.4	067.7	310.3	002.5000	0154.7	072.1	43.12
110.0	100.0000	0242.7	067.6	309.4	002.5000	0153.4	071.7	43.16
111.0	100.0000	0241.8	067.6	308.4	002.5000	0146.5	071.4	42.91
112.0	100.0000	0241.1	067.5	307.5	002.5000	0143.8	071.2	42.86
113.0	100.0000	0241.9	067.6	306.6	002.5000	0146.3	070.8	43.10
114.0	100.0000	0241.3	067.5	305.7	002.5000	0146.8	070.6	43.19
115.0	100.0000	0241.0	067.5	304.7	002.5000	0148.4	070.4	43.33
116.0	100.0000	0239.6	067.4	303.8	002.5000	0149.8	070.4	43.42
117.0	100.0000	0237.6	067.2	302.8	002.5000	0156.1	070.4	43.72
118.0	100.0000	0236.9	067.2	301.8	002.5000	0167.6	070.4	44.28
119.0	100.0000	0235.2	067.0	300.9	002.5000	0179.8	070.5	44.80
120.0	100.0000	0234.5	066.9	299.9	002.5000	0190.2	070.5	45.21
121.0	100.0000	0233.7	066.9	299.0	002.5000	0198.8	070.6	45.54
122.0	100.0000	0232.1	066.7	298.0	002.5000	0206.8	070.9	45.79
123.0	100.0000	0231.6	066.7	297.1	002.5000	0210.1	071.0	45.86
124.0	100.0000	0230.5	066.6	296.2	002.5000	0213.6	071.3	45.92
125.0	100.0000	0229.9	066.5	295.3	002.5000	0217.7	071.5	46.00
126.0	100.0000	0229.3	066.5	294.4	002.5000	0221.0	071.8	46.03
127.0	100.0000	0229.0	066.5	293.5	002.5000	0223.7	072.1	46.04
128.0	100.0000	0228.3	066.4	292.6	002.5000	0227.3	072.4	46.04
129.0	100.0000	0227.6	066.4	291.7	002.5000	0229.9	072.8	46.01
130.0	100.0000	0227.1	066.3	290.9	002.5000	0233.2	073.2	45.99
131.0	100.0000	0227.4	066.3	290.0	002.5000	0236.5	073.6	45.98
132.0	100.0000	0228.0	066.4	289.2	002.5000	0240.8	074.0	46.00
133.0	100.0000	0227.6	066.4	288.4	002.5000	0244.3	074.5	45.95
134.0	100.0000	0226.5	066.3	287.6	002.5000	0246.2	075.1	45.81
135.0	100.0000	0225.8	066.2	286.9	002.5000	0245.0	075.7	45.58
136.0	100.0000	0225.1	066.1	286.1	002.5000	0243.1	076.3	45.30
137.0	100.0000	0224.6	066.1	285.4	002.5000	0240.9	077.0	45.02
138.0	100.0000	0224.0	066.0	284.7	002.5000	0239.8	077.6	44.77
139.0	100.0000	0223.0	065.9	284.1	002.5000	0239.4	078.4	44.51
140.0	100.0000	0222.2	065.9	283.4	002.5000	0241.6	079.1	44.35
141.0	100.0000	0221.1	065.8	282.8	002.5000	0243.9	079.9	44.17
142.0	100.0000	0220.7	065.7	282.2	002.5000	0246.0	080.7	43.99

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
143.0	100.0000	0220.4	065.7	281.6	002.5000	0246.7	081.4	43.76
144.0	100.0000	0220.5	065.7	281.0	002.5000	0248.5	082.2	43.57
145.0	100.0000	0222.5	065.9	280.4	002.5000	0252.4	082.9	43.47
146.0	100.0000	0224.7	066.1	279.7	002.5000	0256.3	083.6	43.37
147.0	100.0000	0226.0	066.2	279.1	002.5000	0257.8	084.3	43.17
148.0	100.0000	0226.4	066.2	278.6	002.5000	0258.5	085.2	42.92
149.0	100.0000	0227.6	066.4	278.1	002.5000	0258.8	086.0	42.66
150.0	100.0000	0229.4	066.5	277.5	002.5000	0258.7	086.8	42.40
151.0	100.0000	0230.1	066.6	277.0	002.5000	0258.4	087.8	42.10
152.0	100.0000	0230.4	066.6	276.6	002.5000	0257.1	088.7	41.76
153.0	100.0000	0230.4	066.6	276.2	002.5000	0256.4	089.7	41.43
154.0	100.0000	0231.8	066.7	275.7	002.5000	0255.2	090.6	41.10
155.0	100.0000	0233.3	066.8	275.3	002.5000	0254.5	091.5	40.78
156.0	100.0000	0234.0	066.9	274.9	002.5000	0254.0	092.5	40.46
157.0	100.0000	0233.8	066.9	274.6	002.5000	0253.4	093.6	40.11
158.0	100.0000	0234.0	066.9	274.3	002.5000	0253.1	094.6	39.78
159.0	100.0000	0233.6	066.9	274.0	002.5000	0253.0	095.7	39.44
160.0	100.0000	0233.1	066.8	273.7	002.5000	0253.2	096.8	39.11
161.0	100.0000	0232.4	066.8	273.5	002.5000	0253.1	097.9	38.77
162.0	100.0000	0232.0	066.7	273.3	002.5000	0253.0	098.9	38.43
163.0	100.0000	0231.9	066.7	273.0	002.5000	0253.1	100.0	38.10
164.0	100.0000	0231.7	066.7	272.8	002.5000	0253.2	101.2	37.77
165.0	100.0000	0230.9	066.6	272.7	002.5000	0253.1	102.3	37.43
166.0	100.0000	0230.8	066.6	272.5	002.5000	0253.0	103.4	37.10
167.0	100.0000	0230.5	066.6	272.4	002.5000	0253.0	104.5	36.77
168.0	100.0000	0230.2	066.6	272.2	002.5000	0252.9	105.7	36.45
169.0	100.0000	0229.4	066.5	272.1	002.5000	0252.6	106.8	36.12
170.0	100.0000	0229.0	066.5	272.0	002.5000	0252.4	107.9	35.80
171.0	100.0000	0228.8	066.5	271.9	002.5000	0252.2	109.1	35.49
172.0	100.0000	0227.6	066.4	271.9	002.5000	0252.1	110.2	35.19
173.0	100.0000	0228.3	066.4	271.7	002.5000	0251.8	111.4	34.90
174.0	100.0000	0229.1	066.5	271.6	002.5000	0251.5	112.5	34.61
175.0	100.0000	0230.2	066.6	271.5	002.5000	0251.2	113.6	34.34
176.0	100.0000	0230.8	066.6	271.4	002.5000	0250.9	114.8	34.07
177.0	100.0000	0231.8	066.7	271.4	002.5000	0250.7	116.0	33.80
178.0	100.0000	0232.7	066.8	271.3	002.5000	0250.5	117.1	33.54



04-22-2010

USGS 03 SEC Terrain Data

FMOver Analysis

KQAL

1227135 BNPED20071022ATB

Channel = 208C3

Max ERP = 2.5 kW

RCAMSL = 480 M

N. Lat. 44 04 26.0

W. Lng. 91 34 38.0

Protected

60 dBu

Channel = 208C3

Max ERP = 25 kW

RCAMSL = 364 M

N. Lat. 43 35 03.2

W. Lng. 89 49 11.2

Interfering

40 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
051.0	000.4389	0227.9	022.6	299.7	025.0000	0067.6	141.1	33.90	
052.0	000.4285	0222.2	022.2	299.4	025.0000	0067.3	140.9	33.93	
053.0	000.4182	0214.3	021.7	299.2	025.0000	0067.0	140.8	33.94	
054.0	000.4121	0214.0	021.6	299.1	025.0000	0066.9	140.5	34.00	
055.0	000.4040	0216.0	021.6	299.0	025.0000	0066.8	140.1	34.06	
056.0	000.4000	0216.7	021.6	298.9	025.0000	0066.7	139.8	34.12	
057.0	000.3940	0219.9	021.7	298.9	025.0000	0066.7	139.4	34.18	
058.0	000.3901	0221.5	021.7	298.8	025.0000	0066.6	139.1	34.24	
059.0	000.3861	0218.5	021.5	298.7	025.0000	0066.3	138.9	34.28	
060.0	000.3822	0222.2	021.6	298.6	025.0000	0066.3	138.5	34.35	
061.0	000.3783	0226.0	021.8	298.6	025.0000	0066.2	138.1	34.42	
062.0	000.3744	0229.1	021.8	298.5	025.0000	0066.2	137.8	34.48	
063.0	000.3725	0231.8	021.9	298.5	025.0000	0066.1	137.4	34.55	
064.0	000.3706	0232.6	022.0	298.4	025.0000	0065.9	137.1	34.60	
065.0	000.3706	0229.6	021.8	298.2	025.0000	0065.6	136.9	34.63	
066.0	000.3706	0228.1	021.7	298.1	025.0000	0065.3	136.6	34.67	
067.0	000.3706	0225.9	021.6	298.0	025.0000	0064.9	136.4	34.70	
068.0	000.3822	0223.2	021.7	297.9	025.0000	0064.7	136.1	34.75	
069.0	000.4040	0219.0	021.8	297.8	025.0000	0064.4	135.7	34.80	
070.0	000.4306	0212.1	021.8	297.7	025.0000	0064.0	135.4	34.84	
071.0	000.4601	0207.9	021.9	297.6	025.0000	0063.8	135.1	34.90	
072.0	000.4862	0199.3	021.8	297.5	025.0000	0063.4	134.9	34.92	
073.0	000.5018	0195.1	021.7	297.3	025.0000	0062.9	134.7	34.95	
074.0	000.5040	0197.5	021.8	297.3	025.0000	0062.7	134.3	35.00	
075.0	000.5018	0197.2	021.8	297.1	025.0000	0062.3	134.1	35.03	
076.0	000.4973	0199.7	021.9	297.0	025.0000	0062.1	133.8	35.08	
077.0	000.4928	0203.8	022.0	296.9	025.0000	0061.9	133.4	35.14	
078.0	000.4884	0212.2	022.4	296.9	025.0000	0061.9	132.9	35.24	
079.0	000.4862	0217.0	022.6	296.8	025.0000	0061.7	132.5	35.31	
080.0	000.4862	0215.1	022.5	296.7	025.0000	0061.2	132.3	35.32	
081.0	000.4862	0218.0	022.7	296.6	025.0000	0061.0	132.0	35.38	
082.0	000.4862	0222.0	022.9	296.5	025.0000	0060.8	131.6	35.44	
083.0	000.4884	0224.0	023.0	296.4	025.0000	0060.5	131.3	35.49	
084.0	000.4906	0227.4	023.2	296.3	025.0000	0060.2	130.9	35.55	
085.0	000.4973	0231.1	023.4	296.2	025.0000	0059.9	130.5	35.61	
086.0	000.5085	0234.4	023.7	296.1	025.0000	0059.6	130.1	35.68	

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
087.0	000.5221	0237.7	024.0	296.0	025.0000	0059.2	129.6	35.76
088.0	000.5406	0241.2	024.4	295.9	025.0000	0058.9	129.1	35.84
089.0	000.5593	0246.2	024.8	295.8	025.0000	0058.5	128.5	35.93
090.0	000.5857	0248.2	025.2	295.7	025.0000	0058.1	128.0	36.00
091.0	000.6133	0252.7	025.7	295.6	025.0000	0057.7	127.4	36.10
092.0	000.6422	0258.5	026.2	295.5	025.0000	0057.5	126.7	36.21
093.0	000.6725	0260.8	026.6	295.4	025.0000	0057.2	126.2	36.30
094.0	000.7041	0261.8	026.9	295.2	025.0000	0057.1	125.7	36.38
095.0	000.7373	0261.9	027.2	295.1	025.0000	0057.1	125.3	36.46
096.0	000.7721	0261.6	027.5	294.9	025.0000	0057.3	124.9	36.54
097.0	000.8085	0260.8	027.8	294.7	025.0000	0057.7	124.5	36.63
098.0	000.8466	0260.3	028.0	294.5	025.0000	0058.2	124.1	36.72
099.0	000.8865	0259.8	028.3	294.3	025.0000	0058.5	123.7	36.81
100.0	000.9282	0259.2	028.6	294.1	025.0000	0058.8	123.3	36.89
101.0	000.9720	0258.5	028.8	293.9	025.0000	0058.9	122.9	36.96
102.0	001.0178	0257.7	029.1	293.7	025.0000	0059.1	122.6	37.03
103.0	001.0658	0257.5	029.4	293.5	025.0000	0059.4	122.2	37.11
104.0	001.1160	0257.9	029.8	293.3	025.0000	0059.5	121.8	37.19
105.0	001.1686	0258.8	030.1	293.1	025.0000	0059.6	121.3	37.27
106.0	001.2237	0259.5	030.5	292.9	025.0000	0059.6	120.9	37.35
107.0	001.2813	0260.0	030.9	292.6	025.0000	0059.6	120.5	37.42
108.0	001.3417	0260.5	031.2	292.4	025.0000	0059.8	120.1	37.50
109.0	001.4050	0261.0	031.6	292.1	025.0000	0060.1	119.7	37.58
110.0	001.4712	0261.6	032.0	291.9	025.0000	0060.3	119.3	37.66
111.0	001.5027	0262.0	032.2	291.6	025.0000	0060.4	119.1	37.70
112.0	001.5347	0262.3	032.4	291.3	025.0000	0060.2	118.9	37.72
113.0	001.5669	0262.7	032.6	291.0	025.0000	0059.8	118.8	37.74
114.0	001.5995	0262.9	032.7	290.8	025.0000	0059.4	118.6	37.75
115.0	001.6324	0263.3	032.9	290.5	025.0000	0058.9	118.5	37.75
116.0	001.6656	0263.6	033.1	290.2	025.0000	0058.4	118.4	37.75
117.0	001.6992	0264.2	033.3	289.9	025.0000	0057.8	118.3	37.75
118.0	001.7332	0264.8	033.5	289.6	025.0000	0057.2	118.2	37.74
119.0	001.7674	0265.4	033.7	289.3	025.0000	0056.5	118.1	37.73
120.0	001.8020	0266.0	033.8	289.0	025.0000	0056.3	118.0	37.74
121.0	001.8114	0266.6	033.9	288.7	025.0000	0056.7	118.1	37.74
122.0	001.8207	0267.6	034.0	288.4	025.0000	0057.2	118.1	37.75
123.0	001.8301	0269.1	034.1	288.1	025.0000	0057.4	118.2	37.76
124.0	001.8396	0269.8	034.2	287.8	025.0000	0057.5	118.3	37.74
125.0	001.8490	0271.4	034.4	287.6	025.0000	0057.5	118.3	37.73
126.0	001.8585	0273.8	034.5	287.2	025.0000	0057.1	118.3	37.71
127.0	001.8680	0277.5	034.8	286.9	025.0000	0056.6	118.3	37.70
128.0	001.8775	0279.4	034.9	286.6	025.0000	0056.1	118.4	37.66
129.0	001.8870	0281.3	035.1	286.3	025.0000	0055.3	118.5	37.61
130.0	001.8966	0282.6	035.2	286.0	025.0000	0054.8	118.6	37.56
131.0	001.8473	0281.1	034.9	285.8	025.0000	0054.6	119.2	37.46
132.0	001.7986	0276.1	034.4	285.7	025.0000	0054.4	119.9	37.32
133.0	001.7506	0272.9	034.0	285.5	025.0000	0054.3	120.5	37.21
134.0	001.7032	0266.9	033.5	285.4	025.0000	0054.4	121.3	37.07
135.0	001.6565	0261.0	032.9	285.3	025.0000	0054.5	122.1	36.93
136.0	001.6104	0254.7	032.3	285.2	025.0000	0054.6	122.9	36.79
137.0	001.5650	0248.5	031.7	285.2	025.0000	0054.6	123.7	36.64

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
138.0	001.5202	0242.4	031.1	285.1	025.0000	0054.7	124.5	36.50
139.0	001.4761	0237.1	030.5	285.0	025.0000	0054.8	125.2	36.37
140.0	001.4326	0238.1	030.4	284.9	025.0000	0055.0	125.7	36.30
141.0	001.4558	0244.8	030.9	284.5	025.0000	0055.4	125.6	36.34
142.0	001.4792	0258.0	031.8	284.1	025.0000	0055.8	125.2	36.42
143.0	001.5027	0261.6	032.2	283.8	025.0000	0055.8	125.3	36.41
144.0	001.5265	0256.8	032.0	283.6	025.0000	0055.9	125.8	36.32
145.0	001.5504	0242.3	031.2	283.7	025.0000	0055.9	126.7	36.15
146.0	001.5745	0232.7	030.7	283.7	025.0000	0055.9	127.4	36.01
147.0	001.5988	0229.7	030.6	283.5	025.0000	0055.9	127.9	35.93
148.0	001.6233	0224.7	030.4	283.4	025.0000	0055.9	128.4	35.83
149.0	001.6480	0219.0	030.1	283.4	025.0000	0055.9	129.0	35.73
150.0	001.6728	0217.1	030.1	283.2	025.0000	0055.8	129.4	35.65
151.0	001.7140	0221.9	030.6	282.9	025.0000	0055.5	129.4	35.63
152.0	001.7682	0226.3	031.1	282.5	025.0000	0055.4	129.5	35.61
153.0	001.9228	0223.1	031.5	282.3	025.0000	0055.5	129.7	35.58
154.0	002.1437	0215.5	031.8	282.0	025.0000	0055.7	130.0	35.54
155.0	002.4157	0210.7	032.4	281.7	025.0000	0056.4	130.1	35.55
156.0	002.4503	0209.5	032.4	281.5	025.0000	0056.6	130.5	35.47
157.0	002.4800	0212.2	032.7	281.3	025.0000	0056.6	130.8	35.42
158.0	002.4950	0211.5	032.7	281.1	025.0000	0056.6	131.3	35.33
159.0	002.5000	0206.1	032.3	281.2	025.0000	0056.6	132.0	35.20
160.0	002.5000	0202.9	032.0	281.1	025.0000	0056.6	132.6	35.08
161.0	002.5000	0200.7	031.8	281.1	025.0000	0056.6	133.2	34.98
162.0	002.5000	0203.3	032.0	280.9	025.0000	0056.6	133.6	34.91
163.0	002.5000	0207.8	032.4	280.6	025.0000	0056.7	133.9	34.85
164.0	002.5000	0204.0	032.1	280.7	025.0000	0056.7	134.6	34.73
165.0	002.5000	0198.9	031.7	280.7	025.0000	0056.6	135.2	34.60
166.0	002.5000	0194.0	031.3	280.8	025.0000	0056.6	135.9	34.47
167.0	002.5000	0188.9	030.8	280.9	025.0000	0056.6	136.5	34.35
168.0	002.5000	0188.1	030.8	280.8	025.0000	0056.6	137.1	34.25
169.0	002.5000	0190.4	031.0	280.6	025.0000	0056.7	137.5	34.18
170.0	002.5000	0191.1	031.0	280.5	025.0000	0056.7	138.0	34.09



## 04-22-2010 USGS 03 SEC Terrain Data

1227135 BNPED20071022ATB

KQAL

Channel = 208C3

Max ERP = 25 kW

RCAMSL = 364 M

N. Lat. 43 35 03.2

W. Lng. 89 49 11.2

Protected

60 dBu

Channel = 208C3

Max ERP = 2.5 kW

RCAMSL = 480 M

N. Lat. 44 04 26.0

W. Lng. 91 34 38.0

Interfering

40 dBu

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)	IX (km)
232.0	025.0000	0078.7	035.1	123.3	001.8333	0269.4	136.7	28.60	
233.0	025.0000	0079.0	035.2	123.3	001.8327	0269.4	136.1	28.71	
234.0	025.0000	0079.4	035.3	123.2	001.8322	0269.3	135.5	28.83	
235.0	025.0000	0079.8	035.4	123.2	001.8316	0269.3	134.9	28.96	
236.0	025.0000	0080.4	035.5	123.1	001.8312	0269.2	134.3	29.08	
237.0	025.0000	0081.0	035.6	123.1	001.8307	0269.2	133.6	29.21	
238.0	025.0000	0081.8	035.8	123.0	001.8303	0269.1	133.0	29.34	
239.0	025.0000	0083.4	036.1	123.0	001.8304	0269.1	132.3	29.48	
240.0	025.0000	0083.5	036.1	122.9	001.8293	0269.0	131.7	29.59	
241.0	025.0000	0083.2	036.0	122.8	001.8280	0268.8	131.2	29.70	
242.0	025.0000	0082.2	035.8	122.6	001.8261	0268.6	130.7	29.78	
243.0	025.0000	0081.1	035.6	122.3	001.8240	0268.2	130.3	29.86	
244.0	025.0000	0079.9	035.4	122.1	001.8218	0267.9	129.9	29.93	
245.0	025.0000	0078.6	035.1	121.9	001.8196	0267.4	129.5	29.99	
246.0	025.0000	0078.0	035.0	121.7	001.8178	0267.1	129.0	30.07	
247.0	025.0000	0077.5	034.9	121.5	001.8160	0266.9	128.6	30.15	
248.0	025.0000	0076.6	034.7	121.3	001.8139	0266.7	128.2	30.22	
249.0	025.0000	0075.5	034.5	121.0	001.8116	0266.6	127.8	30.28	
250.0	025.0000	0074.0	034.1	120.8	001.8090	0266.6	127.6	30.33	
251.0	025.0000	0073.1	034.0	120.5	001.8069	0266.4	127.2	30.40	
252.0	025.0000	0072.6	033.9	120.3	001.8049	0266.2	126.8	30.46	
253.0	025.0000	0072.0	033.7	120.1	001.8028	0266.0	126.5	30.53	
254.0	025.0000	0070.5	033.4	119.8	001.7949	0265.9	126.3	30.54	
255.0	025.0000	0069.1	033.1	119.5	001.7851	0265.7	126.1	30.56	
256.0	025.0000	0067.9	032.8	119.2	001.7759	0265.6	125.8	30.58	
257.0	025.0000	0066.3	032.5	118.9	001.7656	0265.4	125.7	30.58	
258.0	025.0000	0064.8	032.1	118.7	001.7554	0265.2	125.6	30.57	
259.0	025.0000	0064.2	032.0	118.4	001.7473	0265.1	125.3	30.60	
260.0	025.0000	0065.4	032.3	118.3	001.7434	0265.0	124.7	30.71	
261.0	025.0000	0065.1	032.2	118.1	001.7358	0264.8	124.5	30.75	
262.0	025.0000	0064.0	031.9	117.8	001.7264	0264.7	124.3	30.75	
263.0	025.0000	0062.4	031.6	117.5	001.7162	0264.5	124.3	30.73	
264.0	025.0000	0061.6	031.4	117.2	001.7076	0264.3	124.1	30.74	

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
265.0	025.0000	0061.9	031.5	117.1	001.7010	0264.2	123.7	30.79
266.0	025.0000	0062.8	031.7	116.9	001.6954	0264.1	123.3	30.87
267.0	025.0000	0062.2	031.5	116.6	001.6870	0264.0	123.1	30.88
268.0	025.0000	0060.5	031.2	116.3	001.6765	0263.8	123.2	30.84
269.0	025.0000	0060.0	031.1	116.1	001.6684	0263.7	123.0	30.85
270.0	025.0000	0060.7	031.2	115.9	001.6619	0263.6	122.6	30.91
271.0	025.0000	0060.6	031.2	115.7	001.6543	0263.5	122.4	30.94
272.0	025.0000	0061.5	031.4	115.5	001.6478	0263.4	122.0	31.01
273.0	025.0000	0062.3	031.6	115.3	001.6410	0263.3	121.6	31.06
274.0	025.0000	0063.3	031.8	115.1	001.6344	0263.3	121.2	31.13
275.0	025.0000	0064.6	032.1	114.9	001.6279	0263.2	120.7	31.22
276.0	025.0000	0064.8	032.1	114.6	001.6199	0263.2	120.4	31.24
277.0	025.0000	0066.0	032.4	114.4	001.6130	0263.1	120.0	31.32
278.0	025.0000	0064.8	032.1	114.1	001.6033	0263.0	120.1	31.27
279.0	025.0000	0060.2	031.1	113.7	001.5906	0262.8	120.9	31.06
280.0	025.0000	0057.3	030.4	113.4	001.5799	0262.7	121.4	30.92
281.0	025.0000	0056.6	030.2	113.1	001.5713	0262.7	121.5	30.88
282.0	025.0000	0055.8	030.0	112.9	001.5628	0262.7	121.6	30.84
283.0	025.0000	0055.6	030.0	112.6	001.5549	0262.6	121.5	30.83
284.0	025.0000	0055.8	030.1	112.4	001.5472	0262.5	121.3	30.84
285.0	025.0000	0054.8	029.8	112.1	001.5387	0262.4	121.5	30.78
286.0	025.0000	0054.8	029.8	111.9	001.5309	0262.3	121.5	30.76
287.0	025.0000	0056.7	030.3	111.7	001.5238	0262.2	120.9	30.85
288.0	025.0000	0057.4	030.5	111.4	001.5161	0262.1	120.7	30.88
289.0	025.0000	0056.3	030.2	111.2	001.5078	0262.0	120.9	30.80
290.0	025.0000	0058.0	030.6	110.9	001.5001	0262.0	120.5	30.87
291.0	025.0000	0059.8	031.0	110.7	001.4921	0261.9	120.1	30.94
292.0	025.0000	0060.2	031.1	110.4	001.4840	0261.8	120.0	30.93
293.0	025.0000	0059.5	030.9	110.1	001.4759	0261.7	120.1	30.87
294.0	025.0000	0058.9	030.8	109.9	001.4642	0261.5	120.3	30.80
295.0	025.0000	0057.1	030.4	109.7	001.4483	0261.4	120.8	30.64
296.0	025.0000	0059.3	030.9	109.4	001.4300	0261.2	120.3	30.69
297.0	025.0000	0062.0	031.5	109.1	001.4109	0261.0	119.7	30.74
298.0	025.0000	0064.9	032.2	108.8	001.3913	0260.9	119.2	30.80
299.0	025.0000	0066.8	032.6	108.5	001.3723	0260.7	118.8	30.81
300.0	025.0000	0068.0	032.8	108.2	001.3538	0260.6	118.7	30.78
301.0	025.0000	0065.9	032.4	108.0	001.3399	0260.4	119.3	30.61
302.0	025.0000	0061.4	031.4	107.8	001.3304	0260.4	120.3	30.34
303.0	025.0000	0058.9	030.8	107.6	001.3192	0260.3	121.0	30.15
304.0	025.0000	0057.6	030.5	107.4	001.3067	0260.2	121.5	30.02
305.0	025.0000	0056.9	030.3	107.2	001.2935	0260.1	121.8	29.91
306.0	025.0000	0055.6	030.0	107.0	001.2821	0260.0	122.2	29.77
307.0	025.0000	0056.3	030.2	106.8	001.2671	0259.9	122.2	29.72
308.0	025.0000	0055.5	030.0	106.6	001.2555	0259.8	122.6	29.60
309.0	025.0000	0050.1	028.6	106.6	001.2563	0259.8	124.1	29.29
310.0	025.0000	0046.6	027.6	106.5	001.2537	0259.8	125.2	29.06
311.0	024.6761	0045.1	027.1	106.4	001.2476	0259.7	125.9	28.90
312.0	024.3542	0043.0	026.4	106.3	001.2435	0259.7	126.7	28.73
313.0	024.0345	0037.5	024.7	106.5	001.2518	0259.7	128.4	28.41
314.0	023.7169	0035.8	024.1	106.4	001.2484	0259.7	129.1	28.26
315.0	023.4014	0038.0	024.7	106.1	001.2318	0259.6	128.8	28.26

Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Azimuth (degrees)	ERP (kW)	HAAT (m)	Dist (km)	Actual (dBu)
316.0	023.0880	0040.4	025.3	105.8	001.2149	0259.4	128.4	28.27
317.0	022.7768	0041.6	025.6	105.6	001.2020	0259.3	128.4	28.22
318.0	022.4676	0040.8	025.3	105.5	001.1966	0259.2	128.9	28.10
319.0	022.1606	0043.1	025.9	105.2	001.1796	0258.9	128.6	28.09
320.0	021.8556	0049.0	027.4	104.6	001.1500	0258.4	127.6	28.17
321.0	020.9901	0053.6	028.3	104.2	001.1282	0258.1	127.1	28.17
322.0	020.1421	0057.4	029.0	103.9	001.1100	0257.9	126.9	28.14
323.0	019.3116	0059.7	029.2	103.6	001.0977	0257.7	127.1	28.06
324.0	018.4986	0062.1	029.4	103.4	001.0861	0257.6	127.2	27.98
325.0	017.7031	0064.0	029.5	103.2	001.0761	0257.5	127.5	27.88
326.0	016.9250	0065.1	029.4	103.1	001.0689	0257.5	127.9	27.77
327.0	016.1644	0065.5	029.1	103.0	001.0640	0257.5	128.4	27.65
328.0	015.4213	0066.3	029.0	102.9	001.0585	0257.4	128.9	27.53
329.0	014.6957	0068.4	029.0	102.7	001.0496	0257.4	129.2	27.43
330.0	013.9876	0071.0	029.2	102.5	001.0397	0257.4	129.4	27.34
331.0	013.5534	0072.4	029.2	102.3	001.0319	0257.5	129.8	27.24
332.0	013.1261	0072.7	029.1	102.2	001.0273	0257.5	130.3	27.13
333.0	012.7057	0072.9	028.9	102.1	001.0231	0257.6	130.8	27.01
334.0	012.2920	0072.9	028.7	102.0	001.0200	0257.6	131.3	26.89
335.0	011.8853	0073.2	028.5	102.0	001.0160	0257.7	131.8	26.78
336.0	011.4853	0075.7	028.7	101.8	001.0067	0257.9	132.1	26.69
337.0	011.0922	0077.3	028.8	101.6	000.9999	0258.0	132.4	26.59
338.0	010.7060	0077.3	028.6	101.6	000.9979	0258.0	133.0	26.47
339.0	010.3266	0076.3	028.2	101.6	000.9989	0258.0	133.6	26.35
340.0	009.9540	0077.6	028.1	101.5	000.9940	0258.1	134.0	26.25
341.0	009.5605	0079.0	028.1	101.4	000.9892	0258.2	134.5	26.14
342.0	009.1748	0080.2	028.0	101.3	000.9855	0258.2	134.9	26.04
343.0	008.7972	0081.1	027.9	101.2	000.9828	0258.3	135.4	25.93
344.0	008.4274	0082.3	027.9	101.2	000.9795	0258.3	135.9	25.82
345.0	008.0656	0083.3	027.7	101.1	000.9772	0258.4	136.3	25.72
346.0	007.7117	0085.1	027.7	101.0	000.9731	0258.4	136.8	25.61
347.0	007.3658	0086.7	027.7	101.0	000.9700	0258.5	137.2	25.51
348.0	007.0278	0088.3	027.6	100.9	000.9671	0258.5	137.7	25.41
349.0	006.6977	0089.0	027.4	100.9	000.9668	0258.5	138.2	25.30
350.0	006.3756	0089.8	027.3	100.9	000.9666	0258.5	138.7	25.20
351.0	006.3756	0090.6	027.4	100.8	000.9614	0258.6	139.1	25.10