PR 93-130

R E G I O N 22

(MINNESOTA)

REGIONAL PLAN

For The Use Of 800 MHz Channels

601 Through 830

Within The State Of Minnesota

GEN Docket 87-112

Report and Order 87-359

Recommended For Use By The

NATIONAL PUBLIC SAFETY PLANNING ADVISORY COMMITTEE (NPSPAC)

and the

MINNESOTA REGION 22 PLANNING COMMITTEE

DECEMBER 1992

HENNEPIN

INFORMATION SERVICES
COMMUNICATIONS
A-023 Government Center
Minneapolis, MN 55487-0007

January 6, 1993

SECRETARY,
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

Dear Secretary:

In response to Report and Order 87-359 on Gen Docket 87-112 the Regional Plan for Region 22 (Minnesota) is hereby submitted to the Commission on this date for its consideration.

Enclosed are six (6) copies of this Regional Plan.

Respectfully submitted,

H. P. Hillegas

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R E G I O N 22

(MINNESOTA)

REGIONAL PLAN

PREFACE

Responding to direction by the United States Congress in 1983 the Federal Communications Commission (FCC) adopted Report and Order 87-359 on November 24, 1987 for General Docket 87-112 to accomplish the following:

> "Development and Implementation of a Public Safety National Plan and amendment of Part 90 to Establish Service Rules and Technical Standards for Use of the 821-824/866-869 MHz Bands by the Public Safety Services"

This action made available to the Public Safety entities an additional 230 radio channels in the 821/824-866/869 MHz bands.

The Commission had established the National Public Safety Planning Advisory Committee (NPSPAC) in 1986 for the purpose of involving interested parties in a Public Safety planning effort and with the following specific tasks:

1. Identify communications requirements of Public Safety services.

2. Develop a scheme for efficient use of the new frequencies.

3. Develop a scheme to increase utility of existing public safety frequencies.

4. Recommend the manner in which new technologies can be applied to public safety frequencies.

5. Recommend guidelines to insure compliance with the National Plan.

In the structure of the National Plan proposed by the FCC the United States was divided into "regions" which, in many instances, coincided with the boundaries of individual states. The state of Minnesota was identified as Region 22.

The Report and Order specified that authorizations for use of these channels would not be made within the region until a formal "Regional Plan" had been prepared, filed with and approved by the FCC. The Associated Public Safety Communications Officers, Inc. (APCO) was given the responsibility of convening a meeting to initiate the planning process within each region that would lead to the preparation of this Regional Plan.

This document has been prepared, in the manner described therein, to fulfill that FCC requirement and is respectfully submitted to the FEDERAL COMMUNICATION COMMISSION this 6th day of January 1993 for its consideration.

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FOREWORD

For those individuals who have been involved with the planning of Public Safety Land Mobile Radio systems and are familiar with frequency coordination guidelines for such systems, it will be immediately recognized that the technical requirements set forth for these particular 800 MHz channels, as they relate to the confinement of signal propagation, are considerably more stringent than what has been previously required for other commonly used Public Safety radio frequencies.

In most heavily populated areas of the country, and certainly within many areas within the State of Minnesota, public safety communications has for years been seriously compromised by frequency congestion and destructive interference from nearby adjacent and co-channel users. At first glance the 230 additional radio channels, recently made available by the FCC in the " NPSPAC" (National Public Safety Planning Advisory Committee) allocation and contained in this Plan, may appear to be a lasting solution to such problems. It can only approach that however, if we plan, manage and continue to use these, and all other channels, in the most possible efficient manner.

Strict limitations are essential and will be placed on the geographical area over which a user's communication system, utilizing these NPSPAC channels, can propagate. Limitations

Being able to communicate with other Public Safety agencies during major disasters when joint response is being made has been a serious shortcoming in many present day systems. In this NPSPAC allocation of frequencies the FCC has mandated that five (5) specific channels be used for "common channel" use throughout the nation thereby providing a communication link among all jurisdictions in areas using the NPSPAC channels. All 800 MHz systems utilizing NPSPAC channels will be required to include these "common channels" in their system so that this very essential objective will be achieved.

Three (3) additional channels in the 806/821 MHz Public Safety group have also been set aside in Minnesota for similar "common channel" usage.

The radio channels contained in this allocation are primarily intended to be used in systems utilizing "trunking technology" and in fact is required by the FCC in any system utilizing five (5) or more channels. Although systems utilizing less that five (5) channels are not required to "trunk", adjacent jurisdictions, and even counties may find it rewarding and cost effective to combine their channels and utilize "trunking technology". This technique not only may prove cost effective but also would allow such users to realize the many other benefits of a "trunked" radio system that otherwise may not be affordable.

In some of the less populated counties of the state where "trunking systems" are not needed, or contemplated, the use of the 800 MHz radio channels contained in this Plan with their seemingly stringent restrictions may be inappropriate. For those particular applications there are numerous other similar 800 MHz channels that have no "trunking" requirements, or the stringent restrictions on antenna height, and coverage, that are attached to the NPSPAC channels. At the time of this writing such channels are for the most part very lightly used throughout the state of Minnesota and are available for both "conventional" and "trunking" system use by all Public Safety jurisdictions through the normal FCC application procedures.

In the more heavily populated areas of the state however these new radio channels, when properly planned and used,

ACKNOWLEDGMENTS

Sincere appreciation is expressed to each individual who has participated in the formation of this Regional Plan. Many hours of time, and travel by many, have been spent during the last four years in helping put it together.

We are certain too that all members, and the agencies they represent, will appreciate the action taken by the Federal Communications Commission in recognizing and responding to the communications problems faced by many Public Safety agencies. These additional radio channels, being made available through the NPSPAC docket, will make it possible to take advantage of the much needed new technology that is now emerging for public safety communications systems.

The Regional Planning Committee appreciates the assistance of the National Office of "APCO" (Associated Public Safety Communications Officers Inc.), for their work and expense in performing the frequency "sort" and "packing" which is the basis for the distribution of channels listed in this Plan.

Our appreciation is also extended to the Minnesota Chapter of APCO for their financial contribution to cover the expense of printing and distribution of this Regional Plan.

H. P. Hillegas
Chairman
Region 22 (Minnesota) Planning Committee

1.0 SCOPE:

1.1 INTRODUCTION:

In December of 1983, the United States Congress directed the Federal Communications Commission (FCC) to establish a plan to ensure that the communications needs of state and local public safety authorities would be met. By their regular means of initiation, the FCC began the process of developing such a plan. Through their efforts, and the efforts of the National Public Safety Planning Advisory Committee (NPSPAC) the plan was begun.

The National Public Safety Planning Advisory Committee provided an opportunity for the public safety community and other interested members of the public to participate in an overall spectrum management approach by recommending policy guidelines, clinical standards, and procedures to satisfy public safety needs for the foreseeable future. After consideration of NPSPAC's Final Report and comments filed in Docket No. 87-112, a Report and Order was released by the FCC in December 1987, which established a structure for the National Plan that consists of guidelines for the development of regional plans.

The National Plan provides guidelines for the development of regional plans. The particulars of this plan are found in FCC Docket 87-250 which

Trunking technology will greatly improve on the utilization of the limited spectrum thus providing room for growth as the demands for public safety services increases. Trunking will provide greater compatibility of communications systems when emergency conditions require coordinated responses by other jurisdictions and departments. Public Safety communications systems in different jurisdictions, and in many instances even within the same jurisdiction, are not always compatible with each other, thus placing seriousy limitations on their ability to communicate when joint responses are required. Although a nationwide Police channel is available that permits Law Enforcement personnel to communicate across jurisdictions, other Public Safety fleets do not have access to this or another similar common channel.

This regional plan was developed with the objective of assuring all levels of Public Safety and Public Service agencies that radio communications in the near and distant future will not suffer from the problems of the past. The allocation of frequencies was done in as equitable a way as possible. A minimum of four (4) channels were allocated for use in each

which are bound to occur in public safety and public service communications operations long into the future.

2.0 AUTHORITY:

2.1 REGIONAL PLANNING COMMITTEE::

The development of the Public-Safety Radio Communications Plan for Region 22, the State of Minnesota, has followed the requirements of the FCC's Report and Order as issued in the matter of General Docket 87-112.

In accordance with the FCC's Report and Order 87-112, the Associated Public-Safety Communications Officers Inc. (APCO) recommended to the Commission the appointment of a "Convenor" for Minnesota Region 22. The Convenor served as the coordinator for the assembly and formation of the planning committee.

Participants in the formation of the Regional Planning Committee represent interested parties from both the Public Safety and Special Emergency Radio Services. A total of forty (40) individuals have attended meetings and participated in the development process. Exhibit "B" contains the names, telephone numbers, organizational affiliations, and mailing addresses of all participants in the meetings of the Regional Planning Committee.

The committee was selected by attendance at the planning meetings. Each member of the Committee representing an eligible licensee under the Public Safety Radio Services and the Special Emergency Radio Services was permitted to participate in all discussions at committee meetings. Except as may be provided elsewhere in the Plan, the majority of those present at a scheduled meeting constituted a majority for all business. Final approval of the plan, prior to submission to the FCC, was sought by a vote at the last meeting. A mail-back ballot was provided with the meeting notice for those members who could not attend. For this final approval therefore, votes from more than would be in attendance at a regular meeting was possible thus providing all those who had participated in the planning process an opportunity to vote on the final draft. This way, the finished plan was reviewed and accepted by the widest, within reason, group of public safety/public service users.

2.2 NOTIFICATION TO CONVENE:

Several methods of notification were used to invite interested parties to participate in the development of this plan.

On May 10, 1988 information about the project was sent to the following organizations, requesting them to make their members aware of the committee's activities. Recipients of this letter were the following organizations:

1. Minnesota State Sheriff's Association.
2. Minnesota Veterinary Medical Association.
3. Executive Director AASHTO.
4. Minnesota Fire Chief's Association.
5. Minnesota Police Chief's Association.
6. Minnesota Dept. of Health.
7. Minnesota Association of Counties.
8. Minnesota League of Cities.
9. Minnesota Medical Association.
10. National Office APCO
11. St. Paul FCC Office

Letters were also sent to all members of the Minnesota Chapter of APCO.

A Public Notice, announcing the date of the first organizational meeting to be held on July 13, 1988, was run in the May 30, 1988 issue of the State

agencies were sent all announcements for meetings and bulletins of progress.

Requirements for a regional planning committee were presented and discussed at the organizational meeting. At this first meeting and at each

Exhibit "B" contains a roster of all individuals attending Region 22's 800 MHz Planning Committee meetings.

2.5 **REGION PLAN APPROVAL:**
The proposed revisions to the Region Plan draft were submitted to a total of fifty-five (55) individuals who had participated in the region planning process. Those individuals who are employed by public safety organizations eligible to use Public Safety radio channels and had attended at least one meeting, were invited to a final committee meeting, scheduled for December 9, 1992, to resolve the remaining issues. A mail-back ballot was included with the meeting notice for use by those who could not attend the meeting. Two (2) ballots were returned, in favor of the changes, prior to the meeting. Eighteen (18) individuals attended this meeting and voted 15 to 1 in favor of the proposed revisions. The entire plan was also approved by voice vote 15 to 1.

3.0 **NATIONAL INTER-RELATIONSHIPS:**
The Regional Plan is in conformity with the National Plan. If there is a conflict between the two plans, the National Plan will govern. It is expected that Regional Plans for other areas of the country may differ from this plan due to the broad differences in circumstance, geography, and population density. By officially sanctioning this plan the Federal Communications Commission agrees to its conformity to the National Plan. Nothing in the Plan is to interfere with the proper functions and duties of the organizations appointed by the FCC for frequency coordination in the Private Land Mobile Radio Services, but rather it provides procedures that are the consensus of the Public Safety Radio Services and Special Emergency Radio Service user agencies in this Region. If there is a perceived conflict then the judgment of the FCC will prevail.

3.1 **FEDERAL INTER-OPERABILITY:**
Interoperability between the Federal, State and Local Governments during both daily and disaster operations will primarily take place on the five common channels identified in the National Plan. Additionally, through the use of S -160 or equivalent agreements, a licensee may permit Federal use of a non-Federal communications system. Such use, on other than the five identified common channels, is to be in full compliance with FCC requirements for government use of non-government frequencies (Title 47 CFR, sec 2.103). It is permissible for a non-Federal government licensee to increase channel requirements to account for 2- 10 percent increase in mobile

units, dependent on the amount of Federal Government Agencies involvement in its area, provided that written documentation from Federal agencies supports at least that number of increased units.

4.0 **REGIONAL REVIEW COMMITTEE:**
Upon approval of this Plan by the Federal Communications Commission, a Region Review Committee will be established for the review of applications which do not fall within the stated guidelines provided for in this plan, to arbitrate disputes concerning this plan and/or its application, monitor compliance by existing users of their channel loading and other requirements and to formulate any necessary modifications to the Regional Plan as circumstances may require.

This Review Committee must be convened no later than six (6) months following the date on which the Region 22 Plan has been accepted by the FCC.

To maintain uniformity in its proceedings BY-LAWS

5. A member appointed by the President of the Minnesota Chapter of APCO.

6. A member appointed by the Minnesota Ambulance Association.

7. A member appointed by the Minnesota Chapter of the American Public Works Association.

8. A member of ASSHTO (American Association of State Highway and Transportation Officials) to represent Minnesota Highway Engineers responsible for highway maintenance radio systems.

9. A member appointed by the Association of Minnesota Emergency Managers.

10. A member appointed by the State of Minnesota's Commissioner of Public Safety.

11. A member appointed by the Governor of Minnesota.

Terms of membership to this committee should be defined in the BY-LAWS AND OPERATING PROCEDURES of the Review Committee.

Although the membership described above should encompass all expected users of these frequencies in the near future, the Chairperson must insure that all licensees have a voice in the proceedings of the Review Committee. This may require additional members from other user groups not specifically identified

5.1 **REGION DEFINED:**
Region 22 is the State of Minnesota. This region is the result of definition by the Federal Communications Commission as a result of recommendations made in the National Public Safety Planning Advisory Committee (NPSPAC) plan as submitted and approved and contained in Docket 87-112. For purposes of this plan the State of Minnesota shall be defined as all the lands and waters contained within the boundaries of the State of Minnesota.

5.2 **REGION PROFILE:**
The purpose of this section is to provide the basis for the assignment of frequencies, and their re-use. Since the frequency allocation formula used is based to a degree on population within a county, it is necessary to provide this information within this plan. Below is the data used in the determination of frequency allocations.

5.3 **POPULATION:**
The 1990 Census indicates a population of 4,375,099 for the State of Minnesota (Region 22). Population in each of the eighty-seven (87) counties within Region 22 is illustrated in EXHIBIT "C".

5.4 **GEOGRAPHICAL DESCRIPTION:**
There are 87 counties in the state with a total surface area of approximately 80,000 square miles.

Approximately 10% of the total surface area in the state is classified as water basins and wetlands.

The largest county is St. Louis, with a total area of 6,125 square miles. The smallest county in geographical area (154 square miles) is Ramsey, however it is the second most populated in the state and contains more than 11% of the state's total population. Hennepin County, with 611 square miles and adjacent to Ramsey, contains 23% of the state's total population.

The seven (7) counties comprising the Minneapoils/ St. Paul metropolitan area accounts for 52.3 % of the state's total population, yet only 3.5% of the total land area. Conversely many of the out-state counties have a relatively sparse population, however the state's four (4) smallest counties in geographical size are in the seven county Minneapolis/St. Paul metropolitan area and contain approximately 17 % of the state's total population.

As defined by the U.S. Census Bureau the population

of the state in the 1990 Census is classified as 69.9 % being URBAN and 31.1 % RURAL. This compares with the National Average of 75.2 % being URBAN. For purpose of definition, URBAN is considered a population of 2500 or more residents.

All of these items were taken under consideration in the allocation plan.

6.0 **USAGE GUIDELINES:**

All systems operating within the Region having five or more channels will be required to be trunked. The FCC, in its Report and Order states, "Exceptions" will be permitted on the trunking requirement only when a substantial showing is made that alternative technology would be at least as efficient as trunking or that trunking would not meet operational requirements. Exceptions will not be granted routinely, however, and strong evidence showing why trunking is unacceptable must be presented in support of any request for exception."

Those systems having four or less channels may be conventional or trunked although as counties experience rapid growth in the future it may be prudent for both economic and operational considerations that counties pool their channels and implement a multi-county trunked system.

Systems of four or less channels operating in the conventional mode who do not meet FCC loading standards will be required to share the frequency on a non-exclusive basis.

Public Safety communications at the state level, as it impacts the Region, will be reviewed by the Committee. State-wide public safety agencies will submit their communications plans for impact approval if they utilize communications systems within the Region and those portions of such systems must be compatible with the Regional Plan.

The next level of communication coverage will be a county/multiple municipality area. Those systems that are designed to provide area communication coverage must demonstrate their need to require such wide area coverage. This would apply in a situation such as a city requesting coverage of an entire county. Communication coverage beyond the bounds of a jurisdictional area of concern cannot be permitted unless it can be substantiated that such radio coverage is critical to the protection of life and property. If the 800 MHz trunked radio technology is utilized, the system design must include as many

county/multiple municipality government public safety and public service radio users as can be managed technically.

The county/multiple municipality agency (ies)), depending upon systems loading and the need for multiple systems within an area, must provide intercommunications between area-wide systems. In a multi-agency environment, a lead agency using the 800 MHz spectrum, which is an agency or organization having primary response obligations in the geographic area, shall be responsible for coordinating the implementation the Common Channels in this band as mandated by the National Plan. Such implementation must be reviewed and approved by the Local APCO Frequency Advisor, and at his/her discretion, the Regional Review Committee.

Municipal terminology often differs. In order to provide a title for the next level of communications the term "municipal" is used to define the level below county-wide. "Municipal" communications for public safety and public services purposes must provide only the communications needed within its boundaries. However, if the total number of radios in service does not reach minimum loading criteria for a trunked system, that agency must consider utilizing the next higher system level if 800 MHz trunked radio is available in the area. As those higher level systems reach capacity, the smaller system communicators in public safety and public service must then consider uniting their communications efforts to formulate one large system or forfeit use of the limited 800 MHz spectrum.

Where smaller conventional 800 MHz needs are requested, those frequencies to be utilized must not interfere with the region's trunked systems. The 800 MHz trunked radio system is to be considered the higher technology at this time and in greater compliance with FCC guidelines. The amount of interference that can be tolerated depends on the service affected. Personal life and property protection shall receive the highest priority and disruptive interference with communications involved in these services in an area shall not be tolerated. Any co-channel interference within an authorized area of coverage will be examined on a case by case basis by the Regional Review Committee.

6.1 **TECHNICAL DESIGN REQUIREMENTS FOR LICENSING:**

6.2 **DEFINITION OF "COVERAGE AREA":**
"Coverage area" referred to in this Plan is that

geographical area throughout which the applicant has primary jurisdiction, plus approximately three (3) miles, and throughout which the radio "base station (s)" to be installed are intended to provide a minimum received signal strength of 40 dBu (decibels above 1 microvolt, equivalent to approximately 4.6 microvolts across 50 ohms at 850 MHz) to the associated mobile stations.

6.3 **SYSTEM COVERAGE LIMITATIONS:**
Every effort must be made to ensure the most possible re-use (shared) of spectrum by confining signal radiation of a system to only the geographical area throughout which the applicant has primary jurisdiction. It is recognized however that radio signals do not stop at jurisdictional borders nor do jurisdictional boundaries rarely center around a selected transmitter site. All possible considerations however must be given in the system's design to achieve this balance of signal propagation

2. **MOBILE AND CONTROL STATIONS:**
   (a) Mobile and Control stations from co-channel systems shall provide a minimum of 35 dB protection to other co-channel base receivers.

   (b) Mobile and Control stations shall provide a minimum of 15 dB protection to receivers operating on next-adjacent-offset channels.

The use of "satellite receivers" should be used to enhance the talk-back of low powered transmitters.

The location and design of such systems however must anticipate the potential for interference from other systems operating within this plan's guidelines. The criteria listed above is intended to provide protection to only receivers located at the base or mobile relay station site.

Applicants choosing to operate a system with less than a 40 dBu signal contour within their coverage area should be cognizant that noticeable co-channel interference may be experienced from other co-channel users who have systems conforming to these radiated power limitations.

3. **USE OF FREQUENCIES IN AIRCRAFT:**
   (a) The degree to which these 800 MHz channels are to be "re-used" within the Region and their assignments in adjacent Regions require that their use in aircraft be restricted. Limitations are:

      (1) A maximum ERP of 1.0 watt above 500 ft. AGL.

      (2) No transmissions on the "local channels" above 2,000 ft. AGL.

      (3) No transmissions on "common channels" above 5,000 ft. AGL.

      (4) Avoid using the input frequency to the mobile relay station and use the "talk-a-round" mode whenever possible.

6.4 **DETERMINATION OF COVERAGE:**

There are four variables used in determining the area of coverage of a proposed system. These variables are (1) the required strength of the received signal, (2) antenna height above average terrain (HAAT), (3) the effective radiated power (ERP) of the system, and (4) the type of environment.

Received Signal Strength:
For purposes of this plan, received signal strength shall be the determining factor which defines the actual boundary of a system. The signal level which marks the outer boundary of a system must not exceed 40 dBu.

Antenna Height:
Shall be the height of the antenna above the average terrain surrounding the tower site.

Effective Radiated Power (ERP):
The ERP is the transmitter output power times the net gain of the antenna system. The actual formula is:

ERP (watts) = Watts x antilog (Net Gain/10)

Environment Type:
OKUMURA/HATA METHOD - The Okumura method uses four different classifications to describe the average terrain around a transmitter site or area. The classifications are:

1-URBAN; Which is built-up city-crowded with large buildings or closely interspersed with houses and densely grown trees. This would include the downtown area of a major city.

2-SUBURBAN; WHICH is a city scattered with trees, houses and buildings. This would include the downtown area of a large city.

3-QUASI-OPEN; Is an area between suburban and open areas. This includes areas outside of city limits that have few buildings and houses.

4-OPEN; Is an area where there are no obstacles such as tall trees or buildings in the propagation path or a plot of and which is cleared of anything for 300 to 400 meters ahead. This would include farm land, open fields, etc.

The Okumura/Hata method is the method resident in the computer packing program to develop this plan. A minimum system shall be permitted without special consideration when it is limited to an HAAT of 100 feet and the transmitter is centrally located within the jurisdiction or jurisdictions participating in a system. In all jurisdictions, regardless of size, a maximum boundary radius of 8 miles shall be allowed

provided adequate measures have been taken to assure

6.7 **RE-ASSIGNMENT OF FREQUENCIES:**
All agencies participating in the use of this new 800 MHz spectrum shall prepare and submit a plan for the abandonment of any currently licensed frequencies in the lower bands that are presently being used for the activity to be conducted on the new 800 channels. The regional planning committees would have the freedom to consider below-800 MHz public safety bands in further development of their regional plans, but the licensing of channels in these bands would continue to be conducted through existing frequency coordination procedures.

Lower band Frequencies that are replaced by these 800 MHz channels can not be automatically retained or "handed down" to another agency in their respective jurisdiction. Such re-use of frequencies can only be accomplished through the regular procedures followed for a new application.

The time frame allowed for phasing out of lower band frequencies and into 800 MHz and will normally be one (1) year. Any agency requiring more than one year must provide documents stating the reasons for the delay and give the estimated time of completion. Such extensions are subject to approval by the FCC.

6.8 **UNUSED SPECTRUM:**
Since all of the frequency spectrum is not needed at this time, the excess channel pairs will be returned to a reserve pool. These channels may be used for conflict with adjacent Region allocations or may simply remain within this Region until needed. This does not imply that these frequencies are unavailable, only that before they can be utilized within the Region they must be coordinated via the regular APCO coordination process and within the guidelines set forth in this plan. Where possible, the channels designated for a jurisdiction in this plan shall be used.

Additional assignments to be made from the "unused spectrum" pool, when proposed for areas within seventy-five (75) miles of a bordering State or Region, shall be first coordinated with that bordering state or region.

6.9 **COORDINATION OF STATE-WIDE/ COMMON CHANNELS:**
As the use of the five National channels is not considered a day-to-day function, coordination for the use of these channels is not considered to be necessary or advisable. The use of these channels will always be on a non-interference basis, with on-the-air coordination at the time of use when

required. Any user found to be operating in any manner other than this shall be considered to be operating improperly and subject to the existing Federal Communications Commission rules for willful interference with the communications of other users.

The block of thirty (30) additional channels allocated for "state-wide" use were derived from the alternating blocks of thirty (30) channels used in the Illinois, Indiana, Michigan and Wisconsin Regions.

7.0 INITIAL SPECTRUM ALLOCATION:

7.1 FREQUENCY SORTING METHODOLOGY

The initial spectrum allocation for the Region was determined by a computerized frequency sorting process performed by APCO/CET. The purpose of the computer program which assigns frequencies to specific eligibles, where specified, and to pools for future assignments is two-fold, a) they must result in a high degree of spectrum efficiency, and b) they must result in a low probability of co-channel and adjacent channel interference.

Since the desired output is a geographic sorting of frequencies, a method of defining geography must be part of the input. A list of the number of channels to be assigned in each geographic area is also required, along with the name of the eligible, if specified, or pool. Acceptable interference probabilities are determined for the Region. Frequency assignments are then made using a computer program which satisfies the goals of spectrum efficiency and interference protection. The following narrative describes the factors and process used by the computer program.

7.2 GEOGRAPHIC AREA:

For the purpose of this frequency sort, a geographic area is defined as one or more circles of equal radius. To the degree practical, the circle(s) should include the entire area of the geo-political boundary, but not exceed the boundary by more than three (3) miles. Thus, the procedure is to gather maps of sufficient detail, outline the areas to be defined, determine the coordinates and radius of the circles which define each area, and tabulate the data.

7.3 DEFINE THE ENVIRONMENT:

The environment of each system is defined according to the Okumura/Hata method of classifications described elsewhere in this Plan.

7.4 **BLOCKED CHANNELS:**
In the Region there are five mutual aid channels which must be blocked out to prevent the computer from making assignments on these channels. (Since the mutual aid channels are spaced at 0.5 MHz intervals, other Region-wide systems are spaced at 0.5 MHz and placed adjacent to the mutual aid channels. This procedure reduces the impact of blocked adjacent channels by virtue of the fact that the channel plan already has protection spacing on each side of the mutual aid channels.)

These Region-wide blocked channels are identified by FCC channel number, tabulated and they become input to the computer program.

7.5 **TRANSMITTER COMBINING:**
The computer program is designed to provide a minimum frequency separation between any two channels assigned to the same eligible at the same site. This separation is provided in order to enable more efficient combining of multiple transmitters to a single antenna. These separated blocks of frequencies also have a maximum size. That is, if the eligible has more frequencies than the maximum size of the combining block, then a second compatible block is created, and so on. Each of these parameters is adjustable in the program on a global basis. The default parameters chosen are 0.25 MHz minimum spacing and five channel blocks.

7.6 **SPECIAL CONSIDERATIONS:**
There are licensees in the 806-821/852-866 MHz spectrum who plan to expand existing systems into the 821-824/866-869 MHz bands. Some of the existing radio units are unable to operate on 12.5 KHz separated carrier frequencies. The result is that these radios can only operate on "even" FCC numbered channels in the 821-824/866-869 MHz band. The computer program is able to take this into account when making assignments.

7.7 **PROTECTION RATIOS:**
There are two interference protection ratios built into the computer program. One is for the co-channel case, the other is for the adjacent channel case. The ratios provide 35 dB Desired/Undesired signal ratio for co-channel assignments, and 15 dB Desired/Undesired ratio for the adjacent channel case. These ratios provide an acceptable probability of interference for Public Safety Services.

7.8 **ADJACENT REGION COORDINATION:**
The computer program requires a listing of channels

to be blocked along the borderline with other regions which have pre-existing plans. If the adjacent region plan was developed using the APCO/CET packing program, this information exists in the data base.

All regions bordering Minnesota are being "packed" by the APCO/CET program and have received a copy of this Plan.

Although channels 628, 666, 704, 742, 780, and 820 have been assigned in certain Minnesota counties their proposed use within seventy-five (75) miles of the Wisconsin border must first be coordinated with the Wisconsin Region.

Channels assigned for Statewide use and their adjacent guard channels are to be shared and coordinated with the adjacent States and Regions.

7.9 **FREQUENCY ALLOCATION PROCESS:**

The method used for "packing" Region 22 was also the APCO/CET computerized method. The approximate geographical location for the center of each county, in latitude and longitude, were provided along with the environmental type of the county and the approximate radius to cover the county lines. Along with this information, a list of frequencies to block along the adjacent region's border was included. The actual assignment of frequencies is for a minimum of four (4) channel-pairs to be used in each county. To the extent possible the "one channel per 25,000 population formula" was followed for the greater seven county Minneapolis/St. Paul metropolitan area however this was not entirely possible. In anticipation of expected rapid growth for certain "outer-ring counties" in and adjacent to this metro area, the committee attempted to allocate more than the minimum of four channels however this was not possible.

Twenty-seven (27) channels have been allocated for "state-wide" assignments for use by the State of Minnesota. These channels shall provide the various state agencies with the channel capacity to insure the interoperability necessary when employing many different agencies and governmental service providers over large areas and requiring command and control over such wide spread operations.

Three (3) channels have been allocated for "statewide" assignments for use by <u>all</u> eligible applicants requiring wide area coverage such as drug enforcement or other application requirements not appropriate for the five National Mutual Aid

Channels.

7.10 **FREQUENCY ALLOCATION MAP:**
EXHIBIT "H" illustrates the geographical outlines of the State of Minnesota and its eighty-seven (87) counties.

EXHIBIT "D" describes the theoretical site locations within each county that were used by the APCO/CET computerized packing program.

EXHIBITS "E" and "F" contain the resulting channel assignments for each county or other service area.

EXHIBIT "G" contains a listing of channels that could not be considered for assignment within the respective counties.

8.0 **COMMUNICATIONS REQUIREMENTS:**

8.1 **"Common Channel" ("Mutual Aid") Implementation**
A very essential requirement of this plan and benefit to be derived from its implementation is the needed enhancement of inter-agency communications, not only between agencies based in a common geographical area but also by transient vehicles from other jurisdictions who may be assisting or otherwise traveling outside their service area(s).
Five (5) channels in this 800 MHz allocation have been mandated by the FCC for this "common channel" purpose, one of which is a nation-wide "calling channel" to be used only for the purpose of establishing initial contact when inter-agency communications is desired.

8.1.1 **ADDITIONAL "COMMON CHANNELS" FROM THE 806 MHz BAND.**
In addition to the five Mutual Aid channels required by the FCC, the Region 22 Committee recommends that three (3) additional channels, to be obtained from the 806 MHz allocation, be likewise designated as "statewide mutual aid" channels.

Specific channels recommended for this purpose are:
Channel 240 - Intended for "High Level Law"
Channel 280 - Intended for "High Level Fire"
Channel 320 - Intended for "Low Level Law"
Use of these three particular channels would be prioritized as follows:

Priority 1 - Disaster and extreme emergency operations for mutual aid and inter-agency communications.

Priority 2 - Emergency or urgent operation involving

imminent danger to the safety of life or property.

Priority 3 - Special event control activities, generally of a pre-planned nature, and generally involving joint participation of two or more agencies.

Priority 4 - Single agency secondary communications."

The implementation of the International Common Channels must follow the guidelines as set forth by the Federal Communications Commission by the approval of the National Plan. These five common channels are accessible by all levels of government and shall be used in accordance with the provisions of the National Plan.

As new 800 MHz "service areas" are developed, for example a "county", provisions must also be made to provide for communications on at least two (2) of the national common channels (the "calling" plus a "TAC" channel) throughout the service area. Considering the number of jurisdictions served, their diversity in mission, and quantity of mobile units, additional "TAC" channels may be required.

It is beyond the scope of this Plan to identify the source of funding for such equipment however a cooperative effort by all jurisdictions may be most acceptable. The "licensee" in most instances should be the County throughout which the system is intended to cover.

In those instances where only an individual agency, or only a small percentage of agencies in a "service area" applies for 800 MHz channels and others in the area continue to use lower frequency

Mutual aid stations required by this Plan must be capable of functioning as a mobile relay station. Mobile units, including portable transceivers, must also have the capability of communicating directly to other similar units without the mobile relay station in what is commonly referred to as "talk-around".

The four International Tactical (ITAC) Channels will be assigned State-wide, for use as needed by all eligible licensees. These channels are to be used in accordance with the National Plan and in compliance with the regulations as set forth by the Federal Communications Commission. These channels require no special licensing for mobile and portable transceivers, only that the users have an authorization for Public Safety 800 MHz channels as specified in section 90.617 (a) of the FCC Rules and Regulations. Control stations must be licensed in the name of the department where installed.

8.2 **AREAS OF OPERATION:**
The common channels shall be available for use throughout the Region. No specific locations are specified within the Region.

8.3 **OPERATION ON THE COMMON CHANNELS:**
Normally, the five inter-operable channels are to be used only for activities requiring inter-communications between agencies not sharing any other compatible communications system. Inter-operable channels are not to be used by any agency for routine, daily operations. In major emergency situations, one or more ITAC channels may be assigned by the primary Public Safety Agency within that area of operation. The primary Public Safety agency in each county, if not defined elsewhere in the plan, should be the County Sheriff, State Patrol, or other Public Safety Department that has assumed the role of "incident commander" for the incident being attended, which may be any agency licensed to operate in this

procedures for the implementation, administration and use of these "common channels" on a state-wide basis. The committee must have a fair and proportionate representation by all the various user categories eligible for and using these channels. If acceptable by the State of Minnesota's Commissioner of Public Safety, this task may be performed by the existing "MINSEF" Committee that oversees the use of the 155.475 MHz Emergency channel throughout the state. In the absence of any such commitment by that "MINSEF Committee" the Regional Review Committee must assume this responsibility.

8.4 **OPERATING PROCEDURES: (MUTUAL AID CHANNELS)**
On all Common Channels, plain English will be used at all times, and the use of unfamiliar terms, phrases, or codes will not be permitted.

8.4.1 **International Calling Channel (ICALL):**
The ICALL channel shall be used to establish contact with other users in a particular Region that can render assistance at an incident. This channel shall not be utilized as an on-going working channel. Once contact has been established between agencies, an agreed upon ITAC or mutual aid channel shall be used for continued communications.

8.4.2 **International Tactical Channels (ITAC-1 -ITAC-4):**
These frequencies are reserved for use by those agencies involved in inter-agency communications. Incidents requiring multi-agency participation will utilize these frequencies as directed by the control agency assuming responsibility for an incident or area of concern. These frequencies may be subdivided according to function in an incident or by geographical location in response to an incident. Unless otherwise provided for by the Region Review Committee, it is recommended that the following assignments for ITAC-1 through ITAC-4 be used where user diversity requires it.

ITAC-1..... Law Enforcement
ITAC-2 .....Fire Services
ITAC-3 .....Emergency Medical Services
ITAC-4 .....Command and Control

8.5 **CODED SQUELCH (MUTUAL AID CHANNELS):**
All equipment capable of operating on the five (5) common channels shall be equipped with the National Common Tone Squelch of 156.7 Hz. Mobile relays on these channels, if authorized, may use additional tone or digital squelch codes for the purpose of selecting individual mobile relay stations, provided

output. If such an arrangement is utilized, provision must also be made for certain centralized, high level sites to be activated by the 156.7 tone to ensure emergency access by transient units.

8.6 **NETWORK OPERATING METHODS:**
Communications systems on ITAC-1 thru ITAC-4 will be implemented by agencies who volunteer on a distributed coordinated basis. Every primary geographic section of the Region is intended to be covered by at least one ITAC channels. In many areas the common channels will be utilized on a mobile to mobile talk-around basis. Mobile relays on ITAC-1 thru ITAC-4 will be on a limited coverage design to permit reuse of the channel several times within the Region and in adjacent regions. Since Region 22 will probably not have a large number of stationary ITAC Channel stations, the implementation of mobile relay or repeaters is strongly encouraged. This will fill an "on-scene" requirement for most multi-agency response situations.

Adjacent region coordination will be via existing mutual aid coordination procedures with the requesting region establishing the tactical frequency assignment.

9.0 **TRUNKING REQUIREMENTS:**
All systems operating in the Region having five or more channels will be required to be trunked. Those systems having four or less channels may be conventional however it is strongly recommended that any entity licensing three or more "repeaters" use trunking technology in their equipment.

The FCC in its Report and Order states: "Exceptions will be permitted only when a substantial showing is made that alternative technology would be at least as efficient as trunking or that trunking would not meet operational requirements. Exceptions will not be granted routinely and strong showings as to why trunking is unacceptable must be presented in support of any request for exception."

Depending on systems loading and the need for multiple systems within an area, operators of wide area systems (including, but not limited to, designated "Monitoring Agencies") must provide for coordination between area-wide systems and "Monitoring Agencies". Single municipalities or agencies must restrict design and implementation of their systems(s) to provide only the communications needed within its geopolitical boundaries. The use of trunked systems is

encouraged, however if the total number of radios in service does not reach minimum loading criteria for a trunked system, that user must consider utilizing the next higher system level if 800 MHz trunked radio is available in the area. As systems reach capacity, the smaller system users must consider consolidating their communications systems to formulate one large trunked system.

10.0 **CHANNEL LOADING REQUIREMENTS:**

An agency/jurisdiction requesting its first single frequency to replace a frequency currently in use that will be turned back for re-assignment will not be required to meet loading requirements in order to obtain the new frequency. However, if the single frequency is not loaded to more than 50 units within three years after the license is granted, the frequency will be available for assignment to other agencies on a shared basis in the event that other frequencies meeting the criteria for assignment are exhausted. Shared use of a frequency is not interference free.

Agencies/jurisdictions requesting multiple frequencies or employing trunking technology shall comply with the loading standards as outlined below.

Agencies requesting additional frequencies must show loading of 100 percent or greater on their existing system.

Systems that do not meet established loading standards can be required to share such frequencies on a non-exclusive basis. Those agencies requesting Data channels only can be required to share channels with adjacent agencies wherever feasible or limit cover age to their geographic area. Exceptions will be considered on a case-by-case basis by the Regional Review Committee.

Should a demand for frequencies exist after allocated frequencies become exhausted, any system having more than one channel assigned under this plan four or more years previously and not loaded to at least 70 percent may be required to forfeit a sufficient number of channels to bring their system into compliance with the 70 percent loading standard. Frequencies lost in this manner will be re-allocated to other agencies to help satisfy the demand for additional frequencies.

10.1 MINIMUM LOADING TABLES FOR ANALOG MODULATION SYSTEMS

		UNITS PER CHANNEL (Conventional)	(Trunked)
(a)	"EMERGENCY" USE (Police, Fire, Medical)	70	100
(b)	"NON-EMERGENCY" USE (All Other)	100	130

While these quantities are considered appropriate for most typical systems, it must be realized that the ratio of channels needed to the quantity of mobile/portable units is not necessarily linear as the quantity of mobile units increases in large trunked systems. Justification for the number of requested channels in larger systems should not be soley based on the quantity of mobile and portable units expected to be used in the system. A mathematical calculation, similar to that used in the telephone industry for trunked circuit system design, that takes into consideration the "busiest hour", "message length", "number of units in service", "unit call rate" and "grade of service" may be required to further substantiate the desired channel assignments.

10.2 LOADING FOR DIGITAL SYSTEMS:

Standards for loading on channels utilizing "digital modulation" systems are yet to be formulated. As this technology develops and becomes common place in Public Safety communications the loading requirements set forth above for analog systems will most likely be in-appropriate for efficient spectrum utilization when using "digital" modulation. Existing users migrating to digital systems and new applicants planning to use digital modulation technology in their equipment will be required to conform to new loading standards as they are developed..

10.3 TRAFFIC LOADING STUDY:

At the discretion of the Regional Review Committee should a channel shortage exist, licensees with multiple channels assigned may be required to show justification for the number of channels being used.

For trunked systems a computer generated traffic loading analysis of the actual system would be required. A showing of air time usage, excluding telephone interconnect air time, during the peak busy hour greater than 70 percent per channel on three

consecutive days will be required to satisfy loading criteria. Should the system be considered 100% loaded

the loading study should illustrate the degree of "blocking" (number of units placed in "queue", and their waiting times) during peak hours of usage.

For conventional systems an accurate vehicle inventory list along with documents such as copies of Purchase Orders, vendor invoices and packing slips accurately describing equipment regularly being used will be required.

10.4 **SLOW GROWTH:**
All systems in the 821-824/866-869 MHz bands will be slow growth in accordance with Section 90.629 of the Commission's Rules.

11.0 **LONG RANGE COMMUNICATIONS:**
During incidents of major proportions, where Public Safety requirements might include the need for long-range communications in and out of a disaster area, alternate radio communications plans are to be addressed by Primary Public Safety agencies within this sub-region. These agencies should integrate the appropriate interface to the long distance communications providers. Such long distance radio communications might be amateur radio operations, satellite communications and/or long range emergency preparedness communications systems, any of or all of which should be incorporated as part of the communications plans of those lead agencies. They then could provide the means to communicate outside the area for themselves and the smaller agencies who might need assistance. Instances as addressed in the National Public Safety Planning Advisory Committee's Plan, such as earthquakes, hurricanes, floods, widespread forest fires, or nuclear reactor problems could be a cause for such long-range communications needs.

12.0 **EXPANSION OF EXISTING SYSTEMS:**
Existing systems that are to be expanded to include the frequency bands of 821-824/866-869 MHz will have the mobile radios "grand-fathered", provided that they are modified in conformance with the Memorandum Opinion and Order, FCC Docket 87-112. Primarily this involves reducing the modulation to +/- 4 KHz. Existing base stations in the frequency bands 806-821/851-866 MHz may not be used in the frequency bands 821-824/866-869 MHz.

13.0 **ASSIGNMENT STATISTICS:**
Maximum field strength for co-channel operation is 5.0 dBu.

Maximum field strength for adjacent channel operation is 25.0 dBu.

Iterations required for solution	= 120
Number of channels used for solution	= 224
Total number of channels assigned	= 429
Total number of un-assigned channels	= 24
Total number of reserved channels	= 61
Total number of co-channels assigned	= 289

Probability of interference with the nearest:

(a) Co-channel user is between 0% and 1%
(b) Adjacent channel user is between 0% and 1%

14.0 **EXPANSION OF INITIAL ALLOCATION:**
In the event that the allocation for any county becomes depleted, the Region Review Committee shall meet to make further allocations to said county. Should this occur, the applying agency or entity shall submit the proper license and coordination applications with all applicable fees, as in any other licensing request. Allocations will be made based on the initial frequency allocation plan as mentioned above, taking into consideration the channels which were returned to the reserve pool.

15.0 **INFORMATION REQUIRED WHEN SUBMITTING APPLICATIONS:**
In addition to the required FCC and Coordination forms, the following supplemental data must be provided for the coordinator's use to determine compliance with the Regional Plan.

1. A statement that describes the purpose of the proposed radio equipment, for example is it a replacement for an existing system, a new communication system, or a modification to an existing system?

2. A description of the applicant's legal jurisdiction such as "the City of _____" or the "County of _____". A map, such as a County Highway map or a U.S. Geological topographical map, should be used to draw an outline of the applicant's jurisdiction.

3. The proposed location of the base station (s) must be marked on the map.

4. An accurate, graphic illustration on the map of

the 40 dBu contour expected from each base station.

5. A statement describing the proposed loading of the channel(s) being requested. Quantities, that can be verified, of vehicles, mobile radios, portable transceivers, and control stations that will be using the system must be listed along with the projected dates by which they will be placed in service. Portable transceivers should be in two categories, (1) those used full time as the sole communicating device for the bearer and (2) those used only part time to supplement a vehicle installed radio unit or other part time usage.

6. To supplement the information listed on the FCC application form, provide a copy of the work sheet used to calculate the expected ERP of the base stations.

7. A list of any lower band frequencies that will be replaced by the proposed 800 MHz system.

8. The manner in which "interoperability" with other jurisdictions will be accomplished.

16.0 **PRIORITIZATION OF APPLICANTS:**

At the present time there are no un-filled requests for spectrum usage in the 800 MHz Public Safety allocations within the Region and with the exception of the seven (7) county Minneapolis/St. Paul metropolitan area none is anticipated during the foreseeable future. To provide for such conditions should they occur however, a simple method of prioritization of requests will be used.

Until a more detailed prioritization formula is developed by the Region Review Committee the following will be used:

Public Safety Agencies ..... 2 Points
Public Service Agencies..... 1 Point
Multi-agency System..... 2 Points
Multi-agency/Multi Jurisdiction System...3 Points
Single Agency/Jurisdiction System.....1 Point

16.1 **TWIN CITIES METROPOLITAN AREA PLANNING:**

At the present time a very significant planning effort is being undertaken to implement a single metropolitan-wide trunked communication system for all Public Safety systems operating in the seven (7) county metropolitan area in which the cities of Minneapolis and St. Paul and suburbs are located. This endeavor, if successful, would accomplish in a

single task a very significant portion of the long range goals set out for Region 22 in the Regional Plan. An untold number of lower band frequencies would become available for other applicants and users in the counties bordering and beyond this seven county metropolitan area.

This effort is being organized by the METROPOLITAN COUNCIL (see Exhibit "I"), a public agency of the STATE OF MINNESOTA charged with the task of fostering the coordination and integration of governmental planning and services within the seven county Minneapolis/St. Paul metropolitan area. The complexity of this issue, principal of which perhaps is its economic considerations, will require considerable time to be resolved. The Legislative approval process in itself will consume many months.

Considering the scope of this proposed system, its obvious contribution to fulfilling the goals of the National Plan, and that its feasibility is almost totally dependent upon the availability of an adequate number of radio channels, it is recommended that no authorizations for these NPSPAC channels be released in the seven (7) Minnesota counties of ANOKA, CARVER, DAKOTA, HENNEPIN, RAMSEY, SCOTT and WASHINGTON for a period of time considered necessary for the METROPOLITAN COUNCIL to complete the feasibility determination study that has already begun. The suggested cut off date for this proposed "hold" on such authorizations is June 30, 1994.

The committee realizes that other eligible applicants must not be penalized in their efforts to implement 800 MHz communications systems while waiting for other eligibles to reach a decision. As of December 1992 however, approximately 50% of the seventy (70) Public Safety Category channels in the 806 MHz allocation are un-assigned in these seven (7) counties. A similar percentage of channels 1 thru 150, shared by all users, also remain un-assigned. Considering the number of currently available channels in the metropolitan area, a hardship for other eligibles therefore is not expected during the relatively brief period of time the "hold" on authorizations is considered necessary.

17.0 APPEAL PROCESS:

At any time, any applicant may appeal an allocation, rejection, or any limits placed on a particular application for any reason. The appeal process has two levels; the Region Review Committee, and the FCC. An applicant who decides to appeal a rejection should initiate that appeal immediately upon

notification of rejection. In the event that an

EXHIBIT "A"

NOTICES AND PUBLICITY GIVEN

FOR THE FORMING OF THE

REGION 22 800 MHz PLANNING COMMITTEE

Minutes of the 800 Mhz Planning Committee
March 16, 1988

At the direction of Minnesota APCO President Judy Sullivan, a preliminary meeting was held of the Ad Hoc 800 Mhz Planning Committee. Sullivan had asked Harry Hillegas to convene the meeting. It was held at the Bunker Hill (Anoka County) Acitivies Center, Room C, First Floor, 550 Bunker Lake Blvd., Anoka, MN. Present were: Judy Sullivan, MN State Patrol; Harry Hillegas, Hennepin County MN; Henry Bruns, MN Dept. of Transportation; Paul Kent, St. Louis County MN Communications; Jeff Nelson, City of Minneapolis MN, Dept of Emergency Communications; Richard Richardson, City of Minneapolis MN, Public Works Radio Shop; Phillip Saunders, City of St. Paul MN; Donald Vodegal, Hennepin County MN Sheriff's Radio.

Hillegas convened the meeting at 1:05 pm.

He explained that the FCC Report and Order # 87-359 directed that APCO convene meetings in each "region". The purpose of this meeting was to start the planning process for a subsequent public forum where planning on the utilization of certain 800 Mhz frequencies would begin. It was explained that 60 days of prior public notice was required before the public meeting could occur and that this session would focus on:

- Time, date, and location of the public meeting.
- Methods of providing notice to interested parties (news release and public notice and the potential audience)
- Identifying a process for electing a chair and vice chair of the planning committee during or after the public meeting.
- Documenting the steps taken at each phase of the process.

Hillegas solicited input on someone to head and assist in a nominating committee for officers of the planning committee - once it got underway. Suanders and Vodegal volunteered for these respective roles and Hillegas accepted their offers. Hillegas asked for volunteers for the role of recording secretary and Nelson volunteered and was accepted.

Discussion followed on the various professional associations and their constituents who should be made aware of the public meeting. A list of the various associations and organizations as suggested at this meeting is attached at the end of these minutes.

Since emergency preparedness functions are specifically identified in the FCC Report and Order, Bruns agreed to contact the State Emergency Preparedness Director to get a list of potentially interested persons for the planning meeting. Saunders agreed to contact the Metropolitan Council for a similar list and to contact an associate for a mailing list of all the newspapers in the state. It was determined that everyone present had a responsibility to think about and assemble lists of potentially interested persons for the public notice and/or news release and to bring these to the next meeting.

Discussion followed on the form and content of the public notice and the news release. Nelson agreed to draft a news release by 3/31 and distribute it to the members of this group. It was agreed that a follow-up meeting should be held on 4/6/88 at 1:00 pm at Hennepin Sheriff's Radio (Golden Valley) for the

purpose of reviewing the news release and doing further planning on the public meeting. It would be the group's objective to then have the public notice and news release ready for distribution by 4/15/88. After discussion on the pros and cons of various meeting locations it was agreed that we would target to hold the public meeting on 7/13/88 at 1:00 pm in this same setting (Anoka Activities Center).

The need for some form of working fund for this endeavor was discussed and Sullivan agreed to raise this topic at the 3/31/88 Chapter meeting of APCO. Saunders suggested a $ 500 contingency fund.

Saunders spoke about the importance of maintaining accurate records of participants and the activities of this entire planning process for use in the future should an issue become contested. To that end he volunteered to create a form which would seek information on attendees at the public meeting with particular attention to the type of service(s) they represented.

Other topics discussed:

- Hillegas' office will provide clerical support for mailings, etc..
- News release should identify (break down) who is eligible and potentially benefits from participating in this planning process.
- Some mention of the market value of this spectrum allocation should be made to communicate the importance of this planning effort.
- Things/Issues for Public Meeting: Handouts, tape recording the session, PA system, Agenda, time for public comments, time line, possible inventory of existing systems and users.

The meeting concluded at 3:00 PM.

See attachment for preliminary list of possible recipients of public notice and/or news release.

Submitted by,

J. J. Nelson

ASSOCIATED
PUBLIC-SAFETY

Minnesota Chapter

PUBLIC NOTICE

ANNOUNCEMENT OF THE INITIAL MEETING OF THE REGIONAL PLANNING COMMITTEE FOR RADIO FREQUENCIES IN THE 821-824/866-869 MHz BAND FOR USE BY PUBLIC SAFETY AND SPECIAL EMERGENCY RADIO SERVICES WITHIN THE STATE OF MINNESOTA, REGION 22.

Having been duly certified to the Federal Communications Commission (FCC) by the Associated Public Safety Communications Officers, Inc. (APCO) as the Convenor of an initial meeting of representatives of parties eligible for radio authorizations in the Public Safety and Special Emergency Radio Services to establish a Regional Planning Committee within the State of Minnesota, Region 22 as designated by the FCC, I hereby give Public Notice that such an initial meeting will be held on:

Date: July 13, 1988
Time: 1:00 P.M.
Place: Anoka County Activity Center
550 Bunker Lake Blvd., N.W.
Andover, Mn.

The responsibility of this Regional Planning Committee will be to develop a Plan for the utilization of newly allocated radio frequencies in the 821-824/866-869 Mhz band for use by both the Public Safety and Special Emergency Radio Services. Parties interested in this regional planning process are invited to attend this meeting.

This Public Notice is issued in accord with the FCC's Report and Order in General Docket 87-112, adopted November 24, 1987 and released December 18,1987.

The Report and Order was based in large part on the Final Report of the National Public Safety Planning Advisory Committee which was submitted to the FCC on September 9, 1987.

Copies of both the Report and Order and the Final Report are available from the FCC's duplication contractor, International Transcription Services, Inc., Suite 140, 2100 M Street N.W. Washington, D.C. 20037.
Telephone (202) 857-3800.

H.P. Hillegas
Region 22 Convenor
c/o Hennepin County
A-2309 Government Center
Minneapolis, Mn. 55487-0239
Telephone (612) 348-5555

H.P. Hillegas
(Convenor's Signature)

APRIL 6 1988
(Date)

NEWS RELEASE

For Release on May 9, 1988

Regional Public Safety Frequency Planning Meeting Set

It was announced today that the first in a series of formal public meetings will be held Wednesday, July 13, 1988 at 1:00 pm for the purposes of planning future uses of public safety radio frequencies in Minnesota.

This initial meeting and the follow-up activities are required by the Federal Communications Commission (FCC) to further development of regional plans for use of certain 800 Megahertz radio frequencies in the Public Safety and Special Emergency Radio Services. The meeting is being convened under the auspices of the Minnesota Chapter of APCO (Associated Public Safety Communications Officers, Inc.). APCO, with national membership, has been recognized and given authority by the FCC to initiate and coordinate the planning process throughout the United States.

The release of certain radio frequencies in the 800 Megahertz spectrum for use by public safety and special emergency services followed lengthy deliberations by the FCC. Popular estimates of the value of these frequencies for commercial and broadcast use has been placed in the billions of dollars had they been made available to these interests. In its Report and Order on the release of the frequencies the FCC has required that regional plans be developed before licenses will be issued to public safety or special emergency agencies.

This first planning meeting in Minnesota will be convened by Mr. Harry Hillegas who can be contacted at (612) 348-5555. The meeting will be held at the Anoka County Activity Center, 550 Bunker Lake Blvd. NW, Andover, MN at 1:00 pm on July 13, 1988.

-end of release-

Released by: J. J. Nelson
Recording Secretary
800 Mhz Planning Committee
Region 22 - Minnesota
c/o Room 316 - City Hall
Minneapolis, MN 55415
(612) 348-7210

UNITED PARCEL SERVICE F COPY

State of Minnesota State of Minnesota

MINCIS TXT Message

Request for Statewide Broadcast

Notice of Public Meeting Regarding Public Safety Radio Frequencies:

On Weds., July 13, 1988 at 1:00 pm a public organizational meeting will be held for the purpose of planning the use of certain 800 Mhz radio frequencies. This meeting and subsequent planning sessions are required under an FCC plan which has set aside more than 200 radio channels in the 800 Mhz spectrum for use by Public Safety and Special Emergency service providers.

The FCC has required that a regional plan be created concerning the use of these radio frequencies before any licenses will be issued. Details on this first planning meeting are:

Place: Anoka County Activity Center
550 Bunker Lake Blvd., N.W.
Andover, MN

Time: 1:00 pm, July 13, 1988

Attendance at this meeting by representatives of public safety agencies is particularly encouraged. For more information contact Harry Hillegas at (612) 348-5555 or Jeff Nelson at (612) 348-7210.

ASSOCIATED PUBLIC-SAFETY COMMUNICATIONS OFFICERS, INC.

Minnesota Chapter

May 10, 1988

Minnesota State Sheriff's Association
c/o Holly Lack - Executive Director
Box 623
South St. Paul, MN 55075

Re: 800 Mhz Planning Meeting

Dear Director Lack:

Attached is some information which may be of interest to the members of your association. The Minnesota Chapter of APCO would greatly appreciate it if you could make your members aware of this information (in original or excerpted form) at the earliest possible date.

Should you have any questions please call me at (612) 348-7210 or Harry Hillegas at the number shown on the Public Notice.

Sincerely,

J. Jeffrey Nelson
Recording Secretary
800 Mhz Planning Committee
Region 22 - Minnesota

ASSOCIATED PUBLIC-SAFETY COMMUNICATIONS OFFICERS, INC.

Minnesota Chapter

May 10, 1988

Minnesota Veterinary Meidcal Association
c/o Executive Director
379 University Avenue E.
St. Paul, MN 55103

Re: 800 Mhz Radio Planning Meeting

Attached is some information which may be of interest to the members of your association. Under FCC rules, veterinarians are eligible for radio station licensing in the service discussed in the attached announcement. The Minnesota Chapter of APCO would greatly appreciate it if you could make your members aware of this information (in original or excerpted form) at the earliest possible date.

Should you have any questions please call me at (612) 348-7210 or Harry Hillegas at the number shown on the Public Notice.

Sincerely,

J. Jeffrey Nelson
Recording Secretary
800 Mhz Planning Committee
Region 22 - Minnesota

ASSOCIATED PUBLIC-SAFETY COMMUNICATIONS OFFICERS, INC.

Minnesota Chapter

May 10, 1988

Mr. Francis B. Francois
Executive Director, AASHTO
Suite 225 - 444 Capitol Street NW
Washington, DC 20001

Re: **800 Mhz Radio Planning Meeting**

Dear Mr. Francois:

Attached is some information which may be of interest to you and AASHTO membership in the State of Minnesota. The Minnesota Chapter of APCO would greatly appreciate it if you could make affected members aware of this information (in original or excerpted form) at the earliest possible date.

Should you have any questions please call me at (612) 348-7210 or Harry Hillegas at the number shown on the Public Notice.

Sincerely,

J. Jeffrey Nelson
Recording Secretary
800 Mhz Planning Committee
Region 22 - Minnesota

ASSOCIATED PUBLIC-SAFETY COMMUNICATIONS OFFICERS, INC.

Minnesota Chapter

ASSOCIATED PUBLIC-SAFETY COMMUNICATIONS OFFICERS, INC.

Minnesota Chapter

May 10, 1988

Minnesota Police Chief's Association
c/o Darrell Plath, Secretary
Hastings Police Dept.
107 W. 5th Street
Hastings, MN 55033

Re: 800 Mhz Planning Meeting

Dear Chief Plath:

Attached is some information which may be of interest to the members of your association. The Minnesota Chapter of APCO would greatly appreciate it if you could make your members aware of this information (in original or excerpted form) at the earliest possible date.

Should you have any questions please call me at (612) 348-7210 or Harry Hillegas at the number shown on the Public Notice.

Sincerely,

J. Jeffrey Nelson
Recording Secretary
800 Mhz Planning Committee
Region 22 - Minnesota

ASSOCIATED PUBLIC-SAFETY COMMUNICATIONS OFFICERS, INC.

Minnesota Chapter

May 10, 1988

Minnesota Department of Health
Emergency Medical Services Newsletter
EMS Section Attn: Diane Kline
717 Delaware Street SE
Minneapolis MN 55440

Dear Ms. Kline:

Attached is some information which may be of interest to the readers of your newsletter. The Minnesota Chapter of APCO would greatly appreciate it if you could publish this information in original or excerpted form prior to the date of the public meeting in July.

Should you have any questions please call me at (612) 348-7210 or Harry Hillegas at the number shown on the Public Notice.

Sincerely,

J. Jeffrey Nelson
Recording Secretary
800 Mhz Planning Committee
Region 22 - Minnesota

EMERGENCY COMMUNICATIONS CENTER
ROOM 41[illegible] CITY HALL
MINNEAPOLIS, MN 55415-1382

(612) 348-7210
ORI/MN02711C2

PAUL D LINNEE
DIRECTOR

minneapolis
city of lakes

April 17, 1988

Mr. Robert Buttgen
APCO National Office
P O Box 669
New Smyrna Beach, FL 32070

Dear Bob,

Enclosed please find a Public Notice announcing the initial meeting of Minnesota's 800 Mhz Planning Committee.

If possible, I would like to get mention of the meeting notice inserted in the Bulletin. Thanks.

Sincerely,

J. Jeffrey Nelson
Assistant Director
Emergency Communications Center

Ad Hoc Recording Secretary
MN APCO 800 Mhz Planning Committee

enclosure

EMERGENCY COMMUNICATIONS CENTER
ROOM 31[illegible] CITY HALL
MINNEAPOLIS, MN 55415-1382

(612) 348-7210
ORI/MN02711C2

PAUL D. LINNEE
DIRECTOR

minneapolis
city of lakes

April 17, 1988

Mr. Frank Evans
Federal Communications Commission
Field Operations Bureau
St. Paul District Office
691 Federal Building
316 N. Robert Street
St. Paul, MN 55101

Dear Mr. Evans:

Enclosed please find a Public Notice announcing the initial meeting of Minnesota's 800 Mhz Public Safety & Special Emergency Planning Committee.

If possible, we would appreciate any assistance your office can provide in disseminating notice of this important meeting.

Sincerely,

J. Jeffrey Nelson
Assistant Director
Emergency Communications Center

Ad Hoc Recording Secretary
MN APCO 800 Mhz Planning Committee

enclosure

EMERGENCY COMMUNICATIONS CENTER
ROOM 316 - CITY HALL
MINNEAPOLIS, MN 55415-1382

(612) 348-7210
ORI/MN0271102

PAUL D. LINNEE
DIRECTOR

minneapolis
city of lakes

April 17, 1988

Mr. Paul Linnee
Emergency Communications Center
316 - City Hall
Minneapolis, MN 55415

Re: APCO/MN Newsletter

Dear Paul,

Enclosed please find a Public Notice announcing the initial meeting of Minnesota's 800 Mhz Public Safety & Special Emergency Planning Committee.

On behalf of the this committee, we would like to get notice of this meeting published in the APCO/MN newsletter. Thank you.

Sincerely,

J. Jeffrey Nelson
Assistant Director
Emergency Communications Center

Ad Hoc Recording Secretary
MN APCO 800 Mhz Planning Committee

enclosure

ASSOCIATED PUBLIC-SAFETY COMMUNICATIONS OFFICERS, INC.

Minnesota Chapter

May 10, 1988

Minnesota Association of Counties
Attn: Newsletter Editor
555 Park Street - Suite 300
St. Paul, MN 55103

Re: 800 Mhz Radio Planning Meeting

Dear Editor:

Attached is some information which may be of interest to the members of your association. The Minnesota Chapter of APCO would greatly appreciate it if you could make your members aware of this information (in original or excerpted form) at the earliest possible date.

Should you have any questions please call me at (612) 348-7210 or Harry Hillegas at the number shown on the Public Notice.

Sincerely,

J. Jeffrey Nelson
Recording Secretary
800 Mhz Planning Committee
Region 22 - Minnesota

ASSOCIATED PUBLIC-SAFETY COMMUNICATIONS OFFICERS, INC.

Minnesota Chapter

May 10, 1988

Minnesota League of Cities
Attn: Newsletter Editor
183 University Ave. East
St. Paul, MN 55101

Re: 800 Mhz Radio Planning Meeting

Dear Editor:

Attached is some information which may be of interest to the members of the League. The Minnesota Chapter of APCO would greatly appreciate it if you could make your members aware of this information (in original or excerpted form) at the earliest possible date.

Should you have any questions please call me at (612) 348-7210 or Harry Hillegas at the number shown on the Public Notice.

Sincerely,

J. Jeffrey Nelson
Recording Secretary
800 Mhz Planning Committee
Region 22 - Minnesota

ASSOCIATED PUBLIC-SAFETY COMMUNICATIONS OFFICERS, INC.

Minnesota Chapter

May 10, 1988

Minnesota Medical Association
Minnesota Medicine
Attn: Merideth McNab
2221 University Ave. SE Suite 400
Minneapolis MN 55414

Dear Ms. McNab:

Attached is some information which may be of interest to the readers of your newsletter. The Minnesota Chapter of APCO would greatly appreciate it if you could publish this information in original or excerpted form prior to the date of the public meeting in July.

Should you have any questions please call me at (612) 348-7210 or Harry Hillegas at the number shown on the Public Notice.

Sincerely,

J. Jeffrey Nelson
Recording Secretary
800 Mhz Planning Committee
Region 22 - Minnesota

Pemberton leaves L.A. Cellular; Frantom named interim president

By Craig Kacskos

LOS ANGELES—Brian Pemberton has resigned as president of the Los Angeles Cellular Telephone Co., the country's largest nonwireline system.

Pemberton left L.A. Cellular, effective May 12, to join Monroe Systems for Business, a Morris Plains, N.J.-based office equipment manufacturer.

Howard Frantom, the company's vice president of operations, has been named interim president.

Frantom said he is not a candidate for the top spot of the cellular phone company, which turned on its $43 million switch in March 1987.

Pemberton oversaw the launch of L.A. Cellular's system during his two-year tenure at the company.

L.A. Cellular was formed in 1983 by a partnership of Lin Broadcasting Corp. and American Cellular Communications Corp., a joint venture between Mobile Communications Corp. of America and BellSouth, and was a reseller in the nation's top-ranked market until turning on its digital switch.

The 60-percent ACC stake in the Block A system will belong to BellSouth pending approval of the company's acquisition of MCCA (*RCR*, March 14, 1988, p. 13).

Pemberton will be president and chief operating officer of Monroe Systems and said the move to Monroe includes an equity stake in the 75-year old year firm which employs 2,500 people and posted revenues of approximately $175 million last year.

Frantom, who joined L.A. Cellular in January, has 30 years engineering and operations experience with Pacific Bell and AT&T.

"We have the utmost confidence in Howard Frantom and the rest of the L.A. Cellular management team. Our main goal during this period will be to continue developing our subscriber base, maximize customer satisfaction, and enhance support for our agents and resellers," said Carroll McHenry, president of ACC.

Frantom said until a new president is named he will oversee L.A. Cellular's daily operations and the com-

Minnesota meeting set for public safety planning

MINNEAPOLIS—The regional planning committee for public safety and

ASSOCIATED PUBLIC-SAFETY COMMUNICATIONS OFFICERS, INC.

Minnesota Chapter

June 3, 1989

Mr. Thomas Motherway
Dept. of Public Safety
Division of Emergency Services
B-5 - State Capitol Building
St. Paul, MN 55155

Dear Mr. Motherway:

This letter is to invite you or a member of your staff to attend the next meeting of the Region 22 (Minnesota) 800 MHz Planning Committee. The location of the meeting is:

Anoka County Activity Center
550 Bunker Lake Blvd., N.W.
Andover, MN
Weds., July 12, 1989
1:00 pm

The Federal Communications Commission (FCC) has empowered the Region 22 Planning Committee to devlop a communications plan which will determine how certain 800 Mhz radio channels are utilized within the State of Minnesota. As you know, there are present shortages within current radio spectrum for government use. Other states facing similar

Meeting Summary
800 Mhz Planning Committee
Region 22 - Minnesota
July 13, 1988 - 1:30 pm
Anoka County Activity Center

The first formal meeting of the Minnesota (Region 22) 800 Mhz Planning meeting occurred on this date. 21 people attended; their names and other identifying information is contained on the attachment titled "Attendee Information" (Not shown on that list is Don Vodegal, Hennepin County Sheriff's Office, who was also present.

Convenor Harry Hillegas called the meeting to order at approximately 1:45 pm. Hillegas introduced himself and provided a brief overview of the FCC action which allocated 6 Mhz of 800 Mhz spectrum for "public safety" and "special emergency use". He explained the process used by the FCC whereby APCO (Associated Public Safety Communications Officers, Inc.) was identified as the group responsible for starting the planning proccess for utilization of the spectrum within the regions. Hillegas explained that this was the organizational meeting and that the FCC had placed a 5 year deadline on the planning process with the frequencies unavailable for release until a plan was in place within each region and which called for the frequencies to be turned back if a plan wasn't in place within five years on a region by region basis.

Hillegas introduced the ad hoc committee members present: Bruns, Saunders, Nelson, himself, Vodegal, and Kent. (Ad Hoc committe member Dick Richardson was absent) He explained the purpose of a questionnaire being circulated to those present was to gather census information on the persons attending and indicated that additional planning committee membership was open and encouraged those with an interest in active participation to indicate this on the form.

Hillegas entertained questions at this point and recognized Francis Bauer. Bauer represented the fire service and expressed the view that fire service representation was most important on the 800 Mhz planning group. He indicated the fire service's need for, and interest in, adequate frequency spectrum to accomplish their mission and commented on the historical problems they had in getting their needs addressed. Saunders explained some of the steps that had been taken in planning for this meeting and highlighted the process used to notify all interested parties of the meeting. Bauer affirmed that the Minnesota Fire Chiefs Association received adequate notice of the session. His

The prepared ballot was explained and it was pointed out that there were spaces for write-in candidates on the ballot. Hillegas asked for additional nominations for the office of chair. There were none and they were closed. Hillegas then called for nominations for the office of vice-chair. Francis Bauer nominated Dick Richardson for vice-chair. There were no further nominations for vice-chair and they were closed. Hillegas then called for additional nominations for Secretary. There were none and they were closed.

Francis Bauer asked to speak to his nomination of Dick Richardson for vice-chair and was allowed to do so. The ballots were distributed, marked by those in attendance, and returned to the nominating committee members: Saunders and Vodegal. They counted the ballots and reported the results as follows:

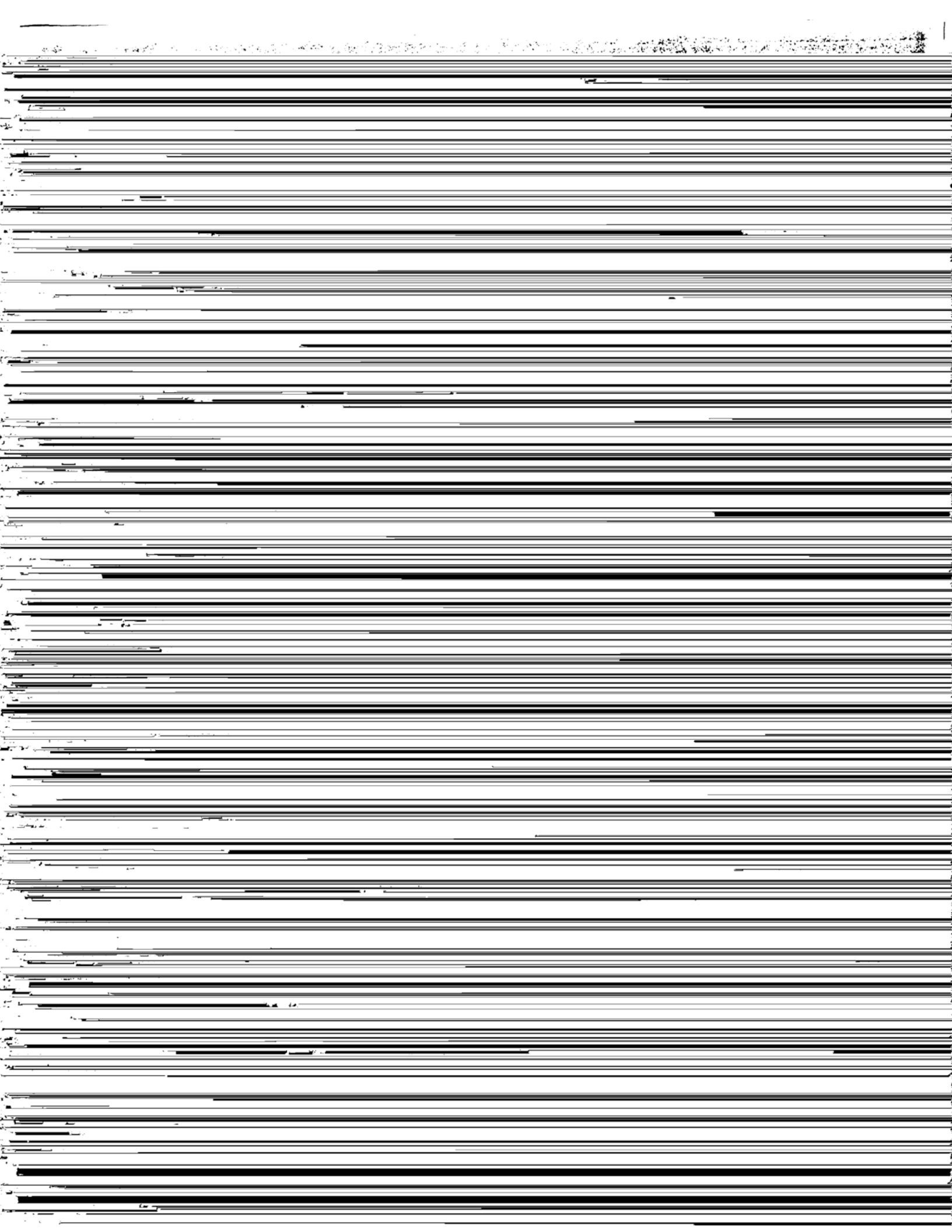
Chair	Harry Hillegas	19 votes
Vice-Chair	Hank Bruns	17 votes
Secretary	Jeff Nelson	19 votes
Vice-Chair	Dick Richardson	3 votes

Bauer moved that the delegates be elected based on the votes cast on a unanimous ballot. Sullivan seconded the motion and it carried on a voice vote.

Hillegas suggested that an Ad Hoc operating committee put together a set of basic procedures to be followed to conduct the business of the Committee. Volunteers were solicited; Nelson and Vodegal volunteered. Hillegas also solicited help from volunteers interested in rounding out the Committee's membership both in terms of service represented and geography by seeking other participants. Bruns related that he had conversations with representatives of FCCA (Forestry Conservation Communications Association), EMS from the State Health Dept., State Emergency Services, and others. Bruns related that the general posture of the representatives he spoke with was to be made aware of committee activities from time to time. (Note from Secretary: Bruns is requested to forward copies of the minutes to persons not shown on the attached attendance list who may be interested in receiving them.)

Bauer suggested that each service eligible for licensing have at least two members actively participating in committee activities. Dick Shulak from the State of Wisconsin

was asked to summarize the attendance questionnaires (results attached). It was



ATTENDANCE ROSTER
800 MHz PLANNING COMMITTEE MEETINGS
REGION 22 (MINNESOTA)

LAST NAME	FIRST	AFFILIATION	ADDRESS	CITY	ST ZIP	PHONE
Anderson	David	SHERBURNE COUNTY	13880 Highway 10	Elk River	MN 55330	(612) 441-2522
Bahneman	Steven	ST.CROIX COUNTY	911 Fourth St.	Hudson	WI 54016	(612) 386-4747
Bauer	Francis	CITY OF PLYMOUTH	11010 Co. Rd. 15	Plymouth	MN 55441	(612) 545-6690
Beutelspacher	Jim	STATE OF MINNESOTA	658 Cedar St	St. Paul	MN 55155	(612) 296-7104
Brantner	Bruce	ST.CROIX COUNTY	911 Fourth St.	Hudson	WI 54016	(715) 386-4747
Bruns	Henry	STATE OF MINNESOTA	3926 Glenview Ave	Arden Hills	MN 55112	(612) 633-6613
Carlberg	Darrell	HEALTH ONE TRANSPORTATION	167 Grand Ave.	St. Paul	MN 55102	(612) 228-8410
Catlisch	Neal	NORTH AMERICAN TELCOM	Box 938	Mankato	MN 56001	(800) 247-0433
Contreras	Freddie	STATE OF MINNESOTA	717 Delaware Street N.E.	Minneapolis	MN 55440	(612) 623-5486
Dristie	Jim	CITY OF BROOKLYN PARK	5800 85th Avenue No.	Brooklyn Park	MN 55443	(612) 424-8000
Gargaro	Sam	STATE OF MINNESOTA	Kelly Annex Suite 900	St. Paul	MN 55155	(612) 296-7402
Gerdes	Craig	CITY OF BLOOMINGTON	2215 West Old Shakopee R	Bloomington	MN 55431	(612) 881-2333
Hagen	John	ELERT & ASSOCIATES	140 Third Street South	Stillwater	MN 55082	(612) 430-2772
Halvorson	Roberta	HENNEPIN COUNTY	320 Washington Ave. Sout	Hopkins	MN 55343	(612) 930-2691
Hannon	Thomas	CITY OF ST. CLOUD	102 N. 7th Avenue	St. Cloud	MN 56303	(612) 251-3627
Hanson	Norm	STATE OF MINNESOTA	393 North Dunlap St.	Minneapolis	MN 55164	(612) 643-2164

ATTENDANCE ROSTER
800 MHz PLANNING COMMITTEE MEETINGS
REGION 22 (MINNESOTA)

LAST NAME	FIRST	AFFILIATION	ADDRESS	CITY	ST ZIP	PHONE
Stevenson	Corky	HENNEPIN COUNTY	320 Washington Ave. Sout	Hopkins	MN 55343	(612) 930-2693
Sullivan	Judy	STATE OF MINNESOTA	B-5 State Capitol	St. Paul	MN 55155	(612) 296-2233
Swanson	Craig	CITY OF EDINA	4801 West 50th St.	Edina	MN 55424	(612) 927-8861
T'Kach	Steven	ST. CROIX COUNTY	911 Fourth Street	Hudson	WI 54016	(715) 386-2345
Vaccaro	Paul	ERICKSON-GE COMMUNICATIONS	7241 Ohms Lane	Edina	MN 55439	(612) 831-2220
Vodegel	Donald	HENNEPIN COUNTY	9300 Naper St.	Golden Valley	MN 55427	(612) 525-6206
Walsh	Jack	CITY OF MINNEAPOLIS	313 South 3rd Street	Minneapolis	MN 55415	(612) 673-2440
Waltz	David	ST.PAUL-RAMSEY MEDICAL CTR	640 Jackson Street	St. Paul	MN 55101	(612) 221-3034
Witschen	Dick	SHERBURNE COUNTY	13880 Highway 10	Elk River	MN 55330	(612) 441-2500
Wojack	Bruce	ANOKA COUNTY	325 East Main St	Anoka	MN 55303	(612) 421-4760

EXHIBIT "C"

POPULATION DISTRIBUTION
REGION 22

COUNTY	COUNTY SEAT	AREA (Sq.Mi.)	LAND (%)	CENSUS 1980	CENSUS 1990	CHANGE (%)	(Est) 2000	
AITKIN	AITKIN	1834	94.87	13404	12425	-7.0	14578	
ANOKA	ANOKA	430	85.25	195998	243641	24.0	281110	*
BECKER	DETROIT LAKES	1312	87.61	29336	27881	-5.0	37329	
BELTRAMI	BEMIDJI	2507	75.07	30982	34384	11.0	39550	
BENTON	FOLEY	408	99.05	25187	30185	20.0	32900	
BIG STONE	ORTONVILLE	497	89.56	7716	6285	19.0	7022	
BLUE EARTH	MANKATO	749	97.20	52314	54044	3.0	54414	
BROWN	NEW ULM	610	98.79	28645	26984	-6.0	28568	
CARLTON	CARLTON	864	98.27	29936	29259	-2.0	33488	
CARVER	CHASKA	351	90.40	37046	47915	29.0	62220	*
CASS	WALKER	2033	77.61	21050	21791	4.0	27130	
CHIPPEWA	MONTEVIDEO	584	99.48	14941	13228	-11.0	14976	
CHISAGO	CENTER CITY	417	93.01	25717	30521	19.0	44657	
CLAY	MOORHEAD	1049	98.95	49327	50422	2.0	50688	
CLEARWATER	BAGLEY	999	95.03	8761	8309	-5.0	10073	
COOK	GRAND MARAIS	1412	89.09	4092	3868	-10.0	4599	
COTTONWOOD	WINDOM	640	98.44	14854	12694	-15.0	14123	
CROW WING	BRAINERD	1008	83.96	41722	44249	6.0	53181	
DAKOTA	HASTINGS	574	95.98	194279	275227	42.0	337630	*
DODGE	MANTORVILLE	439	99.99	14773	15731	6.0	19122	
DOUGLAS	ALEXANDRIA	643	84.33	27839	28674	3.0	37461	
FARIBAULT	BLUE EARTH	714	98.69	19714	16937	-14.0	17770	
FILLMORE	PRESTON	862	99.98	21930	20777	-5.0	22046	
FREEBORN	ALBERT LEA	705	97.09	36329	33060	-9.0	36278	
GOODHUE	RED WING	763	95.72	38749	40690	5.0	45339	
GRANT	ELBOW LAKE	547	93.01	7171	6246	-13.0	6936	
HENNEPIN	MINNEAPOLIS	541	85.11	941411	1032431	10.0	1108110	*
HOUSTON	CALEDONIA	564	96.45	18382	18497	1.0	20087	
HUBBARD	PARK RAPIDS	936	90.37	14098	14939	6.0	19004	
ISANTI	CAMBRIDGE	440	95.22	23600	25921	10.0	39943	
ITASCA	GRAND RAPIDS	2661	91.02	43069	40863	-5.0	52987	
JACKSON	JACKSON	699	96.58	13690	11677	-15.0	12413	
KANABEC	MORA	527	98.14	12161	12802	5.0	17153	
KANDIYOHI	WILMAR	784	89.01	36763	38761	5.0	45787	
KITTSON	HALLOCK	1104	99.34	6672	5767	-14.0	5970	
KOOCHICHING	INTERNATIONAL FALLS	3108	99.52	17571	16299	-7.0	18531	
LAC QUI PARLE	MADISON	772	97.03	10592	8924	-16.0	10115	
LAKE	TWO HARBORS	2053	61.38	13043	10415	-20.0	11379	
LAKE OF THE WOODS	BAUDETTE	1296	61.66	3764	4076	8.0	3698	
LE SUEUR	LE CENTER	446	92.08	23434	23239	-1.0	26835	
LINCOLN	IVANHOE	538	96.77	8207	6890	-16.0	7875	
LYON	MARSHALL	714	98.45	25207	24789	-2.0	26759	
MCLEOD	GLENCOE	489	96.10	29657	32030	8.0	32768	
MAHNOMEN	MAHNOMEN	559	93.14	5535	5044	-9.0	4938	
MARSHALL	WARREN	1760	95.57	13027	10993	-16.0	12955	

EXHIBIT "C"

POPULATION DISTRIBUTION
REGION 22

COUNTY	COUNTY SEAT	AREA (Sq.Mi.)	LAND (%)	CENSUS 1980	CENSUS 1990	CHANGE (%)	(Est) 2000	
MARTIN	FAIRMONT	706	96.60	24687	22914	-7.0	25650	
MEEKER	LITCHFIELD	624	91.42	20594	20846	1.0	23730	
MILLE LACS	MILACA	578	62.33	18430	18670	1.0	22517	
MORRISON	LITTLE FALLS	1124	97.42	29311	29604	1.0	32576	
MOWER	AUSTIN	711	99.97	40390	37385	-7.0	39232	
MURRAY	SLAYTON	702	96.80	11507	9660	-16.0	10033	
NICOLLET	ST. PETER	440	95.08	26929	28076	4.0	30139	
NOBLES	WORTHINGTON	714	98.84	21840	20098	-8.0	21069	
NORMAN	ADA	877	99.75	9379	7975	-15.0	8275	
OLMSTED	ROCHESTER	655	99.71	92006	106470	16.0	106947	
OTTER TAIL	FERGUS FALLS	1973	85.51	51937	50714	-2.0	61761	
PENNINGTON	THIEF RIVER FALLS	618	99.57	15258	13306	-13.0	16126	
PINE	PINE CITY	1421	98.55	19871	21264	7.0	25127	
PIPESTONE	PIPESTONE	466	99.93	11690	10491	-10.0	10297	
POLK	CROOKSTON	1982	98.75	34844	32498	-7.0	35234	
POPE	GLENWOOD	668	88.69	11657	10745	-8.0	12476	
RAMSEY	ST. PAUL	154	88.76	459784	485765	6.0	503010	*
RED LAKE	RED LAKE FALLS	433	99.52	5471	4525	-17.0	5315	
REDWOOD	REDWOOD FALLS	882	99.74	19341	17254	-11.0	18406	
RENVILLE	OLIVIA	984	99.39	20401	17673	-13.0	19232	
RICE	FARIBAULT	501	96.11	46087	49183	7.0	52370	
ROCK	LUVERNE	483	99.99	10703	9806	-8.0	10705	
ROSEAU	ROSEAU	1677	97.95	12574	15026	20.0	13759	
ST. LOUIS	DULUTH	6125	88.88	222229	198213	-11.0	210272	
SCOTT	SHAKOPEE	357	92.73	43784	57846	32.0	76910	*
SHERBURNE	ELK RIVER	435	95.41	29908	41945	40.0	60759	
SIBLEY	GAYLORD	593	97.03	15448	14366	-7.0	15123	
STEARNS	ST. CLOUD	1338	95.56	108161	118791	10.0	127858	
STEELE	OWATONNA	431	99.24	30328	30729	1.0	34908	
STEVENS	MORRIS	560	96.11	11322	10634	-6.0	11263	
SWIFT	BENSON	743	97.34	12920	10724	-17.0	12652	
TODD	LONG PRAIRIE	941	94.70	24991	23363	-7.0	29053	
TRAVERSE	WHEATON	575	97.37	5542	4463	-19.0	4711	
WABASHA	WABASHA	537	97.12	19335	19744	2.0	22898	
WADENA	WADENA	538	98.77	14192	13154	-7.0	16038	
WASECA	WASECA	422	98.89	18448	18079	-2.0	21692	
WASHINGTON	STILLWATER	390	91.31	113571	145896	28.0	177340	*
WATONWAN	ST. JAMES	435	98.72	12361	11682	-5.0	11086	
WILKIN	BRECKENRIDGE	751	99.79	8454	7516	-11.0	8027	
WINONA	WINONA	630	99.72	46256	47828	3.0	48389	
WRIGHT	BUFFALO	672	85.36	58681	68710	17.0	99848	
YELLOW MEDICINE	GRANITE FALLS	758	98.94	13653	11684	-14.0	12127	
	*** Total ***	79546		4075970	4375099	7.3		

EXHIBIT "D"

Input Data For Multiple Site Systems

	Site Name		Site Latitude	Site Longitude	Qty of Chann	Coverage (mi)	ERP (Db/KW)	Antenna Ht (ft)	Environment Type
*	WADENA	A	46 29 7	94 58 14	4	11.00	-18.80	100.00	4
*	WADENA	B	46 40 48	94 58 14	4	11.00	-18.80	100.00	4
*	HUBBARD	A	46 56 29	94 54 30	4	13.00	-16.00	100.00	4
*	HUBBARD	B	47 15 30	94 54 30	4	13.00	-16.00	100.00	4
*	HUBBARD	C	47 6 10	94 54 30	4	13.00	-16.00	100.00	4
*	HOUSTON	A	43 44 59	91 35 7	4	8.00	-23.60	100.00	4
*	HOUSTON	B	43 44 59	91 23 35	4	8.00	-23.60	100.00	4
*	HOUSTON	C	43 36 7	91 23 35	4	8.00	-23.60	100.00	4
*	HOUSTON	D	43 36 7	91 35 7	4	8.00	-23.60	100.00	4
*	WABASHA	A	44 17 33	92 2 54	4	8.00	-18.60	100.00	3
*	WABASHA	B	44 12 14	92 12 12	4	8.00	-18.60	100.00	3
*	WABASHA	C	44 17 20	92 25 48	4	8.00	-18.60	100.00	3
*	WABASHA	D	44 21 46	92 17 23	4	8.00	-18.60	100.00	3
*	DODGE	A	44 5 37	92 48 38	4	8.00	-18.60	100.00	3
*	DODGE	B	44 5 37	92 54 20	4	8.00	-18.60	100.00	3
*	DODGE	C	43 56 9	92 54 53	4	8.00	-18.60	100.00	3
*	DODGE	D	43 56 9	92 48 22	4	8.00	-18.60	100.00	3
*	STEELE	A	43 56 31	93 10 37	4	8.00	-18.60	100.00	3
*	STEELE	B	43 56 31	93 16 19	4	8.00	-18.60	100.00	3
*	STEELE	C	44 5 59	93 16 19	4	8.00	-18.60	100.00	3
*	STEELE	D	44 5 59	93 10 53	4	8.00	-18.60	100.00	3
*	RICE	A	44 17 6	93 10 53	4	8.00	-18.60	100.00	3
*	RICE	B	44 22 40	93 10 53	4	8.00	-18.60	100.00	3
*	RICE	C	44 26 45	93 24 2	4	8.00	-18.60	100.00	3
*	RICE	D	44 16 55	93 23 45	4	8.00	-18.60	100.00	3
*	WASECA	A	43 56 43	93 32 35	4	8.00	-18.60	100.00	3
*	WASECA	B	43 56 43	93 37 25	4	8.00	-18.60	100.00	3
*	WASECA	C	44 5 59	93 37 25	4	8.00	-18.60	100.00	3
*	WASECA	D	44 5 59	93 32 35	4	8.00	-18.60	100.00	3
*	ROCK	A	43 44 50	96 12 13	4	8.00	-23.60	100.00	4
*	ROCK	B	43 44 50	96 18 44	4	8.00	-23.60	100.00	4
*	ROCK	C	43 36 23	96 18 44	4	8.00	-23.60	100.00	4
*	ROCK	D	43 36 23	96 10 55	4	8.00	-23.60	100.00	4
*	LE SUEUR	A	44 26 27	93 39 46	4	8.00	-18.60	100.00	3
*	LE SUEUR	B	44 26 27	93 46 56	4	8.00	-18.60	100.00	3
*	LE SUEUR	C	44 19 60	93 53 7	4	8.00	-18.60	100.00	3
*	LE SUEUR	D	44 17 20	93 39 27	4	8.00	-18.60	100.00	3

EXHIBIT "D" (Cont'd)

Site Name		Site Latitude	Site Longitude	Qty of Chans	Coverage (mi)	ERP (Db/KW)	Antenna Ht (ft)	Environment Type
* SCOTT	A	44 42 41	93 29 28	4	8.00	-5.20	100.00	2
* SCOTT	B	44 38 1	93 23 56	4	8.00	-5.20	100.00	2
* SCOTT	C	44 35 21	93 46 43	4	8.00	-5.20	100.00	2
* SCOTT	D	44 37 8	93 36 18	4	8.00	-5.20	100.00	2
* WATONWAN	A	43 56 33	94 29 31	4	8.00	-23.60	100.00	4
* WATONWAN	B	43 56 33	94 42 54	4	8.00	-23.60	100.00	4
* WATONWAN	C	44 0 47	94 42 54	4	8.00	-23.60	100.00	4
* WATONWAN	D	44 0 47	94 29 5	4	8.00	-23.60	100.00	4
* PIPESTONE	A	44 6 11	96 11 29	4	8.00	-23.60	100.00	4
* PIPESTONE	B	44 6 11	96 19 1	4	8.00	-23.60	100.00	4
* PIPESTONE	C	43 56 33	96 19 1	4	8.00	-23.60	100.00	4
* PIPESTONE	D	43 56 33	96 11 29	4	8.00	-23.60	100.00	4
* ISANTI	A	45 28 32	93 8 35	4	7.00	-20.50	100.00	3
* ISANTI	B	45 28 58	93 22 55	4	7.00	-20.50	100.00	3
* ISANTI	C	45 38 6	93 22 55	4	7.00	-20.50	100.00	3
* ISANTI	D	45 38 6	93 16 24	4	7.00	-20.50	100.00	3
* BENTON	A	45 42 59	93 54 0	4	8.00	-5.20	100.00	2
* BENTON	B	45 42 59	94 9 47	4	8.00	-5.20	100.00	2
* BENTON	C	45 39 39	94 5 15	4	8.00	-5.20	100.00	2
* BENTON	D	45 39 39	93 53 41	4	8.00	-5.20	100.00	2
* CARLTON	A	46 37 30	92 52 55	4	11.00	-13.80	100.00	3
* CARLTON	B	46 33 3	92 52 55	4	11.00	-13.80	100.00	3
* CARLTON	C	46 33 3	92 29 46	4	11.00	-13.80	100.00	3
* CARLTON	D	46 37 30	92 29 46	4	11.00	-13.80	100.00	3
* DOUGLAS	A	45 58 16	95 20 44	4	11.00	-18.80	100.00	4
* DOUGLAS	B	45 53 49	95 20 44	4	11.00	-18.80	100.00	4
* DOUGLAS	C	45 53 49	95 34 13	4	11.00	-18.80	100.00	4
* DOUGLAS	D	45 58 16	95 34 13	4	11.00	-18.80	100.00	4
* POPE	A	45 32 14	95 18 10	4	11.00	-18.80	100.00	4
* POPE	B	45 32 14	95 32 38	4	11.00	-18.80	100.00	4
* POPE	C	45 37 21	95 32 57	4	11.00	-18.80	100.00	4
* POPE	D	45 37 21	95 18 29	4	11.00	-18.80	100.00	4
* STEVENS	A	45 37 21	95 56 6	4	11.00	-18.80	100.00	4
* STEVENS	B	45 37 21	96 4 47	4	11.00	-18.80	100.00	4
* STEVENS	C	45 32 54	96 4 47	4	11.00	-18.80	100.00	4
* STEVENS	D	45 32 54	95 56 6	4	11.00	-18.80	100.00	4
* GRANT	A	45 52 56	95 56 6	4	11.00	-18.80	100.00	4
* GRANT	B	45 52 56	96 4 47	4	11.00	-18.80	100.00	4
* GRANT	C	45 59 36	96 4 47	4	11.00	-18.80	100.00	4

(Cont'd)

EXHIBIT "D" (Cont'd)

Site Name		Site Latitude	Site Longitude	Qty of Chann	Coverage (mi)	ERP (Db/KW)	Antenna Ht (ft)	Environment Type
* GRANT	D	45 59 36	95 56 6	4	11.00	-18.80	100.00	4
* KITTSON	A	48 40 46	96 35 21	4	11.00	-18.80	100.00	4
* KITTSON	B	48 40 46	96 58 30	4	11.00	-18.80	100.00	4
* KITTSON	C	48 52 2	96 58 30	4	11.00	-18.80	100.00	4
* KITTSON	D	48 52 2	96 35 21	4	11.00	-18.80	100.00	4
* MAHNOMEN	A	47 23 26	95 54 54	4	8.00	-23.60	100.00	4
* MAHNOMEN	B	47 23 26	95 42 46	4	8.00	-23.60	100.00	4
* MAHNOMEN	C	47 14 7	95 42 46	4	8.00	-23.60	100.00	4
* MAHNOMEN	D	47 14 7	95 54 54	4	8.00	-23.60	100.00	4
* WINONA	A	43 56 4	91 29 21	4	8.00	-18.60	100.00	3
* WINONA	B	43 57 10	91 55 37	4	8.00	-18.60	100.00	3
* WINONA	C	43 57 10	91 41 12	4	8.00	-18.60	100.00	3
* WINONA	D	44 5 49	91 55 37	4	8.00	-18.60	100.00	3
* WINONA	E	44 1 9	91 48 49	4	8.00	-18.60	100.00	3
* BIG STONE	A	45 19 18	96 15 47	4	8.00	-23.60	100.00	4
* BIG STONE	B	45 29 9	96 22 33	4	8.00	-23.60	100.00	4
* BIG STONE	C	45 29 9	96 40 59	4	8.00	-23.60	100.00	4
* BIG STONE	D	45 29 9	96 30 51	4	8.00	-23.60	100.00	4
* BIG STONE	E	45 24 13	96 21 50	4	8.00	-23.60	100.00	4
* TRAVERSE	A	45 41 21	96 23 41	4	8.00	-23.60	100.00	4
* TRAVERSE	B	45 39 17	96 43 49	4	8.00	-23.60	100.00	4
* TRAVERSE	C	45 43 41	96 29 23	4	8.00	-23.60	100.00	4
* TRAVERSE	D	45 54 51	96 22 55	4	8.00	-23.60	100.00	4
* TRAVERSE	E	45 54 51	96 27 29	4	8.00	-23.60	100.00	4
* CLEARWATER	A	47 16 50	95 21 5	4	10.00	-20.20	100.00	4
* CLEARWATER	B	47 27 31	95 21 5	4	10.00	-20.20	100.00	4
* CLEARWATER	C	47 37 32	95 21 5	4	10.00	-20.20	100.00	4
* CLEARWATER	D	47 47 33	95 22 3	4	10.00	-20.20	100.00	4
* CLEARWATER	E	47 53 53	95 23 31	4	10.00	-20.20	100.00	4
* FILLMORE	A	43 36 20	92 18 25	4	8.00	-23.60	100.00	4
* FILLMORE	B	43 35 54	91 52 48	4	8.00	-23.60	100.00	4
* FILLMORE	C	43 35 54	92 4 20	4	8.00	-23.60	100.00	4
* FILLMORE	D	43 44 45	91 52 48	4	8.00	-23.60	100.00	4
* FILLMORE	E	43 44 45	92 4 20	4	8.00	-23.60	100.00	4
* FILLMORE	F	43 44 45	92 18 45	4	8.00	-23.60	100.00	4
* OLMSTED	A	43 56 43	92 13 1	6	8.00	-5.20	100.00	2
* OLMSTED	B	44 0 29	92 13 1	6	8.00	-5.20	100.00	2
* OLMSTED	C	44 6 2	92 26 38	6	8.00	-5.20	100.00	2
* OLMSTED	D	44 6 2	92 32 28	6	8.00	-5.20	100.00	2

(Cont'd)

EXHIBIT "D" (Cont'd)

	Site Name		Site Latitude	Site Longitude	Qty of Chann	Coverage (mi)	ERP (Db/KW)	Antenna Ht (ft)	Environment Type
		E	43 55 37	92 32 28	6	8.00	-5.20	100.00	2
*	OLMSTED	F	43 56 57	92 22 25	6	8.00	-5.20	100.00	2
*	OLMSTED								
		A	43 35 27	92 35 14	4	8.00	-18.60	100.00	3
*	MOWER	B	43 35 27	92 55 5	4	8.00	-18.60	100.00	3
*	MOWER	C	43 35 27	92 43 34	4	8.00	-18.60	100.00	3
*	MOWER	D	43 44 19	92 34 55	4	8.00	-18.60	100.00	3
*	MOWER	E	43 44 45	92 55 5	4	8.00	-18.60	100.00	3
*	MOWER	F	43 44 45	92 46 26	4	8.00	-18.60	100.00	3
*	FREEBORN	A	43 35 45	93 11 9	4	8.00	-18.60	100.00	3
*	FREEBORN	B	43 35 45	93 30 27	4	8.00	-18.60	100.00	3
*	FREEBORN	C	43 35 45	93 20 48	4	8.00	-18.60	100.00	3
*	FREEBORN	D	43 45 2	93 20 48	4	8.00	-18.60	100.00	3
*	FREEBORN	E	43 45 2	93 11 9	4	8.00	-18.60	100.00	3
*	FREEBORN	F	43 45 2	93 30 27	4	8.00	-18.60	100.00	3
*	FARIBAULT	A	43 45 2	93 47 20	4	8.00	-23.60	100.00	4
*	FARIBAULT	B	43 45 2	94 6 37	4	8.00	-23.60	100.00	4
*	FARIBAULT	C	43 45 2	93 56 58	4	8.00	-23.60	100.00	4
*	FARIBAULT	D	43 35 45	93 56 58	4	8.00	-23.60	100.00	4
*	FARIBAULT	E	43 35 45	93 47 20	4	8.00	-23.60	100.00	4
*	FARIBAULT	F	43 35 45	94 6 37	4	8.00	-23.60	100.00	4
*	MARTIN	A	43 35 45	94 23 30	4	8.00	-23.60	100.00	4
*	MARTIN	B	43 35 45	94 42 48	4	8.00	-23.60	100.00	4
*	MARTIN	C	43 35 45	94 33 9	4	8.00	-23.60	100.00	4
*	MARTIN	D	43 45 2	94 33 9	4	8.00	-23.60	100.00	4
*	MARTIN	E	43 45 2	94 23 30	4	8.00	-23.60	100.00	4
*	MARTIN	F	43 45 2	94 42 48	4	8.00	-23.60	100.00	4
*	JACKSON	A	43 45 2	94 59 40	4	8.00	-23.60	100.00	4
*	JACKSON	B	43 45 2	95 18 58	4	8.00	-23.60	100.00	4
*	JACKSON	C	43 45 2	95 9 19	4	8.00	-23.60	100.00	4
*	JACKSON	D	43 35 45	95 9 19	4	8.00	-23.60	100.00	4
*	JACKSON	E	43 35 45	94 59 40	4	8.00	-23.60	100.00	4
*	JACKSON	F	43 35 45	95 18 58	4	8.00	-23.60	100.00	4
*	NOBLES	A	43 35 56	95 36 8	4	8.00	-23.60	100.00	4
*	NOBLES	B	43 35 56	95 54 52	4	8.00	-23.60	100.00	4
*	NOBLES	C	43 35 56	95 46 11	4	8.00	-23.60	100.00	4
*	NOBLES	D	43 44 50	95 46 11	4	8.00	-23.60	100.00	4
*	NOBLES	E	43 44 50	95 54 52	4	8.00	-23.60	100.00	4
*	NOBLES	F	43 44 50	95 35 35	4	8.00	-23.60	100.00	4

EXHIBIT "D" (Cont'd)

Site Name	Site	Site	Qty of	Coverage	ERP	Antenna	Environment

EXHIBIT "D" (Cont'd)

Site Name		Site Latitude	Site Longitude	Qty of Chann	Coverage (mi)	ERP (Db/KW)	Antenna Ht (ft)	Environment Type
CHISAGO	C	45 22 58	92 50 13	4	7.00	-7.10	100.00	2
CHISAGO	D	45 25 38	92 46 58	4	7.00	-7.10	100.00	2
CHISAGO	E	45 28 18	92 50 13	4	7.00	-7.10	100.00	2
CHISAGO	F	45 29 52	92 53 28	4	7.00	-7.10	100.00	2
ANOKA	A	45 18 58	93 8 27	9	7.00	-7.10	100.00	2
ANOKA	B	45 12 17	93 8 27	9	7.00	-7.10	100.00	2
ANOKA	C	45 8 30	93 14 57	9	7.00	-7.10	100.00	2
ANOKA	D	45 19 24	93 23 25	9	7.00	-7.10	100.00	2
ANOKA	E	45 19 24	93 16 15	9	7.00	-7.10	100.00	2
ANOKA	F	45 14 57	93 19 50	9	7.00	-7.10	100.00	2
SHERBURNE	A	45 28 18	93 37 57	4	7.00	-7.10	100.00	2
SHERBURNE	B	45 21 11	93 37 57	4	7.00	-7.10	100.00	2
SHERBURNE	C	45 30 05	94 02 41	4	7.00	-7.10	100.00	2
SHERBURNE	D	45 28 18	93 50 19	4	7.00	-7.10	100.00	2
SHERBURNE	E	45 23 51	93 46 25	4	7.00	-7.10	100.00	2
SHERBURNE	F	45 28 45	93 55 12	4	7.00	-7.10	100.00	2
PINE	A	46 17 28	92 29 46	4	11.00	-18.80	100.00	4
PINE	B	46 8 34	92 29 46	4	11.00	-18.80	100.00	4
PINE	C	46 17 28	92 52 55	4	11.00	-18.80	100.00	4
PINE	D	46 1 54	92 52 55	4	11.00	-18.80	100.00	4
PINE	E	45 51 53	92 56 28	4	11.00	-18.80	100.00	4
PINE	F	46 3 1	92 44 53	4	11.00	-18.80	100.00	4
CROW WING	A	46 16 44	93 59 34	4	11.00	-13.80	100.00	3
CROW WING	B	46 15 24	94 9 59	4	11.00	-13.80	100.00	3
CROW WING	C	46 40 46	94 8 41	4	11.00	-13.80	100.00	3
CROW WING	D	46 27 25	94 8 41	4	11.00	-13.80	100.00	3
CROW WING	E	46 40 46	93 58 23	4	11.00	-13.80	100.00	3
CROW WING	F	46 29 38	93 59 21	4	11.00	-13.80	100.00	3
TODD	A	46 14 4	94 57 52	4	11.00	-18.80	100.00	4
TODD	B	45 54 2	94 57 52	4	11.00	-18.80	100.00	4
TODD	C	46 5 10	94 57 52	4	11.00	-18.80	100.00	4
TODD	D	46 14 4	94 51 9	4	11.00	-18.80	100.00	4
TODD	E	45 54 2	94 51 9	4	11.00	-18.80	100.00	4
TODD	F	46 5 10	94 51 9	4	11.00	-18.80	100.00	4
WILKIN	A	46 7 19	96 23 41	4	8.00	-23.60	100.00	4
WILKIN	B	46 31 43	96 25 35	4	8.00	-23.60	100.00	4
WILKIN	C	46 23 55	96 25 35	4	8.00	-23.60	100.00	4
WILKIN	D	46 16 8	96 25 35	4	8.00	-23.60	100.00	4
WILKIN	E	46 23 55	96 32 20	4	8.00	-23.60	100.00	4
WILKIN	F	46 31 43	96 39 5	4	8.00	-23.60	100.00	4

EXHIBIT "D" (Cont'd)

Site Name		Site Latitude	Site Longitude	Qty of Chann	Coverage (mi)	ERP (Db/KW)	Antenna Ht (ft)	Environment Type
* BECKER	A	46 51 42	95 21 52	4	11.00	-13.80	100.00	3
* BECKER	B	46 51 42	95 58 60	4	11.00	-13.80	100.00	3
* BECKER	C	46 51 42	95 42 7	4	11.00	-13.80	100.00	3
* BECKER	D	47 1 18	95 58 60	4	11.00	-13.80	100.00	3
* BECKER	E	47 1 18	95 42 7	4	11.00	-13.80	100.00	3
* BECKER	F	47 1 18	95 21 52	4	11.00	-13.80	100.00	3
* NORMAN	A	47 14 7	96 11 52	4	8.00	-23.60	100.00	4
* NORMAN	B	47 14 29	96 42 18	4	8.00	-23.60	100.00	4
* NORMAN	C	47 14 29	96 27 45	4	8.00	-23.60	100.00	4
* NORMAN	D	47 24 22	96 12 23	4	8.00	-23.60	100.00	4
* NORMAN	E	47 24 22	96 29 22	4	8.00	-23.60	100.00	4
* NORMAN	F	47 24 22	96 41 29	4	8.00	-23.60	100.00	4
* PENNINGTON	A	48 4 27	95 43 1	4	7.00	-20.50	100.00	3
* PENNINGTON	B	48 2 35	95 40 35	4	7.00	-20.50	100.00	3
* PENNINGTON	C	48 4 27	95 55 8	4	7.00	-20.50	100.00	3
* PENNINGTON	D	48 4 27	96 4 50	4	7.00	-20.50	100.00	3
* PENNINGTON	E	48 4 27	96 24 14	4	7.00	-20.50	100.00	3
* PENNINGTON	F	48 4 27	96 14 32	4	7.00	-20.50	100.00	3
* GOODHUE	A	44 30 38	92 25 48	4	7.00	-20.50	100.00	3
* GOODHUE	B	44 37 30	92 40 23	4	7.00	-20.50	100.00	3
* GOODHUE	C	44 25 58	92 54 48	4	7.00	-20.50	100.00	3
* GOODHUE	D	44 28 11	92 42 55	4	7.00	-20.50	100.00	3

EXHIBIT "D" (Cont'd)

Site Name	Site Latitude	Site Longitude	Qty of Chann	Coverage (mi)	ERP (Db/KW)	Antenna Ht (ft)	Environment Type
* MILLE LACS	D 46 8 30	93 40 43	A	7.00	-25.50	100.00	4

EXHIBIT "D" (Cont'd)

	Site Name		Site Latitude	Site Longitude	Qty of Chans	Coverage (mi)	ERP (Db/KW)	Antenna Ht (ft)	Environment Type
*	MCLEOD	A	44 54 16	94 6 29	4	6.00	-22.40	100.00	3
*	MCLEOD	B	44 54 16	94 24 1	4	6.00	-22.40	100.00	3
*	MCLEOD	C	44 54 16	94 15 20	4	6.00	-22.40	100.00	3
*	MCLEOD	D	44 42 2	94 24 1	4	6.00	-22.40	100.00	3
*	MCLEOD	E	44 42 2	94 21 7	4	6.00	-22.40	100.00	3
*	MCLEOD	F	44 47 35	94 24 1	4	6.00	-22.40	100.00	3
*	MCLEOD	G	44 47 35	94 6 39	4	6.00	-22.40	100.00	3
*	MCLEOD	H	44 47 35	94 15 20	4	6.00	-22.40	100.00	3
*	SWIFT	A	45 18 27	95 22 48	4	8.00	-23.60	100.00	4
*	SWIFT	B	45 18 27	95 58 37	4	8.00	-23.60	100.00	4
*	SWIFT	C	45 18 27	95 48 58	4	8.00	-23.60	100.00	4
*	SWIFT	D	45 18 27	95 35 28	4	8.00	-23.60	100.00	4
*	SWIFT	E	45 15 29	95 21 57	4	8.00	-23.60	100.00	4
*	SWIFT	F	45 15 29	95 35 28	4	8.00	-23.60	100.00	4
*	SWIFT	G	45 15 29	95 58 37	4	8.00	-23.60	100.00	4
*	SWIFT	H	45 15 29	95 47 2	4	8.00	-23.60	100.00	4
*	CHIPPEWA	A	45 3 37	95 21 57	4	7.00	-25.50	100.00	4
*	CHIPPEWA	B	45 6 35	95 54 45	4	7.00	-25.50	100.00	4
*	CHIPPEWA	C	45 3 37	95 31 36	4	7.00	-25.50	100.00	4
*	CHIPPEWA	D	45 3 37	95 43 11	4	7.00	-25.50	100.00	4
*	CHIPPEWA	E	45 0 39	95 39 19	4	7.00	-25.50	100.00	4
*	CHIPPEWA	F	44 56 12	95 33 32	4	7.00	-25.50	100.00	4

Site Name		Site Latitude	Site Longitude	Qty of Chann	Coverage (mi)	ERP (Db/KW)	Antenna Ht (ft)	Environment Type
* RED LAKE	A	47 54 1	96 22 54	4	6.00	-27.40	100.00	4
* RED LAKE	B	47 54 1	96 15 5	4	6.00	-27.40	100.00	4
* RED LAKE	C	47 54 1	96 5 23	4	6.00	-27.40	100.00	4
* RED LAKE	D	47 54 1	95 48 24	4	6.00	-27.40	100.00	4
* RED LAKE	E	47 54 1	95 58 6	4	6.00	-27.40	100.00	4
* RED LAKE	F	47 50 6	95 55 56	4	6.00	-27.40	100.00	4
* RED LAKE	G	47 50 6	96 15 20	4	6.00	-27.40	100.00	4
* RED LAKE	H	47 50 6	96 5 38	4	6.00	-27.40	100.00	4
* SIBLEY	A	44 39 8	93 52 50	4	6.00	-22.40	100.00	3
* SIBLEY	B	44 39 8	94 9 54	4	6.00	-22.40	100.00	3
* SIBLEY	C	44 39 8	94 1 14	4	6.00	-22.40	100.00	3
* SIBLEY	D	44 39 8	94 34 2	4	6.00	-22.40	100.00	3
* SIBLEY	E	44 32 14	94 32 24	4	6.00	-22.40	100.00	3
* SIBLEY	F	44 32 54	94 24 55	4	6.00	-22.40	100.00	3
* SIBLEY	G	44 32 54	94 17 26	4	6.00	-22.40	100.00	3
* SIBLEY	H	44 32 41	94 0 11	4	6.00	-22.40	100.00	3
* SIBLEY	I	44 32 41	94 8 58	4	6.00	-22.40	100.00	3
* CARVER	A	44 55 16	93 56 2	4	5.00	-11.60	100.00	2
* CARVER	B	44 55 16	93 51 12	4	5.00	-11.60	100.00	2
* CARVER	C	44 50 29	93 35 17	4	5.00	-11.60	100.00	2
* CARVER	D	44 50 22	93 44 27	4	5.00	-11.60	100.00	2
* CARVER	E	44 42 8	93 44 27	4	5.00	-11.60	100.00	2
* CARVER	F	44 46 55	93 41 34	4	5.00	-11.60	100.00	2
* CARVER	G	44 43 35	93 48 48	4	5.00	-11.60	100.00	2
* CARVER	H	44 46 15	93 56 22	4	5.00	-11.60	100.00	2
* CARVER	I	44 50 42	93 54 55	4	5.00	-11.60	100.00	2
* OTTER TAIL	A	46 14 44	95 19 45	4	11.00	-13.80	100.00	3
* OTTER TAIL	B	46 14 44	96 4 28	4	11.00	-13.80	100.00	3
* OTTER TAIL	C	46 14 44	95 41 19	4	11.00	-13.80	100.00	3
* OTTER TAIL	D	46 30 18	96 4 28	4	11.00	-13.80	100.00	3
* OTTER TAIL	E	46 34 45	95 58 40	4	11.00	-13.80	100.00	3
* OTTER TAIL	F	46 34 45	95 21 3	4	11.00	-13.80	100.00	3
* OTTER TAIL	G	46 34 45	95 38 25	4	11.00	-13.80	100.00	3
* OTTER TAIL	H	46 24 11	95 21 46	4	11.00	-13.80	100.00	3
* OTTER TAIL	I	46 24 11	95 48 47	4	11.00	-13.80	100.00	3
* CLAY	A	46 43 39	96 38 45	4	8.00	-18.60	100.00	3
* CLAY	B	46 43 39	96 18 30	4	8.00	-18.60	100.00	3
* CLAY	C	46 43 39	96 28 37	4	8.00	-18.60	100.00	3
* CLAY	D	46 54 2	96 18 30	4	8.00	-18.60	100.00	3
* CLAY	E	47 3 23	96 19 38	4	8.00	-18.60	100.00	3
* CLAY	F	47 3 23	96 39 53	4	8.00	-18.60	100.00	3
* CLAY	G	47 3 23	96 29 46	4	8.00	-18.60	100.00	3
* CLAY (Cont'd)	H	46 52 60	96 39 53	4	8.00	-18.60	100.00	3

	Site Name		Site Latitude	Site Longitude	Qty of Chans	Coverage (mi)	ERP (Db/KW)	Antenna Ht (ft)	Environment Type
*	CLAY	I	46 52 60	96 29 46	4	8.00	-18.60	100.00	3
*	LAKE OF THE WOODS	A	48 29 47	94 36 54	4	11.00	-18.80	100.00	4
*	LAKE OF THE WOODS	B	48 29 47	95 0 55	4	11.00	-18.80	100.00	4
*	LAKE OF THE WOODS	C	48 37 12	95 8 38	4	11.00	-18.80	100.00	4
*	LAKE OF THE WOODS	D	48 57 5	95 7 20	4	11.00	-18.80	100.00	4
*	LAKE OF THE WOODS	E	49 15 28	94 59 5	4	11.00	-18.80	100.00	4
*	LAKE OF THE WOODS	F	49 1 32	94 56 3	4	11.00	-18.80	100.00	4
*	LAKE OF THE WOODS	G	48 49 58	94 55 11	4	11.00	-18.80	100.00	4
*	LAKE OF THE WOODS	H	48 36 1	94 37 23	4	11.00	-18.80	100.00	4
*	LAKE OF THE WOODS	I	48 38 59	94 52 29	4	11.00	-18.80	100.00	4
*	LAKE	A	48 1 1	91 12 45	4	11.00	-18.80	100.00	4
*	LAKE	B	47 31 21	91 12 45	4	11.00	-18.80	100.00	4
*	LAKE	C	47 46 11	91 12 45	4	11.00	-18.80	100.00	4
*	LAKE	D	47 7 36	91 35 54	4	11.00	-18.80	100.00	4
*	LAKE	E	47 22 26	91 35 54	4	11.00	-18.80	100.00	4
*	LAKE	F	47 34 19	91 35 54	4	11.00	-18.80	100.00	4
*	LAKE	G	47 46 11	91 35 54	4	11.00	-18.80	100.00	4
*	LAKE	H	48 3 59	91 35 54	4	11.00	-18.80	100.00	4
*	LAKE	I	47 55 5	91 24 20	4	11.00	-18.80	100.00	4
*	LAKE	J	47 20 22	91 25 9	4	11.00	-18.80	100.00	4
*	ST LOUIS	A	47 5 32	92 11 4	8	20.00	-7.10	100.00	4
*	ST LOUIS	B	48 1 54	92 11 4	8	20.00	-7.10	100.00	4
*	ST LOUIS	C	47 41 8	92 11 4	8	20.00	-7.10	100.00	4
*	ST LOUIS	D	47 23 20	92 11 4	8	20.00	-7.10	100.00	4
*	ST LOUIS	E	46 59 36	92 41 55	8	20.00	-7.10	100.00	4
*	ST LOUIS	F	46 56 38	92 18 47	8	20.00	-7.10	100.00	4
*	ST LOUIS	G	48 22 40	92 41 55	8	20.00	-7.10	100.00	4
*	ST LOUIS	H	48 1 54	92 41 55	8	20.00	-7.10	100.00	4
*	ST LOUIS	I	47 41 8	92 41 55	8	20.00	-7.10	100.00	4
*	ST LOUIS	J	47 20 22	92 41 55	8	20.00	-7.10	100.00	4
*	ITASCA	A	47 34 32	94 11 44	4	12.00	-17.40	100.00	4
*	ITASCA	B	47 41 32	94 11 44	4	12.00	-17.40	100.00	4
*	ITASCA	C	47 41 32	93 48 2	4	12.00	-17.40	100.00	4
*	ITASCA	D	47 43 32	93 17 39	4	12.00	-17.40	100.00	4
*	ITASCA	E	47 43 32	93 35 1	4	12.00	-17.40	100.00	4
*	ITASCA	F	47 10 10	93 17 39	4	12.00	-17.40	100.00	4
*	ITASCA	G	47 20 11	93 17 39	4	12.00	-17.40	100.00	4
*	ITASCA	H	47 30 11	93 17 39	4	12.00	-17.40	100.00	4
*	ITASCA	I	47 26 31	93 42 43	4	12.00	-17.40	100.00	4
*	ITASCA	J	47 9 50	93 34 25	4	12.00	-17.40	100.00	4
*	MARSHALL	A	48 17 19	96 58 28	4	9.00	-21.80	100.00	4
*	MARSHALL	B	48 17 19	95 45 43	4	9.00	-21.80	100.00	4

(Cont'd)

Site Name		Site Latitude	Site Longitude	Qty of Chans	Coverage (mi)	ERP (Db/KW)	Antenna Ht (ft)	Environment Type
* MARSHALL	C	48 17 19	96 2 41	4	9.00	-21.80	100.00	4
* MARSHALL	D	48 17 19	96 19 40	4	9.00	-21.80	100.00	4
* MARSHALL	B	48 17 19	96 36 38	4	9.00	-21.80	100.00	4
* MARSHALL	F	48 25 42	96 58 28	4	9.00	-21.80	100.00	4
* MARSHALL	G	48 25 42	96 41 13	4	9.00	-21.80	100.00	4
* MARSHALL	H	48 25 42	96 24 14	4	9.00	-21.80	100.00	4
* MARSHALL	I	48 25 42	95 45 26	4	9.00	-21.80	100.00	4
* MARSHALL	J	48 25 42	96 4 50	4	9.00	-21.80	100.00	4
* BROWN	A	44 25 34	94 48 13	4	6.00	-22.40	100.00	3
* BROWN	B	44 17 33	94 45 37	4	6.00	-22.40	100.00	3
* BROWN	C	44 12 53	95 1 33	4	6.00	-22.40	100.00	3
* BROWN	D	44 12 53	94 54 24	4	6.00	-22.40	100.00	3
* BROWN	B	44 10 13	95 2 12	4	6.00	-22.40	100.00	3
* BROWN	F	44 10 13	94 49 50	4	6.00	-22.40	100.00	3
* BROWN	G	44 10 13	94 27 23	4	6.00	-22.40	100.00	3
* BROWN	H	44 10 13	94 38 7	4	6.00	-22.40	100.00	3
* BROWN	I	44 13 33	94 28 2	4	6.00	-22.40	100.00	3
* BROWN	J	44 17 34	94 33 36	4	6.00	-22.40	100.00	3
* BROWN	K	44 19 53	94 40 55	4	6.00	-22.40	100.00	3
* WRIGHT	A	45 2 30	93 51 23	4	6.00	-9.00	100.00	2
* WRIGHT	B	45 2 30	94 10 12	4	6.00	-9.00	100.00	2
* WRIGHT	C	45 2 30	94 1 31	4	6.00	-9.00	100.00	2
* WRIGHT	D	45 14 44	94 10 12	4	6.00	-9.00	100.00	2
* WRIGHT	B	45 8 4	94 10 12	4	6.00	-9.00	100.00	2
* WRIGHT	F	45 20 18	94 1 31	4	6.00	-9.00	100.00	2
* WRIGHT	G	45 14 44	93 36 55	4	6.00	-9.00	100.00	2
* WRIGHT	H	45 13 37	93 48 30	4	6.00	-9.00	100.00	2
* WRIGHT	I	45 17 11	93 54 28	4	6.00	-9.00	100.00	2
* WRIGHT	J	45 10 31	93 47 25	4	6.00	-9.00	100.00	2
* WRIGHT	K	45 10 31	93 58 59	4	6.00	-9.00	100.00	2
* MEEKER	A	45 12 44	94 21 21	4	6.00	-27.40	100.00	4
* MEEKER	B	45 2 43	94 21 21	4	6.00	-27.40	100.00	4
* MEEKER	C	45 8 17	94 21 21	4	6.00	-27.40	100.00	4
* MEEKER	D	44 57 36	94 39 50	4	6.00	-27.40	100.00	4
* MEEKER	B	44 57 36	94 36 56	4	6.00	-27.40	100.00	4
* MEEKER	F	45 4 17	94 39 50	4	6.00	-27.40	100.00	4
* MEEKER	G	45 15 24	94 39 50	4	6.00	-27.40	100.00	4
* MEEKER	H	45 15 24	94 26 48	4	6.00	-27.40	100.00	4
* MEEKER	I	45 9 50	94 39 50	4	6.00	-27.40	100.00	4
* MEEKER	J	45 6 30	94 31 9	4	6.00	-27.40	100.00	4
* MEEKER	K	45 3 37	94 29 25	4	6.00	-27.40	100.00	4
* RENVILLE	A	44 48 20	94 36 16	4	7.00	-25.50	100.00	4
* RENVILLE	B	44 48 20	95 22 34	4	7.00	-25.50	100.00	4

(Cont'd)

EXHIBIT "D" (Cont'd)

	Site Name		Site Latitude	Site Longitude	Qty of Chann	Coverage (mi)	ERP (Db/KW)	Antenna Ht (ft)	Environment Type
*	RENVILLE	C	44 48 20	95 10 59	4	7.00	-25.50	100.00	4
*	RENVILLE	D	44 48 20	94 57 29	4	7.00	-25.50	100.00	4
*	RENVILLE	E	44 48 20	94 45 55	4	7.00	-25.50	100.00	4
*	RENVILLE	F	44 32 1	94 43 59	4	7.00	-25.50	100.00	4
*	RENVILLE	G	44 39 26	94 43 59	4	7.00	-25.50	100.00	4
*	RENVILLE	H	44 45 22	95 12 55	4	7.00	-25.50	100.00	4
*	RENVILLE	I	44 40 55	95 5 12	4	7.00	-25.50	100.00	4
*	RENVILLE	J	44 36 28	94 55 33	4	7.00	-25.50	100.00	4
*	RENVILLE	K	44 43 53	94 55 33	4	7.00	-25.50	100.00	4
*	STEARNS	A	45 25 38	94 13 30	8	8.00	-5.20	100.00	2
*	STEARNS	B	45 22 44	94 19 22	8	8.00	-5.20	100.00	2
*	STEARNS	C	45 25 25	94 37 55	8	8.00	-5.20	100.00	2
*	STEARNS	D	45 30 18	94 59 54	8	8.00	-5.20	100.00	2
*	STEARNS	E	45 30 18	94 48 20	8	8.00	-5.20	100.00	2
*	STEARNS	F	45 40 19	94 59 54	8	8.00	-5.20	100.00	2
*	STEARNS	G	45 40 19	94 45 26	8	8.00	-5.20	100.00	2
*	STEARNS	H	45 40 19	94 30 58	8	8.00	-5.20	100.00	2
*	STEARNS	I	45 40 19	94 20 3	8	8.00	-5.20	100.00	2
*	STEARNS	J	45 32 58	94 20 3	8	8.00	-5.20	100.00	2
*	STEARNS	K	45 32 58	94 37 25	8	8.00	-5.20	100.00	2
*	MORRISON	A	46 4 23	93 56 23	4	7.00	-20.50	100.00	3
*	MORRISON	B	46 4 23	94 8 36	4	7.00	-20.50	100.00	3
*	MORRISON	C	46 14 17	94 30 48	4	7.00	-20.50	100.00	3
*	MORRISON	D	45 52 2	94 30 48	4	7.00	-20.50	100.00	3
*	MORRISON	E	45 59 50	94 30 48	4	7.00	-20.50	100.00	3
*	MORRISON	F	46 7 37	94 30 48	4	7.00	-20.50	100.00	3
*	MORRISON	G	46 4 17	94 20 40	4	7.00	-20.50	100.00	3
*	MORRISON	H	45 52 2	94 25 1	4	7.00	-20.50	100.00	3
*	MORRISON	I	45 54 16	93 52 33	4	7.00	-20.50	100.00	3
*	MORRISON	J	45 54 16	94 4 7	4	7.00	-20.50	100.00	3
*	MORRISON	K	45 54 16	94 15 42	4	7.00	-20.50	100.00	3
*	BELTRAMI	A	48 23 51	95 24 27	4	11.00	-13.80	100.00	3
*	BELTRAMI	B	48 8 43	95 24 27	4	11.00	-13.80	100.00	3
*	BELTRAMI	C	47 59 49	95 1 18	4	11.00	-13.80	100.00	3
*	BELTRAMI	D	47 33 7	94 58 45	4	11.00	-13.80	100.00	3
*	BELTRAMI	E	47 44 59	94 58 45	4	11.00	-13.80	100.00	3

Site Name		Site Latitude	Site Longitude	Qty of Chans	Coverage (mi)	ERP (Db/KW)	Antenna Ht (ft)	Environment Type
* WASHINGTON	A	45 14 22	92 56 33	6	5.00	-11.60	100.00	2
* WASHINGTON	B	45 9 55	92 56 33	6	5.00	-11.60	100.00	2
* WASHINGTON	C	45 14 22	92 50 46	6	5.00	-11.60	100.00	2
* WASHINGTON	D	45 7 41	92 50 46	6	5.00	-11.60	100.00	2
* WASHINGTON	E	45 4 21	92 54 9	6	5.00	-11.60	100.00	2
* WASHINGTON	F	44 59 14	92 54 9	6	5.00	-11.60	100.00	2
* WASHINGTON	G	44 53 47	92 54 9	6	5.00	-11.60	100.00	2
* WASHINGTON	H	44 49 40	92 55 56	6	5.00	-11.60	100.00	2
* WASHINGTON	I	44 48 33	92 51 42	6	5.00	-11.60	100.00	2
* WASHINGTON	J	44 52 47	92 51 42	6	5.00	-11.60	100.00	2
* WASHINGTON	K	44 56 21	92 50 14	6	5.00	-11.60	100.00	2
* WASHINGTON	L	45 0 8	92 51 3	6	5.00	-11.60	100.00	2
* KOOCHICHING	A	48 3 34	93 17 39	4	11.00	-18.80	100.00	4
* KOOCHICHING	B	48 3 34	93 39 21	4	11.00	-18.80	100.00	4
* KOOCHICHING	C	48 0 14	93 56 43	4	11.00	-18.80	100.00	4
* KOOCHICHING	D	48 0 14	94 13 6	4	11.00	-18.80	100.00	4
* KOOCHICHING	E	48 13 35	94 13 6	4	11.00	-18.80	100.00	4
* KOOCHICHING	F	48 36 56	94 13 6	4	11.00	-18.80	100.00	4
* KOOCHICHING	G	48 23 35	94 13 6	4	11.00	-18.80	100.00	4
* KOOCHICHING	H	48 30 16	94 0 4	4	11.00	-18.80	100.00	4
* KOOCHICHING	I	48 30 16	93 16 40	4	11.00	-18.80	100.00	4
* KOOCHICHING	J	48 16 55	93 16 40	4	11.00	-18.80	100.00	4
* KOOCHICHING	K	48 22 15	93 38 22	4	11.00	-18.80	100.00	4
* KOOCHICHING	L	48 15 35	93 55 44	4	11.00	-18.80	100.00	4
* DAKOTA	A	44 51 34	93 5 42	10	5.00	-11.60	100.00	2
* DAKOTA	B	44 44 53	93 14 23	10	5.00	-11.60	100.00	2
* DAKOTA	C	44 47 47	93 8 17	10	5.00	-11.60	100.00	2
* DAKOTA	D	44 41 6	93 14 43	10	5.00	-11.60	100.00	2
* DAKOTA	E	44 31 25	93 12 19	10	5.00	-11.60	100.00	2
* DAKOTA	F	44 31 25	93 6 32	10	5.00	-11.60	100.00	2
* DAKOTA	G	44 34 12	92 59 18	10	5.00	-11.60	100.00	2
* DAKOTA	H	44 36 6	92 52 33	10	5.00	-11.60	100.00	2
* DAKOTA	I	44 40 59	92 48 3	10	5.00	-11.60	100.00	2
* DAKOTA	J	44 43 13	92 54 39	10	5.00	-11.60	100.00	2
* DAKOTA	K	44 43 13	93 3 20	10	5.00	-11.60	100.00	2
* DAKOTA	L	44 36 32	93 12 1	10	5.00	-11.60	100.00	2
* DAKOTA	M	44 37 39	93 1 53	10	5.00	-11.60	100.00	2
* HENNEPIN	A	44 53 34	93 16 18	38	5.00	-1.90	100.00	1
* HENNEPIN	B	44 58 54	93 16 37	38	5.00	-1.90	100.00	1
* HENNEPIN	C	45 5 1	93 21 56	38	5.00	-1.90	100.00	1
* HENNEPIN	D	45 10 35	93 30 37	38	5.00	-1.90	100.00	1
* HENNEPIN	E	45 7 15	93 26 17	38	5.00	-1.90	100.00	1
* HENNEPIN	F	45 9 28	93 34 58	38	5.00	-1.90	100.00	1
* HENNEPIN	G	45 5 1	93 39 8	38	5.00	-1.90	100.00	1

(Cont'd)

Site Name		Site Latitude	Site Longitude	Qty of Chans	Coverage (mi)	ERP (Db/KW)	Antenna Ht (ft)	Environment Type
* HENNEPIN	H	44 57 1	93 41 5	38	5.00	-1.90	100.00	1
* HENNEPIN	I	45 1 21	93 41 5	38	5.00	-1.90	100.00	1
* HENNEPIN	J	44 56 54	93 30 57	38	5.00	-1.90	100.00	1
* HENNEPIN	K	44 52 0	93 26 36	38	5.00	-1.90	100.00	1
* HENNEPIN	L	44 51 27	93 20 49	38	5.00	-1.90	100.00	1
* HENNEPIN	M	44 59 14	93 23 43	38	5.00	-1.90	100.00	1
* HENNEPIN	N	45 2 34	93 30 57	38	5.00	-1.90	100.00	1
* POLK	A	47 49 23	95 41 24	4	8.00	-23.60	100.00	4
* POLK	B	47 35 58	95 43 20	4	8.00	-23.60	100.00	4
* POLK	C	47 35 58	96 41 33	4	8.00	-23.60	100.00	4
* POLK	D	47 35 58	96 27 58	4	8.00	-23.60	100.00	4
* POLK	E	47 35 58	96 12 27	4	8.00	-23.60	100.00	4
* POLK	F	47 35 58	95 56 55	4	8.00	-23.60	100.00	4
* POLK	G	47 38 57	95 53 2	4	8.00	-23.60	100.00	4
* POLK	H	47 38 57	96 6 37	4	8.00	-23.60	100.00	4
* POLK	I	47 38 57	96 20 12	4	8.00	-23.60	100.00	4
* POLK	J	47 46 24	96 27 58	4	8.00	-23.60	100.00	4
* POLK	K	47 46 24	96 47 22	4	8.00	-23.60	100.00	4
* POLK	L	47 56 51	96 53 12	4	8.00	-23.60	100.00	4
* POLK	M	48 4 18	96 59 1	4	8.00	-23.60	100.00	4
* POLK	N	48 4 18	96 37 40	4	8.00	-23.60	100.00	4
* POLK	O	48 4 18	96 49 19	4	8.00	-23.60	100.00	4
* POLK	P	47 55 21	96 37 40	4	8.00	-23.60	100.00	4

Input Data For Single Site Systems

Site Name	Site Latitude	Site Longitude	Qty of Chans	Coverage (mi)	ERP (Db/KW)	Antenna Ht (ft)	Environment Type
* DULUTH	46 47 13	92 07 17	4	7.00	-3.50	200.00	1
* ROCHESTER	44 01 21	92 21 46	4	7.00	-3.50	200.00	1

EXHIBIT "E"

FCC CHANNEL ASSIGNMENTS

CHANNEL	COUNTIES/USE
601	821.0125/866.0125 Mutual Aid Statewide
602	821.0375/866.0375 Duluth, Wadena, Steele. Rock, Watonwan, Big Stone, Kandiyohi, and Hennepin
603	821.0500/866.0500 Rochester, Benton, Douglas, Mahnomen, and Redwood
604	821.0625/866.0625 Hubbard, Waseca, Pipestone, Carlton, Traverse, and Hennepin
605	821.0750/866.0750 Dodge, Pope, Jackson, Crow Wing, Norman, and McLeod
606	821.0875/866.0875 Fillmore, Faribault, Lyon, Wilkin, Kanabec, and Hennepin
607	821.1000/866.1000 Rice, Stevens, Nobles, Becker, and Meeker
608	821.1125/866.1125 Houston, Mower, Martin, Lincoln, Todd, Mille Lacs, and Washington
609	821.1250/866.1250 Wabasha, Scott, and Grant
610	821.1375/866.1375 Freeborn, Cottonwood, Anoka, Cass, and Swift
611	821.1500/866.1500 Olmsted, Pine, Nicollet, and Otter Tail
612	821.1625/866.1625 Murray, Chippewa, and Dakota
613	821.1750/866.1750 Blue Earth, Aitkin, Clay, and Wright
614	821.1875/866.1875 Ramsey and Yellow Medicine
615	821.2000/866.2000 Le Sueur, Chisago, and Stearns

CHANNEL	COUNTIES/USE
616	821.2125/866.2125 Winona, Lac Qui Parle, and Hennepin
617	821.2250/866.2250 Sibley and Stearns
618	821.2375/866.2375 Olmsted and Hennepin
619	821.2500/866.2500 Brown and Morrison
620	821.2625/866.2625 Ramsey
621	821.2750/866.2750 Sherburne
622	821.2875/866.2875 Duluth, Wadena, Steele, Rock, Watonwan, Big Stone, Ramsey, and Kandiyohi
623	821.3000/866.3000 Rochester, Benton, Mahnomen, and Redwood
624	821.3125/866.3125 Hubbard, Waseca, Pipestone, Carlton, Douglas, and Anoka
625	821.3250/866.3250 Dodge, Traverse, Jackson, Crow Wing, Norman, and Renville
626	821.3375/866.3375 Pope, Fillmore, Faribault, Lyon, Kanabec, and Hennepin
627	821.3500/866.3500 Rice, Nobles, and Wilkin
628	821.3625/866.3625 Houston, Stevens, Mower, Martin, Lincoln, McLeod, and Washington
629	821.3750/866.3750 Reserved for Guard
630	821.3875/866.3875 Reserved for State Use
631	821.4000/866.4000 Reserved for Guard
632	821.4125/866.4125 Reserved for State Use

CHANNEL	COUNTIES/USE
633	821.4250/866.4250 Reserved for Guard
634	821.4375/866.4375 Reserved for State Use
635	821.4500/866.4500 Reserved for Guard
636	821.4625/866.4625 Reserved for State Use
637	821.4750/866.4750 Reserved for Guard
638	821.4875/866.4875 Reserved for State Use
639	821.5125/866.5125 Mutual Aid
640	821.5375/866.5375 Grant, Olmsted, Cottonwood, Becker, Aitkin, and Hennepin
641	821.5500/866.5500 Le Sueur, Todd, and Yellow Medicine
642	821.5625/866.5625 Freeborn, Murray, Ramsey, Swift, and Clay
643	821.5750/866.5750 Cass, and Wright
644	821.5875/866.5875 Blue Earth, Ramsey, Chippewa, and Otter Tail
645	821.6000/866.6000 Wabasha, Chisago, and Meeker
646	821.6125/866.6125 Nicollet, Lac Qui Parle, and Hennepin
647	821.6250/866.6250 Pine, and Stearns
648	821.6375/866.6375 Hennepin
649	821.6500/866.6500 Mille Lacs, and Sibley

CHANNEL	COUNTIES/USE
650	821.6625/866.6625 Winona, and Ramsey
651	821.6750/866.6750 Goodhue, Brown, and Morrison
652	821.6875/866.6875 Anoka
653	821.7000/866.7000 Scott
654	821.7125/866.7125 Renville, and Washington
655	821.7250/866.7250 Unassigned
656	821.7375/866.7375 Hennepin
657	821.7500/866.7500 Unassigned
658	821.7625/866.7625 Ramsey
659	821.7750/866.7750 Unassigned
660	821.7875/866.7875 Hennepin
661	821.8000/866.8000 Unassigned
662	821.8125/866.8125 Ramsey
663	821.8250/866.8250 Isanti
664	821.8375/866.8375 Dakota
665	821.8500/866.8500 Unassigned
666	821.8625/866.8625 Hennepin

CHANNEL	COUNTIES/USE
667	821.8750/866.8750 Reserved for Guard
668	821.8875/866.8875 Reserved for State Use
669	821.9000/866.9000 Reserved for Guard
670	821.9125/866.9125 Reserved for State Use
671	821.9250/866.9250 Reserved for Guard
672	821.9375/866.9375 Reserved for State Use
673	821.9500/866.9500 Reserved for Guard
674	821.9625/866.9625 Reserved for State Use
675	821.9750/866.9750 Reserved for Guard
676	821.9875/866.9875 Reserved for State Use
677	822.0125/867.0125 Mutual Aid
678	822.0375/867.0375 Hennepin
679	822.0500/867.0500 Goodhue, and Stearns
680	822.0625/867.0625 Anoka
681	822.0750/867.0750 Carver
682	822.0875/867.0875 Ramsey
683	822.1000/867.1000 Unassigned

CHANNEL	COUNTIES/USE
684	822.1125/867.1125 Hennepin
685	822.1250/867.1250 Unassigned
686	822.1375/867.1375 Hennepin
687	822.1500/867.1500 Unassigned
688	822.1625/867.1625 Hennepin
689	822.1750/867.1750 Unassigned
690	822.1875/867.1875 Sherburne, and Dakota
691	822.2000/867.2000 Unassigned
692	822.2125/867.2125 Anoka
693	822.2250/867.2250 Unassigned
694	822.2375/867.2375 Hennepin
695	822.2500/867.2500 Unassigned
696	822.2625/867.2625 Hennepin
697	822.2750/867.2750 Unassigned
698	822.2875/867.2875 Hennepin
699	822.3000/867.3000 Unassigned
700	822.3125/867.3125 Ramsey

CHANNEL	COUNTIES/USE
701	822.3250/867.3250 Unassigned
702	822.3375/867.3375 Hennepin
703	822.3500/867.3500 Unassigned
704	822.3625/867.3625 Hennepin
705	822.3750/867.3750 Reserved for Guard
706	822.3875/867.3875 Reserved for State Use
707	822.4000/867.4000 Reserved for Guard
708	822.4125/867.4125 Reserved for State Use
709	822.4250/867.4250 Reserved for Guard
710	822.4375/867.4375 Reserved for State Use
711	822.4500/867.4500 Reserved for Guard
712	822.4625/867.4625 Reserved for State Use
713	822.4750/867.4750 Reserved for Guard
714	822.4875/867.4875 Reserved for State Use
715	822.5125/867.5125 Mutual Aid
716	822.5375/867.5375 Scott, Kittson, Cook, and Koochiching
717	822.5500/867.5500 Clearwater
718	822.5625/867.5625 Roseau, St. Louis, and Hennepin

CHANNEL	COUNTIES/USE
719	822.5750/867.5750 Pennington
720	822.5875/867.5875 Lake of the Woods, Lake, and Dakota
721	822.6000/867.6000 Red Lake, and Itasca
722	822.6125/867.6125 Marshall, and Hennepin
723	822.6250/867.6250 St. Louis
724	822.6375/867.6375 Beltrami, and Hennepin
725	822.6500/867.6500 Unassigned
726	822.6625/867.6625 Ramsey
727	822.6750/867.6750 Isanti
728	822.6875/867.6875 Ramsey
729	822.7000/867.7000 Carver
730	822.7125/867.7125 Ramsey
731	822.7250/867.7250 Unassigned
732	822.7375/867.7375 Hennepin
733	822.7500/867.7500 Polk
734	822.7625/867.7625 Hennepin
735	822.7750/867.7750 Unassigned

EXHIBIT "E" (Cont'd)

CHANNEL	COUNTIES/USE
736	822.7875/867.7875 Kittson, Cook, Washington, and Koochiching
737	822.8000/867.8000 Scott, and Clearwater
738	822.8125/822.8125 Anoka, Roseau, and St. Louis
739	822.8250/867.8250 Pennington
740	822.8375/867.8375 Lake of the Woods, Lake, and Hennepin
741	822.8500/867.8500 Red Lake, Itasca, and Stearns
742	822.8625/867.8625 Marshall, and Hennepin
743	822.8750/867.8750 Reserved for Guard
744	822.8875/867.8875 Reserved for State Use
745	822.9000/867.9000 Reserved for Guard
746	822.9125/867.9125 Reserved for State Use
747	822.9250/867.9250 Reserved for Guard
748	822.9375/867.9375 Reserved for State Use
749	822.9500/867.9500 Reserved for Guard
750	822.9625/867.9625 Reserved for State Use
751	822.9750/867.9750 Reserved for Guard
752	822.9875/867.9875 Reserved for State Use

CHANNEL	COUNTIES/USE
753	823.0125/868.0125 Mutual Aid
754	823.0375/868.0375 Beltrami, and Hennepin
755	823.0500/868.0500 Unassigned
756	823.0625/868.0625 Koochiching, Dakota, and Polk
757	823.0750/868.0750 Unassigned
758	823.0875/868.0875 Anoka, and St. Louis
759	823.1000/868.1000 Unassigned
760	823.1125/868.1125 Ramsey
761	823.1250/868.1250 Unassigned
762	823.1375/868.1375 Anoka
763	823.1500/868.1500 Sibley
764	823.1625/868.1625 Hennepin
765	823.1750/868.1750 Unassigned
766	823.1875/868.1875 McCleod, and Washington
767	823.2000/868.2000 Sherburne
768	823.2125/868.2125 Ramsey
769	823.2250/868.2250 Isanti, Goodhue, and Carver

EXHIBIT "E" (Cont'd)

CHANNEL	COUNTIES/USE
770	823.2375/868.2375 Ramsey, and Renville
771	823.2500/868.2500 Le Sueur, and Morrison
772	823.2625/868.2625 Olmsted, and Hennepin
773	823.2750/868.2750 Rice, Brown, and Stearns
774	823.2875/868.2875 Ramsey
[illegible]	[illegible]

CHANNEL	COUNTIES/USE
787	823.4500/868.4500 Reserved for Guard
788	823.4625/868.4625 Reserved for State Use
789	823.4750/868.4750 Reserved for Guard
790	823.4875/868.4875 Reserved for State Use
791	823.5000/868.5000 Reserved for Guard
792	823.5125/868.5125 Grant, Olmsted, Aitkin, Beltrami, and Hennepin
793	823.5250/868.5250 Freeborn, Lincoln, and Todd
794	823.5375/868.5375 Stevens, Winona, Nobles, Becker, Red Lake, St. Louis, and Hennepin
795	823.5500/868.5500 Dodge, Lyon, Wilkin, Kanabec, Cass, and Marshall
796	823.5625/868.5625 Carlton, Pope, Clearwater, Fillmore, Jackson, and Dakota
797	823.5750/868.5750 Wabasha, Waseca, Benton, Norman, Roseau, Yellow Medicine, Lake, and Itasca
798	823.5875/868.5875 Duluth, Hubbard, Pipestone, Traverse, Martin, Kandiyohi, Pennington, and Dakota
799	823.6000/868.6000 Houston, Steele, Douglas, Mahnomen, Chisago, Crow Wing, Redwood, Cook, and Lake of the Woods.
800	823.6125/868.6125 Rochester, Wadena, Rock, Watonwan, Kittson, Big Stone, St.Louis, and Hennepin
801	823.6250/868.6250 Renville
802	823.6375/868.6375 Hennepin
803	823.6500/868.6500 Brown, and Stearns

CHANNEL	COUNTIES/USE
804	823.6625/868.6625 Hennepin
805	823.6750/868.6750 Nicollet
806	823.6875/868.6875 Anoka, and Meeker
807	823.7000/868.7000 Blue Earth, Goodhue, and Lac Qui Parle
808	823.7125/868.7125 Ramsey, McCleod, Clay, and Morrison
809	823.7250/868.7250 LeSueur, Murray, Pine, and Chippewa
810	823.7375/868.7375 Mower, Mille Lacs, Otter Tail, Washington, Koochiching, and Polk
811	823.7500/868.7500 Rice, Cottonwood, Swift, and Wright
812	823.7625/868.7625 Grant, Faribault, Ramsey, Aitkin, Sibley, and Beltrami
813	823.7750/868.7750 Isanti, Olmsted, Lincoln, and Todd
814	823.7875/868.7875 Stevens, Freeborn, Nobles, Becker, Red Lake, Carver, and St. Louis
815	823.8000/868.8000 Winona, Lyon, Wilkin, Kanabec, Cass, and Marshall
816	823.8125/868.8125 Dodge, Carlton, Pope, Clearwater, Jackson, and Hennepin
817	823.8250/868.8250 Waseca, Benton, Fillmore, Norman, Roseau, Yellow Medicine, Lake, and Itasca
818	823.8375/868.8375 Duluth, Hubbard, Wabasha, Pipestone, Traverse, Martin, Kandiyohi, Pennington, and Hennepin
819	823.8500/868.8500 Houston, Steele, Douglas, Mahnomen, Chisago, Crow Wing, Redwood, Cook, and Lake of the Woods
820	823.8625/868.8625 Rochester, Wadena, Rock, Watonwan, Kittson, Big Stone, Sherburne, St. Louis, and Dakota