REGION 22
(MINNESOTA)

REGIONAL PLAN

FILED WITH THE FCC PER WT DOCKET 02-378

FOR THE USE OF 700 MHZ PUBLIC SAFETY CHANNELS

PER

FCC WT DOCKET 13-87

MINNESOTA REGION 22 PLANNING COMMITTEE

SEPTEMBER 24, 2015

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1.0 REGIONAL CHAIRPERSON

The Region 22 Planning Committee held an initial meeting January 8, 2001 at the Minnesota Department of Transportation, Arden Hills Training Center. A Chair, Vice Chair and Secretary were elected. **Current officers are listed on the FCC's website at:**

http://publicsafety.fcc.gov/pshs/public-safety-spectrum/700-MHz/rpc-directory.htm

Chair

James Mohn, Engineer Principal
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2.0 RPC MEMBERSHIP

The By-laws adopted (Attachment 1) by the Region 22 committee were written to allow and encourage broad participation by all interested parties. The section of the by-laws that deals with membership and voting reads as follows:

> For purposes of this Article, the term "member," unless otherwise specified, refers to both voting and non-voting members.
>
> **Number, Election and Qualification.** The Regional Committee shall have two classes of members, "voting members" and "non-voting members." New members may be added at annual, special, or regular meetings.
>
> **Voting Members**. Voting members shall consist of one representative from any single agency engaged in public safety eligible to hold a license under 47 CFR 90.20, 47 CFR 90.523 or 47 CFR 2.103, and the Metropolitan Radio Board. Except that a single agency shall be allowed no more than one vote for each distinct eligibility category (e.g. police, fire, EMS, highway) within the agency's organization or political jurisdiction. In voting on any issue the individual must identify himself/herself and the agency and eligibility category that he or she represents.
>
> **Non-Voting Members.** Non-voting members are all others interested in furthering the goals of public safety communications.
>
> **Tenure.** In general, each member shall hold MEMBERSHIP from the date of acceptance until resignation or removal.
>
> **Powers and Rights.** In addition to such powers and rights as are vested in them by law, or these bylaws, the members shall have such other powers and rights as the membership may determine.
>
> **Suspension and Removal.** A representative may be suspended or removed with cause by vote of a majority of members after reasonable notice and opportunity to be heard.
>
> **Resignation.** A representative may resign by delivering written resignation to the chairman, vice-chairman, treasurer or secretary of the Regional Committee or to a meeting of the members.

With the opportunity to represent ones' agency at any given time, attendance at the meetings varied depending on the agenda items. Those voting members attending at least one meeting are listed in Attachment 2.

The Officers of the Region 22 RPC were originally defined as:

> **Number and qualification.** The officers of the Regional Committee shall be a chairman, vice-chairman, secretary/treasurer and such other officers, if any, as the voting members may determine. The officers must be voting members of the Regional Committee.

Due to poor attendance and the inability to assemble a quorum at many of the meetings, the Board was increased to allow the Board to conduct business if a quorum was not present. The following language change was approved at the April 8, 2003 RPC meeting:

> The Board of Directors shall consist of 7 members, one Chair, one Vice-Chair, one Secretary/Treasurer, and four directors, representing five different service types (Police, Fire, EMS, Transportation, etc), and three different levels of government (State, County, City, etc).

A quorum was originally defined as:

At any meeting of the members, a quorum exists when the following minimum roster is met:

Two Officers of the Regional Planning Committee
Five separate governmental entities
Five different service types (i.e. Police, Fire, EMS, Public Works, etc)
Eleven voting members

The definition of a quorum was changed, at the April 8, 2003 RPC meeting, to read:

> At any meeting of the members, a quorum exists when the following minimum roster is met:
>
> One of the following Board Members: Chair, Vice-Chair, or Secretary/Treasurer
> Five separate governmental entities
> Five different service types (i.e. Police, Fire, EMS, Public Works, etc)
> Nine voting members

If the minimum roster is not met, a majority of the members of the Board, one member must be Chair, Vice-Chair, or Secretary/Treasurer, shall constitute a quorum.

Quorum of the minimum roster group governs over the actions of Board alone. The minimum roster quorum can over rule action of Board; however the Board is empowered to act upon issues when a quorum of voting members does not attend a meeting.

3.0 DESCRIPTION OF THE REGION

Region 22 is defined as the entire State of Minnesota. Minnesota is in the north central United States. Near the geographic center of North America, it is bordered on the north by the Canadian provinces of Manitoba and Ontario, on the west by North Dakota and South Dakota, on the south by Iowa, and on the east by Wisconsin and Lake Superior.

The area of Minnesota is 86,943 sq mi, of which 4,780 sq mi is inland water and 2,546 sq mi is a portion of Lake Superior under the state's jurisdiction. Minnesota thus ranks 12th in area among the 50 states. From north to south the state measures 406 mi, and from east to west it measures 358 mi at its maximum extent and about 180 mi at its narrowest point. The mean elevation is about 1,200 ft.

There are 87 counties, more than 2700 cities and townships as well as 11 tribal governments. There are five major cities in Minnesota comprising about 19% of the total population (2000):

Minneapolis -	382,700
St. Paul (Capitol)	288,000
Duluth	86,044
Rochester	91,264
Bloomington	85,400

The Minneapolis/St. Paul metropolitan area is comprised of 7 counties and has a total population of 2,642,056 (53.7% of entire State population). Hennepin County, the state's largest, has a total population of 1,116,200 (22.5% of entire State population). The growth rate in the metro area from 1990 to 2000 was 15.4%. The metro area is located in the east central portion of the State, on the Minnesota/Wisconsin border. The neighboring Wisconsin counties, Polk, St. Croix, and Pierce, are also experiencing rapid growth. St. Croix County is most accessible to the metro area via I-94, and has seen an 11% population growth in the last three years.

According to the 2000 census, the following demographics describe Minnesota:

Total Population: 4,919,479

State Rank in Population: 21st

Highest Point - Eagle Mountain - 2,301 feet (701 m) above sea level

Lowest Point - 602 feet above sea level at Lake Superior

Number of rivers and streams: 6,564 (92,000 miles).

Number of lakes (over 10 acres): 11,842 (4,967,510 acres).

The State of Minnesota has 87 counties. There are 486 police departments and Sheriff's Offices in the State. Of the 486 agencies, 400 have fewer than 25 officers/deputies. 13 agencies have more than 100 officers/deputies. The total number of full time licensed peace officers in Minnesota is 9,295. Minnesota has 567 fire departments, 309 EMS providers, and more than 1000 maintenance and public works organizations.

All interoperability channels in the VHF, UHF (450 MHz), 700 MHz and 800 MHz bands shall be administered by the Interoperability Committee of the Minnesota Statewide Emergency Communications Board (SECB).

Local, regional and statewide mutual aid agreements exist throughout the State. Cooperative planning efforts have been undertaken in the past to facilitate interoperability in the VHF and UHF bands. The fire plan, EMS plan, MIMS plan, and the MINSEF plan are a few examples of the more widely recognized agreements. It would be nearly impossible to compile all of the mutual aid agreements that exist in the State for the purpose of this report. Police, fire, and EMS agencies within the region frequently train and respond with one another, and the need to communicate between agencies exists on a daily basis, in some areas.

Nearly all agencies in the region operate a VHF radio system for primary voice communications. There are some UHF systems in use, particularly in the metropolitan St. Paul/Minneapolis area. Commencing in 1999, a region wide 800 MHz trunked radio system was constructed in the 7 metro counties plus the adjoining Chisago and Isanti counties to the north. The largest users of the system currently are the State Patrol, Department of Transportation, Metropolitan Council, Anoka County, Hennepin County, Carver County, and the City of Minneapolis. In 2003, the availability of significant federal grant money has increased the number of agencies migrating to the region wide system. It is anticipated that Ramsey County, the Metropolitan Airports Commission, as well as several larger cities in the metro area will be using the system by mid-2005. The system is currently being extended to the cities of St. Cloud and Rochester. Additional agencies are expected to participate in the future. The intent of the system is to provide a communications network for all public safety and public service entities, thereby facilitating reliable interoperability.

Until recently, the State had four primary channels used for interoperability within a service type: MINSEF – Statewide police (155.475), Statewide Fire (154.295), Statewide EMS (155.340), and MIMS/Point to Point (155.370). There was also a UHF Metropolitan emergency frequency in use by some of the large agencies in Hennepin and Ramsey counties. In addition to the features inherent with a wide area trunked system, the development of the region wide 800 MHz system included several different enhancements to interoperability in the metropolitan area. Two additional VHF repeater

channels have been constructed to facilitate communication between VHF users and 800 MHz users. Three of the 800 MHz interoperability channels (ICALL and ITAC 4) now have equipment installed and operating to facilitate communications with 800 MHz users traveling through the area.

The FCC recently allocated eleven 12.5 KHz VHF channels and four UHF channels to facilitate interoperability, but we are not aware of them being widely used in the Region:

VHF	UHF
151.1375	453/458.2125
154.4525	453/458.4625
155.7525	453/458.7125
157.2250	453/458.8625
157.2500	
157.2750	
158.7375	
159.4725	
161.8500	
161.8250	
161.8750	

4.0 NOTIFICATION PROCESS

The notification process for the RPC meetings was primarily accomplished through e-mail. The original meeting included a notice published in the State Register, the APCO Bulletin (Attachment 3) as well as notification to the Minnesota Sheriff's Association and the Minnesota Chiefs of Police Association. Subsequent e-mails were distributed to all attendees and re-distributed to e-mail lists of interested persons. At the time of this 700 MHz planning process, the metro area 800 MHz system was completed and put into operation. Mn/DOT was also working to implement a statewide 800 MHz system. As part of these efforts, radio communications issues were at the forefront for most Public Safety agencies. Meeting notes were taken at each meeting (Attachment 4).

Our original understanding was that the tribal police agencies were notified through their association with the Minnesota Chiefs of Police Association. It was discovered in 2003 that several of the tribal police agencies were not members of the Association, and therefore have likely not learned of the planning process. A letter was sent to the Minnesota Indian Affairs Council after that discovery was made (Attachment 5).

The Division of Homeland Security and Emergency Management (HSEM) is a division of the Minnesota Department of Public Safety. A member of the HSEM attended the initial meeting. The Department of Transportation maintains and operates the communications system for the Department of Public Safety. The Department of Transportation has been an integral part of the planning process.

The meetings were originally scheduled for the second Wednesday of each quarter at 10:00 am. The day was changed to the second Tuesday of the quarter, beginning July, 2002, due to a conflict with regularly scheduled meetings involving members of the Metropolitan Radio system. The meetings were moved to different locations around the State, to encourage participation by agencies in greater Minnesota. The meetings were also available throughout the State at the Mn/DOT District Offices through a state-wide video-conferencing system. Regardless of the location of the "live" meeting, participation was typically limited to a core group of attendees from in and around the St. Paul/Minneapolis area. As the process progressed, the "live" meetings were held in St. Paul, but we continued to broadcast them throughout the state, with limited participation at the remote sites.

5.0 REGIONAL PLAN SUMMARY

5.1 Description of the Planning and Approval Process

The FCC directed the Chairman of the 800 MHz NPSPAC committee to schedule an initial meeting of a Regional Planning Committee (RPC), to establish a plan for allocation and use of these new 700 MHz frequencies. Notices for the meeting were published more than 60 days in advance of the meeting in several venues such as the APCO public safety magazine, the Federal Register, the Minneapolis Star and Tribune news paper. Notices were also distributed at the state APCO training conference and posted on the local chapter web site. Notices were also distributed using existing e-mail lists to parties involved in previous radio planning processes.

The initial meeting was held January 8, 2001, and despite the broad distribution of the notices, there was relatively low attendance. Temporary officers were elected at the first meeting, and the by-laws and officers were finalized at the following meeting. The committee has been meeting quarterly, and notices have primarily been distributed through e-mail following the initial meeting. The meetings were originally held around the State, but eventually held in St. Paul at the Department of Transportation Central Office due to lack of participation by agency representatives from greater Minnesota. These meetings were available throughout the State using Mn/DOT's video-conferencing system.

A work group was formed and discussed some of the more technical aspects of the Plan, presenting their work at the quarterly meetings. Preliminary allocations and technology options were discussed at meetings prior to completion of the NYSTEC model allocation plan. Discussions were also held regarding the use of the State licensed frequencies. After the NYSTEC plan was received, it was reviewed, and a determination was made that Region 22 RPC would not modify that plan.

The Plan was widely distributed via e-mail and printed copies. Comments and concurrence were solicited from adjacent RPC's.

5.2 Deliberators for a Fair and Open Planning Process

The entire planning process was open and we were actively recruiting participation throughout. Despite the typically low turnout, we had a broad representation from different service types (ie police, fire, EMS, transportation). Most of the attendees represented metro area agencies, with occasional attendance from agency representatives from out-state Minnesota. The greatest pressure for additional frequency allocations exists in the metro area, and most out-state areas have all or most of the NPSPAC channels available for use.

5.3 Structure and Procedure for RPC Operation

The RPC structure and procedure for operations were defined by the by-laws (Attachment 1).

5.4 700 MHz Public Safety Spectrum

The Region 22 channel allocation pre-coordinates general use narrowband ~~and wideband data channels~~ including low power and interoperability channels. As per Section 8 and the pre-planning flow-chart of Appendix G, page 62, the plan allots general use channels to geographic areas bounded by county borders. Channels have been coordinated within the region and with adjacent regions. The Regional Plan discusses various methods of increasing spectral efficiency including system sharing, contour analysis and "orphan channel" distribution procedures. The Region 22 RPC has been designated to administer the interoperability channels in accordance with the NCC's recommendations. Region 22 license application and processing procedures are described and documented by the coordination flowchart of Appendix G, page 63.

The basis of the planning process is the FCC's 700 MHz band plan per the fourth MO& O in WT DKT96-86 (TV channels 63/64 and 68/69). The band plan is detailed in the matrix of the Appendix listed under 700 MHz Plan Documents.

The Narrowband channels are designated in 6.25 kHz blocks and can be aggregated to 25 kHz. TV channels 63/64 are comprised of two segments of 480 narrowband base channels and one segment allocated to the National Public Safety Broadband plan. The base channels of the channel pair begin at 769 MHz and end at 775 MHz. TV channels 68/69 are also comprised of two segments of 480 narrowband base channels. The

mobile channels of the channel pair begin at 799 MHz and end at 805 MHZ. A comparison of 700 MHz and 800 MHz NPSPAC Public Safety Channels is shown in Attachment 6.

The Region 22 allotment for the channels of the FCC's 700 MHz band plan is discussed in section 8 and shown as a listing of channels per county and counties per channel in Attachments 7 and 8. The most current listing can be found on the CAPRAD data base.

5.5 Spectrum Allotment Procedure

The goal of the Region 22 RPC was to balance the need for efficient assignment of the limited channels available with the ability of each eligible entity to maintain autonomy, if they choose. The RPC acknowledges that larger, regional systems with many users provide a more efficient use of the channels, but also acknowledges the desire of some agencies to maintain an independent system. The RPC felt that if no resources were allocated to individual eligible entities, some agencies may choose to continue to operate a VHF or UHF system, making interoperability with neighboring agencies less efficient. At the same time, the RPC wanted to encourage radio planning at a county-wide or larger level.

The County government is encouraged to develop a plan for the use of the 700 MHz channels within their area. If a county plan is submitted to, and approved by, the RPC within 5 years following the adoption of the Region 22 RPC Plan, channels may only be licensed consistent with that plan for a maximum period of 8 years following the adoption of the Region 22 Plan by the FCC. If no plan is developed, the county will have exclusive licensing authority for only the initial 5 years following the adoption of the Region 22 Plan by the FCC. After 5 years (if no county plan is approved) or 8 years (if a county plan is approved), any eligible entity within the County may apply for a license.

Region 22 supports the National Coordination Committee's pre-assignment rules and recommendations listed in the Appendix under Technical Reports. The RPC will notify counties that county pool allotments are available upon FCC approval of the plan.

5.6 NCC Guidelines

In general and unless otherwise noted Region 22 will adhere to the published National Coordination Committee Implementation Guidelines, for 700 MHz Public Safety Regional Planning Committees. The Regional Planning Committee has established a process to approve applications and interpret the plan.

5.7 Channel Usage Guidelines

The narrowband General Use channels are allotted to geographic areas bounded by county borders per the NYSTEC methodology described in detail in section 8. These channels can be licensed by counties, municipalities or other public safety eligibles within the county, subject to the timetable described in section 5.5. The RPC supports and promotes multi-agency systems that allow for regional/wide area coverage within the region.

UNASSIGNED POOL (former Reserved Channels)

The twenty-four 12.5 kHz former Reserved Channels are now General Use channels in the Part 90 Rules. With the exception of the eight identified Deployable Trunked Channels below, the RPC now holds the remaining sixteen channels in a "reserved (unassigned) pool" for use by any public safety entity for which the local allotment is shown to be insufficient for system requirements. This Unassigned pool is intended to be a collection of channels available to accommodate technical difficulties in fully utilizing the applicant's associated allotment and to resolve coordination conflicts in congested areas. Vehicular repeater applications can be accommodated with the assignment of frequencies from this Unassigned pool. Channels shall be selected by the applicant and reviewed for approval by the RPC. Applicants are required to demonstrate the need for assignment of all Unassigned pool channels requested in the submitted application(s). The requested assignments must be in compliance with the provisions of this section (Section 5).

The sixteen channels (base transmit shown) in the Unassigned Pool are as follows:

UNASSIGNED POOL

6.25 KHz Channels	12.5 kHz Center Freq (MHz)
77/78	769.48125
157/158	769.98125
197/198	770.23125
221/222	770.38125
237/238	770.48125
277/278	770.73125
301/302	770.88125

317/318	770.98125
643/644	773.01875
699/700	773.36875
723/724	773.51875
763/764	773.76875
803/804	774.01875
843/844	774.26875
859/860	774.36875
923/924	774.76875

DEPLOYABLE TRUNKED STATIONS

The RPC adopts the NPSTC recommendation for 700 MHz Nationwide Deployable Trunked Channels as a standard for six of the eight channels utilized in Region 22 for Deployable Trunked Systems. The RPC adds to these six channels, the 12.5 kHz channels 683/684 (773.26875 center frequency) and 779/780 (773.86875 center frequency) to comprise the standard set for 700 MHz Deployable Trunked Systems.

The RPC designates this set of channels as an Interoperability solution for Region 22, and as such, licensing of such temporary fixed stations (FB2T) shall be administered by the Interoperability Committee of the Minnesota Statewide Emergency Communications Board (SECB).

The following eight channels (base transmit shown) are used in Region 22 for Deployable Trunked Systems:

DEPLOYABLE TRUNKED

6.25 kHz Channels	12.5 kHz Center Freq (MHz)	FCCor REGION 22
37/38	769.23125	NPSTC/FCC
61/62	769.38125	NPSTC/FCC
117/118	769.73125	NPSTC/FCC
141/142	769.88125	NPSTC/FCC
683/684	773.26875	REGION 22
779/780	773.86875	REGION 22
883/884	774.51875	NPSTC/FCC
939/940	774.86875	NPSTC/FCC

AIR GROUND CHANNELS

Eight former Secondary Trunking Interoperability channels are now designated in the Rules as Air-Ground channels. These channels are intended communication between low-altitude aircraft and associated ground stations (medivac helicopters and base stations or mobile repeaters used by first responders). These stations must be licensed according to the Rules, whereby the mobile station onboard aircraft is limited to 2 Watts ERP and may transmit on the mobile and, where appropriate, base (talk around) side of the channel pair. Applications for stations operating within 315 km (~196 miles) of the Canadian border will be considered on a case by case basis.

The RPC designates this set of channels as an Interoperability solution for Region 22, and as such, licensing of the Air-Ground channels shall be administered by the Interoperability Committee of the Minnesota Statewide Emergency Communications Board (SECB).

The following eight channels (base transmit shown) are available to license Air-Ground stations.

AIR GROUND CHANNELS

6.25 KHz Channels	12.5 kHz Center Freq (MHz)
21/22	769.13125
101/102	769.63125
181/182	770.13125
261/262	770.63125
659/660	773.11875
739/740	773.61875
819/820	774.11875
899/900	774.61875

5.8 Usage Guidelines

All systems operating within the Region having five or more channels will be required to be trunked. Exceptions will be permitted on the trunking requirements 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 an operational considerations that counties pool their channels and implement a multi-county trunked system.

Public Safety communications at the State level, as it impacts the Region, will be reviewed by the RPC. Statewide public safety agencies will submit their communications plans for review if they utilize communications systems within the Region and those portions of such systems must be compatible with the Regional plan.

Where smaller conventional 700 MHz needs are requested, those frequencies to be utilized must not interfere with the region's trunked systems. The 700 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 RPC.

5.9 Statewide Trunking Plan

The Statewide trunking project is a significant planning effort which encourages the development of a multi-agency, multi-tasking shared network on a statewide basis. Current plans are to augment 800 MHz with 700 MHz channels at sites where there are insufficient 800 MHz channels to meet loading requirements. This plan will assist agencies in complying with the usage guidelines described in this document. Agencies planning to use 700 MHz channels are encouraged to review the progress of this project and plan their systems accordingly.

Authority

Minnesota Statute 403.36 defines the requirements and establishes the authority for the Departments of Public Safety, Transportation and Administration to develop a plan for a statewide, shared, trunked public safety radio system. Under directive from the 2002 legislature a Statewide Planning Committee was created and subsequently approved a plan for implementing a statewide shared trunked radio system.

Plan

The purpose of the statewide radio project, also known as the Allied Radio Matrix for Emergency Response system (ARMER) is to improve safety, security, and mobility of the public by providing a reliable communication system that meets the needs of state agencies and their local government partners. By creating partnerships with other units of government and public service organizations there will be improved interoperability between the levels of government and the sharing of resources to build a statewide communication infrastructure on which to move into the future in an integrated, practical and strategic way.

The infrastructure will be designed around open standards to insure additional public and private entities have the opportunity, and are in fact encouraged, to plug-in to the statewide infrastructure as it is completed. As the system is completed throughout various regions, it is anticipated that the added capacity of a statewide infrastructure will provide the opportunity for integration and full interoperability of public safety communication.

Phased Implementation Plan and Schedule

The first phase of the state infrastructure has been completed as part of the Metropolitan Radio Board system. As local government participation in the metro system (Phase Two) continues, the State will proceed with the phased deployment of state backbone systems in greater Minnesota

(phases Three-Six). Each phase will consist of implementing components of the system within two to three complete State Patrol districts. For operational purposes, complete districts will be converted to the new system, rather than portions of a district or specific highway corridors.

The work to be completed during each phase consists of constructing and or installing the following components: towers, 700/800 MHz base stations, Interop base stations (VHF), controllers, switching equipment, and microwave transmitters/receivers.

Special consideration will be given to the interoperability system (Interop) that will be needed to permit communications between users of the new 700/800 MHz trunked system and the users who choose not to migrate or join the new system. An attempt will be made to use the available 800 MHz channels first, if technically viable.

- Phase Three- Phase Three will begin in FY2004. This phase will provide coverage throughout 23 counties in the Rochester and St. Cloud Patrol districts.

- Phase Four – Phase Four, which will begin in FY2005 or one year after the start of Phase Three. This phase will cover the Duluth and Brainerd Patrol districts. The two districts cover 12.5 counties (half of St. Louis Co.)

- Phase Five – Phase Five will begin in FY2006 or 1 year after the start of Phase Four. This phase encompasses three Patrol districts – Mankato, Marshall, and Detroit Lakes. This phase will include 31 counties.

- Phase Six – Phase Six, will begin in FY2007 or 1 year after phase Five begins. This phase will cover the Virginia and Thief River Falls Patrol districts. These two districts include 11.5 counties.

5.10 Periodic Re-Evaluation of Allotments

To accommodate population change, changing technologies and to maximize spectrum efficiency, a periodic re-evaluation of allotments and assignments is anticipated. The RPC shall conduct a formal documented review of the plan every five years after its initial acceptance by the FCC. This process will insure an opportunity for agencies that have an immediate spectrum need and the funding to implement a system without delay. It will also provide a mechanism to periodically review all un-constructed frequency assignments.

5.11 Interoperability Channels

The narrowband voice and data interoperability channels (sixty-four at 6.25 KHz bandwidth) are defined on a nationwide basis. Appendix A - Corrected shows the designation of these channels as defined by the 700 MHz National Coordination Committee (NCC). Since they are nationwide channels, each channel must have the same usage within each region and across regional borders.

~~Within the 12 MHz of spectrum designated for high capacity, wide bandwidth (50 to 150 kHz) channel usage, there are eighteen 50 kHz (or six 150 kHz) channels designated for wideband interoperability use.~~

Agencies requesting 700 MHz frequencies must either construct its own interoperability capability or include a Memorandum of Understanding per Appendix B from another agency demonstrating that interoperability will be accomplished.

5.12 Administration of Interoperability Channels

The Region 22 Planning Committee has **delegated the responsibility for administering the Interoperability channels to the Interoperability Committee of the Statewide Emergency Communications Board (SECB), referred to as the Statewide Interoperability Committee in the Plan. The Statewide Interoperability Committee shall administer the 700 MHz Interoperability channels** per the NCC/**NPSTC** standards and recommendations as described in section 6. A plan for these channels should include, but not be limited to interoperability operations on the 700 MHz interoperability channels. VHF and UHF narrowband interoperability channels of the Public Safety pool (90.20) will also be administered.

5.13 Low Power Channels

The FCC has designated twenty-four 6.25 kHz channel pairs for low power use for on-scene incident response purposes with transmitter power not exceeding 2 watts (ERP). Eighteen channel pairs are to be assigned on a non-exclusive basis and are to be shared by all public safety eligible.

Channels 9-12 paired with 969-972 and 959-960 paired with 1919-1920 are set aside Nationwide for itinerant use. Operation on these channels may include analog modulation with an aggregation of two channels for 12.5 kHz bandwidth allowed. Project 25Common Air Interface is required for digital mode of operation on these channels.

Temporary base and mobile relay stations are allowed for on scene operation with an antenna height limit of 5.1 meters above ground.

Additional 700 MHz exclusive Scene of Action (SOA) channels for specific applications were not designated since six have already been assigned by the Region 22 NPSPAC Committee for the ARMER project described in section 5.9. It is anticipated that radios will be capable of both 700 and 800 MHz operation so the need is fulfilled by the following NPSPAC SOA channels;

NPSPAC Pair	SOA Use
825	All Users
826	All Users
827	Public Safety 1
828	Public Safety 2
829	Fire & EMS only, portables only
830	Fire & EMS only, portables only

5.14 Incumbent Co-Channel and Adjacent Channel Broadcast TV Stations

There are no full power TV or digital television stations (DTV) on channels 62 through 69 (758-806) in Minnesota or in bordering areas of adjoining states.

There are 51 low power (LPTV) and translators (TX) in the state including three channels in the Minneapolis – Saint Paul metropolitan area. Several additional stations are near Minnesota in bordering states. These types of stations are secondary and must cease operation if they cause harmful interference when a primary service, like land mobile comes into operation. The secondary LPTV stations already on channels 63 through 69 cannot apply for the new class A protection status.
A list of TV licenses can be found at the FCC's video division's TV query web site, www.fcc.gov/gov/fcc-bin/tvg?state.

The RPC will support an applicant's effort to remove a TV station by working through the FCC. See sample notifications by RPC to secondary TV stations in Appendix AA.

Canadian TV and DTV assignments must be considered if located near the border. The FCC will permit interim authorization at locations north of line A (90.7) or within 75 miles of the Canadian border as per 90.533. Public Safety transmitters must not cause harmful interference to Canadian TV stations and must comply with interference protection criteria in Section 90.545 for TV/DTV stations in Canada.

Public Safety stations must accept any interference from Canadian broadcast stations. The terms of licenses may change subject to an US-Canada international agreement.

5.15 Protection Ratios

There are two protection ratios to be considered for coordinating general narrowband channels. One is for the co-channel case; the other is for the adjacent channel case. The ratio provides 35 dB desired/undesired signal ratio for co-channel assignments and 20 dB desired/undesired ratios for the adjacent channel case. These ratios are described in section 8 and are recommended by the National Coordinating Committee.

5.16 Channel Loading Requirements

Applicants must show compliance with the minimum-loading table, shown as follows. This may be done in accordance with the extended implementation Section 90.629 of the Commissioner's rules.

Minimum Loading Table:

		Units per Channel	
		Conventional	Trunked
a.	"Emergency" use (Police, Fire, Medical)	70	100
b.	Non-"Emergency" use (all others)	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 solely 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 such things as the "busiest hour" and "message length". "Number of units in service", "unit call rate", and "grade of service" may be required to further substantiate the desired channels assignments.

The RPC will approve an application based on the applicant's demonstration of compliance with the minimum loading requirements or by providing a loading schedule as required by the FCC to meet the extended implementation rule.

5.17 CAPRAD Database

The Regional Planning Committee will use the NLECTC/CAPRAD frequency allocation database, specifically designed for use in the 769-775/799-805 MHz public safety band. This database contains both frequency and pre-assignment information. The RPC will use the database to review adjacent Region's pending and/or complete pre-assignments for assistance in completing their respective plans. The FCC's designated public safety frequency advisors will use the CAPRAD database during the application process (pre-coordination). Frequency advisors, as well as RPC's are required to maintain the database as the applications are processed and granted by the commission.

5.18 Re-Assignment of Frequencies

All applicants for 700 MHz spectrum must submit a plan for the abandonment of any currently licensed frequencies under 512 MHz that are presently being used for the activity to be conducted on the new 700 MHz channels.

The Regional Planning Committee will have the freedom to consider below-700 MHz public safety bands in further development of regional plans, but the licensing of channels in these bands would continue to be conducted through existing frequency coordination procedures.

Lower band frequencies being replaced by 700 MHz channels cannot 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 with a new application.

The time frame allowed for phasing out of lower band frequencies and into 700 MHz 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.

5.19 FCC License Applications

The following describes the procedure and information required when submitting FCC license applications. All applicants must obtain approval by the RPC before the frequency coordination process can proceed. To request channels from Region 22 a full application package must be submitted online to the NPSTC sponsored CAPRAD database at http://caprad.nlectc.du.edu/login/home The application must include an FCC form 601 and the supplemental information required when submitting

applications. Supplemental information may be provided to the Regional Chairman by mail if it cannot be provided on-line. 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 communications system, or a modification to an existing system?
2. A description of the applicants legal jurisdiction such as "the County of _____". A map, such as a county highway map or a U.S. geological or 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. In certain situations the RPC may require an interference prediction map using the current version of TIA/EIA TSB88 guidelines.
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. A list of "orphaned channels" as per Section 8.8. It is expected that these channels will be returned to the database and be reassigned by the RPC.
7. A list of any lower band frequencies that will be replaced by the projected 700 MHz system.
8. The manner in which "interoperability" with other jurisdictions, will be accomplished.

5.20 RPC Application Approval

The Regional Planning Committee will designate a person(s) to screen applications to determine compliance with the Regional Plan. If there are issues of non-compliance, the RPC will convene a frequency meeting to resolve the issues. Upon successful review, the Regional Chair, *or designee*, will approve the application and submit it through the CAPRAD database to the applicant's preferred FCC Certified Coordinator for processing. For most applications the review process will be completed

within 20 working days. The CAPRAD database will reflect the approved application and place the channels for the proposed system in “pre-license status”. In case of a conflict, the coordinator will return the application to the applicant with a copy to the planning committee. It is expected that the three parties will work to resolve the conflict.

5.21 FCC Approval

Upon issuance of the license by the FCC, the coordinator will update the coordinator database with actual license parameters. If after twelve months (or longer for slow growth) the FCC does not receive construction notification from the licensee, the coordinator will delete this license from the database.

5.22 Construction Requirements

An applicant will have twelve months to place a system in operation and to confirm compliance with the construction/coverage requirements. Construction may be extended up to five years if application is made pursuant to section 90.155 (b), which permits local government entities a longer period for placing a station in operation where the applicant submits a specific schedule for the completion of each portion of the entire system, which has been approved and funded for implementation in accordance with that schedule. The applicant must file FCC form 601, main form and schedule K, with the Commission no later than 15 days from the applicable construction/coverage deadline. See 47 C.F.R. section 1.946 (d).

6.0 INTEROPERABILITY CHANNELS

The purpose of interoperability channels is to provide a means for public safety agencies to effectively respond to mutual aid situations by facilitating communication with each other. **Licensing and operation of all 700 MHz Interoperability channels shall be administered by the Interoperability Committee of the Minnesota Statewide Emergency Communications Board (SECB).** Base stations on the I/O channels require licensing. Mobile stations do not require a license.

The narrowband voice & data interoperability channels (sixty-four at 6.25 kHz bandwidth) are defined on a nationwide basis. Appendix A shows the designation of these channels as defined by the 700 MHz National Coordination Committee (NCC). Since they are nationwide channels, each channel must have the same usage within each Region and across Regional borders. They have been sub-divided into different service categories.

The Digital Interoperability Standard for the conventional-only mode of operation on the narrowband voice and data interoperability channels adopted by the NCC and approved by the FCC, is the ANSI/TIA 102 Standards (i.e., Project 25 digital protocols).

There are 2 Calling channel sets and 30 Tactical channel sets. Channel Sets are comprised of two 6.25 kHz bandwidth channels each. The Tactical channel sets are subdivided into the following recommended categories:

4 for Emergency Medical Service
4 for Fire Services,
4 for Law Enforcement Services,
2 for Mobile Repeater operation,
2 for Other Public Services, and
12 for Public Safety General Services.
2 for Data

6.1 Standardized Nomenclature:

Standardized nomenclature is recommended nationwide. All 700 MHz public safety subscriber equipment using an alphanumeric display of at least eight digits should be programmed to show the recommended label from the Table in Appendix A - Corrected when programmed to operate on the associated 700 MHz channel set. The Table shows the recommended label for equipment operating in the mobile relay (repeater) mode. When operating in direct (simplex) mode, the letter “D” should be appended to the end of the label.

6.2 Calling Channels

The 700 MHz licensees will be responsible for monitoring the interoperability calling channels. The RPC will develop operational guidelines.

Because the 700 MHz band will be initially encumbered by broadcast television in some areas, two of the interoperability channels sets are reserved as "Calling Channels". The RPC will define when and where the two calling channels are to be used. These calling channels, which appear in the Table of Interoperability Channels (Appendix A) as “7CAL59” and “7CAL75” must be monitored, as appropriate, by licensees who employ interoperability infrastructure in the associated channel group. In addition to the usual calling channel functions, the calling channels may be used to notify users when a priority is declared on one or more of the tactical interoperability channels. Any system plan submitted for approval must include a design for the interoperability channels that will meet their purpose as defined by the FCC.

6.3 Tactical Channels

All Interoperability channels, except as described below, shall be used for conventional-only operation.

Normally, users will 'call' a dispatch center on one of the "Calling Channels" and be assigned an available tactical channel. Deployable narrowband operations (voice, data, and trunking) shall be afforded access to the same pool of channels used for similar fixed infrastructure operations. In the event of conflict between multiple activities, prioritized use shall occur. The Region 22 plan will not set aside additional channels for interoperability use within the region. It is expected that the sixty-four FCC designated channels (6.25 kHz) will be sufficient for the region.

6.4 Encryption

Use of encryption is prohibited on calling channels and permitted on all other interoperability channels. A standardized encryption algorithm for use on the interoperability channels must be TIA/EIA IS AAAA-A Project 25 Block encryption protocol.

6.5 Deployable Systems

This plan supports the use of deployable systems to provide additional coverage and capacity to minimize the expense of the alternative of implementing a fixed infrastructure. These prepackaged systems can be deployed when needed to provide additional support for interoperability.

Conventional deployable systems should be capable of operating on any of the interoperability tactical channels. The agencies that are a part of a multi agency trunked system are encouraged to have trunked deployable systems on those channels designated for trunked use. The RPC will develop operational procedures for these systems.

6.6 Trunking on the Interoperability Channels

Trunking the Interoperability channels on a secondary basis **is not allowable per the FCC Report and Order adopted October 17, 2014, PS Docket 13-87.**

6.7 Standard Operating Procedures on the Trunked I/O Channels for I/O Situations above Level 4

The safety and security of life and property determines appropriate interoperable priorities of access and/or reverting from secondary trunked to conventional operation. In the event secondary trunked access conflicts with conventional access for the same priority, conventional access shall take precedence. Access priority for “mission critical” communications is recommended as follows:

1. Disaster and extreme emergency operations for mutual aid and interagency communications;
2. Emergency or urgent operation involving imminent danger to life or property;
3. Special event control, generally of a preplanned nature (including Task Force operations);
4. Single agency secondary communications.
   [Priority 4 is the default priority when no higher priority has been declared.]

For those systems employing I/O channels in the trunked mode, the RPC will set up interoperability talk groups and priority levels for those talk groups so that it is easy for dispatch to determine whether the trunked I/O conversation in progress has priority over the requested conventional I/O use. The RPC will also determine whether a wide-area I/O conversation has priority over a local I/O conversation.

6.8 Data Only Use of the I/O Channels

Narrowband data-only interoperability operation on the Interoperability channels on a secondary basis shall be limited to two specific 12.5 kHz bandwidth channel sets. One set is defined by 7DAT71 and the other by 7DAT87.

6.9 DELETED

6.10 Region 22 Administration of Interoperability Channels

Licensing and operation of all 700 MHz Interoperability channels shall be administered by the Interoperability Committee of the Minnesota Statewide Emergency Communications Board (SECB).

6.11 Minimum Channel Quantity

If all calling and tactical voice channels are desired, the minimum channel quantity is 8 I/O channel slots in each subscriber unit. Including direct (simplex) mode on these channel sets, up to 16 slots in each radio will be capable of being programmed for I/O purposes. Backbone issues are deferred to the RPC. Subscriber units, which routinely roam through more than one jurisdiction up to nationwide travel may require more than the minimum channel quantity.

The “CALL”ing channel sets (7CAL59 and 7CAL75) shall be implemented in all voice subscriber units in repeat-mode and direct (simplex) mode. “Direct” mode is permitted in the absence of repeat operation or upon prior dispatch center coordination. If the local CALLing channel set is not known, 7CAL59 shall be attempted first, then 7CAL75. Attempts shall be made on the repeater mode first then on the direct (simplex) mode.

A minimum set of Tactical channels shall be implemented in every voice subscriber unit in the direct (simplex) mode. Specific channel sets are shown below.

- 7TAC63 & 7TAC79 channel sets
- 7TAC67 & 7TAC83 channel sets
- 7TAC73 & 7TAC89 channel sets

Voice subscriber units subject to multi-jurisdictional or nationwide roaming should have all I/O voice channels, including direct (simplex) mode, programmed for use.

The need for interoperability channel programming will be determined as standards are developed, and systems are built.

6.12 Direct (Simplex) Mode

In direct (simplex) mode, transmitting and receiving on the output (transmit) side of the repeater pair for subscriber unit-to-subscriber unit communications at the scene does not congest the repeater station with unnecessary traffic. However, should someone need the repeater to communicate with the party who is in “direct” mode, the party would hear the repeated message, switch back to the repeater channel, and join the communications. Therefore, operating in direct (simplex) mode shall only be permitted on the repeater output side of the voice I/O channel sets.

6.13 Common Channel Access Parameters

Common channel access parameters will provide uniform I/O communications regardless of jurisdiction, system, manufacturer, etc. Thus, the Calling and TAC channels (all of them) should include a common NAC as the national standard. The secondary, trunked I/O channels would be excluded in the trunked mode. However, when reverted to conventional I/O, the common NAC would then apply. This national requirement should apply to base stations and subscriber units. This should apply to fixed or temporary operations for tactical or other mutual aid conventional I/O use.

Common channel access parameters for all voice I/O shall utilize the default values (ANSI/TIA/EIA-102, BAAC-2000, approved April 25, 2000) provided in every radio regardless of manufacturer.

7.0 ADDITIONAL SPECTRUM SET ASIDE FOR INTEROPERABILITY WITHIN THE REGION

The RPC will not designate any additional general use channels for interoperability use. The consensus is that the 32 narrowband channels ~~and 18 wideband channels~~ are sufficient for interoperability use.

8.0 ALLOCATION OF GENERAL USE SPECTRUM

The Narrowband general use spectrum refers to the block of frequencies designated for local public safety users. The FCC has allocated six hundred and sixteen 6.25 kHz bandwidth channel pairs for general use. Region 22's plan distributes spectrum in 25 kHz building blocks, each comprised of four 6.25 kHz or two 12.5 kHz bandwidth channels.

The channels are distributed according to an allotment plan developed for the National Public Safety Telecommunications Council NPSTC and the National Institute of Justice by the New York Technology Enterprise Corporation and Syracuse Research Corporation, NYSTEC. The methodology of the Safety Pool Allotments, (Narrowband General Use Channel Set) documentation of Methodology and Results" January 31, 2003. The report can be found at www.NPSPAC.org and Appendix AAA.

8.1 Summary of The NYSTEC Methodology:

- Use population and population density characteristics in evaluating capacity needs. Employ PSWAC like capacity requirement models to introduce increased accuracy in the modeling process.
- Use terrain data for service-area evaluation and interference prediction. This will allow greater accuracy in the process, and will result in more efficient reuse of the spectrum.
- Use contour intersections to evaluate the validity of pre-allotment channel sets. Build upon past experience in developing quasi-optimal spectral allotment solutions.
- Pre-allot "pool" channels in aggregate 25 kHz blocks. Allow a minimum of four blocks per allotted (county like) area – three for voice, and one for data. Allot additional spectrum based upon projected need (normalized by the spectrum available), and local availability.
- Allot all areas of the U.S. as listed in the in the NYSTEC Report in the Appendix under Technical Reports. which includes fifty states and Puerto Rico.
- When considering allotable spectrum blocks, make no attempt to work around either U. S. International broadcast-television services. Many of these station assignments are either temporary, or subject to change, and working around them would have resulted in allotment inefficiencies.

Each county allotment is a contiguous 25 kHz block consisting of:

- (4) 6.5 kHz channels or

- (2) 12.5 kHz channels

It maintains at least 250 kHz separation with other allotments within each county. Each county received a minimum of 5 of these 25 kHz blocks. The remaining was allotted according to the capacity model, and reuse constraints. Terrain and U.S. borders affect availability. For areas along the Canadian border above line A the RPC must note that any public safety allocations within that area subject to future treaties with these counties.

8.2 Narrowband Allotments

The Narrowband allotment completed by NYSTEC and adopted by the RPC is shown as a listing of channel assignments in Attachments 7 and 8. The most current listing can be found on the CAPRAD database.

8.3 Wideband Data Channel Allotments

The Second Report and Order provides for wideband operations on a waiver basis. Wideband operations may be permitted in the consolidated narrowband portion or the internal public safety guard band portion of the public safety broadband spectrum. Under certain circumstances public safety entities may request a waiver to operate in the upper 1.25 megahertz of the public safety broadband spectrum. All wideband operations shall be secondary to the primary narrowband or broadband operations, as applicable. Wideband licensees operating under a secondary status pursuant to a waiver shall be required to resolve any harmful interference caused to primary operations including modifying or terminating wideband operations.

8.3.1 Wideband Application Procedures.
Requests for a waiver for wideband operations shall be considered by the RPC on a case by case basis. Unless prohibited by FCC rules, any frequencies within the consolidated narrowband portion or the internal public safety guard band portion may be utilized for secondary wideband operations. Counties and adjacent regions that are allocated specific narrowband general use channels that are impacted by secondary wideband waivers will be notified of the secondary application. The Sheriff or the County Administrator of the impacted county will be requested to provide the RPC an update of any implementation plans for construction of facilities on the specified frequencies. The RPC will approve all waiver requests that do not disrupt plans that are underway to utilize the requested frequencies for other purposes within five years. Upon determination that the requested frequencies are not included in an implementation plan for other purposes within five years, a letter from the RPC or state licensee, as applicable, confirming that the proposed wideband deployment will not disrupt any regional or state planning efforts that are underway will be issued.

8.3.2 Applicable FCC Rules.
The following FCC Rules pertaining to wideband waiver operation were adopted in the Second Report and Order.

§ 90.1432 Conditions for waiver to allow limited and temporary wideband operations in the 700 MHz Public Safety spectrum.
(a) Wideband operations in the 700 MHz Public Safety spectrum. Wideband operations are prohibited in the public safety allocation of the

700 MHz band public safety spectrum except where the Commission has granted a waiver pursuant to §§ 1.3 and 1.925 of this chapter and subject to the additional conditions and requirements specified below. Grants of waiver are restricted to the deployment of a wideband system in the consolidated narrowband portion or the internal public safety guard band portion of the public safety broadband spectrum. Where spectrum in the narrowband segment or internal guard band segment is unavailable for wideband operations, public safety entities may request a waiver to operate in the upper 1.25 megahertz of the public safety broadband spectrum.

(b) Any public safety entity seeking to conduct wideband operations within the public safety allocation must file a request for waiver that is accompanied by an application for authorization and includes the following information:

(1) a letter from the Public Safety Broadband Licensee, confirming that the proposed wideband deployment is not inconsistent with the broadband deployment plan for the affected or adjacent service areas; and

(2) a description of the conditions or transition requirements, if any, agreed to between the applicant and the Public Safety Broadband Licensee.

(c) Additional requirement for wideband operations in the narrowband segment and Internal Guard Band. If an applicant seeks permission to deploy wideband systems in the narrowband segment, its waiver request must also include a letter from the appropriate regional planning committee or state licensee confirming that the proposed wideband deployment will not disrupt any regional or state planning efforts that are underway.

(d) Additional requirements and conditions for wideband operations in the broadband segment. Permission to conduct wideband operations in the broadband segment will be granted only where spectrum in the narrowband segment or the internal guard band is unavailable for wideband operations. In no event will permission be granted to conduct wideband operations in geographic areas scheduled for broadband deployment within the first three years of the build-out plan for the Shared Wireless Broadband Network.

(1) An applicant seeking permission to deploy wideband systems in the broadband segment must have first issued a request for proposal (RFP) that permitted interested parties to submit broadband proposals that are technically consistent with the Shared Wireless Broadband Network.

(2) A request for waiver that seeks permission to deploy wideband systems in the broadband segment must include the following information:

(i) a substantially supported, detailed technical showing demonstrating that insufficient spectrum in the narrowband segment or the internal guard band is available to support the desired wideband operations;

(ii) a showing that rejected responses to the required broadband network RFP were more costly, provided less coverage as measured by

throughput at the network edge, or were otherwise inferior to the accepted wideband proposal; and

(iii) a detailed plan for integration of such wideband system into the Shared Wireless Broadband Network. This plan must specify how and by what date the wideband applicant will integrate its proposed wideband system into Shared Wireless Broadband Network and must include a certification that the public safety entity will not seek reimbursement for any costs involved in converting the wideband system to Shared Wireless Broadband Network upon completion of that network in the applicant's geographic area.

(3) Authority to conduct wideband operations in the broadband segment of the public safety spectrum will be subject to the following conditions:

(i) All devices operating on the wideband system must be designed to interoperate with Shared Wireless Broadband Network;

(ii) All waivers will expire automatically upon the Upper 700 MHz D Block licensee's initiation of service in the service area covered by such waiver.

(e) Secondary status of wideband operations. All wideband operations permitted under this section shall be secondary to the authorized narrowband or broadband applications, as applicable.

(f) License terms for wideband operations. Any secondary license to conduct wideband operations in the public safety spectrum shall have a term of no more than five years.

(g) Renewal of wideband authorization. Any request for renewal of an initial authorization to conduct wideband operations shall be filed not less than 180 days prior to expiration of the license. All renewal requests must include a showing that continued operation of the wideband system is in the public interest and must be accompanied by a letter from the Public Safety Broadband Licensee confirming that continuing wideband operations are not inconsistent with the broadband deployment plan for the affected or adjacent service areas. The license term for any renewal of a license granted under the waiver provisions herein shall not exceed three years. No more than one license renewal will be granted.

(h) Grandfathered wideband STA operations. Upon request, the Public Safety and Homeland Security Bureau may grant a public safety entity that has constructed, deployed, and was operating a wideband system as of July 31, 2007 pursuant to STA to extend the STA grant for periods of no more than 180 days until, but not later than, six months following the selection of the Public Safety Broadband Licensee.

8.4 Allotment Variances:

The general channel allotment can be considered a first cut for frequency planning for the Region. It is however, an essential step of the process in order to ensure coordination between regions. It allows agencies in any location to plan communications systems with a reasonable assurance that enough channels will be available to implement a useful modern communications system. Changes in the plan are expected especially after the five-year review. An agency can apply for any channel regardless of the general allotment plan if it can demonstrate that it meets the plan's coverage/interference criteria, when compared with the plan's co-channel and adjacent channel licensees and allotments and can be coordinated with adjacent regions.

There are circumstances such as where an applicant may require a variance of the maximum service area such as where a site is near a county border or if the user anticipates signal overshoot because of an unusual in-building coverage requirement. At the discretion of the RPC, certain variances in maximum service area may be allowed if there are no co-channel users in that direction. Variances will be considered by the RPC on a case by case basis. The RPC will require applicants to provide detailed coverage/interference predictions in the application process.

8.5 Expansion on Initial Allocation:

In the event that the allocation for any county becomes depleted, the Region Planning 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 orphan channels, which were returned to the reserve pool.

8.6 Annexations and Other Expansions:

It is well known that as cities grow, annexations occur. When an expansion of the present city limits of any city currently using 700 MHz system within the spectrum as herein specified occurs, it is understood that the existing system may have to be expanded and its range increased. This is a modification and may be permitted. The increased range of the system will have to be determined at the time of modification to assure non-interference with any other existing system. Where interference is likely, the use of alternate methods of expansion, such as satellite systems or multiple transmitters sites with reduced heights may be necessary. Should the annexation or expansion of a city effectively take in all or most of a county, the allocation for that county may be given to the city if required by said city and not in use or planned to be used by the county. Where more spectrum is not available from the initial

allocation, the rules for expansion of initial allocation, as contained in this plan, shall apply.

8.7 NPSPAC Channels:

If a county has not yet exhausted its 821 MHz allotment, the 700 MHz RPC should work with the applicant encouraging it, where technically appropriate to complete the 800 MHz spectrum. The purpose is to ensure utilization of all allocated spectrums with similar characteristics.

8.8 Orphaned Channels

The narrowband pool allotments will have a channel bandwidth of 25 kHz. These 25 kHz allotments are characterized as “Technology Neutral”, i.e. able to accommodate multiple technologies utilizing multiple bandwidths. If agencies choose a technology that requires less than 25 kHz channel bandwidth for their system, there is the potential for residual, “orphaned channels” of 6.25 kHz or 12.5 kHz bandwidth immediately adjacent to the assigned channel. The agency shall identify orphaned channels in the request for coordination from the RPC during the license application process.

An orphaned channel presents an opportunity to achieve greater spectrum efficiency by allowing it to be utilized for other applicants on a first-come, first-served basis. Typically, it cannot be used effectively within the same county or adjacent county because of adjacent channel interference restrictions.

An applicant for an orphan channel must demonstrate that it meets the 5 dBu co-channel and 60 dBu adjacent channel interference criteria with the plan assignments and licensees’ in the area. The application must be coordinated with the adjacent regions if it lies within 75 miles of a border area.

8.9 Periodic Re-Evaluation of Allotment

To accommodate population changes, changing technologies, and to maximize spectrum efficiency, a periodic re-evaluation of allotments and assignments is recommended. The RPC will revisit the general ~~and wideband~~ channel allotment every five years on a structured basis with published results. The review will ensure that all agencies have the opportunity to access spectrum commensurate with their needs.

8.10 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 system. 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 system(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 700 MHz trunked radio is the smaller system users must consider consolidating their communications systems to formulate one large trunked system.

8.11 Transmitter Combining

The allotment is designed to provide a minimum frequency separation of 0.25 MHz 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 that the maximum size of the combining block, then a second compatible block is created, and so on.

8.12 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) to five (5) 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) to the associated mobile stations.

8.13 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 jurisdiction borders nor do jurisdiction boundaries rarely center around a selected transmitter site. All possible considerations however given in the system's design to achieve this balance of signal propagation to the utmost.
Overlap or extended coverage must be minimized, even where systems utilizing 700 MHz trunked radio systems are proposing to inter-mix systems for cooperative and/or mutual aid purposes.

Antenna heights are to be limited to provide only the necessary coverage for a system. When antenna locations are restricted to only the "high-ground" transmitter outputs and special antenna patterns must be employed to produce only the necessary coverage with the proper amount of ERP.

The following TIA/EIA TSB88-A criteria must be met in the design of communication system utilizing frequencies in this allocation, assuming a 40 dBu service contour is provided by the desired stations throughout the intended service area.

1. The 40 dBu service contour will be allowed to extend beyond the service area by 3 to 5 miles depending on population (urban, rural). See Appendix K
2. The interfering co-channel 5 dBu contour must not overlap the 40 dBu contour of the system being evaluated.
3. An adjacent interfering (25 kHz) channel shall not be allowed to have its 60 dBu coverage overlap the 40 dBu contour of the system being evaluated.

Coverage/Interference evaluation can be analyzed using any of the commonly used coverage models including Bullington, Longley - Rice, Okumura, etc. Longley Rice (50-50-50) with land use is used exclusively by several Public Safety Coordinators.

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 are intended to provide protection to only receivers located at the base or mobile relay stations site.

Applicants choosing to operate a system with less that 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.

8.14 Use of Frequencies in Aircraft

The degree to which these 700 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. Avoid using the input frequency to the mobile relay station and use the "talk-around" mode whenever possible.

8.15 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 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 purpose of this plan, received signal strength shall be the determining factor, which defines the actual boundary of the 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 (watt) = Watts x antilog (Net Gain/10)

8.16 Canadian Coordination

Region 22 licensees *North of line A* must accept any interference that may be caused by operations of UHF television broadcast transmitters in Canada and that conditions may be added during the term of the license if required by the terms of international agreements between the United States and the Government of Canada, as applicable, regarding the non-broadcast use of the 764-806 MHz bands. Public Safety licensees are granted subject to the conditions sat forth in 47 C.F.R. Paragraph 90.533.

9.0 AN EXPLANATION OF HOW NEEDS WERE ASSIGNED PRIORITIES IN AREAS WHERE NOT ALL ELIGIBLES COULD RECEIVE LICENSES.

Outside of the immediate Twin City metropolitan area, very few of the 800 MHz NPSPAC channels have been licensed. The RPC feels that adequate channels will be available throughout greater Minnesota in the 700 MHz and 800 MHz bands. The construction of the 800 MHz system in the metropolitan area has addressed many of the needs, and potential needs. The desire of the Metropolitan Radio Board is to focus the system using available 800 MHz resources, and supplement them with 700 MHz at some point in the future, if necessary. Prior to licensing any 700 MHz channels within a county, all PSAP's within the county must concur. If an agreement cannot be reached, a resolution by the requesting government entity shall be sent to the RPC for consideration. The RPC will work to develop an equitable allocation to meet the needs of those involved. The RPC may approve license applications, without concurrence of all parties.

The following matrix should be used to evaluate competing applications within the region. The matrix will be used when there are multiple agencies requesting the same channels within the same time frame. Total evaluation points will add to 100.

- Priority will be given to applicants involved with protection of life and property with consideration of the population being served. (15 points)

- Intersystem & Intra-system interoperability (10 points)

  However well the proposed system will be able to communicate with other levels of government and services during an emergency on "regular" channels not the I/O channels. Interoperability must exist among many agencies to successfully accomplish the highest level of service delivery to the public during a major incident, accident, natural disaster or terrorist attack. Applicants requesting 700 MHz spectrum shall inform the region of how and whom they have been achieving interoperability in their present system.

  The applicant shall stipulate how they will accomplish interoperability in their proposed system (gateway, switch, cross-band repeater, console cross patch, software defined radio or other means) for each of the priorities listed below.

  1. Disaster and extreme emergency operation for mutual aid and interagency communications.

  2. Emergency or urgent operation involving imminent danger to life or property.

  3. Special event control, generally of a preplanned nature (including task force operations).

4. Single agency secondary communications. Priority 4 is the default priority when not other priority is declared and includes routine day to day (non-emergency) operations.

- Loading (30 points)

  Is the system part of a cooperative, multi-organization system? Is the application an expansion of a existing 800 MHz system? Have all 821 channels been assigned (where technically feasible)? A showing of maximum efficiency or a demonstration of the systems mobile usage pattern could be required in addition to loading information. Based on population, number of units (if number of units, are they take home, how many per office), what the talk groups?

- Spectrum Efficient Technology (10 points)

  How spectrally efficient is the system's technology? Trunked systems are considered efficient "as well as any technological system feature, which is designed to enhance the efficient use of the system and provide for the efficient use of the spectrum."

- Systems Implementation Factors (20 points)

  Demonstrate funding, demonstrate system planning. Provide a construction and implementation schedule. Is this going to be slow growth (within the next five years) or is it something that's ready to be implemented now? A document stipulating what the agency is planning to implement signed by an official within the organization who handles the money is required. Some concerns expressed in this category were: how one legally provided a document that proves subsequent year funding; the money does not start flowing until the equipment is in place; some agencies cannot bond until they have the frequencies.

- Geographic Efficient (10 points)

  The ratio of subscriber units to area covered and the channel reuse potential were the two subcategories in this one. "The higher the ratio (mobiles divided by square miles of coverage) the more efficient the use of the frequencies. Those systems which cover large geographic areas will have a greater potential for channel reuse and will therefore receive a high score in this subcategory."

- Turnback Channels (5 points)

  Consider the number of VHF and UHF channels given back. Consider the extent of availability and usability of those channels to others.

10. AN EXPLANATION OF HOW ALL THE REGION ELIGIBLES' NEEDS WERE CONSIDERED, AND TO THE EXTENT POSSIBLE, MET.

The entire planning process took place through open meetings, and solicited input from interested and affected parties. See Section 4 for further discussion about the process. The CAPRAD system will be used for the license application process. See section 9 for further discussion of how needs were considered.

11. ADJACENT REGION COORDINATION

The Draft Plan was posted on the CAPRAD site following approval by the RPC. A printed copy was also delivered by US Mail to the Chairperson of each adjacent region.

Dispute resolution

i) The following is the procedure for inter-regional coordination when a license application is made that is consistent with the Regional Plan.

ii) Intra-regional review and coordination takes place, including a technical review resulting in assignment of channels.

iii) After intra-regional review, a copy of those frequency-specific applications requiring adjacent Region approval, including a definition statement of proposed service area, shall then be forwarded to the adjacent Region(s) for review. This information will be sent to the adjacent Regional chairperson(s) using the CAPRAD database.

iv) The adjacent Region reviews the application. If the application is approved, a letter of concurrence shall be sent, via the CAPRAD database, to the initiating Regional chairperson within thirty (30) calendar days.

v) If the adjacent Region(s) cannot approve the request, the adjacent Region shall document the reasons for partial or non-concurrence, and respond within 10 (Ten) calendar days via email. If the applying Region cannot modify the application to satisfy the objections of the adjacent Region then, working group comprised of representatives of the two Regions shall be convened within thirty (30) calendar days to attempt to resolve the dispute. The working group shall then report its findings within thirty (30) calendar days to the Regional chairpersons email (CAPRAD database). Findings may include, but not be limited to:

   i) unconditional concurrence;
   ii) conditional concurrence contingent upon modification of applicant's technical parameters; or

iii) partial or total denial of proposed frequencies due to inability to meet co-channel/adjacent channel interference free protection to existing licensees within the adjacent Region.

vi) If the Inter-Regional Working Group cannot resolve the dispute, then the matter shall be forwarded for evaluation to the National Plan Oversight Committee (NPOC), of the National Public Safety Telecommunications Council. Each Region involved in the dispute shall include a detailed explanation of its position, including engineering studies and any other technical information deemed relevant. The NPOC will, within thirty (30) calendar days, report its recommendation(s) to the Regional chairpersons via the CAPRAD database. The NPOC's decision may support either of the disputing Regions or it may develop a proposal that it deems mutually advantageous to each disputing Region.

vii) Where adjacent Region concurrence has been secured, and the channel assignments would result in no change to the Region's currently Commission approved channel assignment matrix. The initiating Region may then advise the applicant(s) that their application may be forwarded to a frequency coordinator for processing and filing with the Commission.

viii) Where adjacent Region concurrence has been secured, and the channel assignments would result in a change to the Region's currently Commission approved channel assignment matrix, then the initiating Region shall file with the Commission a *Petition to Amend* their current Regional plan's frequency matrix, reflecting the new channel assignments, with a copy of the *Petition* sent to the adjacent Regional chairperson(s).

ix) Upon Commission issuance of an Order adopting the amended channel assignment matrix, the initiating Regional chairperson will send a courtesy copy of the Order to the adjacent Regional chairperson(s) and may then advise the applicant(s) that they may forward their applications to the frequency coordinator for processing and filing with the Commission.

12. A DETAILED DESCRIPTION OF HOW THE PLAN PUT SPECTRUM TO THE BEST POSSIBLE USE

Previous sections of the Plan discuss channel loading and the expectation that trunking technology will be used in most 700 MHz systems. Throughout the planning process, we evaluated all frequency resources that were available for use, and how these resources will best meet the needs of all users.

13. A DETAILED DESCRIPTION OF THE FUTURE PLANNING PROCEDURES

The Plan will be reviewed and updated every five years. Changes to the plan can be made more frequently when necessary. The 700 MHz RPC will take efforts to

coordinate meetings of the other radio planning bodies to ensure that conflicting decisions are not being made.

14. A CERTIFICATION BY THE REGIONAL PLANNING CHAIRPERSON THAT ALL PLANNING COMMITTEE MEETINGS, INCLUDING SUBCOMMITTEE OR EXECUTIVE COMMITTEE MEETINGS WERE OPEN TO THE PUBLIC.

"I hereby certify that all planning committee meetings, including subcommittee or executive committee meetings were open to the public.

Signed

_____"

Steve Pott, Region 22 Chairperson
Chief Deputy
Washington County Sheriff's Office

700 MHz Regional Plan
Attachments

Attachment 1	Region 22 By-laws
Attachment 2	Voting Membership
Attachment 3	Original Meeting Notices
Attachment 4	Meeting minutes
Attachment 5	Letter to Minnesota Indian Affairs Council
Attachment 6	Comparison of 700 MHz & 800 MHz NPSPAC Public Safety Channels
Attachment 7	Region 22 – Minnesota Channel Allotments by Class
Attachment 8	Region 22 – Minnesota Allotments by FCC Channel
Attachment 9	Grouping and Allotment Plan for 700 MHz State Channels

APPENDIX

The appendices which involve National Coordination Committee Documents can be accessed from the website; www.NPSTC.org When on the NPSTC homepage, select CAPRAD on the left side of the screen. When on the CAPRAD homepage, select DOCUMENTS which can be found under the Public Information heading.

TECHNICAL REPORTS

Appendix -	Generation of the National 700 MHz Public Safety Allotments (Narrowband General Use Channel set) Documentation of Methodology and Results
Appendix -	Population, Area, and Capacity Model Data County Contours in graphics format

700 MHz Plan Documents

Appendix -	700 MHz Band Plan per Fourth MO&O
Appendix -	State Channel Sharing Plan – Northeast Option

700 MHz Regional Planning Guidebook

Appendix B	Memorandum of Understanding Template
Appendix C	Sharing Agreement Template
Appendix D	Sample Dispute Resolution Process
Appendix E	Sample Agenda
Appendix F	Sample Bylaws Template
Appendix G	Pre-Planning Flow Chart Coordination Flow Chart
Appendix H	Funding Request Form
Appendix I	Sample Public Notice
Appendix J	Recommended Incident Command System
Appendix K	Simplified 700 MHz Pre-Assignment Rules Recommendation
Appendix L	Digital Television (DTV) Transition

Appendix M	700 MHz Band Plan Chart
Appendix N	RPC & SIEC Chairs
Appendix O	Hints & Kinks – Alternatives and Cool Things Being Done by RPCs
Appendix P	FCC Regulatory Actions

New Planning Documents From The NCC Implementation Subcommittee

Appendix A	Table of Interoperability Channels – Corrected
Appendix AA	Sample Notifications by RPC to Secondary TV Stations
Appendix AB	Sample Cover Letter to Adjacent Regional Chairs
Appendix AC	List of Low Power Channels Subject to Regional Planning
Appendix O	Simplified 700 MHz Pre- Assignment Rules and Regulations
Appendix R	Regional Plan Chart
Appendix T	Sample Cover Letter to FCC
Appendix U	1st Meeting Notification Checklist
Appendix V	700 MHz Implementation Frequently Asked Questions
Appendix W	Inter-Regional Agreement
Appendix X	Process for Handling Unformed Regions
Appendix Y	Sample Unformed Region Waiver Language
Appendix Z	Sample Adjacent Region Concurrence Letter

Attachment 1

BYLAWS OF REGION 22

ARTICLE 1

NAME & PURPOSE

1.1 Name and purpose. The name of this Region shall be Region 22. Its primary purpose is to foster cooperation, planning, development of regional plans and the implementation of these plans in the 700 MHz Public Safety Band.

ARTICLE II

MEMBERS

For purposes of this Article, the term "member," unless otherwise specified, refers to both voting and non-voting members.

2.1 Number, Election and Qualification. The Regional Committee shall have two classes of members, "voting members" and "non-voting members." New members may be added at annual, special, or regular meetings.

Voting Members. Voting members shall consist of one representative from any single agency engaged in public safety eligible to hold a license under 47 CFR 90.20, 47 CFR 90.523 or 47 CFR 2.103, and the Metropolitan Radio Board. Except that a single agency shall be allowed no more than one vote for each distinct eligibility category (e.g. police, fire, EMS, highway) within the agency's organization or political jurisdiction. In voting on any issue the individual must identify himself/herself and the agency and eligibility category that he or she represents. Non-Voting Members. Non-voting members are all others interested in furthering the goals of public safety communications.

2.2 Tenure. In general, each member shall hold MEMBERSHIP from the date of acceptance until resignation or removal.

2.3 Powers and Rights. In addition to such powers and rights as are vested in them by law, or these bylaws, the members shall have such other powers and rights as the membership may determine.

2.4 Suspension and Removal. A representative may be suspended or removed with cause by vote of a majority of members after reasonable notice and opportunity to be heard.

2.5 Resignation. A representative may resign by delivering written resignation to the chairman, vice-chairman, treasurer or secretary of the Regional Committee or to a meeting of the members.

2.6 Meetings. Meetings will normally be held on the second Wednesday in January, April, July, and October at 10:00am. If that date is a legal holiday in the place where the meeting is to be held, then at the same hour on the following Wednesday. The January meeting will be designated as the annual meeting. If an annual meeting is not held as herein provided, a special meeting of the members may be held in place thereof with the same force and effect as the annual meeting, and in such case all references in these bylaws, except in this Section 2.6, to the annual meeting of the members shall be deemed to refer to such special meeting.

Any such special meeting shall be called and notice shall be given as provided in Section 2.7 and 2.8.

2.7 Special Meetings. Special meetings of the members may be held at any time and at any place within the Regional Committee area. Special meetings of the members may be called by the chairman or by the vice-chairman, or in case of death, absence, incapacity, by any other officer or, upon written application of two or more members.

2.8 Call and Notice.

A. Reasonable notice of the time and place of special meetings of the members shall be given to each member.

B. Reasonable and sufficient notice. Except as otherwise expressly provided, it shall be reasonable and sufficient notice to a member to send notice by mail at least fifteen days or by e-mail/facsimile at least ten days before the meeting, addressed to such member at his or her usual or last known business address, or, to give notice to such member in person or by telephone at least ten days before the meeting.

2.9 Quorum. At any meeting of the members, a quorum exists when the following minimum roster is met:

Two Officers of the Regional Planning Committee
Five separate governmental entities
Five different service types (i.e. Police, Fire, EMS, Public Works, etc)
Eleven voting members

2.10 Action by Vote. Each voting member, representing a particular agency (one vote per agency) shall have one vote; non-voting members have no right to vote. When a quorum is present at any meeting, a majority of the votes properly cast by voting members present shall decide any question, including election to any office, unless otherwise provided by law or these bylaws. Items not specifically listed on the agenda, may be acted on, but will not become final until minutes are published, distributed, and approved at the next meeting of the Committee.

ARTICLE III

OFFICERS AND AGENTS

3.1 Number and qualification. The officers of the Regional Committee shall be a chairman, vice-chairman, secretary/treasurer and such other officers, if any, as the voting members may determine. The officers must be voting members of the Regional Committee.

3.2 Election. The officers shall be elected by the voting members at their first meeting and, thereafter, at the annual meeting of the members.

3.3 Tenure. The officers shall each hold office until the annual meeting of the members held within one year from the adoption of these bylaws, or until their successor, if any, is chosen, or in each case until he or she sooner dies, resigns, is removed or becomes disqualified.

3.4 Chairman and Vice Chairman. The chairman shall be the chief executive officer of the Regional Committee and, subject to the control of the voting members, shall have general charge and supervision of the affairs of the Regional Committee. The chairman shall preside at all meetings of the Regional Committee.

The Vice Chairman, if any, shall have such duties and powers, as the voting members shall determine. The vice-chairman shall have and may exercise all the powers and duties of the chairman during the absence of the chairman or in the event of his or her inability to act.

3.5 Secretary/ Treasurer. The secretary/ treasurer shall record and maintain records of all proceedings of the members in a file or series of files kept for that purpose, which file or files shall be kept within the Region and shall be open at all reasonable times to the inspection of any member. Such file or files shall also contain records of all meetings and the original, or attested copies, of bylaws and names of all members and the address (including e-mail address, if available) of each. The secretary/treasurer shall be the chief financial officer and the chief accounting officer of the Regional Committee. The secretary/treasurer shall be in charge of its financial affairs, funds, and valuable papers and shall keep full and accurate records thereof. If the secretary/ treasurer is absent from any meeting of members, a temporary secretary chosen at the meeting shall exercise the duties of the secretary/treasurer at the meeting.

3.6 Suspension or Removal. An officer may be suspended with cause by vote of a majority of the voting members.

3.7 Resignation. An officer may resign by delivering his or her written resignation to the chairman, vice-chairman, treasurer, or secretary of the Regional Committee. Such resignation shall be effective upon receipt (unless specified to be effective at some other time), and acceptance thereof shall not be necessary to make it effective unless it so states.

3.8 Vacancies. If the office of any officer becomes vacant, the voting members may elect a successor. Each such successor shall hold office for the remainder terms, and in the case of the chairman, vice chairman, treasurer and secretary until his or her successor is elected and qualified, or in each case until he or she sooner dies, resigns, is removed or become disqualified.

ARTICLE IV

AMENDMENTS

These bylaws may be altered, amended or repealed in whole or in part by vote. The voting members may by a two-thirds vote, alter, amend, or repeal any bylaws adopted by the Regional Committee members or otherwise adopt, alter, amend or repeal any provision which FCC regulation or these bylaws requires action by the voting members. Members shall be given prior notice to any proposed change in the bylaws, and the changes shall be identified on the agenda.

ARTICLE V

DISSOLUTION

This Regional Committee may be dissolved by the consent of two-thirds of the representatives in good standing at a special meeting called for such purpose. The FCC shall be notified.

ARTICLE VI

RULES OF PROCEDURES

The Conduct of Regional Meetings including without limitation, debate and voting, shall be governed by Robert's Rules of Order, newly revised 1990 edition, ninth edition, Sarah Corbin Robert, Henry M. Robert III, and William J. Evans.

Attachment 2

Al Smith – Minnesota State Patrol
Andy Terry – Minnesota Department of Transportation
Bill Dean - Metropolitan Radio Board
Blaine Hentz – Wabasha County
Bob Meschke – Martin County
Bob Vandenbroeke – Carver County
Bruce Hagerness – St. Louis County
Dan Gelle – Gold Cross Ambulance
Dave Pagel – Minnesota Department of Transportation
Doug Pearce – Stearns County
Ed Skainiak – Bureau of Alcohol, Tobacco and Firearms
Gary Fried – Goodhue County
Gary Nyberg – Metro Transit
Greg Anderson – Moorhead Police
Jay Smith – City of Minneapolis
Jerry Rohret – Metropolitan Radio Board
John Gundersen – Three River Park Police
John Tonding – Anoka County
Kathy Karels – Minnesota Department of Transportation
Ken Southorn – Eagan Police Department
Kim Kallestad – Stillwater Police Department
King Fung – Hennepin County
Larry Nacezeny – United States Postal Inspection Service
Lynn Ness – Minnesota Department of Transportation
Michele Tuchner – Minnesota State Patrol
Mike Hogan – Minnesota Department of Transportation
Mike Olson – City of Minnetonka
Nancie Ekum – Carver County So
Pamela Raser – Carver County So
Rich Swanson – City of Eagan
Roger Hand – Red Wing Public Safety
Roger Kochevar – Minnesota Department of Transportation
Roger Laurence – Hennepin County Sheriff's Office
Rolly Helgeson – Wright County
Ron Whitehead – Minnesota Department of Public Safety
Phil Thinesen – Wright County Sheriff's Office
Steve Pott – Washington County
Tim Lee – Minnesota Department of Transportation
Tom Cherney – Minnesota Department of Emergency Management
Tom Hannen – City of St. Cloud

Attachment 3

Public Meeting Notice

The initial meeting of the Iowa Public Safety Region 15 planning committee for 700 MHz, will be held at the following time and location:

May 29, 2002
1:00 pm – 4:00 pm
Iowa State Patrol Post #1 Headquarters
Interstate 80 & 2nd Avenue
Des Moines, IA

The convener for the meeting will be:

Richard Hester
Iowa State Patrol Communications
56911 Whitepole Road
Lewis, IA 51544

Phone: 712-769-2395
Fax: 712-769-2475
E-Mail hester@dps.state.ia.us

The purpose of the meeting includes elections of a Chairperson, Vice-Chair and Secretary/Treasurer. All parties having Public Safety interests in Region 15 are encouraged to attend.

AFFIDAVIT OF PUBLICATION

STATE OF MINNESOTA

COUNTY OF RAMSEY

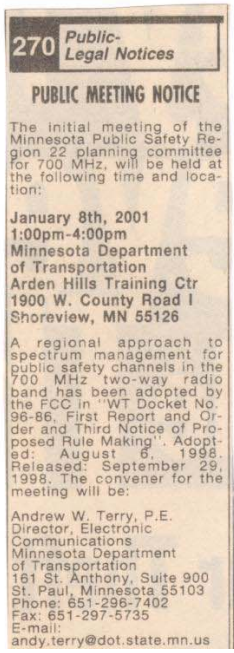
Jolynn Brand
being duly sworn on oath, says: that she is, and during all times herein state has been, Clerk of Northwest Publications, Inc., Publisher of the newspaper known as the Saint Paul Pioneer Press, a newspaper of general circulation within the City of Saint Paul and the County of Ramsey.

That the notice hereto attached was cut from the columns of said newspaper and was printed and published therein on the following date(s):

10th day of December 2000

Newspaper Ref./Ad Number #11012

Subscribed and sworn to before me this
9th day of January 2001



270 Public-Legal Notices

PUBLIC MEETING NOTICE

The initial meeting of the Minnesota Public Safety Region 22 planning committee for 700 MHz, will be held at the following time and location:

January 8th, 2001
1:00pm-4:00pm
Minnesota Department of Transportation
Arden Hills Training Ctr
1900 W. County Road I
Shoreview, MN 55126

A regional approach to spectrum management for public safety channels in the 700 MHz two-way radio band has been adopted by the FCC in "WT Docket No. 96-86, First Report and Order and Third Notice of Proposed Rule Making". Adopted: August 6, 1998. Released: September 29, 1998. The convener for the meeting will be:

Andrew W. Terry, P.E.
Director, Electronic Communications
Minnesota Department of Transportation
161 St. Anthony, Suite 900
St. Paul, Minnesota 55103
Phone: 651-296-7402
Fax: 651-297-5735
E-mail:
andy.terry@dot.state.mn.us

also available for review during normal business hours at Metropolitan Council Library, Mears Park Centre Building, 230 E. 5th St., St. Paul and Metropolitan Transit Heywood Office and Operating Facilities, 560 6th Ave., N., Minneapolis.

Comments can be conveyed to the Council as follows:

- Send written comments to Jim Barton, Metropolitan Council, Mears Park Centre Building, 230 E. Fifth St., St. Paul, MN 55101
- **Fax** comments to (651) 602-1739
- Record comments on Council's Public Comment Line at (651) 602-1500
- **Email** comments to: *data.center@metc.state.mn.us*

Public Employees Retirement Association

Notice of Meeting for the Finance Committee of the Board of Trustees

A Legislative Committee meeting of the Board of Trustees of the Public Employees Retirement Association (PERA) will be held on Wednesday, November 29, 2000, at 9:30 a.m., in the Office of the Association, 514 Saint Peter Street, Suite 200, St. Paul, MN.

Department of Transportation

Program Support Division

Office of Electronic Communications

Notice of the initial meeting of the Minnesota Public Safety Region 22 planning committee for 700 MHz. This meeting will be held at the following time and location:

January 8th, 2001
1:00 p.m. - 4:00 p.m.
Minnesota Department of Transportation
Arden Hills Training Center
1900 W. County Road I
Shoreview, Minnesota 55126

A regional approach to spectrum management for public safety channels in the 700 MHz two-way radio band has been adopted by the FCC in "WT Docket No. 96-86", "First Report and Order and Third Notice of Proposed Rule Making". **Adopted:** August 6, 1998. **Released:** September 29, 1998. The convener for the meeting will be:

Andrew W. Terry, P.E.
Director, Electronic Communications
Minnesota Department of Transportation
161 St. Anthony, Suite 900
St. Paul, Minnesota 55103
Phone: (651) 296-7402
Fax: (651) 297-5735
Email: *andy.terry@dot.state.mn.us*

All parties having Public Safety interests in Region 22 are encouraged to attend.

STATE OF MINNESOTA)
)ss.
COUNTY OF HENNEPIN)

AFFIDAVIT OF PUBLICATION

Don Jacobson, being duly sworn, on oath says he is and during all times herein stated has been an employee of the Star Tribune, a subsidiary of McClatchy Company, 425 Portland Avenue, Minneapolis, Minnesota 55488, publisher and printer of the Star Tribune newspaper (the "Newspaper"), published 7 days a week, and has full knowledge of the facts herein stated as follows:

1. (a) The Newspaper is printed in the English language in newspaper format and in column and sheet form equivalent in printed space to at least 1,000 square inches;
   (b) The Newspaper is printed daily and distributed at least five days each week;
   (c) In at least half of its issues each year, the Newspaper has no more than 75 percent of its printed space comprised of advertising material and paid public notices. In all of its issues each year, the Newspaper has not less than 25 percent of its news columns devoted to news of local interest to the community which it purports to serve. Not more than 25 percent of the Newspaper's non-advertising column inches in any issue duplicates any other publication;
   (d) The Newspaper is circulated in the local public corporation which it purports to serve, and has at least 500 copies regularly delivered to paying subscribers;
   (e) The Newspaper has its known office of issue established in either the county in which it lies, in whole or in part, the local public corporation which the Newspaper purports to serve, or in an adjoining county;
   (f) The Newspaper files a copy of each issue immediately with the state historical society;
   (g) The Newspaper is made available at single or subscription prices to any person, corporation, partnership, or other unincorporated association requesting the Newspaper and making the applicable payment;
   (h) The Newspaper has complied with all the foregoing conditions for at least one year immediately preceding the date of the notice publication which is the subject of the Affidavit; and
   (i) Between September 1 and December 31 of each year, the Newspaper publishes and submits to the secretary of state, along with a filing fee of $25, a sworn United States Post Office periodical class statement of ownership and circulation.

2. The printed copy of the matter attached hereto (the "Notice") was cut from the columns of the Newspaper and was printed and published in the English language, on the following days and dates: **Sunday, December 10, 2000.**
3. Except as otherwise directed by a particular statute requiring publication of a public notice, the Notice was printed in a type face no smaller than six point with a lowercase alphabet of 90 point.
4. The fees for publication are as follows:
   (a) The maximum rate currently allowed by law for publication of a public notice in the Newspaper is $3.13;
   (b) The lowest classified rate currently paid by commercial users for comparable space in the Newspaper is $6.00; and;
   (c) The rate actually charged for publication of the Notice was **$137.72**

Subscribed and sworn to before me
on December 11, 2000

Diane M. Kise

Notary Public

DIANE M. KISE
NOTARY PUBLIC - MINNESOTA
My Comm. Expires Jan. 31, 2005

Public Meeting Notice

The initial meeting of the Minnesota Public Safety Region 22 planning committee for 700 MHz will be held Jan. 8, 2001, from 1:00 to 4:00 p.m. at the Minnesota Department of Transportation's Arden Hills Training Center at 1900 W. County Road I in Shoreview.

The FCC adopted a regional approach to spectrum management for public safety channels in the 700 MHz two-way radio band in "WT Docket No. 96-86 First Report and Order and Third Notice of Proposed Rule Making." Adopted: Aug. 6, 1998. Released: Sept. 29, 1998.

For more information, contact the convener for the meeting, Andy Terry, P.E., director of electronic communications for the Minnesota DOT. Write him at 161 St. Anthony, Suite 900, St. Paul, MN 55103. Call him at (651) 296-7402. Fax him at (651) 297-1669. Direct e-mail to andy.terry@dot.state.mn.us

We encourage anyone with public safety interests in Region 22 to attend.

Public Safety Communications November 2000

Public Safety Events

January 8: Minnesota Public Safety Region 22 Planning Committee Meeting, Arden Hills Training Center, Shoreview, Minn. Contact Andy Terry, (651) 296-7402; fax (651) 297-1669; andy.terry@dot.state.mn.us

January 11: Missouri Public Safety Region 24 Planning Advisory Committee 700 MHz Meeting, St. Louis County Emergency Operations Center, Chesterfield, Mo. Contact Stephen Devine, (573) 526-6105; sdevine@mail.state.mo.us

January 25-26: APCO International Project 25 Symposium, Sheraton Hotel, Mesa, Ariz. Contact Stephanie Graves, (904) 322-2500; graves@apco911.org

February 20-22: PSWN 12th Regional Symposium, Grove Hotel, Boise, Idaho. Contact (800) 565-PSWN; www.pswn.gov

March 11-14: NENA Technical Development Conference, Rosen Centre Hotel, Orlando, Fla. Contact (800) 332-3911

May 21-24: Michigan 9-1-1 Conference, Amway Grand Plaza Hotel, Grand Rapids, Mich. Contact Nate McClure, (231) 722-3524; nmcclure@gte.net

June 19-21: PSWN Regional Symposium (Minnesota), location TBD. Contact (800) 565-PSWN; www.pswn.gov

June 23-28: NENA 2001 Conference and Expo, Orlando, Fla. Contact Tricia, (614) 469-7707; fax (614) 469-7709; nena911@aol.com; www.nena9-1-1.org

June 26-27: Police-Security Expo 2001, Atlantic City, N.J. Contact Miles Watkin, (800) 323-1927; www.police-security.com

August 5-9: APCO International Conference and Expo 2001, Salt Lake City. Contact Pat Daniels, (904) 322-2500; fax (904) 322-2501

APCO International Regional/Chapter Meetings: Contact APCO International for dates and locations, (888) 272-6911; www.apco911.org

NENA Chapter Meetings/Symposiums: Contact NENA for dates and locations, (800) 332-3911; www.nena.org

PSWN Symposiums: Contact PSWN for dates and locations, (800) 565-PSWN; www.pswn.gov

Radio Resource Magazine January – February 2001

Public Safety Events

2000

Nov. 4-7: International Association of Emergency Managers Annual Conference, Austin, Texas. Contact (703) 538-1975; fax: (703) 421-5603

Nov. 5-8: NENA PS Comm 9-1-1 Operations Forum, Orlando, Fla. Contact (800) 332-3911; fax: (614) 933-0911; www.nena9-1-1.org

Nov. 9: APCO North California Chapter Meeting, Contra Costa County, Calif. Contact Harry Engstrom, (510) 667-7788

Nov. 11-16: International Association of Chiefs of Police Conference, San Diego. Contact (703) 836-6767; fax. (703) 836-4543

Nov. 16: APCO CPRA Chapter Meeting. Contact Gina Purvis, (323) 669-4450

Nov. 17: APCO Ohio Chapter Meeting, Columbus, Ohio. Contact Tim Hetzler, (614) 466-2393

Nov. 23: APCO Illinois Chapter Executive Committee Meeting. Contact Richard Nowakowski, (312) 746-9257

Dec. 6-8: APCO Oregon Chapter Meeting, Agate Beach, Ore. Contact Erika Gabliks, (503) 378-2100 ext. 255

Dec. 7: APCO Nevada Chapter Meeting, Las Vegas. Contact Rick Bareuther, (775) 353-2315

Dec. 8: APCO CPRA Chapter Meeting, Pleasanton, Calif. Contact Gina Purvis, (323) 669-4450

Dec. 21: APCO Illinois Chapter Christmas Luncheon and Elections, Illinois. Contact Richard Nowakowski, (312) 746-9257

2001

January 8: Minnesota Public Safety Region 22 Planning Committee for 700 MHz Meeting, Arden Hills Training Center, Shoreview, Minn. Contact Andy Terry, (651) 296-7402; fax (651) 297-1669; andy.terry@dot.state.mn.us

January 16-19: Arizona 2001 NENA/APCO State Training Conference, Phoenix, Ariz. Contact Karen Allen, (408) 350-8772; karen_allen@tempe.gov

January 23-26: 2001 California Chapter of NENA Conference & Trade Show, Anaheim, Calif. Contact Steve Powell, (909) 866-0124; sjpowell@sanbernardinosheriff.org; www.calnena.org

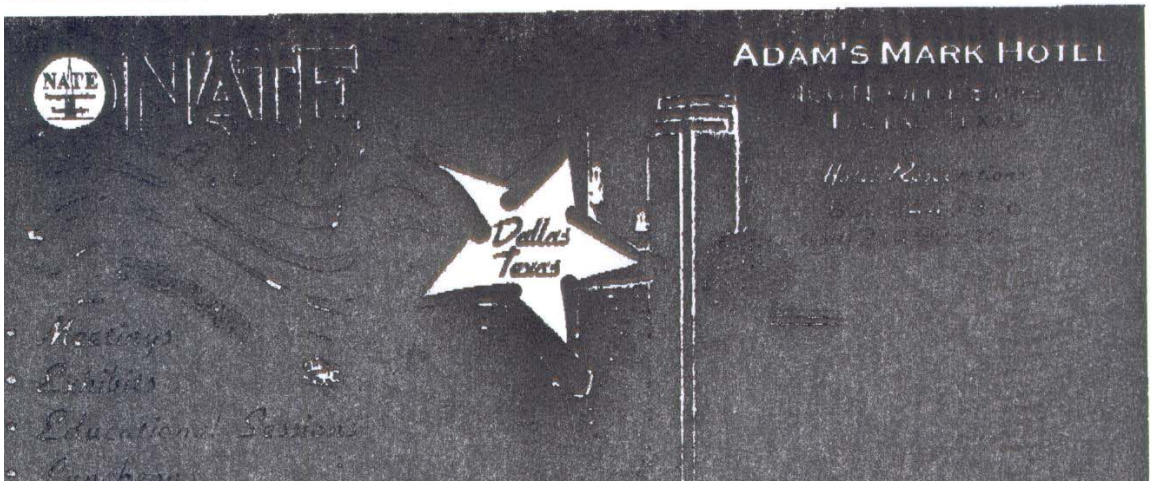
February: APCO International Gulf Coast Regional Conference, time and location TBD. Contact Krista Roberts, (972) 205-2109; roberts@ci.garland.tx.us

April 11-13: NENA-TX 2001 Chapter Conference. Contact Lisa Dodson, (713) 755-6911; lisa_dodson@ltc.co.harris.tx.us

April 24-27: APCO International North Central Regional Conference, Bismarck, N.D. Contact Rick Hessinger, (701) 328-8153; rhessing@pioneer.state.nd.us

May 13-17: APCO International/NENA East Coast Regional Conference, Lancaster, Pa. Contact Kathy Skiles, (717) 783-5567; fax (717) 783-4384; kskiles@psp.state.pa.us

May 21-24: Michigan 9-1-1 Conference, Amway Grand Plaza Hotel, Grand Rapids, Mich. Contact Nate McClure, (231) 722-3524; nmcclure@gte.net



2001

January

6–9: International CES, sponsored by the Consumer Electronics Manufacturers' Association; Las Vegas Convention Center, Las Vegas Hilton, Riviera Hotel and Alexis Park Hotel, Las Vegas. Contact: **www.CESweb.org.**

8: Minnesota Public Safety Region 22 Planning Committee for 700MHz: Minnesota Department of Transporation, Arden Hills Training Center. Contact: Andy Terry, 651-296-7402.

11: Missouri Public Safety Region 24 Planning Committee for 700MHz: St. Louis County Emergency Operations Center, Chesterfield, MO. Contact: Stephen Devine, 573-526-6105.

February

20–23: NATE, sponsored by the National Association of Tower Erectors, Adam's Mark Hotel, Dallas. Contact: 888-882-5865 or **www.natehome.com.**

March

20–22: Wireless, sponsored by the communications Industry Associatic Contact: 202-785-2842 or **www.wo**

28–30: International Wireless Con Expo, sponsored by *Mobile Radio* Las Vegas Convention Center, Las V Web site **www.iwceconexpo.com.**

April

1–4: ENTELEC, sponsored by EN Orleans. Contact: 281-357-8700 **www.entelec.org.**

24–27: APCO North Central Regi ence, sponsored by the Associati Safety Communications Officials– Radisson Hotel, Bismark, ND. C Hessinger, 701-328-8153.

May

6–9: Spring Vehicular Technology sponsored by the IEEE Vehicular Te ciety, David Intercontinental Ho Israel. Contact: 972-3-61 **www.congress.co.il/ieee_news/inde**

13–17: APCO East Coast Regiona sponsored by the Association of Pub ficials–International, Lancaster Lancaster, PA. Contact: Jay Groce 5084.

16–18: PCIA Tower and Site Mana ference, sponsored by the Personal tions Industry Association, Doral G Spa, Miami. Contact: 703-739-030

21–24: Telecommunications Rese tion Spring Conference and Exhi sored by TRA, Adam's Mark Hotel tact: Web site **www.tra.org.**

June

3–7: Supercomm, sponsored by T Georgia World Congress Center, At 800-278-7372.

24–27: UTC Telecom, sponsored United Telecom Council, Midwest waukee. Contact: 202-857-1881 or

24–28: NENA, sponsored by the N gency Number Association, Orland Web site **www.nena9-1-1.org.**

August

Mobile Radio Technology December 2000

700 MHZ REGIONAL PLANNING
KICK-OFF MEETING
(Re-typed from original copy)

JANUARY 8, 2001
Mn/DOT ARDEN HILLS TRAINING FACILITY

ATTENDEES: Andrew Terry, Mn/DOT; Dan Snorek, Tri-Country Hospital; Gary Lee Stevens, Iowa State Patrol; Rich Hester, Iowa State Patrol; Tim Lee Mn/DOT; Charles Venske, HCSO; Roger Laurence, HCSO; Rick Juth, MSP; Rey Freeman, GEO Comm; William Hering, Woodbury PS; Dan Gelle, Gold Cross; Mark Hoppe, Bluewing, St. Cloud; Jeff Schwiesow, Bloomington PD; King Fung, HCSO; Dave Pagel, Mn/DOT; Harry Hillegas, NPSPAC; Steve Pott, Washington County; Dan Bullock, Metro Transit; Gary Sigfriwius, Mn. National Guard; John McGough, Metro Council; Toni Malanaphy, Alliant Consulting; Roger Kochevar, Mn/DOT; Bill Dean, Metro Radio Board; Wayne Arrowood, Mn. EMS Board; Michele Tuchner, Mn State Patrol; Jeff Nelson PSC Montgomery; Len Koehnen, Consulting Engineer

MEETING SUMMARY:

Andy Terry, Mn/DOT Director of Electronic Communications convened the meeting at 1:10 p.m.

After attendees introduced themselves, Terry gave a presentation to provide an overview of the 700 MHz spectrum resource available to public safety, its potential uses and the planning process that will be required to most efficiently allocate the frequencies.

Terry began by outlining the goals of FCC docket #96-86 reallocating TV channels 60-69. These included relief of LMR congestion, public safety access to new digital technologies and improved interoperability.

Terry said that 24 MHz of 60 MHz was to be allocated to public safety to be used only for protection of life, health and property. Non governmental organizations would be eligible to use the frequencies but would require a letter of support from public safety entities.

The 24 MHz of bandwidth for public safety general use must be allocated through a regional planning committee process.

Frequencies to be used for interoperability will be allocated according to a national plan to be developed by the National Coordinating Committee (NCC). The plan would contain recommended digital I/O standards.

Terry said that the NCC has already submitted a report to the FCC recommending that the Project 25 Phase 1 (12.5 kHz FDMA) be the digital I/O standard. The report also recommended trunking on some interoperations channels and a common nomenclature for the interoperability channels.

A second NCC report due in February will include the national and regional planning guidelines.

Terry spent some time talking about the planning process as he expected it to evolve. He said that an approved regional plan would be required before the new frequencies could be licensed.

FCC has provided some general guidelines for the 700 MHz planning process. Most elements would be the same as the NPSPAC planning process used to allocate the 821 MHz frequencies.

Terry said that the FCC was encouraging participation by all eligible entities in the planning process. This will require 60 day notification of meetings in public safety publications and on public safety web sites. Meetings should be held in different parts of the planning region. E-mail lists should be set up for regular distribution of information.

The FCC was also requiring a written sign-off on regional plans by adjacent regions.

FCC certified public safety coordinators will be authorized to coordinate the 700 MHz frequencies.

Terry stressed that before the planning effort can get underway, the regional planning committees and frequency coordinators will need a common database. The National Institute of Justice has approved funding for such a data base and plan for it to be on line by February 2001. The FCC will most likely require all planning committees to use this NIJ database.

Terry noted that there were no TV stations currently using the 60-69 band in the Minnesota (Region 22) so the planning effort wouldn't be delayed while waiting for these frequencies to be abandoned. There were 60-69 frequencies being used in Wisconsin and Canada, however, and these could have a potential impact on how we allocate frequencies in this region.

The FCC has set a deadline of December 31, 2006, for an end to all analog broadcasting in the 60-69 band.

Terry closed his presentation by summarizing the goals for today's meeting. First of all, he wanted to get volunteers to serve on the planning committee.

He wanted to elect a chairman and officers and organize standing committees.

Terry said that he saw himself as temporary facilitator of the process until the committee was up and running. He said that Mn/DOT staff would be willing to provide some technical and administrative support to the 700 MHz effort and he thought the Radio Board would be willing to do likewise.

Terry asked if there were questions about the background information he had presented or about the proposed planning process.

Jeff Nelson had a question about the requirement that adjacent regions sign off on the 700 MHz plan. He wanted to know if the status of planning efforts in Wisconsin, Iowa and the Dakotas.

Andy Terry responded that he understood that Wisconsin had held a planning kick-off session. He did not know if North and South Dakota had done anything to date or if they were considered as one planning region.

With respect to Iowa, Terry noted that there were representatives from Iowa in the audience. He asked them if Iowa had initiated the process.

The Iowa representatives said that hoped to start the process in the next few months.

Len Koehnen asked if the 700 MHz plan like the NPSPAC plan would set limits on the time these frequencies would be available for public safety use. He also wondered whether these frequencies, like the 800 MHz, would be of most use to entities in urban areas.

Andy Terry referred the question to Roger Kochevar, the state frequency coordinator.

Kochevar said that he thought there would be a five-year limit as there was on the 800 MHz frequencies. On Koehnen's second point Kochevar agreed that the urban areas were making most use of 800 MHz frequencies. He thought that only five frequencies were now licensed in non-urban areas of the state.

Mark Hopi asked how the new frequencies would be used for interoperations. Would they be used for data as well as voce intercommunication? He expected that the FCC would make voice interoperations mandatory.

Terry said that the FCC requires digital modulation on wide band data channels. The NCC national plan will set the final standards for interoperability in the new spectrum.

Harry Hilligas asked if a date had been set for completion of the 700 MHz plan.

Terry replied that the FCC was allowing three years for regions to complete their plans. If there is no plan by that time the responsibility for allocation falls back to the frequency coordinators.

Roger Laurence noted that this whole process was set in motion by Congress. Congress told the FCC to start issuing licenses two years ago. He reported that there was some urgency to this matter and cited, as an example, the fact that Hennepin County MDT licenses were running out. He hoped that relief would come by licensing 700 MHz frequencies for wide band data transmission.

Laurence suggested that the 700 MHz planning process be put on a fast track. We needed these frequencies as soon as possible. He thought that this could be done because the National Committee had already provided a template for the planning process. Furthermore, this region didn't have to contend with current users on the 60-69 spectrum.

Andy Terry agreed that the process could and should be accelerated in this region.

Harry Hillegas asked if national APCO would be as active in the 700 MHz planning process as it was in planning for 800 MHz.

Terry said that APCO had a responsibility under contract with the FCC for the sorting of the 800 MHz frequencies.

Roger Kochevar said that the NIJ has been given the responsibility for creating and maintaining the 700 MHz database. There hasn't been a sort of these frequencies as of yet. The National Coordinating Committee was setting up signal levels for the frequencies to prevent interference. He agreed with Andy Terry and Roger Laurence that the absence of current TV 60-69 users will make our job much easier.

Mark Hopi asked whether utilities and other critical infrastructure users would be allowed to license these frequencies.

Terry thought that they would as long as their use was endorsed by public safety entities.

Len Koehnen said that the FCC was now looking into the question of whether utilities should be defined as essential public services. If so, they could be included in the public safety category.

Jeff Nelson was concerned that lacking a centralized sorting methodology we would not know what frequencies were being used in adjacent planning regions.

Roger Kochevar said that he expected the 700 MHz sort to be completed soon.

Roger Laurence thought that approval of our plan by adjacent regions made sense but the downside was that we couldn't complete our planning process until our neighbors completed theirs.

Roger Kochevar didn't think it would be possible to interleave 700 MHz frequencies the way we did with 800 MHz. He also didn't think there would be much demand for 700 MHz frequencies in rural areas if 800 MHz frequencies were still available.

Roger Laurence wanted to know how large a task it would be to come up with the regional plan and what the next steps were.

Andy Terry said that the most important task right now was to get a commitment from the appropriate user groups.

Roger Kochevar recommended that we keep the process as open and unstructured as possible.

Bill Dean wanted to know if there were any funds available for the planning process. He suggested that it might make sense to use a consultant to help facilitate the process as the Radio Board was doing with the 800 MHz interoperations standards and procedures.

Terry hoped that there might be some monies available to assist the planning effort and asked how the NPSPAC planning had been funded.

Jeff Nelson said that there was no funding directly allocated for the 800 MHz planning process but he thought that there had been a line item in the state APCO budget for planning.

Harry Hilligas recalled that the biggest problem in the 800 MHz planning process was getting non-metro participation. He thought this would be true for the 700 MHz process as well.

Roger Laurence believed that in this effort as in others like it a small core group would end up doing the heavy lifting. He suggested that e-mail was the best way to ensure broader input.

Terry recommended rotating the chair and committee officers to increase the level of buy-in and support.

Roger Laurence recalled that Hennepin County had provided the bulk of the staff support for the 800 MHz effort.

Andy Terry thought there could be negative implications if Mn/DOT led this effort. He added that Mn/DOT intended to play a strong role in the 700 MHz planning effort and had a major stake in its outcome.

Terry asked for volunteers who would be willing to serve on the planning committee.

Volunteering were Roger Laurence, Bill Dean, John McGough, Tim Lee, Roger Kochevar, Bill Herring, Page.

Roger Laurence suggested he ask for a show of hands by attendees of those who wanted to be on a committee mailing list or who would be available to attend a quarterly planning committee meeting.

All attendees responded in the affirmative.

Jeff Nelson believed that the best way to assure good attendance was to give notice well in advance of the meetings.

Andy Terry said that the FCC requires a 60-day notice.

Terry then asked for nominations for committee chair. He said that he did not want to serve because of the problems he saw with Mn/DOT leading the planning process.

Bill Herring nominated Steve Pott for committee chair. Pott agreed to serve.

Andy Terry agreed to serve as vice chair and John McGough volunteered to be committee secretary.

Andy Terry said that the NCC planing guidelines recommend standing committees for planning, interoperations and education/outreach.

Bill Dean volunteered to chair the Education Outreach Committee.

Roger Laurence recommended that these be interim officers serving until the full committee is operating and can elect a full slate of officers.

Those attendees agreed with this arrangement.

Steve Pott said that he would work with John McGough to create an e-mail meeting notification list and issue a notice 60 days prior to the first meeting of the 700 MHz planning committee.

ADJOURNMENT
The 700 MHz planning kick-off meeting adjourned at 2:20 p.m.

Region 22 700 MHz Planning Meeting
Mn/DOT Transportation Building, Conference room 604

Meeting Minutes of 3-14-01

Attendees: Andy Terry, Mn/ DOT; Roger Kochevar, Mn/ DOT; Bill Dean, Metro Radio Board; Greg Coleman, ComNet Ericsson; Mark Hopie, Blue Wing and City of St. Cloud; Gary Nyberg, Metro Transit; King Fung, HCSO; John Gunderson, Henn County Parks; John Tonding, Anoka County; Mike Hogan, Mn/DOT; Tim Lee, Mn/ DOT; Michele Tuchner, MN State Patrol; Doug Pearce, Stearns County; Rey Freeman, Geo Comm; Tom Cherney, MN Dept of Emergency Mgmt; Jerry Huettl, Mankato DPS/Blue Earth County; Kim Kallestad, Stillwater Fire Dept.; Ron Whitehead, Bloomington PD; Greg LaVick, Capitol 2-Way Communications; Donald Waller, Capitol 2-Way Communications; Gary Fried, Goodhue County; Roger Hand, Red Wing Public Safety; Steve Pott, Washington County; Dan Gelle, Gold Cross Ambulance; Greg Anderson, Moorhead/Clay County; Dan Nohr, Motorola; Bob Vandenbroeke, Carver County.

Meeting Summary:

Chair, Steve Pott called the meeting to order at 1:07 p.m.

Pott passed out an agenda. He advised the group that he would try to give adequate notice for quarterly and special meetings. 60-day notice is not required. Initial meeting notices were posted in the federal register. There was a discussion on the best ways to notify interested parties. Pott stated that he will use the attendance sheet from this meeting to notify attendees of the time and location of the next meeting.

Terry noted that there was a lack of attendance from greater Minnesota. Previous meeting notifications had a long lead-time, possibly causing people to forget. A discussion ensued on how to get better participation from greater Minnesota. A consensus developed that it would be a good idea to move the meetings around the state and that meetings should be held within 100 miles of the metropolitan area. The start and end times of meetings was also discussed and it was decided that the most convenient schedule would be to hold the meetings from 10 a.m. to 1 p.m., allowing people driving time.

Pott followed by indicating that notice of this meeting spurred many calls to his office. He further commented that most of the participation might come from the metro area due to the greater interest and need for 700 MHz in the metro. In choosing locations for future meetings Pott will try to pick sites that are within 2-3 hours of the metro. He will try to give 3 to 4 weeks notice. Next there was general discussion about meeting dates. It was tentatively decided that quarterly meetings would be held on the second Wednesday of each month in April, July, October and January.

Pott distributed the minutes of the kick-off meeting and a draft copy of proposed By-laws that had come from the NCC, and had been modified somewhat by Pott. Pott indicated that what he passed out was meant to provide a starting point for the discussion. Everybody took time to read the proposed By-laws. Much discussion ensued. Most centered on what would constitute a quorum and on whether each individual or each agency should have votes. A suggestion was made that no political subdivision should have more than a certain number of votes. Roger Kochevar said he felt that there should be a minimum number of people present from each type of agency for a vote to be considered valid. The suggestion was made that at least two of the three elected officers and a majority of members must be present for actions of the Planning Committee to be considered valid. It was suggested that an odd number of people be determined as the minimum for a quorum so as to insure a majority vote on any issue. The suggestion was also made that at least 11 individual voting members and at least 5 types of political subdivisions be present to constitute a quorum. There being no objection, these amendments were adopted. Ron Whitehead raised a question about whether the Metropolitan Radio Board was a political subdivision. John Tonding moved that the Radio Board be considered a political subdivision and have one vote. The question was called and the motion passed. Bill Dean moved to strike a provision prohibiting voting on issues affecting an individual's agency. The motion passed. Next there were a number of comments on what would constitute a member. Andy Terry said he felt there should be as much openness and inclusiveness as possible. He also suggested a "failure to attend" clause be removed and so moved. The motion passed. Steve Pott suggested that a clause allowing proxies and action by writing be eliminated. There being no objection, the amendment was passed and the clause removed. It was suggested that meetings could incorporate teleconferencing and that votes by audio or video conferencing would be acceptable. There was consensus that that was a good idea. Ron Whitehead moved that final action at a meeting be limited to those items on a published and pre-distributed agenda. He further moved that any vote taken on a non-agenda item could not receive final approval until the following meeting. The motion passed. It was suggested that the offices of secretary and treasurer be merged. There being no objection, the amendment was adopted.. There were no further suggestions or motions. The question was called on the By-laws as amended. They were unanimously given preliminary approval. Pott announced that he would rewrite the By-laws, incorporating the amendments approved by the group, and have copies available for review and final approval at the next meeting.

Chairman Pott then announced that he would take nominations for other officers. First he took nominations for vice chair. Bob VanDenBroeke nominated Andy Terry for vice chair. John Tonding seconded the nomination. There being no other nominations, the chair called for the vote. Terry was elected on a voice vote. Pott then took nominations for secretary/treasurer. John Tonding nominated Michele Tuchner. Bob VanDenBroeke seconded the nomination.

There being no other nominations, the chair called for the vote. Michele Tuchner was elected secretary/treasurer on a voice vote.

Pott then summarized the purpose of forming this committee. He briefly reviewed the kick-off meeting minutes and discussed the history of the 700 MHz band. He explained that Wisconsin is currently in the planning stage for 700 MHz. At this time there has been nothing available about the status of the remaining adjacent states, North Dakota, South Dakota, and Iowa. It will be required for us to get concurrence from our neighboring states before implementation of a Minnesota plan.

Roger Kochevar was called upon to discuss frequency issues. He said he would prepare background material for presentation at the next meeting. He indicated that NIJ will set up a data base. The challenge will be to figure out how to sort frequencies with Wisconsin.

There are many various technologies and they have various slots available of varying bandwidths. The feds want each region to fill in the slots and then they will determine how to sort them. Frequency coordinators will have to sort this out. They will get some help from the National Coordinating Committee. The NCC will provide some guidelines and we should have these within the next couple months. The 700 MHz plan needs to be completed within the next 3-4 years.

Pott asked those present what the goals of their individual agencies were. King Fung said that Hennepin County will need frequencies for their CAD/MDT system soon, and indicated he hoped the process could proceed more quickly. Gary Fried said that Goodhue County has a bottleneck involving capacity. A suggestion was made to survey agencies to get a grasp on what each agency's needs and wants. The discussion then turned to the survey completed by Mike Hogan, Mn/ DOT, on the 800 MHz statewide rollout plan. Copies were distributed to those who wanted them.

There then followed a discussion on what funding might be available to this committee. Pott indicated there is $2500 available, broken down as follows: $300 for meeting notices and start up costs, $1400 for regional planning preparation (probably for printing copies of the final plan) and $800 for training. It was suggested that we might want to hire a consultant. If we did this we would need to come up with a funding source. There were questions about the possibility of obtaining funds from APCO or the Metropolitan Radio Board. The conclusion is that as it now stands this is basically an unfunded project.

The discussion then turned to a sub-committee structure. It was generally decided to create the following sub-committees: Education and Outreach, which Bill Dean offered to chair; An Operations subcommittee, and a Technical subcommittee.

Steve Pott announced that he would try to obtain some reference material for the next meeting. Attendees were also advised there is much information available on the World Wide Web at www.fcc.gov.wtb.

There was no other new business. The meeting was adjourned at approximately 3:50 p.m.

Region 22 700 MHz Planning Committee
Mankato Convention Center

Meeting Minutes of 4-11-01

Attendees: Andy Terry, MN DOT; Roger Kochevar, MN DOT; Bill Dean, Metro Radio Board; King Fung, HCSO; Michele Tuchner, MN State Patrol; Jerry Huettl, Mankato DPS/Blue Earth County; Ron Whitehead, Bloomington PD; Steve Pott, Washington County; Dan Gelle, Gold Cross Ambulance; Bob Vandenbroeke, Carver County; Bob Meschke, Martin County.

I. Call to Order

Chair, Steve Pott called the meeting to order at 10:20 a.m.

Meeting Summary:
Pott distributed an agenda and copies of the new by-Laws. These by-laws were re-written by Pott to reflect the changes discussed at the last meeting. Andy Terry moved to accept the by-laws, the motion passed.

Andy Terry and Roger Kochevar led a discussion on what to do with the 700 MHz channels. They explained the need to develop a work plan and to decide how this block of frequencies will be assigned. The National Coordinating Committee will work with the frequency coordinator (Roger Kochevar) to provide some direction. Roger Kochevar has the most expertise on this, as he was involved with spectrum allocation for 800 MHz. Roger Kochevar discussed different philosophies for frequency allocation such as pooling vs assigning as requested. One disadvantage of pooling is that you don't get as efficient of a pack, eventually some agency would be left without channels. An advantage to pooling is that the people that have the money to build can get what they need. However then some agencies may hold on to them and never do anything with them and if another agency wants them and needs them they can't get them. Kochevar suggested that we could mix and assign some, and save some, maybe 10%. Or we could assign in some areas and pool in others.

Roger Kochevar, King Fung and Andy Terry talked with National Coordinating Committee. They drew up a handout that compares how much 700 spectrum we have with what we got with the 800 NPSAC. Channel centers and separation have not been finalized yet with 700 MHz.

Pott questioned if we could assign the 700MHz channels like we did the 800 MHz channels. Kochevar explained the method used in assigning channels in our 800 spectrum. If we followed the same model we used with 800, we would have to have more geographic distance between users. Pott commented that he realized that this may be more difficult, but it seems as though we have been able to overcome the frequency overlap in the metro.

Then there was discussion on what user's needs were and whether 700 MHz would be able to meet their needs. The question was asked if 50 KHz would be enough bandwidth for pushing data. It was suggested that to push video one would need to aggregate maybe three 50 KHz channels. It was brought up that many agencies are considering going to CDPD, these users may be looking at 700 MHz as an alternative to meet their needs.

Whitehead raised the concern that in the next five to ten years users will be looking for a new system because what they have won't be enough. Kochevar said that most VHF users will eventually migrate to narrow band use because the equipment will be available, and there will be less interference. And, if a user goes to narrow band they will be able to get more channels from narrow band.

Roger Kochevar then handed out a draft of a general channel assignment plan for 700 MHz.
He listed five criteria needed for frequency assignment. First, determine the channel total to be assigned or left in an unassigned pool for future use. Second, define the service area. (Mobile coverage vs. Portable coverage). Third, define the interference criteria [Narrowband and Wideband (co-channel and adjacent channel)]. Fourth, what RF coverage model to use (Longely-Rice, Okumura, Bullington). Fifth, define the non-technical criteria for assigning channels possible non-technical criteria: 1) population, 2) eligible political entities such as, counties, cities, major cities, 3) area of political entities, 4) adjacent state considerations.

A presentation by David Eierman, Senior Staff Engineer with Motorola on the National Coordinating Committees 700 MHz transition plan followed. Dave presented a wealth of information about the national process, and the status of other regional planning processes. A copy of his Power Point presentation is available from Michele Tuchner at Michele.Tuchner@state.mn.us

Following the presentation, we discussed the channel allocation again. There was discussion about the NPSPAC process and how it might have gone differently if it was done today, with more information about the technology that is available. We decided that resolving this issue is the core of our process, and we need to meet in the near future to discuss it further.

Mn/DOT discussed their intent to apply for the 700 channels designated as Statewide channels. Pott pointed out that if the State chose not to license them, they would become part of the regional planning process. Terry felt it was best to move ahead with the licensing process at this point.

There was discussion about funding available for the regional planning process. $2500 is available. Bill Dean thought we should apply for the money now, and use it as necessary. Pott was reluctant to apply for the money until after costs

were incurred, to simplify the accounting and reporting requirements. No action taken at this time.

There was discussion about developing a work group to deal with the frequency allocation issue. Pott thought that it would be difficult to identify a work group when the entire Regional Planning Group has such an open structure. It was decided that additional meetings will be called between the quarterly meetings, consistent with the by-laws, but significant decisions will be held for the quarterly meetings.

Andy Terry offered Mn/DOT's video-conferencing equipment for future meetings. This would allow the meeting to be held at all Mn/DOT district offices throughout the State.

Adjourned at 1332 hours.

Region 22 700 MHz Planning Committee

Video Conference

Meeting Minutes of 7-11-01

1010 Andy Terry did roll call, of remote sites, Rochester only site in addition to Mn/ DOT Central Office.

Attendees: Gary Fried, Goodhue County; Roger Hand, Red Wing Public Safety; Blaine Hentz, Wabasha County; Ron Whitehead, Bloomington PD; Roger Kochevar, Mn/DOT; Andy Terry, Mn/DOT; Steve Pott, Washington County; Michele Tuchner, MN State Patrol; Mark Hopie, Blue Wing and City of St. Cloud; Jerry Huetel, Mankato DPS/Blue Earth County.

Pott lead off with introductions. Apologized for not getting agenda out. Pott requested any items to be added to agenda. Request to discuss funding of new technology.

Andy Terry discussed the purpose of the meetings, planning 700 frequencies, separate from partnership that is going on with Olmstead County. Pott advised that some of the questions would probably get answered as we discuss what 700 can do and what 800 can do.

Roger Kochevar placed copy of honeycomb map on display. The handout showed one possible scenario for distribution of channels, similar to cellular company strategy. There are 3 categories of channels for public safety in the 700 MHz band that we need to deal with - state channels, local channels, and data channels. There are ninety-six 12 1/2 kHz state channels. Mn/DOT has applied for these licenses. These can be used anywhere in the state. They have to be coordinated with adjacent states.

Jerry Huetel asked are the state frequencies reserved only for state use? No.

Hopie asked the bandwidth of the state channels. Kochevar said that there is still discussion, but it appears the thought is that they should be 12 1/2 kHz.

Roger then discussed the 154 local channels. These are likely to be 25 kHz bandwidth, to accommodate different technologies.

The 3rd category is data channels. They are wideband, 50 kHz, and can be aggregated, up to 150 kHz. This seems to be the future in data communications. Right now we're limited to 25 kHz, so having 50 kHz, will be a significant change. Roger couldn't recall the number of channels available, but there are many available for allocation.

A document showing the FCC channel allocation plan was placed on display. The NCC is coordinating the allocation of these channels. They left some

channels open for future allocation for other technologies, and for guard channels to protect the public safety channels from interference. FCC has adopted Project 25 (APCO) as the digital standard to be used for the interoperability channels.

Kochevar explained that we have some experience with the NPSPAC plan, and we are trying to improve on that plan. We're exploring a cellular approach to the 154 local channels. We did this with the 96 state channels. Pointing to the cell map, he explained that they intend to use a cellular pattern of eight clusters. Each cell is a 12 1/2-mile radius. We thought we'd take the 154 channels and group them into 19 channels per group or 8 groups of 19. We've struggled with the size of the cells. Our coverage is based on 330 ft above average terrain, antenna. For the coverage analysis, the power level used was 35-watt mobiles, and 3-watt portables. We get 95 % coverage (outdoors on the belt) with 330 ft above terrain height antenna. The tradeoffs are if you make the cell larger, you get wider coverage, but you can't reuse the group again for many miles. If you make cell too small, it can't be made useable with the technology we have today. We're trying to balance the cell size based on current technology and future technology.

Pott said we talked about the design of this in the higher populated areas, how about the rest of the State? Roger responded that they started to look at this cell concept for the local channels, but when we start the allocations we thought we'd do it by population, the higher population would have the most channels, because they have the most need. We are gong to use all 154 in metro, and then reuse them out-state.

The ground rules used for this idea were:

1) Channel pairs allocated in an 8-cell pattern. Cells have 12.5 mile radius
2) Service area is determined by cell boundaries, that means we would restrict coverage to the cell boundaries or somewhat past the boundaries, but we'll have to decide how to do that
3) Adjacent channel cell allocations are protected by criteria to be developed by the NCC.
4) Frequency allocation for cells split by political boundaries may be done on an area basis. For example, if a cell has 19 channels and the cell lays 70% in County A and 30% in County B, County A would get 70% of the channels. Or it could be done on a population basis. For example, if the cell was split 70% and 30%, but the population in each of those areas was the same, the channels would be split equally.

Another model that could be used is the NPSPAC model, but the cellular model would use the channels more efficiently.

The cellular plan is gaining the attention of states surrounding Minnesota. That will help with the coordination process in adjacent states, and may help with some "edge site" issues.

Pott asked how many more frequencies does the metro area need? The metro counties have already benefited from being the largest population area. They already have a system built. Is it a good idea to use that model again? They need more channels to support the system in the future, but it should be a smaller number than the NPSPAC allocation.

Pott suggested that maybe we need to ask how many frequencies everyone needs, instead of giving channels based only on population. Maybe assign based on how many everyone needs. (i.e. Bloomington may need 12 and Hennepin Co, may not need all 19 because they could use the 800 channels that Bloomington may not need any longer).

Since Washington County and Dakota County don't have any 800 MHz channels, do you give them more 700 channels, rather than trying to find 800 channels that will work, and leave those for the metro system? Maybe we should develop a formula on how to assign rather than base it on population base or square miles, so that we can best meet everyone's needs.

Andy Terry stated that maybe we do the opposite of NPSPAC, because the metro area got more NSPAC, maybe the collar counties should get more 700 MHz frequencies?

Roger stated that, politically, it might be hard to do it that way.

Ron Whitehead commented that Bloomington is experiencing conflicts with Nextel, and their 800 channels, so maybe they would want 700 MHz, to eliminate conflicts. Pott said maybe they would consider relinquishing their 806 channels in return for a larger number of 700 MHz channels. That may be a better option for the metro system also rather than dealing with 700 MHz channels as part of the established 800 MHz system.

Terry said we talked about leaving some in a pool, for those who come to us with a need.
These could be allocated on a first come first serve basis.

Hopie asked if MN DOT would be willing to develop an RF coverage plan and frequency assignment plan, to better evaluate the issue. Mn/DOT agreed.

Pott expressed concern about sorting the channels assuming 25 KHz bandwidth. One 25 KHz channel cannot be used as two 12 ½ KHz channels using the metro system technology. We would get nearly twice as many useable channels if 12 ½ KHz bandwidth were used.

There was discussion about the impact of the cellular approach on countywide coverage. Simulcast is currently used to cover larger geographical areas. It may take as many as 68 channels in a multicast system to accomplish the same loading as 8 or 9 simulcast channels.

Roger agreed this is a major issue; do we want everyone to do simulcast within his or her county?

Andy Terry suggested that the new concept that was introduced today might be a dual standard, one for metro and another for greater MN. Maybe we need to be more flexible and assign some and leave some pooled. At some point we need to submit a plan, but we can modify the plan in the future.

There was discussion about the coverage analysis assuming 330 feet above average terrain. Tower space and construction is getting more difficult. This may not be possible in many areas.

Roger said that their experience with the 800 system is that in building coverage is comparable to VHF. Ron Whitehead from Bloomington said that their in building coverage with 800 MHz hasn't been as good as they would like.

Ron Whitehead: There is some potential that you can center the pattern differently, as you get out-state, this maps seems to suggest this pattern once set must be repeated as is. As you get to the less populated areas, could you re-center some of these cells? There was discussion about the number of channels needed outside of the metro area. Roger said that only about 5 licenses have been issued on the 205 NPSPAC channels anywhere in the State.

Andy Terry asked about coordinating the 700 Planning meeting with the NPSPAC meeting. He said that he needs to hold a meeting, and thought it would boost attendance if it were held the same time and location as the 700 meeting. He thought he would try to set a meeting prior to the October 700 MHz planning meeting.

Pott polled the group about the use of the videoconferencing. They felt it was acceptable, but it would be good to have the same handouts at all locations, rather than trying to look at them on a television screen.

Adjourned at 12:38 pm.

Region 22 700 MHz Planning Meeting
Kelly Inn

Meeting Minutes of 10-10-01

Attendees: Steve Pott, Roger Kochevar, John Gunderson, Kim Kallestad, Mark Hoppe, Bob Schnese (Motorola), Andy Terry, Michele Tuchner.

Called meeting to order at 1015 hrs. 8 people in attendance - not enough for a quorum.

Steve Pott had discussion with Bill Dean from the Metro Radio Board. He, and others, is unavailable for the 700 MHz meetings due to their regularly scheduled System Managers Group meeting. They would appreciate consideration of a change in the meeting dates. Those in attendance felt that a change to the second Tuesday of the quarter, rather than the second Wednesday, would work. The quarterly meetings are scheduled in the by-laws, and cannot be changed without proper notice, and a larger group of voting members. Will put the issue on the upcoming agenda.

Andy Terry suggested another change in wording for the by-laws similar to what is being considered for the NPSPAC Committee. The wording is still being developed but it basically allows business to be conducted even if a quorum is not present. Any action taken at the meeting becomes effective after the minutes are distributed and an amount of time for comment/objection has passed.

The initial sort of the 700 MHz frequencies is scheduled to be done prior to the April meeting. That may generate enough interest and participation in the meeting to make these by-law changes.

Steve Pott talked about the NIJ funding that is available, and whether we wanted to spend it before the end of the year, or lose it. Discussion about whether the funds could be used to attend the NCC meeting (Terry), or PSWN (Pott) meeting. Terry suggested spending dollars on printing of final report. Kochevar thinks we will need to send someone to NIJ training, after the sort is done. The feeling of the group was that training and publishing costs were more appropriate than a conference or meeting. (NOTE: Steve Pott received an e-mail message from Mark Hoppe following the meeting and he had learned that the NIJ funding does not go away, and then renew at the end of the year. Mark spoke with the National Law Enforcement and Corrections Technology Center in Colorado, the agency managing the funds. They were surprised that we hadn't applied for the money yet, and recommended that we do so. We had discussed applying for the money at an earlier meeting and decided not to, at that time. Steve Pott will discuss with Andy Terry and Michele Tuchner to determine who will act as the fiscal agent, and we will apply for the money if we can make the proper arrangements.)

Discussed the formation of the work group, and the meeting schedule. The intent is to meet once each month on the second Wednesday of every month, at 10:00am at the Kelly Inn, 10th floor. The purpose of the meeting is to develop discussion points to help make the quarterly meetings more productive.

Roger Kochevar discussed the sort criteria that will be used by NPSTC (National Public Safety Telecommunications Council). The sort will be similar to the NPSPAC sort of the 800 MHz frequencies - by County and major cities in 25 KHz blocks. There was discussion about the possibility and process for modifying the sort. If changes are going to be made in the Metro area, or along any other border, modifications will need to be coordinated with neighboring states.

We discussed the possibility of asking the FCC for definite date when the 700 MHz channels will be available. Canadian TV Channels are still an issue for northern Minnesota. If a date is announced, vendors might be more motivated to develop equipment.

There was discussion about how we will organize and write the 700 MHz plan. NCC has written a comprehensive draft. Final draft guidelines for 700 MHz are available on the NPSTC website (NPSTC.org). We could also get a head start by developing concepts on how we may want to modify the sort. NYSTEC (NYSTEC.com) has published the criteria that will be used to perform the sort. One criterion that will be considered is need. There was discussion about how need could be determined on a national basis.

One of the technical parameters that will be used is a much more conservative interference model. Compared to the 800 MHz NPSPAC plan, this interference model will re-use the frequencies at a greater distance.

Mark Hoppe asked how they are going to address terrain. Kochevar wasn't sure terrain would be an issue in our state, not mountainous. Mark Hoppe advised that it appears they pick the highest point in your area.

Terry asked how much flexibility we have to modify the sort; are there restrictions? Mark Hoppe felt that it was negotiable if we didn't affect the other regions. Pott reiterated that as we discussed at work group meeting, we agreed with Mark Hoppe, we should be able to make modifications if it didn't interfere with other regions.

The discussion turned to the list of discussion points that was developed for the meeting. These are not listed in order of importance or priority, they were simply recorded during the work group meeting in the order they were discussed.

1. *The RPC must have a working understanding of the criteria for the 700 MHz Pre-allotment process.*

Develop a document discussing, in non-technical terms, the entire process. Provide a summary of the NYSTEC process. If this is properly written and formatted, it can be part of the final plan. Questions to be addressed include: What is the sort criteria? How will NYSTEC determine needs? How will terrain be considered in the sort process? What is the feedback process for the RPC to provide input/modifications to the sort? What training is available? What is the process for modifying the original sort?

Kim Kallestad asked how much of this process is repetitive from the 800 MHz; could we get some guidance from 800 group? Roger Kochevar thought it would be good to have an informational document on 800 MHz, NPSPAC, but we were unsure if that had been done. We will look into that group as a resource.

2. *The RPC should develop a process, which will achieve maximum utilization of a channel within a county. The RPC should take an active role in that process.*

   Channels will be allocated for use by eligible users within a County. Assignment within the county can be left up to the county or done by the RPC. There was discussion about the allocation process within a county. Relationships between officials of eligible user agencies vary from county to county. The RPC should develop a documented process so all users have a chance. There was a good deal of discussion about a tiered approach to the allocation. Everyone in attendance agreed that the channels should be used within a specific period of time or re-allocated to another eligible user. One suggestion was that we leave it up to the counties to resolve issues within their boundaries, and if they can't reach an agreement they can appeal to the RPC, then the FCC. The RPC should take responsibility for the issues that develop as a result of the plan. Mark Hoppe said that we might want a two-step process, first show need, and then show utilization.

3. *The plan should have sufficient flexibility so those counties can pool their channels for a regional system.*

   Andy Terry felt no one would object to that as long as it doesn't impact anyone outside the boundaries of the joint system. If you are going to cause interference, you could still possibly do it with a waiver (concurrence) from the agency impacted. Steve Pott felt it is important to define a shared or regional system. Andy Terry felt Washington County's current system is a shared system, to become a regional system; it would include wider multiple counties use. One way to determine allocation may be to consider distribution by PSAP. Steve Pott suggested three different definitions - shared, multi-county, or regional systems.

4. *Channel loading should not be used for channel allotment because there are better methods available. RPC should develop a multiple factor weighting scale. Then assign channels by a predetermined formula.*

   Developing a formula that considers many factors will be very difficult. Consideration could be given to busiest time based on different categories of users, police (night), city use (day), or fire (anytime). Discussed the 100 units per channel assignment formula. Mark Hoppe pointed out that technology would also drive the number of channels needed. Some technologies do not allow simulcast, so if you have 3 sites, you need three channels. Does simulcast mean more efficient use of the frequencies? Can we limit technology by making that a requirement? Should we make it a requirement? Mark Hoppe said that 6.25 KHz technology cannot use simulcast. Some attending the work group meeting had thoughts about a formula; we will discuss further at the work group, and bring back to the group.

5. *Users should be treated basically equal. No user should be considered more noble then another.*

6. *The members of equal treatment of users should be left up to the counties rather then the RPC.*

   Discussion of #5 & #6 were combined. Mark Hoppe said that historically police, fire and EMS typically get newer technology and the first shot at the frequencies. Mark Hoppe suggested that if public works wants frequencies, they go to the county to get concurrence for use. Andy Terry suggested that counties develop a countywide use plan. Perhaps give the county 5 years to develop plan, and submit to the RPC, if not done, those frequencies can then be licensed to any other eligible users. RPC should create a model plan for counties to use and follow.

7. *All members of the working group agreed that the RPC should not develop policies that force an entity to use both 700 MHz and 800 MHz. The "near – far" Nextel problem may make this impossible.*

   Should metro expand on 800 system, and the rest be saved for those not on the 800 system? Should NPSPAC frequencies that are not be used now be kept in reserve for expansion of the metro/state system while the 700 frequencies are used by "non-participating" agencies? Mark Hoppe felt there are technical and financial reasons to build a system using one frequency range. A system should be on either 800 or 700, due to coverage issues, antenna systems; etc. Radios that operate on one band will be less expensive than those that operate on both. Our goal should be to facilitate interoperability between 700 & 800. If our goal is to address spectrum management, rather than just the allocation of the 700 MHz band, our goal should be to develop a plan to eventually allocate all the 800 channels to the

metro/state system. Roger Kochevar pointed out that it would take a modification of the NPSPAC plan to do that. Roger Kochevar said that there is discussion taking place about trading channels with the SMRs to get around interference problems, like those being experienced with Nextel. Nextel may need to buy out public safety frequencies and move public safety agencies to another band. Bloomington is looking at this. The FCC would have to change the rules, but they're considering the change because they allowed this problem to happen. We will need to watch this to see what happens.

8. *The channel sort should focus on the metro area and larger cities such as Rochester, St. Cloud, Duluth, Moorhead, Mankato and others. That plan should then drive the allotment in other parts of the state.*

   The group felt that this point is non controversial, but will re-word discussion item #8 to reflect county boundaries rather than cities, to be consistent with the sort.

9. *All members of the working group agreed that the sort should be based on portable on the belt coverage.*

   The group agreed that we need to evaluate the initial sort results to see how it will address portable on the belt coverage in residential buildings. We should relay our suggestion to NYSTEC for the initial sort.

10. *The RPC may develop ground rules to "shoehorn" low power applicants such as public works, golf courses, and building among high power users on the sane channel.*

    We need to evaluate this need after the initial sort is complete. Roger Kochevar suggested that we might want to define the users, and needs of the users (for example in building, campus, etc.).

11. *Assigning channels for exclusive low power use may be wasteful in at least the near term because it is expected that radios may be too expensive for unsophisticated users.*

    Delete and combine with #11.

12. *The RPC should link 700 MHz allotments to 800 MHz channel licensing. Allot a greater proportion of 700 MHz channels in the metro Collar Counties than in counties already licensed with a substantial number of 800 MHz channels.*

    Delete and combine with #7.

13. *The RPC should leave as many channels as possible unassigned to be coordinated on first come-first served basis. There probably will have to be an allotment of channels for the border counties.*

    Roger Kochevar thought we should remove 10 channels from the initial sort. Mark Hoppe, I think if we can justify utilization, we should be able to use all that are available. If that means all are allocated, then we need them all. Refer to discussion in #2.

14. *Being able to be used anywhere is a unique advantage of the State channels. It allows them to be used to solve channel shortage problems where not enough channels are available. The State of Minnesota should be allocated channels from the general pool for limited use at specific locations. This will allow valuable state channels to be used in a more advantageous manner.*

    There was discussion similar to that in #13. The State has more than 90 channels allocated for statewide use. Everyone agreed these are premium channels and may be valuable for solving border problems. There was discussion about what the state intends to do with all of these channels? Roger Kochevar said they had no immediate plans, but they may be needed to support the rollout of the statewide system. There was also discussion about the use of 10 of the interoperability channels for problem solving. These channels have a restriction that they need to be abandoned if there is a major event requiring them for interoperability. Refer to discussion in #2.

15. *Allot wideband data channels in a manner to encourage a metro-wide community data system.*

    Roger Kochevar talked about the preliminary data system design that was expected to piggyback on the metro 800 MHz voice system. Steve Pott said that he remembers the NCC requiring a minimum of one wideband channel be allocated to each County. The group felt that it would be a good idea to encourage participation on a wide area system, but allow a county to have some capacity of their own. One way to encourage participation would be to limit bandwidth to 50 KHz unless you are part of the region wide system. Andy Terry said that we would have to see how the sort comes out, before making any further decisions. Steve Pott suggested that we concentrate on allocation of the voice channels first so licenses can be issued, then work on the allocation of the data channels. There was discussion about the possibility that Hennepin County is interested in building a system on these channels in the near future. We felt that enough work could be done to accommodate that, prior to allocation for the entire metro area.

16. *Allot unused interoperability channels for general use.*

    Roger Kochevar said that these channels could possibly used for "wild card channels", for problem solving. Also see discussion in #14.

17. *A limited number (6) of the frequency pairs should be dedicated as radio-to-radio channels. Both sides of the pair should be able to be used for mobile or portable operation only.*

    Roger Kochevar mentioned the trouble that we had with this on the 800 MHz system, so he thought we should consider it as we develop the plan. Steve Pott was concerned that we used perfectly good 800 MHz channels for 'scene of action channels', and precluded them for use system-wide. We will need to wait for the sort to discuss this further.

The next work group meeting on November 14th, at 10 am at the Kelly Inn, 10th floor.
The following work group meeting is on December 12th at 10 am at the Kelly Inn,

The next RPC meeting is scheduled for January 9th at 10:00am using the Mn/DOT videoconferencing system. The “base” location of the meeting will be announced in the future.

Adjourned 1:20 pm

Region 22 700 MHz Planning Meeting

Meeting Minutes of 1-9-02

Secretary arrived late 1040 hours

In attendance: John Gunderson - Hennepin Co Parks, King Fung – Hennepin County, Steve Pott – Washington County, Andy Terry – Mn/DOT, Roger Kochevar – Mn/DOT, Michelle Tuchner – State Patrol, Mark Hoppe -

Discussed the difficulty we have had in getting a quorum. A change in the by-laws is required if we want to re-define a quorum. With the exception of the first couple meetings, we have not had a quorum. The issue will be on the next meeting agenda, and we will consider changing it, if we have a quorum. There was discussion about ways to draw more people to the meetings. Better advertising and changing the day of the meeting will be considered.

Another option discussed was to mail the draft plan when it nears completion and provide time for input. The final plan would require approval, in person, based on the current by-laws.

Those present felt that changing the meetings from the second Wednesday to the second Tuesday would not present conflicts.

Pott explained that a working group has been meeting on the second Wednesday of every month to develop discussion points for this meeting. Anyone interested is welcome to attend. The meetings are held at the Kelly Inn at 10:00 am.

Roger Kochevar handed out a letter to vendors, asking for information about their interest or commitment to developing equipment that operates on 700 and/or 800 MHz. We also want to know if their systems will operate on 12.5 or 25 KHz bandwidth, so we can make decisions about the most efficient use of the channels, especially in the metro area. The group agreed that the letter should be sent out to provide the committee with more information.

Roger Kochevar led discussion about modifications to the sort. NYPSTEC will be performing the original sort using 25 KHz. Discussed distributing the letters to vendors. Deanna @ MN DOT will send letters out, all responses will come to e-mail to Pott, and Hoppe can field questions.

Roger developed a draft design for letterhead. Some minor changes were made and the letterhead will be used until a quorum can formally accept.

Pott asked about the importance of developing a website? There has been discussion in the past about pros and cons of approaching Mn/DOT or the Metro Radio Board. One suggestion was to talk to APCO. The primary purpose would be to make the information accessible to everyone. More discussion when we

have a quorum. Roger Kochevar reported that the sort process is underway. He has spoken with David Funk, and found they are still negotiating a contract with NYSTEC. When approved, the sort will include the whole country. This initial sort will provide a baseline for the regional planning committees to begin their process. We will be able to make modifications to the sort, as long as they don't interfere with surrounding states. We (MN) will have to work with Wisconsin if we deviate from the sort, especially near the highly populated counties of the Minnesota metro area. Training for the NIJ database will also be provided sometime this year.

Roger Kochevar explained that the initial sort parameters would use 25 kHz channels (4 adjacent 6.25 channels for a total of 25 KHz), which will result in 154 channels for allotment. They will also use projected 2010 population data. Based on the experience with the 800 MHz channels, Roger thinks the channels can be reused in 55-65 miles. The interference criteria for 700 channels will be more conservative than it was for 800 channels.

Roger distributed a document showing an initial analysis he had performed using some of the criteria described above. There was discussion about the intent to designate 3 of the 4 channels in a group to voice and the other to data. We will need to wait for the initial sort before that can be addressed.

NYSTEC is sorting by county. Rather than assign to the counties to distribute, maybe consideration should be given to allocating by PSAP. This will allow more flexibility for a PSAP if they have plans that are incompatible with a County. This idea was proposed by Pott, but needs to be discussed further.

Roger feels meeting the needs of the metro and collar counties are critical to this plan. The greater MN area will likely have more than they need, and have used very few of the 800 channels. Pott felt that we should also try to develop a way to identify need, not just automatically give the channels to the PSAPS. Do the agencies that are/will be using the metro system need as many voice channels as those who may build other systems? Hoppe asked if there should be a hierarchy of who gets first priority for channels. Kochevar we're trying to organize our comments, and we've come up with these discussion issues.

Andy Terry asked if we are going to list all of our ideas and thoughts and then write all of them into a plan and then ask for everyone to comment on them, or are we going to work through our ideas, and then submit our final ideas in a plan for comment. Pott said that we should submit our final ideas in a plan, along with any unresolved issues. Everyone has an opportunity to participate now, and it will be impossible/impractical to rehash all of the ideas and issues by mail.

Roger handed out Discussion Issues from the last meeting in Oct; we need to list which ones need a decision. And then are there some questions/issues that once determined will drive another issue. We need to whittle away at this and incorporate what's applicable into the plan.

King Fung said that we need to discuss these issues with more people, particularly those on the SMG. Pott agrees. An attempt will be made to change the meeting date and/or time to allow more participation by those involved in the

Metro system planning process. King asked why are we only looking at 800 MHz allocation to help determine needs for 700; why not VHF and UHF? Roger said that UHF and VHF are not planned bands, and cannot be tied together. Andy Terry said that we also need to consider the turn back channels.

The next meeting will be held on Wednesday April 10.

Meeting ended at 12:55 pm.

Region 22 700 MHz Planning Meeting
St. Cloud MN DOT Building

Meeting Minutes of 4-10-02

Attendees:
Steve Pott, Washington County, Andrew Terry, Mn/DOT, Mike Kahl, Granite Electronics, Rolly Helgeson, Wright County, Roger Kochevar, Mn/DOT, Mark Hoppe, Blue Wing Communications, Ron Whitehead, Bloomington, Dave Pagel, Mn/DOT, Greg Coleman, M/A-Com, Jerry Huettl, Mankato P.D., Kathy Karels, Mn/DOT, Jeff Nelson, PSC Consulting, Tom Hannen, City of St. Cloud, Mike Olson, City of Minnetonka, Rich Swanson, Eagan, Greg Anderson, Moorhead P.D.

The meeting began about 15 minutes late due to difficulty with set-up of the videoconference system, once the system was linked to remote sites the meeting began. (The link to the DOT Waters Edge Building was not re-established).

Steve asked for introductions from participants.

Agenda Item # 1: Meeting times / Definition of Quorum
Steve Pott reviewed the by-laws regarding terms for a quorum and noted that a quorum was present (the fist time within one year)

In light of the difficulty obtaining participation to the level needed to have a quorum present on a regular basis, the group reviewed the by-laws definition of a quorum. The group-discussed modification of the definition and also the possible changes in meeting dates to reduce conflicts with established Metro area 800 MHz meetings, thereby allowing more participants to attend.

Motion was made by Jerry Huettl to move meeting date to second Tuesday of the month, second by Andy Terry, voted unanimously, will be effective in July.

Discussion on the make-up of the quorum. Jerry Huettl made motion; to reduce number of participates to 9, second by Andy Terry. Mark Hoppe thought number should stay at 11 for the near term. Further discussion about quorum, quantities, timing and representation. Amendment to the motion was made by Ron Whitehead to appoint Directors positions to boards from different user groups and increase from three to seven representing five service types (must consist of at least three members from different levels of government). Plan to post and elect members in July. Quorum of full group governs over the actions of board alone. Body can over rule action of board; however the board is empowered to act upon issues that have come before the body but was un-actionable due to lack of a quorum. Motion made by Jerry Huettl, second by Andy Terry. Amendment and motion made unanimously. Motioned by Mike Olson to make quorum require to have four board members. Second by Ron Whitehead.
Agenda Item #2) Report of working group.
Work group has held three meeting they have addressed channel allocations, list of issues developed, requested vendor information on product development.

Channel Allocation: Roger Kochevar reviewed work on the channel allocation plan. The Region 22 700 MHz plan due in three years, 1 year elapsed. Frequency allotment is major task. Handout of channel chart. Working Group has come up with a proposed sort and channel plan for discussion and future comparison with NCC guidelines. Current sort is done on 25 KHz channel assignments. Working group developed criteria for sort (250 KHz separation, geographic separation, boundary dBu contour restrictions. etc). Discussion of coordination process and county boundaries and dBu contour requirements. Open issues on areas of the state who also have similar channel allotment plans developed. Discussion issues review: Roger advised people to review and comment. Input is welcome. These issues will be addressed in the plan with a desire to get consensus in the plan. To stay consistent with quarterly meetings, the work group will change meeting dates to Tuesday s.

Agenda Item # 3: Kick-off of plan documentation:
Roger reviewed NCC guidance on plan content and plan development. Documentation of process and participation of board encouraged. Steve asked for volunteers to take different sections of the Business plan and develop drafts for discussion, possible electronic distribution and comment. Andy will start draft and distribute to group as a starting point.

Agenda Item #4: Review of vendor feedback.
Steve reviewed what we asked to vendors (Narrowband vs. Wideband, 700 MHz and 800 MHz capable). Jeff Nelson, reviewed the response from M/A Com. Mark H reviewed the Motorola, Thales Communication, Daniel's Electronic, and Simoco response.

Other Business.
Greg Anderson asked about discussion of issue #5. The issue of licensing 700 MHz channels only when NPSPAC channels are licensed. Will this impact wideband data spectrum? Steve responded that our focus has been on voice channels and not on the data piece. Jeff Nelson suggested that issue items may take significant time and is comfortable with the technical process of sort. There seems to still be much work on the policy pieces. Mark suggested that there are probably three big issues (12/25, 700/800, definition of allocation).

1. Steve advised that the grant request has been submitted and authorized for use of the one time $2500 Federal Planning money.
2. Videoconference process and capabilities were reviewed. It was agreed to continue use of video system whenever possible.
3. Volunteers for board
4. Motion to approve letterhead approved.

Region 22 700 MHz Planning Meeting
Kelly Inn, St. Paul

Meeting Minutes of 7-9-02

Meeting called to order at 1005 hrs.
Minutes reviewed.

Pott, summarized last mtgs. minutes.

Attendees:
Steve Pott, Washington County, Ron Whitehead, Bloomington PD, Bob Schnese, Motorola, Dick Hoffman, Motorola. Dave Eischens, Motorola, Jeff Nelson PSC Consulting, Roger Kochevar, Mn/DOT, Andy Terry, Mn/DOT, John Gunderson Hennepin County Parks, King Fung, Hennepin County, Greg Coleman M/A - Com.

Pott: Treasurer's report $2500, from NPSTC, deposited at Wash Co. Could be used for future training.

Pott: discussed board positions becoming available, moving from 3 to 7 members. Oct 8th 10am next meeting. Keep the meeting the same despite conflict with IACP Mtg. in Oct. No quorum today.

Andy will schedule video conference for next meeting. Steve Pott will get agenda out early.

Roger: Working group notes. Working on channel allotment statewide, by criteria based on 2010 population projections. It's assuming flat terrain. Mentioned issues that came up at last working group meeting. Since this last meeting, we've proof read the allotments. Went through to make sure we have no violation of our ground rules.

Roger gave a handout, with 4 documents: 1) assumptions and criteria (ground rules for the allotment) 2) ID of the channels, by FCC, the groups we've assigned and the allotment of the counties. Using this to keep track of our sorts. 3) MAP Group allotment 4) FCC channel grouping of base channels. (Each channel is 6.25 kHz and aggregates up to 25 kHz)

Roger described/explained document #4. 32 interop channels,
Started allotment in metro based on 2010 populations' standards.
Every county statewide we were able to allot 2 groups. (see assumptions and criteria handout)
Whitehead asked about Wright County says state B, what is this? Roger explained that they couldn't entirely allot according to rules, there so they gave Wright County a state allotted channel, hence state B.

Roger explained that the reuse distance was every 50 miles. Most will put the tower in the middle of their county. Roger explained that if you want in building coverage instead of centering your tower in your county, you could put on your county line and use a directional antenna. Need 55 DBU signal strength for in

building coverage. Or put tower at county seat and you would then have 55 DBU at the county seat where most of your in building coverage is needed.
Roger gave additional handouts of 800 MHz coverage pattern for WCAL & coverage pattern for Freeborn site.

Jeff - PSC Consulting comment that the ground elevations at WCAL and Freeborn are similar, asked if Roger has looked at an area like Duluth where the ground elevations vary substantially. Roger no, not for 700 we did for 800 though. Bottom line is that situation could come up here. The applicant needs to design his system for this.

Andy commented that how stringent (tight) you are with your frequency allocation, it will have a direct impact on how you design your system.

Jeff- discussed previous conversations about allocation in areas of lakes (Wisconsin) he asks should we propose something to WI? Roger says we really haven't run into any problems with this yet but could do this.

Roger gave an example of the second arrow on criteria handout: What if a county like Itasca needs more than 2 channels?
Whitehead concerned about making counties follow this criteria listed, will it discourage counties from using the 700 channels.
Pott asked what difference will it makes if we force them to use the 800 before the 700 channels,, there are still some channels left unused.
Gunderson comments metro congested and lack of spectrum, greater MN has more than they will ever need.

Roger talked about the criteria listed below arrow (bullet) #2. Discussion ensued about the need for this criteria in greater MN. Roger described that these were the ground rules, and necessary to provide some control over this. In 2010, the reserved spectrum will become available.

Gunderson asked are we trying to encourage them to use 800? Roger yes.

Pott asked why are we trying to encourage them to use specifically 700 or 800 MHz, what difference does it make. Andy Terry commented on how we as Public Safety keeps going to the FCC asking for more spectrum, given 800 went back asked for more, given 700, and now went back asking for more. So I think what Roger means is that we need to manage our spectrum, otherwise we look irresponsible in mgmt.

Discussion, Again it's a metro vs. greater MN thing. Metro we will never have enough, Greater MN will always have more than they need.

Andy asks: Is there a restriction on doing a full allocation like Pott says? Long discussion about Pott's view of allocation method vs. Roger's. All have to meet the criteria. One of the criteria is that it has to meet the criteria on this group's plan. Roger says that everyone gets the basic assignments, and then there is an additional pool to draw from for those who are looking for more channels.

The General group allotment (map) allows for the big coverage patterns/assignments (handouts on WCAL and Freeborn Co), then after that users can use directional antennas to meet their other coverage needs.

Roger NIJ, first group will be going to Denver to look at the database and the sort, in Sept. When we get the first sort, we can go from there. Andy asked if they do this first sort based on criteria we provided? Roger says no, they do a sort that does not include this criteria. The training is on the database, it will allow you to put in place holders for the channels you select so other regions can look at what you select. Also some additional tools to do sorting. Roger suggests we wait until we get this first sort, before we move forward. This would be in time for our Oct meeting. Andy: Is the person who is attending going to have a role in frequency coordination? Roger: well this person would be involved in the development of the plan. Andy we need to identify if we are going to send someone and who is going to go. Pott do we agree that Sept is the time to go? Roger says the dates are Sept. 24-26th, in Denver. Pott can we get the course content or something. Roger yes, and they will reserve for us. Whitehead, Roger is the obvious choice and maybe someone else to keep him honest (ha, ha). And then maybe Pott, or Andy or someone else. Funk has the agenda, we will get it. Andy will they provide us with the software tool, that we can access? Yes. Roger a lot of it is the mechanics of keeping up the data base. Another aspect of the training is the NPSPAC sort.
Pott anything else on the voice Nothing,

Moving to wideband data channel allotment. Roger commented that he doesn't think many are moving on this yet; they are waiting to see what the wide band applications will be. Roger passed out a handout with a rough draft on channel allocation for the metro and surrounding areas. Whitehead comments that he believes a lot of users will snap these up due to their band width. The need is great for mobile data, and many want to improve their through-put. Roger says the coverage patterns are somewhat smaller; you may be able to reuse the channels closer because of this.

Roger doesn't think we will be able to use them for anything other than this. Pott threw out an idea, what if we were to build a metro wide system. Roger you might have a more efficient use of the spectrum.
Pott could we resurrect Ron Vegemast's work and get the info we can from Motorola and see where that takes us.

Roger says Ron's concept was somewhat a square nine dot pattern, with each site approx 6 miles apart. We should look into the greenhouse project down in Florida that Motorola is working on. Roger says that as you get closer to the fringe area of coverage it slows down. Roger says the Troopers are getting a lot better coverage than we originally predicted. Roger pointed out on the green house test the coverage isn't as good on the wide band as it is on the 800 narrow band.

Potential for a shared regional plan exists and should be given some thought.

Jeff, demand for the data channels is more intense than for voice channels. I think most of the data systems in place, are getting due for replacement and this is probably a more urgent issue than the voice channels.
Discussion ensued about owning own system vs. using (leasing) another's system (CDPD). Costs, advantages, and disadvantages associated with each.

Roger options on what to do with these channels and how to allot. Pott against leaving them in a pool for those who want and draw as needed. Gives the preference to those who have the money to build them out now.

Pott and Roger only two at last working group meeting. Pott asking if anyone wants to assist in writing the plan. Roger taking technical sections, Pott, the other side.

The NCC has an entire plan, to be view via net, Whitehead asked about accessing, offered to help if necessary.

Discussed getting video conferencing and out state meeting for future meetings. We were able at last meeting to get a quorum together to change the by-laws. Encouraged others to attend, and consider board positions.

No further business adjourned at 1230.hrs.

Region 22 700 MHz Planning Meeting
Kelly Inn, St. Paul

Meeting Minutes of 10-8-02

Attendees: Len Koehnen, LJK consulting, Steve Pott, Andy Terry, Roger Kochevar, Michele Tuchner, King Fung, Hennepin County, Mark Hoppe, Greg Coleman Ma/COM, Dan Nohr, Motorola. Robert Schnese, Motorola

1010 hrs, called for members at other sites, none responded. No quorum (need nine). Roger gave bills (for payment) to Pott.

Andy Terry called to Rochester Site, to have someone check video conference link. 1020 appears system working (Rochester Mn/DOT employee in room)

Unofficially called meeting to order.

Review minutes from last meeting. If no questions, we will move on. Can't approve minutes.

Election of officer's discussion (Ron Whitehead offered to serve as an officer). (Not present, at IACP).

Discussed by-laws, board is 7, and 9 needed for a quorum. 4 board members, are a quorum, or 9 members (currently only have 3 board members). Quorum of 9 has precedence over board members.

Can consultants serve on board? Discussed original by-laws.

Pott and Kochevar attended meeting in Denver. Discussed other ways to advertise this meeting.

Discussion about the NLETC training, learning about CAPRAD, database used to track frequency allocations. Pott found the training very helpful. CAPRAD will generate good reports. Hoppe asked if it will be based on geographical, Pott said it will be based on population, terrain, etc.

Learned some interesting responsibilities the state took on by licensing the frequencies... the state has 96 12.5 KHz channels. Up to each state to sort and assign so they can coordinate with adjacent states. The State will look at this in the next couple weeks. There are currently a couple of different approaches - the Missouri plan, (cellular approach) the New York plan, based on terrain, we have a plan for extending 800 out-state, and we've id'd tower sites, were thinking that if we expanded the 800 plan in the metro, were short of frequencies in collar counties. Thinking of augmenting the 800 with 700 channels.

Hoppe asked if Motorola system smart enough to know what to assign? Roger says yes, but you need a control channel.

System is funded by NPSTC, everyone will be able to use database at some level. CAPRAD has two basic functions – planning and managing applications.

Users can be given different access depending on their role in the process. After we finish sort we will enter them into the database. Most users will be able to see what's been done but not be able to change things.

Pott said the application process is good. The goal is to complete the 601 application form one time, then move it around electronically. Once entered it won't need to be entered again. If RPC says it meets plan, it will move on to one of the coordinators. We may see “coordinator shopping” based on who’s faster, cheaper, etc.

Hoppe is there a consensus on 25 or 12.5? Pott said that there was no consensus yet, all over the board. Missouri did theirs at 12.5. NYSTEC doing their (locals-regional plan) sort based on 4 to a group.

Pott, I suspect state (MN) will sort their channels at 12.5. Andy - yes. Pott feels we need to sort at 25. Sorting at 25 allows most flexibility for different technologies.

Calif. allocated at 6.25 but right in a row, so you'd get 25, and gave them 50 to 75. Give 3 contiguous 25 KHz channels.

If you sorted at 6.25 and they were contiguous, how could you use them without interference?

Andy asked if we can establish what criteria they use for the sort in our region? Nationwide the pack will be done at 25, but we have the option to change it. If we chose to modify it, it would have an impact on an adjacent state.

Hoppe asked if they said why they did the sort at 25? Pott to accommodate all the different technologies.

Len asked question about the cellular plan being used. Discussed tower site location and how this cellular plan would then work.

Local sort by NYSTEC will not use the cellular plan. They have their own criteria.

Kochevar said the 40 dBu contour a can extend 5 miles beyond your boundary. Andy said the State will be discussing in band vehicular repeaters, because it’s hard to justify portable coverage in greater MN.

Pott said that we need to decide what level of access members of the RPC will have to the CAPRAD system. Should we hold a training session (fairly soon) for those who want to have access? Whose responsibility will it be to change information on CAPRAD? Everyone should be able to access the 601 form, view the allocations, etc. Pott will train others on what's available, training guides were given, and copies available.

Currently CAPRAD is only in training mode. You can go in and make changes...hands on practice, but it isn't going to remain that way.

David Funk felt sort would be available by the end of the year.

Pott thinks we should we set up a demo/training session, for others to come and see. Washington County is willing to host at their site.

Len, question on state channels, is there a potential, that you would allow a local to use your (a state) channel for a small agency say, or in a building? Kochevar said yes we could augment the local plan, and do this. We could coordinate and sort on the basis of interference.

Kochevar also felt the CAPRAD was well organized, materials there and available. Roger found some glitches in the system, but the programmer was there and they wrote them up. They need to be fixed but feel confident they will be. Contractor on the database really wasn't into frequency coordination. They hired this company that handled military software, they seemed somewhat knowledgeable, and they took a lot of input from frequency coordinators.

Pott advised he'll put something together and send it out for training for CAPRAD.

Roger, our last meeting we talked about coverage interference model. I think this is an important element of our plan, on how we handle applications.

Background, we use coverage models...to determine interference, last few years, APCO, FCC, standardized "radio soft". They designated the Longley-Rice model to evaluate co-channel, and adjacent channel interference. Gave example of testing at tower in Virginia. Drove area and got coverage contour and dBu readings and overlaid this over the Longley -Rice model. The whole point of this was to make sure that when we plug into the Longley -Rice models, we get the field strength and coverage we expected.

Handed out maps of coverage testing (discussed the maps/legends). Experience has shown that the WCAL radios cut out at 10-15 dBu, normally you're allowed (the FCC allows you) 40 dBu. Hoppe how would they define the coverage ring? Our criteria is a 5 mile spill over.

Discussed location of next meeting. Willmar, Duluth, etc. We will get something out prior to the meeting. Hoppe should we have additional working group meetings? Not really necessary until the sort gets back.

Next RPC meeting is Jan 14th.

Substitute 2nd Tuesday of November for working meeting and make it CAPRAD training.

In January if sort is back we'll discuss that if not see if they can get Ron Vegemast to discuss what he's done with data.

Adjourned at 12:00hrs.

Region 22 700 MHz Planning Meeting
Mn/DOT Central Office

Meeting Minutes of 1-14-03

Attendees: Kim Kallstead, Stillwater Fire Dept., Michele Tuchner, MN State Patrol, Roger Kochevar, Mn/ DOT, Andy Terry, Mn/DOT, Steve Pott, Washington Co So, John Gundersen, Three River Park Police, Paul Linnee, Geo Comm, Mike Mazzitello, Geo Comm, Ron Whitehead, Bloomington PD, Ray Freeman, Geo Comm, Ken Southern, Eagan PD, Mark Hoppe, Blue Wing/City of St. Cloud Rep., King Fung, Hennepin Co So.

Began introductions at 10:10 am. No quorum again so we are unable to conduct any official business. Elections will not be held until a meeting with a quorum. No additions to the agenda.

Steve Pott and Roger Kochevar traveled to Eau Claire, Wisconsin and met with Region 45 folks. They have not started their planning process, and we primarily discussed issues involving State channels. The frequency sort from NPSTC is more than 1 year overdue. We have three years from the beginning of the planning process to complete the plan. Our deadline is December 2003.

Roger Kochevar provided a review of the 700 MHz planning process and work that has been done to date. He also reviewed the manual process that he has completed for allocating the channels. The most difficult area to provide adequate capacity for is the collar counties around the metro area. The rest of the state should have enough channels using the new 700 MHz channels as well as the 800 MHz NPSPAC channels. He described a different allocation approach being used in New York. There was discussion about the resources available on the CAPRAD site (http://caprad.nlectc.du.edu)

The state channels have been licensed and we can use them anywhere in the state, as soon as we sign off on the plan. There are some reserve channels being held until 2010.

Paul Linnee asked if the RPC had the authority to group the channels by region rather than by County. He felt there were some areas of the state that will never use the channels. An example would be Pennington, Red Lake and Polk County. Iowa has 99 counties; this task would be more difficult there, wouldn't it? Conversely, in MN if you only had 12 counties it would be easier. We are purposely going with a reuse pattern of 60-65 miles, anticipating, this.

Linnee also asked who is eligible to apply? The allocation, is to the piece of land, the land mass, not to the governmental entity, correct? Andy Terry and Mark Hoppe responded it depends on how the plan is written. Linnee asked if the intention of this committee was to write the plan assigning the channels to the land mass? Steve Pott responded yes, but the channels would likely not be reserved indefinitely. The intent is to keep the channels from getting locked up indefinitely by someone who will never use them. Roger Kochevar remarked that the purpose of the plan is to make sure everyone gets something. We could set

a time line of 5-10 yrs that they have to develop/use them, if the channels aren't used in that time, and then we need to re-look at it.

Discussion moved to the Statewide Channel Plan. Roger distributed a handout describing the initial channel plan. Roger Kochevar explained that in greater MN there are still 800 channels available for use, plus the 700 channels, plus the statewide 700 channels. Roger presented a State Map that showed a plan for statewide build out, of a statewide system. About 1/3 of those towers are already built, 2/3 still need to be allocated, built, etc. This would assume 33 DBu, mobile coverage. Linnee asked would you integrate the NPSAC and 700 MHz channels, Roger, Yes that's the plan. This would allow the collar counties to use the newer radios that operate on 700 or 800 MHz. Metro collar counties have not used the NPSAC channels, and they could pool them for use.

Hoppe asked about the survey results asking if out state MN counties were interested in getting on a shared system. Andy Terry reported that the 2001 survey reported that 85% of greater MN agencies would be interested in a shared system.

Linnee brought up info about a move under foot to raise the 911 surcharge to $1.00. Andy Terry said the last legislative session did recognize and agree that a shared system is the right thing to do, but didn't want to fund it. Discussed increasing 911 surcharges, for exclusive use to build a SHARED system. If you want the money it has to go to a shared system.

Andy Terry commented, that if this development is approved, we would need to meet with locals to discuss the plan, and tower build out so when those locals are ready to jump onto the system, the tower sites would be beneficial for all.

Discussed and reviewed handout titled, Proposed 700 MHz Statewide Channel Plan, Jan 7, 2003. Discussed the Border Sharing plan (handout) that was prepared by New York. Whitehead asked if we have the capacity issues that New York has? Roger said no, but we still have border issues, and want to be on the same page, as everyone else. If Iowa and others all group differently, we won't be talking the "same language". If others group in 25 kHz, it will cause us some problems. If we allocated at 25 kHz would we have enough to allocate statewide? It reduces your pool by ½.

Next quarterly meeting is April 8th at 10:00 am. Work group meetings are held the second Tuesday of each month that we don't have the regular quarterly meeting. Hoppe suggested recommended resolutions be written for future agendas. Whitehead concerned about getting this out to the right people. How do we make sure the right people have this information? Linnee asked if an agency eligible to be a member of the RPC can designate someone else to represent them? Unsure if the by-laws would allow a consultant or vendor to be the designated representative for an agency. Possibly a letter from the agency you represent, giving you voting rights.

Meeting adjourned 12:00 hrs.

Region 22 700 MHz Planning Meeting
Mn/DOT Central Office

Meeting Minutes of 4-8-03

- **A meeting of the 700 MHz RPC was called to order at 10:00am by Steve Pott.**
- **Introductions of attendee's.**

Larry Nacezeny	**USPIS**
Greg Anderson	**Moorhead**
Andy Terry	**Mn/DOT**
Mike Olson	**Minnetonka PD**
Ron Whitehead	**Bloomington**
Steve Pott	**Washington County**
Tim Harper	**Motorola**
Ken Southorn	**Eagan**
Jeff Nelson	**PSC Alliance**
Roger Kochevar	**Mn/DOT**
Mike Mazzitello	**Geo Comm**
Ed Skainiak	**BATF**
John Gundersen	**Three Rivers Park Police**
Jill Rohret	**Metro Radio Board**

  - Steve Pott announced that a quorum has been established.
- Motion by Ron Whitehead to approve meeting notes of Working Group. Andy Terry offered a amendment to include past minutes and meeting notes into the record. Motion and amendment approved.
- No treasurer's report at this time, however there is still $2500.00 available for use by the committee.
- Discussion of quorum and modification of bylaws. Andy Terry motioned to incorporate language into bylaws. Seconded by Ron Whitehead. Motion approved.
- Nominations:

Chairman:	Ron Whitehead nominated Steve Pott, Andy Terry seconded.
Vice-Chairman:	Ron Whitehead nominated Andy Terry, Ken Southorn seconded.
Secretary/Treasurer	Andy Terry nominated Michele Tuchner, Ken Southorn seconded.

- Board of Directors:
  - Ron Whitehead
  - Greg Anderson
  - John Gunderson
  - Ken Southorn

- Roger Kochevar reviewed channel plan handout and channel sort document. Information is also available from CAPRAD (Computer Assisted Per-Coordination Resource and Database Systems)

  http://caprad.nelctc.du.edu along with reports on development sort.

- Work Group discussion points:
  - Basic philosophy for starting point is that we will use NYSTIC sort as baseline.
  - Round table discussion on recommendations with feedback from group. Roger Kochevar collected comments from the group to modify positions and language. Recommendations will be modified and reviewed within the Working Group.
  - The full committee at its July quarterly meeting will incorporate these comments in to a draft plan for review.
- Steve Pott introduced concept of balance between voice and data. Some guidance is needed on what level channel use for data.
- Mike Olson asked about how to deal with agencies that span county boundaries, (like MT or Logis).
- Roger Kochevar reported that wide-band data is in the National standards process due to be completed in completed July 2003.
- Review of FCC narrowband mandate.
- Meeting adjourned.

Region 22 700 MHz Planning Meeting
Mn/DOT Central Office

Meeting Minutes of 7-8-03

Attendees: Ron Whitehead, Bloomington; Ken Southorn, Eagan PD; Roger Kochevar, Mn/DOT; Andy Terry, Mn/ DOT; Steve Pott, Washington Co; Jeff Nelson, PSC Alliance; Greg Anderson Moorhead PD; Bill Dean Metro Radio Board; Len Koehnen, Jon Gunderson,, Three Rivers Park Police; arrived at 1100 hrs.

Meeting called to order at 1020 by Steve Pott.

Primary purpose of the meeting is to go through the plan that was sent out, and also discuss the 4.9 GHz spectrum. The 700 MHz committee has been assigned the task of distributing this spectrum as well.

Roger Kochevar gave a brief overview of 4.9 GHz – it is primarily for data, looking at the standards for the equipment, they are looking at 802.11. There is a commercial and a public safety side. The goal is to try to make the equipment operate for both.

The coordinators APCO & ASHTO are going to be able to coordinate this.

Andy asked about the different categories of mobile data available on 25 KHz channels - 4800, 9600 etc, and then there's the top end of that data rate, which is 19.2.

Jeff Nelson: explained that the application in the middle might allow you to roam from hot spot areas, to wide area. Andy asked if the technology is developed enough to do this.

Len says it's an open architecture and not protected from outsiders. This is nice (4.9 GHz) because it allows us to isolate ourselves from others. The protocols and the spectrum should protect us.

Andy asked: What are the rules that govern the spectrum? We'll need to research this. Steve says we have a short time frame that we'll need to hold a meeting to discuss the 4.9 GHz spectrum. He doesn't think there is a lot of coordination on this yet.

Len said in Police service there is a need for quality police video and this would be good for this as well.

This was just an update; Steve will research this more before out next meeting.

Move on to 700 MHz. Plan.

Steve and Roger worked on this plan (was e-mailed out)

Went through the plan:

Talks about the Chair and how it was put in place. Steve added the by-laws, and put an attendance list in as an appendix.
Next was a description of the region. Most of the information came from the State website. Jeff asked about the membership, and about identifying people as to who they represent. Reaffirm that a person can only vote as one representative.

Next section talk about how interop channels will be dealt with. The RPC will deal with this. Discussed the requirement to list how we deal with mutual aid plans, so many of them it would be difficult to explain this, instead maybe reference the actual plans that exist.

Discussion took place about the possibility of this committee licensing some of the interop channels and forming a committee to oversee them.

In 700 MHz in the appendix, we have all the interop channels listed. The FCC says you must address the interop issue in your report. Plan says interop has to be digital APCO 25, but doesn't say how many stations of interop you must have.

Len suggests that the interop might be allowed to be in 800 MHz. For example an outstate agency might want the interop to be MINSEF, as no one around them would be on 700 MHz.

Ron asked: How many channels are committed to interop? Per Roger 32. They are 12.5 KHz.

Roger says some of these interops are adjacent to our state channels so we have to watch that. Maybe we need to pick the best ones if we don't need all 32.

Andy asked if maybe you would use these 700 channels and patch them back to VHF channels for interop. Or they could be used to communicate with another 700 MHz user.

Discussed the current environment. UHF and VHF are the primary users around the metro. Len reports there are 11 VHF and 4 UHF narrowband interop channels recently released by the FCC. MIMS (point to point) should be added to this list. 155.370. Len will e-mail list of interop channels to Steve.

Next discussed the Notification Process. The original mtg. was published in the state register and the APCO bulletin, and in the main papers, as well as a broad e-mail distribution list. Roger will give him the original notice that was sent/published.

Steve thought tribal police were getting notifications. Found only 3 belong to the Chiefs of Police.. Steve will draft a letter to them, that the 700 MHz planning process has been in place 1 ½ years, here's where we are, original notification went out. etc.,

Address how DEM and Homeland security were involved in the process, represented by DOT, who maintains their radio infrastructure.

Discussed holding meetings, and video conferencing, and quit moving them around the state.

Roger Kochevar did sections 5, 6 7, & 8.

Explained how the sort was done. Explained in appendix Q, the regional plan requirements and how we address everything.

Section #5 explains what was allotted and how. Need to put in more info the TV situation. There is an extensive appendix that covers the TV channels. Plan must include the 50 kHz wide band channels.

Section #6 sets out the rules and the identification of the interop channels. Len asks if we would be better off not dedicating these channels, therefore being more flexible. It's an idea, but then no one knows where to go. Steve asked if possibly identify all except the General Services.

Jeff asked about minimum channel quantity. Jeff asks if we should dictate that they put it in, or if we should encourage it. Greg pointed out that if we put the 700 MHz in just for data, would they have to then put these interop channels in, when they won't be used for voice? Len pointed out the radios wouldn't even have a microphone on them (if used only for data).

Moved on to state interop committees. Steve is it worth making a pitch to the commissioner of public safety, that the way it is currently being done is outdated. Bill Dean explains that there will be substantial legislation about state radio planning. The State planning committee is meeting tomorrow, and this is and should be an issue for them. Len, this committee has standing before the FCC. You don't want this committee subservient to them. MINSEF is under public safety, the statewide Fire is under state fire chief's a lot of it is lost and outdated. Possibly create one committee, they can't relinquish their authority but could say to the others you can handle this. Ron Whitehead suggests possibly designate this to the MINSEF committee. Steve suggests that could become political. Andy pointed out that MINSEF meets even less. Do you just add under the agenda items of this committee to cover the various interop issues, MINSEF, NPSPAC, Statewide Fire, 700 MHz, etc? Possibly get the committee members from these other committees to attend. And maybe put it on the agenda twice a year.

Andy suggested coordinated efforts by having joint meetings with other interop groups.

Moved on to Section #7.0

Roger suggested maybe this is where we include the language about UHF & VHF interop. Steve says maybe add language here that were going to have 32 channels for interop.

Section #8 discussed how NYSTEC did the sort. As a group we agreed that we were going to go with the NYSTEC sort, from the CAPRAD site, in the plan.

The wideband allotments, we came up with a methodology, we came up with a manual allotment. We allotted 3 channel 50 KHz groups in the metro counties. This should probably go back into the appendix when were done. The rest in this section is taken from our discussion and the NSPAC plan. Noted that under NPSPAC channel paragraph second 700 MHz should read 800 MHz.

Andy asked it the Technology neutral approach will be accepted, as some states plans have been rejected. Roger advises that technology neutral is acceptable.

There was discussion about how we can allow allotment variances. If an applicant can find a frequency and lower its power and meets the criteria, they can be allowed to use it.

Jeff suggests a language change in section “orphan channels” to remove mileage, and instead base this on interference levels. Not distances, therefore you won’t need to go back and revise the plan in the future.

There was discussion about channel loading on the data channels. There is probably not enough information to make any solid decisions about the data channels yet.

Roger says there is a rating plan in NPSPAC, a point system, to determine who should get what. Discussion about the possibility of the 700 data channels being in high demand. The belief that we will run out, before everyone gets what they want. Discussion about the prioritization plan only works if everyone applies at the same time. Steve said that maybe the best balance is to require concurrence from all PSAP’s in a county before any licenses are issued. Jeff suggests that maybe it goes to the planning committee, and the committee asks the PSAPS/counties/locals, to come together and state their plan. Ron felt that a PSAP shouldn’t be able to have veto power, over all. Steve says maybe if they can’t reach concurrence there is an appeal process, before this committee. Len pointed out that an issue that will divide users will be the agencies choice of mobile data protocols. How long do we allow this to go on? 2 yrs, 5 yrs? Jeff will take a stab at the paragraph or two on data loading. Steve says I can take a stab at the prioritization language. Roger points out that they are very serious about this language. Andy says maybe we should have a two-step process, first the concurrence idea, and then a point system, if there is no agreement.

Discussion about allotment of channels for the rest of the state (outside metro). Len suggests maybe inviting vendors in to ask them what they are going to do with technology. Roger says Motorola’s “greenhouse” seems to be where the standards are going (3 50 KHz channels combined to make 150 KHz aggregated).
Len asks can we split the 50’s into two 25s? Roger says no.

Ron asks if there were 3 more channels to allot? Roger says yes,

Letter will need to be sent out for concurrence from adjacent regions. Ron suggested sending a letter to MINSEF committee etc., about coordinating interop.

Bob Speidel from M/A Com has offered to come talk about 4.9 GHz. Maybe schedule for some time in the future.

Region 22 700 MHz Planning Meeting
Mn/DOT Central Office

Meeting Minutes of 1-13-04

Attendees: Jill Rohert, MRB; Jay Smith, Mpls; Ron Whitehead, DPS; Ron Vegemast, MRB Consultant; Len Koehnen (consultant); Steve Pott, Washington Co; Andy Terry, Mn/DOT; ,Lynn Ness, Mn/ DOT; Roger Kochevar, Mn/DOT; King Fung, Henn CO; Roger Laurence, Henn CO; Ken Southhorn, Eagan; Al Smith, State Patrol; Michele Tuchner, State Patrol; 2 other consultants (Motorola & M/A-COM). Steve Erlbeck, DATARADIO.; Tim Harper (Motorola); Jeff Nelson; John Gunderson, Three River Park Police; Bill Dean, Metro Radio Board.; Greg Anderson; Moorhead Police (video conference); Sgt. Letinesis (?), Wright Co So (video conference), Greg Coleman, M/A Com.

Called to order 1005 hours.

Minutes from last meeting were approved - Ron motioned, and John seconded.

Treasures report - Steve Pott will get this for next meeting.

Steve said next item on agenda is election of board members. Bill Dean motioned that the current board members be retained, seconded by Ron Whitehead.

Roger and Steve will be attending the region 45 planning meeting (neighbors to the east). Next step will be to distribute the final draft of the plan in April for comments.

Discussed change in meeting dates to alleviate conflicts. No change at this point.

Review of draft plan -

> 5.8 Jeff Nelson commented on last sentence of fourth paragraph of this section does the technical component cause trouble with the political component. Suggested adding in the phrase of “and politically” Steve recommend should make every attempt to include as many as possible. Jeff suggested softening the MUST in this paragraph.
>
> 5.9 New section per Roger, describes the statewide trunking effort. States planners should be aware of this. Jeff suggests, to the degree that this plan is to provide initial guidance/direction. Look at 800 NPSPAC before applying for the 700 MHz, this language is somewhere else in the document and put it in 5.9 as well.
>
> 5.12 discussed forming an SEIC, State Executive Interop Committee, discussed combining NPSPAC, MINSEF,700 MHz. Can’t at this time MINSEF committee is required in state statute. Roger had talked to FCC said they’d like to keep the committees separate even if same faces, just convene two meetings.

5.13 Lower power channels, discussed why we didn't designate specific SOA channels in 700 MHz. Use 800 SOA, and possibly orphan channels in 700 MHz. No real changes in TV channels.

5.16 Jeff is 5.16 intended to cover voice or voice and data, Roger says, both. Jeff realizes this. He offered to write something but has not yet. Steve maybe you could correlate the coverage area to the number of units. Ron, wording "justification should NOT solely be based on the quantity of mobile…..etc" Add the NOT.

5.18 straight out of NPSPAC plan, other state had a heavy handed approach. We've found our approach in past has worked fine. No reason to revamp the language.

5.19 FCC applications, pretty similar to NPSPAC language, it does describe the process and what has to be included, what detailed info. Some applications come in on-line.

5.20 Discussion about the approval process and how the RPC will react to an application. There are a lot of applications that comply with the plan, we were thinking of having some people appointed by the RPC to review the applications for compliance. Applications are sent to the coordinator and must have the approval of the RPC before going to the coordinator. There are three acceptable processes for an RPC approval - just let applications move to coordination if they comply with the Plan; require notification of the RPC when applications are submitted for coordination; or require RPC action and approval before an application move to coordination.

Andy says, this is not uncommon, where they do a pre-qualification application, it adds a little time to the process, but it solves more problems than it creates.. Ron, if we just let them slide through, 5 yrs later it becomes an issue. Andy, says state (OEC) acts as an advisor, provides cursory review, then it goes in for application, and then ends up coming back to the state anyhow. Saves time and problems for state as well. If it's submitted on the CAPRAD system, it would go out to everyone on CAPRAD (Roger, here in MN). If an application is sent to a coordinator that isn't familiar with the region, they look to us for input on it, and our plan.

5.20 Application, the coordinator has to update the CAPRAD database when we have a new license application. Two databases CAPRAD, and FCC. When you change the license status and send it to CAPRAD they forward to FCC. Len felt people might start shopping around for coordinators, to get the best price. Andy explained that the state volunteers the coordination service, in an attempt to avoid headaches and get it done right, so the user benefits. Discussion ensued about developing a way for the state OEC to recoup their costs (for Roger Kochevar's time).

5.22 Construction requirements. Put it in as an easy resource for users. Jeff does 5.22 need a sentence to acknowledge slow growth with 700 as well? Roger yes, we can add it in there. Steve what if just moved the second sentence and put it at the bottom and then it would read better, and wouldn't require any re-writing.

6.0 Pretty much verbatim from the FCC template. Steve we discussed interop, and decided we weren't going to mine them to supplement local allocations. They can be used in the future to "fix problems". Roger since then we've had issues come up the example at Camp Ripley, a portable system on site. . Originally we talked about throwing some of these in for the locals and we decided to leave it as is.

6.2 Jeff Nelson had question about the language requiring calling channels which are integrated into infrastructure must provide coverage that at least matches the coverage of the other channels in the system. Steve suggested, adding "700 MHz channel" language. Jeff says possibly but might be somewhat limiting. Jeff suggests giving guidance but yet maintain flexibility. Suggests striking MUST. Steve: it could say their coverage must at least match the service area/PSAP coverage area/jurisdictions coverage area.?? Jeff says needs to be resolved before it's adopted will be highlighted for re-work. Discussion about designating as mobile or portable coverage. Roger and Steve will work on this language for next draft.

6.9 discussions about using interop channels discussed 9.02 standard. Lynn Ness: where do you want interop? What level? The application level or the operational level? On voice its clearer, but data, where do you need it? Long discussion ensued about interop standards. Roger told story of 93 O.K. bombing, and the request for more interop, and the need for more spectrum. Now the FCC is asking for us to plan with interop to the nth degree. Andy asked if we deviate from the plan for shared wide channel use, what do we risk… with the FCC?

Steve pointed out we should do our best at submitting a Plan but not have our feelings hurt if they (FCC) don't like it. Be less concerned with trying to write/get a plan that is absolute and will pass easily.

6.10 Didn't know what to call the committee, SIEC took out state and called it Interop Exec Committee. Just took out state, as state wasn't going to do it. Steve suggested adding Region 22 IEC. Roger will make change.

6.11 Minimum Channel Quantity. Had a discussion that you have to have 16 slots designated as interop on 700 MHz, Roger thought intent was to have the ability to program those into the radio? That the radio has the ability to have them programmed in. This would take up all channels of a 16 channel radio. Ron, by leaving it open does that mean it can have none. Yes, But patching could occur, and initially 700 voice will probably be practically non-existent. Len suggests that maybe we wouldn't even want a say DATARADIO, to have any interop channels if you use 700

data, you have to have access to P25 radio channels. Greg Coleman said that issues specific to FCC, Bob Speidell, could come out and address these issues. Steve suggests we have him come out and answer/address these questions/issues.

Roger I think we will have the plan on the web (at the CAPRAD site). Bill Dean minimizes number of paper copies, and distribute via e-mail. Steve maybe we make copies of CDs and send it out that way.

8.4 Allotment Variances, We can deviate from the allotments a long as you comply with the contour. If we do this the RPC would take a look at this.

8.7 Would rather go to the NPSPAC channels, than these. Bill Dean said at APCO conference he heard that the NEXTEL consensus plan is practically a done deal. If this takes place we'd receive approx 6-10 additional 800 MHz channel pairs. Roger says this is true.

Discussed adding a glossary

8.11 "combing" should read "combining".

8.14 Use of frequencies in aircraft.
Jeff suggests striking #2 & #3. agreed.

8.16 Canada not done with their plan, if changes occur could impact say, Koochiching County.

Steve said Len brought up a good point of having another committee of the RPC, and have them act as the SEIC. Recommend that the IEC be part of the RPC.

Section 9 Steve Pott discussed these sections:
How the needs are met, the NPSAC channels out side metro are not used, we've encouraged their use. Discussed 800 system and needs being met.

Section 10 is it meant to make sure everyone has an equal voice?
Steve: I think so. Jeff, maybe we should add a sentence about all the stuff we did to include/invite others attendance and input. Steve says o.k. Jeff says section 4.

Section 13 explained meet every 5 yrs and then evaluate the plan
Any thoughts?

Appendixes will get cleaned up before final draft is complete.

Goal is to have the plan ready for comments to the RPCs. Should we send this draft to the adjacent regions, and try and get some preliminary approval. Ron and Andy suggest we wait until we have our final done.

Roger and Steve will discuss our status at the Region 45 meeting on Jan 22 in Wausau, WI.

Discussed a correspondence received from Steve Devine (Missouri) about forming a public safety telecommunications group to have more contact with the FCC. Concern that it might eliminate our ability to communicate directly with FCC, but there might be a chance of improving clout with the FCC. Andy pointed out there are many groups with clout, APCO, Sheriffs, Chiefs, etc., if it becomes something with a lot of clout maybe sign on, otherwise let's take a wait and see attitude.

Letter from Pyramid communications, talks about the interop band and lower power receivers. Steve will give to Roger Kochevar.

Steve neglected to send letter to Indian affairs counsel. Has now been sent.

Discussion about getting Bob Speidell from MA-COM, and/or David Eirman, Motorola to a future meeting to discuss 4.9 GHz. The RPC has been tasked to convene a meeting and talk about 4.9 GHZ. Unsure if we need to write a plan.

Working committee will meet again, Steve will send out notices.

Agenda item #4, Data channel allocation.

DATARADIO will have 50 KHz equipment available in a few months, Motorola a little further out there. Discuss how to allocate channels, in 50 KHz. Also how to allocate, by region wide, or county boundaries, etc., Jeff: Does the metro leadership have a position on how they would like that allocation to be accomplished? No, discussion was still open, as the RFPs were released for comments, and let the vendors come up with ideas on using those channels. Also would need statewide channels, to address that as well. Need to discuss what direction we should go. Ron Vegemast position is that the 50 KHz channels will meet our needs for the next 6-10 years… Amount of info moved around is primarily text vs. video (discussion about that) and this would do it. A reasonable compromise might be to stay technology neutral, and allocate in a cellular groups of 7(DATARADIO) or 12 (MOTOROLA). If our goal is to be neutral, sounds like we should use 4 groups of 12, or as Roger suggested, have the vendors come to us with proposals. What if we allocated them at 50 KHz but let them petition for a variance if they need them in 150 kHz. Roger gave examples of allocation some at 50 KHz, and some at 150 KHz. Steve what if we gave a 50 kHz allocation by county and then kept 4 -50 KHz. Plus there are the reserve channels.

King verified that Hennepin County applied for, and received licenses for the 4.9 GHz channels. They are non-exclusive, so if another agency like Hopkins requested they could use also and interference could occur. No time limit on when you can build, you could wait 10-20 years, as they are non-exclusive. If you had your system up first, others who might build would come to you probably, rather than experience interference. No reason to probably rush to get licensed, as they are non-exclusive and will probably always be available.

Jeff says, not sure what his position on 50 KHz allocation vs. 150 is yet, mind not made up yet. He is troubled by getting to the 150 kHz bandwidth, Three issues a) need (what will Law Enforcement use it for - they don't even know yet) b) cost c) availability of products/equipment… Do you preserve the spectrum on a speculative proposition especially when there are other relief valves available? Much discussion on this topic. Lynn Ness feels best to give county their 50 KHz allocations. Greg from Morehead asked questions about if anyone in metro was even interested in this? He said when he has attended Metro MDC users group it sounded like many were interested in commercial product (CDPD, or its' replacement). Much discussion about the pros and cons of the different types of systems, the capacity, speed, security, control. Greg pointed out that in Morehead they were using 800 MHz, and only had one channel with maybe 50 units on it, and felt it was better to use CDPD in this example. Jeff says maybe true now, but CDPD going away, GSM (?) replacing it,, and then you are competing with all other GSM users, (public) instead of just other Law Enforcement.

Returned to discussion about frequency allocation. Take all 50 KHz channels and do an independent sort. We'll have to work on this a little more. Roger and Andy will take a stab at this.

Adjourned at 1300 hrs, others to use conf room.

Region 22 700 MHz Planning Meeting
Mn/DOT Central Office

Meeting Minutes of 4-13-04

Attendees: Steve Pott, Washington Co SO; Andy Terry, Mn/DOT; Roger Kochevar, Mn/DOT; Michele Tuchner, State Patrol; Pamela Raser, Carver Co SO; Nancie Ekum, Carver Co So; Ken Southorn, Eagan PD; Ron Whitehead, Dept. of Public Safety; King Fung, Hennepin Co SO; Len Koehnen, Consulting Eng.; Dave Pagel, Mn/DOT; Mike Knoll, Pierce Co SO WI; Steve Irlbech, Dataradio; Jim Anderson, M/A Com;
Bruce Hagerness in Duluth via video conferencing

Called to order by Steve Pott at 1010 hrs
Introductions around room at DOT CO.
Approval of Secretaries minutes, Andy moved, Ken Southern seconded, approved.

Treasures report, money spent to attend training for Roger Kochevar and Steve Pott.
Move to accept treasurers report, I seconded, approved.

Steve Pott went over the draft plan, and changes made, these changes are listed in the last minutes. Went over the high points of those changes.

Ron Whitehead asked about 6.11 and requiring interop channels, discussed why this was not required at this time. Could add language if necessary.

Purpose of this meeting is to put draft plan in final form and send it out for comment, to our adjacent areas, and other interested.

Appendix will be updated prior to draft plan being published for comment.

Len asked are we ahead of adjacent states with our plan? Steve Pott said a little, we haven't really had contact with many except WI. Roger advises that South Dakota is going to start.

Steve reports that WI is at a similar point to ours, fair amount of language crafted struggling with the same issues we are, like data.

Andy says that in order for the FCC to adopt our plan adjacent states have to sign off on it, and if they don't have their part done, it can hold up our approval.

Len, make a motion that we send letter to adjacent regions advising that the plan is coming and that we'd like them to act/respond on/to the plan. Steve advises he probably doesn't need it to be officially requested; he can probably just send the letters out.

Andy says that you need to have something publish in the federal register, about our next meeting, Andy made motion, Ken seconded, approved.

Completes discussion on the draft plan.

Next discussion on the wideband plan. Steve will devote the rest of the time to this discussion and turned it over to Roger Kochevar.

Roger advised that he faxed the documents about the wideband plan to the front desk in Duluth, and Bruce will retrieve copies there.

Long discussion about handouts and the different option plans 1, 2 & 3. Excerpts below:

Option 1 to assign everything as 50 KHz non-adjacent, and allocate according to a matrix or cellular plan, discussed a 4 channel per site/cell.

Option 2 - assign the counties 150 KHz channels individually, and do it across the board.

Option 3 retain the FCC 150 KHz 3 channel groupings for ½ the channels, and the other ½ assign 50 KHz non-contiguous.

There are basically two vendors moving forward with equipment for 700 MHz data. The vendors are using different technology – one using 50 KHz and the other using 150 KHz. Metro area has hired a consultant to design a region wide system. They don't know if they will build a 150 KHz system or a 50 KHz system. It sounds as though they may be leaning toward a 50 KHz system at this point.

Roger went into more detail about Option 3. He suggests making two "supergroups" of 24 channels each. One group of 24 channels might be called "FCC" and would be assigned so there are 8 sets of 3 contiguous channels, for a total of 150 KHz. The other group of 24 channels might be called "XY" and they would be assigned as non-contiguous 50 KHz channels.

In the metro area and the first ring collar counties, we would assign all 24 of the "XY" channels to each county. They would also get one 150 KHz FCC grouping. Roger discussed a handout, dated April 12th, titled 700 MHz Wide Band Channel Data Plan option 3. He discussed co-channel separation, said it would be nice to work from county center but with 35db protection you'd need to space co-channel towers 65 miles apart. Steve Pott asked for clarification for the distance apart these towers need to be. Can there be some overlap? Yes, a little the 40 dBu contours can't overlap.

We want to allot as many channels as we can, but that will require system designers to decrease the coverage foot print. The systems will likely need to use directional antennas, down tilt antennas, etc., to tailor the coverage. This will increase the cost of the system.

Big question how do we group them 8 groups of 6, (average distance between co borders is 28 miles, so that's 8 groups of 6). If we go to 12 groups of 4, we're at 40 miles, 16 groups of 3 is 43 miles. Those mileage distances quoted are between the county borders, this is very conservative. If we pack them real close

it gets expensive and difficult to design, if we're too loose, then there are fewer channels due to longer re-use distances, and maybe not enough.

Other option is to go with the matrix, and then we have a uniformed situation, and a controlled situation, but then it's more restrictive and you have to 'play together' as a team.

Andy said he thought we discussed doing a little bit of each, allocating some and leaving some?? So this analysis is looking at the channels that we would allot to the counties?

Yes. Discussion followed about the advantages and disadvantages of contiguous vs. non-contiguous assignments.

Len discussed the assignment outstate, if you try to apply this statewide, if you look beyond 700 MHz, Worthington for example could do 800 MHz. Len is implementing an 802.11B, with some hot spots, not everyone will necessarily want to do 700 MHz. For example Lincoln County isn't even considering 800 MHz right now, much less 700 MHz. So maybe our concern shouldn't be about greater MN. Roger explained that even though we know they won't need/use them in the near future, we still need to assign channels to Lincoln County to submit our plan and get it approved. Even though they may never use them.

Steve mentioned that if counties get one 150 KHz contiguous allotment, they would probably be able to use to 50 KHz channels on each end, and orphan the middle channel. This would likely be adequate for many counties.

Len says we should look at the 'worst' case when we define our plan. King Fung says, that he feels the way Roger has defined it has allowed for a lot of flexibility.

Andy commented that we're trying to meet the needs of those who are interested in a shared system, and also meeting the needs of those who want to go on their own.

Steve the real issue becomes, that we box out the big populated counties, for example Hennepin Counties needs probably would not be met with one 150 KHz channel, so they are forced into the regional system.
Steve said our goal all along is the give as much flexibility as possible and I think this might be it. Len agreed.
Roger we have some bordering counties, very close to region 22, we would present this to those counties.
Len asked when do you reassign these "XY's" in greater MN. Roger said that many of them should be able to be used beyond the first tier counties. The idea is to minimize the restrictions on the metro area.

Steve asked what is option 2? Roger explained that it just assigns channels to the counties. The problem with this plan is that you have sites 28 miles apart.

Andy asked is anything taboo with the FCC? Roger doesn't see a problem with any of the options.

Steve, have we discounted Option 2? That's 3 non-contiguous, and one 150 KHz channels. Might be difficult with the close separation of sites.

Option 4: In this option we forget about the metro plan and the FCC groups. We assign all the channels to the counties; it gives 43-mile separation. Each county gets 3 except some of the larger populations. These channels are 50 KHz.

Steve why can't all the options be calculated with the same channel separation? We started these options on the premise of how many channels everyone would get, we could now probably work backwards, and calculate it on channel separation, having an idea of how many channels everyone would get. Roger thinks that the separation is important.

Where are you leaning Roger, Option 1 or 3? Roger said I got the impression that we were moving ahead with the option 1 plan, and then at last meeting I got the impression we were leaning toward individual allotments. The only thing Roger cautions on option 1 is the separation space. Option 3 doesn't really allow for a 'shared system'. Steve, I think we need to plan for a 'shared' system. Andy, I think option 1 is a nice balance, allows for a shared system, and an opt out option for those who are not interested.

Steve asked what if you took option 1 and take out the state's allocation? Would that take care of the separation issues? Roger it would help. If the state indicates they need 150 KHz, we can give them the interop channels… Roger I don't think we could use it for day-to-day operations only. Len, I think the interop channels are a good stepping-stone for smaller agencies. Roger maybe we could use the interop channels for the state, I don't think you have to tell the FCC what your going to do with your interop channels. Maybe we could say a portion of these will be allocated to the state for day-to-day use, and save some. There are 18 50 KHz interop channels. If state was allocated two 150 KHz groups, it would still leave 2/3 of the channels available, for interop.

Roger asked how states data folks feel about this would, would they be nervous about this amount of allocation?

Andy suggested maybe we put a time constraint on the use of these "XY" channels, for build out. Len asked could you use these interop channels for point-to-point operations. Roger I don't know, don't think so. This is for mobile to base.

Len suggested having the interop channels be assigned to the "XY" supergroup, as they would be interop anyway, or at least a portion of them. Steve comments maybe where we need to spend the time is to look at option 1, take away the state allocation, and give them to the county allocation, and then take some of the interop channels and throw them into the "XY" supergroup, and then allocate some channels for the state.

Roger asked do we want to keep the 150 KHz, allotments in the option 1 plan? Yes, Steve gives us more options, Len, yes. Steve says we should encourage people to use the spectrum most efficiently, but if they can't work out an interop plan, then there are channels for them to go it alone.

In out-state we should see if we can give 2 groups of 3, and see if we can work it into the metro area. In the more populated areas of greater MN, we would maybe allot them a little more.

Roger says we have to enter this into the CAPRAD database; we could assign the “XY” supergroup channels to all of the metro counties or none of them. The advantage to listing them is when we develop our border sharing plan; it’s all spelled out there. The same 24 channels would be listed for all border counties, for example to Washington Co and we could send this to Wisconsin so they could see what’s where. We can’t enter them as the state or regional use as there is no allocation listed for the state or region. Steve I think we can list it well enough in the plan so that everyone can look at it, but we do need to include the border sharing in our plan. Steve suggests we write the plan the way we want it, and if we can fit it into CAPRAD great, but not required.

Goal is to have our draft plan ready for distribution at our July meeting, so we will probably need a working meeting in between. Probably won’t be an absolute final draft, but close, schedule a work group meeting for the end of May.

Other agenda items:

Steve discussed the correspondence about the 900 MHz nationwide paging system.. Nextel paging, alphanumeric paging delays up to 45 minutes.. Do we want to ‘weigh-in’ on the topic? Unless someone has other thoughts, I will leave it alone, unless it’s going to impact our 700 MHz channels.

Next item, National Assoc., of Regional Planning committees, Roger says NPSTC has 5 representatives and this is probably something that is probably needed. Interfaces with the NIJ. Andy is the question that they are asking us to join the same as last request, a letter of support for the ‘concept’ of the formation of the group? There are 55 groups, do we want to give up our autonomy and let someone else represent us. Roger says he thinks it would help us to learn from these, the drawback is we can deal with the FCC directly now, would this change that? Unknown.

There is already APCO and ASHTO, is this forming another group. Sort of the same people. The NIJ needs someone to carry on with the regional planning committees. I think it’s going to exist whether we support this or not. Steve raised 2 concerns – The person pushing to form the group has stated that he wants to be in charge of it. We don’t know much about him or possible motives, but Roger thinks he would be good for the position. What if we disagree on something, then we’re fighting the organization we're a member of. Andy felt that the group will be in place anyway, and we will need to work through it, regardless of whether we belong or support them. But they could advocate for us when needed. Roger feels it helps to band together for support.

Meeting adjourned.

Region 22 700 MHz Planning Committee
July 13, 2004
Mn/Dept. of Transportation, Central Office

Meeting Minutes

Attendees: Steve Pott, Washington Co So; Andy Terry, Mn/DOT; Roger Kochevar, Mn/DOT; Ken Southorn, Eagan; Bill Dean, Metro Radio Board; John Gunderson, Hennepin Parks; Dave Pagel, Mn/DOT; Ron Whitehead, DPS; King Fung, Hennepin Co So.; Michele Tuchner, State Patrol; Tim Harper, Motorola; Steve Irlbeck, Data Radio.

Meeting Summary:
1010 a.m. no quorum yet, Steve Pott began discussions about the Plan.

Reviewed changes to the Region 22 Plan that was e-mailed out yesterday. Highlighted minor changes that were made based on previous discussions.

1015 Ron Whitehead arrived. We have a quorum. Meeting was called to order at 1015 hrs.

Discussed the language added to Section 5.5. This concept has been discussed for several meetings, but not previously reduced to writing. The goal of this section is to encourage larger, joint systems, but also allow local autonomy. Roger Laurence expressed concerns in a memo which was distributed by Steve Pott at this meeting.

Andy Terry asked how public works would get allocations, as they qualify. Pott advised they wouldn't until 2015, based on this language.

Bill Dean asked about the impact of this wording from a PSAP consolidation perspective. He has no immediate objection, but we should be able to amend these rules somewhere down the line. However once in writing sometimes it's difficult to change.

Ron Whitehead says wording is designed now to give people and option to go their own way if they want. Maybe it should be tied to a county plan, if there is a plan.

Andy suggested to flip-flop, the language of local PSAP license 2010 and County PSAP by 2015 flip to county license by 2010 and locals by 2015. (In 5.5)

Pott, maybe have County develop the plan first; if they don't in that time period, it shifts to all eligibles. Andy concurred.

Andy suggested that when a county comes forward, they must show consideration for the needs of all eligible users within the County.

Whitehead, County must submit plan in 7 yrs, if no plan, then anyone else eligible can have them. Andy concurs, good plan

Andy, Moved County Board create plan within 5 yrs, and if they have a plan adopted by the county board (within the 5 yrs) they have 3 additional yrs of exclusive license eligibility with a total of 8 yrs, to develop the plan. At end of 5 yrs if no plan, or 8 yrs after counties with a plan, any eligible user can apply for them. (Clock starts at the adoption of our plan by the FCC) Whitehead seconded it.

Voted on the "Whitehead amendment". It passed.

Under 5.9 Authority, it should be statute 403.36. Bill Dean says funding language is no longer accurate and needs re-writing. Suggested taking it out completely and Whitehead will review and do this. Bill Dean suggested keeping some funding language; bond language will be available in the next two years.

John Gunderson left at approx 1115 hrs.

Roger Kochevar discussed data allocation. We have 48 wideband 50 kHz channels to allot. Ron Vegemast describes a case for implementing a 50 kHz system in the metro. One way to accommodate the metro plan, and potential local systems would be to allot them into 2 super groups. One might be the FCC supergroup, keeping 3 contiguous 50 KHz channels. The other might be called the XY super group, groups of 3 non-contiguous channels.

Pott suggested adding language in 8.3.3 "License applications will not be approved unless they are in compliance with the Metro Data Plan."

Pott suggested adding language "none of the XY channels can be license in the metro or first tier counties without the approval of the RPC."

Roger changed language of 8.3.2 allotment plan to read:

"Super-group XY is composed of twenty-four 50 kHz channels which can be grouped into 3 contiguous FCC channels if assigned out-state. The XY super-group channels are also assigned as a 24-channel block without any particular grouping if allocated to the Metro or Collar County area. While super-group FCC also consists of twenty-four 50 kHz channels they must, however, be allocated in groups of three contiguous 50 KHz channel groupings. While the users may implement individual 50 KHz channels and create orphans, the 150 kHz allotment must continue to reside with the assigned county."
(This taken from an e-mail he passed to me).

Steve asked if they need to add language about which channels the state uses first, county/local channels allocated for this, then interop? Roger says we could put something in there to that effect. Roger says that the collar counties are really where the issue is. Roger says he will look at this language.

Pott, suggested adding wording in 8.3.5:

The RPC doesn't feel that specific allocations need to be made for outstate. Purpose of assigning channels in the metro is that the out-state area has enough, but want to make sure metro has enough to plan for a shared system.

Roger suggested using the interops in the following way: one to metro, two to State, one open, and two for national interop. Roger will write exact language. Roger suggests in 8.3.5, striking, "and, 91/211, 92/212, 93/213".

Roger explained 8.3.6 language. Pott asked why low power channels wouldn't work? Roger says need more high power for long range. People are asking for county-wide coverage. By doing it on an interop channel, everyone could work together to get a community system.

Pott do we need to add language about that these channels that they will be non-interfering? Yes, that might be looked upon more favorably by FCC.

Pott under Dedicated Long Range Communications, it says "this channel" what channel are we talking about? Under 8.3.6 channels 47/167 & 74/194, these channels are intended for DGPS & DLRC. Discussed assigning them now, done...47/167 is assigned to DGPS, and 74/194 is assigned to DLRC.

Discussion about the super-group titling: Roger suggests super group, A & B, instead of X & Y, and then sub-groups numbered as well. Roger will do this.

Pott asked, Pierce, Polk, & St. Croix should they be included in our Region 22 Plan? Should we ask the FCC to add them to our Region 22 Plan? Roger says it makes him nervous, could ultimately result in a 5 + yr delay. Declined the idea.

Pott, moved to send out plan for comments, Terry seconded, passed. 60-day review period and then returned to committee for our Oct mtg.

King Fung left at 1220 hrs.

Adjourned 1224 hrs.

RPC 700 MHz Mtg.
10-12-04
At Mn/DOT Arden Hills facility

Attendees: Tim Harper, Motorola; Ken Southorn, Eagan PD; Randy Frailing, Region 45 City of Green Bay; Andy Terry, Mn/ DOT; Steve Pott, Washington CO SO; Roger Kochevar Mn/DOT; Bob Heidbrink, MA/Com; Greg Coleman, MA/Com; Bob Speidel, MA/Com; Michele Tuchner, State Patrol.

Video conferencing in place, no attendees via video conference.

1006 mtg. called to order.

Minutes reviewed, Andy Terry moved to accept, Ken Southhorn seconded.

Treasurer's report - same balance as before. Pott will be going to the 700 MHz colloquium in Denver at the end of the month. The colloquium is free, but travel expenses will be paid out of the fund balance.

Pott offered if any other board members were interested in attending. Possibly Ken Southorn, they will discuss off-line. Dates are Oct 25-27. Note: it was too late to register any additional attendees.

Pott made CDs of the plan and distributed to the 4 adjacent regions, it's also out on CAPRAD, including attachments. He did not include addendums they are already on CAPRAD.

Here to review comments on the plan, Pott only received one set of comments from Roger Laurence at Hennepin County.

Roger's comments have fairly minor changes; the one that could have the biggest impact is the first one. Roger suggests that Michigan is an adjacent region. Pott- should we include it or leave it out? It's not listed in the CAPRAD plan as an adjacent. It would require concurrence for our plan approval process. If we feel there will be issues, then we should get it out there now. Andy feels there is enough physical separation, that it should not be an issue. Pott- we acknowledge the lake area already (Superior).

Pott- moved, Andy seconded, to leave it out.

Leave in the language about Hennepin County (see underline text in handout) Reviewed rest of underlined text. All o.k. to leave in will clarify with Roger the 3 additional VHF repeater channels (Pott will check with Roger)

Discussed Roger's language change from PSAP to 'eligible entity' do we want for example a school bus company to hold the same level of rights as say a PSAP to apply for these unused frequencies?

Handout circulated, produced by Roger Kochevar, about getting more specific about the request/appeal process.

Roger Kochevar, took the process that the National coordinating committee used and he has set up a 'scoring' system, for our application process, with 7 scoring categories,

1) service, higher score for like police service
2) interoperability-
3) loading
4) Spectrum efficient technology
5) System Implementation Factors
6) Geographic Efficient
7) Givebacks

Discussed the scoring system, and what is fair. Reviewed and discussed language. Reviewed language in Wisconsin's plan.

Andy asked does it (Wisconsin's) have an application window, I think it's first come, first served. Randy didn't think they had a window.

Pott is fine with the way Roger has it worded except for the part about service.

Add language from Wisconsin's region 45 and add, "Consideration will be given to the population served by the entity".

Andy do we want to use the WI language that says we go to this if there is a conflict, or as part of our process? Discussion ensued.

Pott, I think it would be an easier process for the RPC, if we evaluate it on an annual basis. Rather than try to guess if another application is in the wind. What kind of window would we like to set Jan-Feb is the filing window for each year for 700 MHZ. Only for general use, or include the data channels, All 700 MHz, under our authority.

Reviewed the rest of Roger's comments, underlined text, 5.5 paragraph 2, and o.k.
Paragraph 3, ok. Announcement that frequencies are available.

5.7 changed "subject to the timetable set in 5.5" this o.k. also.

Other than Roger's first change about Michigan, we really don't have any issue with his language changes.

Roger Kochevar, Roger Laurence sent some comments to him. Roger L. suggested, In section 3, include these federal frequencies. (see handout 4-2333). Bob Speidel recommended it be left out, and just focus on the 700 MHz. This may only confuse the FCC. Pott- asked why Roger suggested adding these channels. Pott-asked are these only for interop? Yes, so do we really need to use them? Roger K. said we put some of this in, so that this plan can be used by our own people as a reference guide as well. By adding it, those reviewing the plan can see that there is another possibility with these channels. Cleaner to just leave them out, and just put a sentence in about other frequencies available for use, and not specifically list them. Decided to leave it the way it is and not add any additional language on this point.

Roger advised that he proofed it, and made small language clean up. Barring any last minute comments, but if there are no others, we are going to move ahead to submit the plan.

Pott asked if Randy had any comments to add. Randy asked is it on CAPRAD now? Yes, and a copy was sent to Karen on disk. Randy- status of our approval of your plan, and additionally, looking for your approval of our (WI) plan. Still need to get concurrence of adjacent regions, ND & SD, will be more difficult as they do not appear to have a Committee working on a plan. Were on hold until ND & SD, can approve our plan.

Tuchner moved, Andy seconded the approval of the plan, with the additional changes noted today. Voted, passed. As soon as we can get concurrence from the adjacent regions, we will forward to the FCC.

Pott -Region 45's plan a lot of boiler plate but there are some differences, dispute resolution, allocation of data channels, Roger and Pott looked at it, they discussed it, and they/we don't have any issues with it, we can do one of two things, we can give concurrence today, or send it out for 30 days, to the membership, for review and if no more comments, we will approve it.

Andy motioned, Pott seconded that it be sent out for review for 30 days, and if no objections, the Committee will motion to approve. Voted and approved.

Pott- info will be sent to all on where/how to receive copy of Region 45 plan for review.

700 MHz portion of meeting adjourned 1120 hrs.

Bob Speidel gave presentation on application process for 4.9 GHz.

Meeting adjourned at 1240 hours.

Attachment 5

January 6, 2004

Joseph B. Day, Executive Director
Minnesota Indian Affairs Council
3801 Bemidji Ave., Suite 5
Bemidji, MN 56601

Dear Mr. Day:

Several years ago, the Federal Communications Commission (FCC) released additional radio frequencies in the 700 MHz band for use by public safety entities. These frequencies became available following the re-allocation of television channels 60 to 69. This allocation is said to be the largest ever single allocation for public safety.

The FCC directed the Chairman of the 800 MHz NPSPAC committee to schedule an initial meeting of a Regional Planning Committee (RPC), to establish a plan for allocation and use of these new frequencies. Notices for the meeting were published more than 60 days in advance of the meeting in several venues such as the APCO public safety magazine, the Federal Register, the Minneapolis Star and Tribune news paper. Notices were also distributed at the state APCO training conference and posted on the local chapter web site. Notices were also distributed using existing e-mail lists to parties involved in previous radio planning processes.

The initial meeting was held in January 2001, and despite the broad distribution of the notices, we had relatively low attendance. I was elected Chairman of the Region 22 RPC, (State of Minnesota). The committee has been meeting quarterly, and notices have primarily been distributed through e-mail following the initial meeting. The meetings have been held around the State, but more recently have been hosted in St. Paul at the Department of Transportation Central Office. The meetings have been available throughout the State using MnDOT's video-conferencing system. The meetings have not been well attended, and there seems to be little or no interest by most governmental entities throughout the State. We continue to press on with the process, and expect to complete a draft of the plan in the next few months.

One of the recipients of the e-mail notices has been the Minnesota Chiefs of Police organization. We asked that they distribute the notice to all of their members. Late in 2003 we learned that less than one half of the tribal police

departments in Minnesota are members of the Chiefs of Police organization, and assume they have not been made aware of the 700 MHz planning process. One of the requirements of the FCC is to make sure that the 700 MHz allocation plan addresses any needs identified by tribal public safety entities. We felt that your agency may be able to help distribute this information, and identify any needs that may exist.

A consulting firm was hired to prepare a model allocation plan for the entire country, and that was finally completed in 2003. The Region 22 committee feels that the national allocation model will best meet the needs throughout the State, and we don't currently have any plans to modify the allocation. With the exception of the twin cities metro area, most areas of the State will have adequate radio frequencies available for system development.

I would like to discuss the planning process with you, and determine the best way to determine if there are specific needs that the committee should address. I will try to make contact with you by phone yet this week. If I am unsuccessful, the next meeting of the RPC is Tuesday January 13, 2004 at 10:00 am. The "live" meeting will be held at the Mn/DOT Central Office in St. Paul, and will be also be available at the following Mn/DOT District Office video-conference locations:

Duluth	Virginia	Bemidji
Crookston	Detroit Lakes	Morris
Owatonna	Mankato	Windom
Willmar	Marshall	

I look forward to talking with you about the 700 MHz allocation, and expect that we will be able to address any problems or concerns that any of the tribal public safety entities may have.

Sincerely,

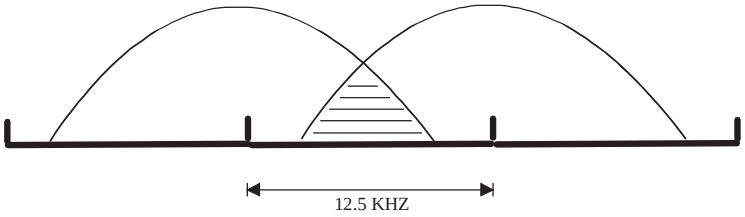
Steve Pott, Chairman

651-430-7615 (phone)
651-430-7603 (fax)
steve.pott@co.washington.mn.us

Attachment 6

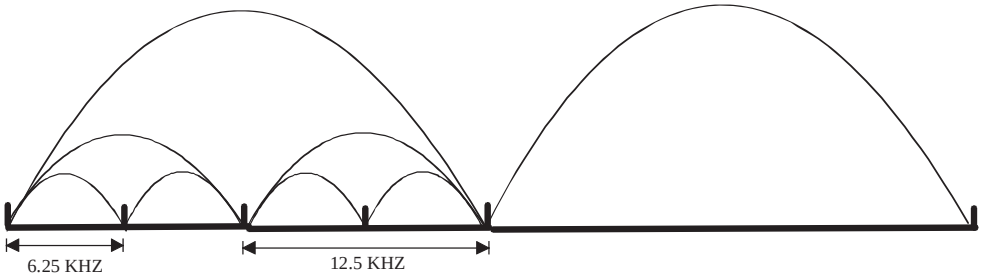
Comparison of 700 MHZ & 800MHZ NPSPAC Public Safety Channels.

Number of 800 NPSPAC channels:
For State channels 27
For Mutual Aide channels 8
For Guard channels 31
For Unassigned channels 24
For Assigned 140 channel and **3.5 MHZ** of spectrum
Total of 230 channels and 6 MHZ of spectrum



NPSPAC channels centers are 12.5 KHZ away from each other.

Number of 700 MHZ Public Safety Narrow-band (25kHZ) channels:
For State, 48 channels and 2.4 MHZ of spectrum
Mutual Aid 32 channels and .8MHZ of spectrum[Nationwide Interoperability]
For Assignment, 154 channels and **7.7 MHZ** of spectrum[General Use]



700MHZ channels centers and separation have not been finalized at this time.

Attachment 7

Region22 - Minnesota
Channel Allotments by Class
12/14/07
General Use-Voice 25KHz

County	Band	FCC Channel Number	Base Frequency	Mobile Frequency	Notation
Aitkin					
	25KHz	13-16	769.0875	799.0875	
	25KHz	165-168	770.0375	800.0375	
	25KHz	333-336	771.0875	801.0875	
	25KHz	381-384	771.3875	801.3875	
	25KHz	441-444	771.7625	801.7625	
	25KHz	489-492	772.0625	802.0625	
	25KHz	529-532	772.3125	802.3125	
	25KHz	605-608	772.7875	802.7875	
Anoka					
	25KHz	13-16	769.0875	799.0875	
	25KHz	97-100	769.6125	799.6125	
	25KHz	173-176	770.0875	800.0875	
	25KHz	253-256	770.5875	800.5875	
	25KHz	345-348	771.1625	801.1625	
	25KHz	413-416	771.5875	801.5875	
	25KHz	469-472	771.9375	801.9375	
	25KHz	501-504	772.1375	802.1375	
	25KHz	541-544	772.3875	802.3875	
	25KHz	629-632	772.9375	802.9375	
	25KHz	673-676	773.2125	803.2125	
	25KHz	757-760	773.7375	803.7375	
	25KHz	821-824	774.1375	804.1375	
Becker					
	25KHz	17-20	769.1125	799.1125	
	25KHz	57-60	769.3625	799.3625	
	25KHz	133-136	769.8375	799.8375	
	25KHz	285-288	770.7875	800.7875	
	25KHz	337-340	771.1125	801.1125	
	25KHz	381-384	771.3875	801.3875	
	25KHz	469-472	771.9375	801.9375	
	25KHz	549-552	772.4375	802.4375	
	25KHz	609-612	772.8125	802.8125	
	25KHz	713-716	773.4625	803.4625	
	25KHz	865-868	774.4125	804.4125	
	25KHz	941-944	774.8875	804.8875	
Beltrami					
	25KHz	13-16	769.0875	799.0875	
	25KHz	121-124	769.7625	799.7625	
	25KHz	161-164	770.0125	800.0125	
	25KHz	217-220	770.3625	800.3625	
	25KHz	281-284	770.7625	800.7625	
	25KHz	341-344	771.1375	801.1375	
	25KHz	393-396	771.4625	801.4625	

25KHz	453-456	771.8375	801.8375
25KHz	493-496	772.0875	802.0875
25KHz	533-536	772.3375	802.3375
25KHz	601-604	772.7625	802.7625
25KHz	677-680	773.2375	803.2375
25KHz	741-744	773.6375	803.6375
25KHz	821-824	774.1375	804.1375
25KHz	861-864	774.3875	804.3875
25KHz	917-920	774.7375	804.7375

Benton

25KHz	45-48	769.2875	799.2875
25KHz	89-92	769.5625	799.5625
25KHz	169-172	770.0625	800.0625
25KHz	209-212	770.3125	800.3125
25KHz	249-252	770.5625	800.5625
25KHz	321-324	771.0125	801.0125
25KHz	361-364	771.2625	801.2625
25KHz	401-404	771.5125	801.5125
25KHz	485-488	772.0375	802.0375
25KHz	561-564	772.5125	802.5125
25KHz	909-912	774.6875	804.6875

Big Stone

25KHz	217-220	770.3625	800.3625
25KHz	361-364	771.2625	801.2625
25KHz	437-440	771.7375	801.7375
25KHz	545-548	772.4125	802.4125
25KHz	589-592	772.6875	802.6875
25KHz	713-716	773.4625	803.4625
25KHz	825-828	774.1625	804.1625

Blue Earth

25KHz	45-48	769.2875	799.2875
25KHz	85-88	769.5375	799.5375
25KHz	133-136	769.8375	799.8375
25KHz	173-176	770.0875	800.0875
25KHz	293-296	770.8375	800.8375
25KHz	345-348	771.1625	801.1625
25KHz	385-388	771.4125	801.4125
25KHz	461-464	771.8875	801.8875
25KHz	501-504	772.1375	802.1375
25KHz	605-608	772.7875	802.7875
25KHz	701-704	773.3875	803.3875
25KHz	757-760	773.7375	803.7375
25KHz	821-824	774.1375	804.1375
25KHz	861-864	774.3875	804.3875
25KHz	901-904	774.6375	804.6375
25KHz	941-944	774.8875	804.8875

Brown

25KHz	93-96	769.5875	799.5875
25KHz	245-248	770.5375	800.5375
25KHz	321-324	771.0125	801.0125
25KHz	361-364	771.2625	801.2625
25KHz	409-412	771.5625	801.5625
25KHz	549-552	772.4375	802.4375
25KHz	597-600	772.7375	802.7375

25KHz	677-680	773.2375	803.2375
25KHz	717-720	773.4875	803.4875
25KHz	797-800	773.9875	803.9875
25KHz	869-872	774.4375	804.4375
Carlton			
25KHz	89-92	769.5625	799.5625
25KHz	201-204	770.2625	800.2625
25KHz	241-244	770.5125	800.5125
25KHz	281-284	770.7625	800.7625
25KHz	321-324	771.0125	801.0125
25KHz	369-372	771.3125	801.3125
25KHz	425-428	771.6625	801.6625
25KHz	517-520	772.2375	802.2375
25KHz	561-564	772.5125	802.5125
25KHz	617-620	772.8625	802.8625
25KHz	717-720	773.4875	803.4875
25KHz	861-864	774.3875	804.3875
Carver			
25KHz	89-92	769.5625	799.5625
25KHz	353-356	771.2125	801.2125
25KHz	433-436	771.7125	801.7125
25KHz	525-528	772.2875	802.2875
25KHz	581-584	772.6375	802.6375
25KHz	621-624	772.8875	802.8875
25KHz	825-828	774.1625	804.1625
Cass			
25KHz	85-88	769.5375	799.5375
25KHz	137-140	769.8625	799.8625
25KHz	253-256	770.5875	800.5875
25KHz	293-296	770.8375	800.8375
25KHz	349-352	771.1875	801.1875
25KHz	417-420	771.6125	801.6125
25KHz	481-484	772.0125	802.0125
25KHz	545-548	772.4125	802.4125
25KHz	585-588	772.6625	802.6625
25KHz	637-640	772.9875	802.9875
25KHz	709-712	773.4375	803.4375
25KHz	785-788	773.9125	803.9125
Chippewa			
25KHz	13-16	769.0875	799.0875
25KHz	81-84	769.5125	799.5125
25KHz	125-128	769.7875	799.7875
25KHz	165-168	770.0375	800.0375
25KHz	205-208	770.2875	800.2875
25KHz	325-328	771.0375	801.0375
25KHz	405-408	771.5375	801.5375
25KHz	477-480	771.9875	801.9875
25KHz	485-488	772.0375	802.0375
25KHz	577-580	772.6125	802.6125
25KHz	637-640	772.9875	802.9875
25KHz	837-840	774.2375	804.2375
Chisago			
25KHz	161-164	770.0125	800.0125
25KHz	297-300	770.8625	800.8625
25KHz	337-340	771.1125	801.1125

	25KHz	397-400	771.4875	801.4875
	25KHz	445-448	771.7875	801.7875
	25KHz	557-560	772.4875	802.4875
	25KHz	601-604	772.7625	802.7625
	25KHz	873-876	774.4625	804.4625
Clay				
	25KHz	89-92	769.5625	799.5625
	25KHz	161-164	770.0125	800.0125
	25KHz	201-204	770.2625	800.2625
	25KHz	241-244	770.5125	800.5125
	25KHz	297-300	770.8625	800.8625
	25KHz	365-368	771.2875	801.2875
	25KHz	441-444	771.7625	801.7625
	25KHz	493-496	772.0875	802.0875
	25KHz	537-540	772.3625	802.3625
	25KHz	577-580	772.6125	802.6125
	25KHz	625-628	772.9125	802.9125
	25KHz	705-708	773.4125	803.4125
	25KHz	757-760	773.7375	803.7375
	25KHz	797-800	773.9875	803.9875
	25KHz	837-840	774.2375	804.2375
	25KHz	909-912	774.6875	804.6875
Clearwater				
	25KHz	49-52	769.3125	799.3125
	25KHz	97-100	769.6125	799.6125
	25KHz	329-332	771.0625	801.0625
	25KHz	437-440	771.7375	801.7375
	25KHz	557-560	772.4875	802.4875
	25KHz	781-784	773.8875	803.8875
Cook				
	25KHz	13-16	769.0875	799.0875
	25KHz	57-60	769.3625	799.3625
	25KHz	137-140	769.8625	799.8625
	25KHz	213-216	770.3375	800.3375
	25KHz	253-256	770.5875	800.5875
	25KHz	321-324	771.0125	801.0125
	25KHz	361-364	771.2625	801.2625
	25KHz	405-408	771.5375	801.5375
	25KHz	465-468	771.9125	801.9125
	25KHz	489-492	772.0625	802.0625
	25KHz	533-536	772.3375	802.3375
	25KHz	573-576	772.5875	802.5875
	25KHz	613-616	772.8375	802.8375
	25KHz	677-680	773.2375	803.2375
	25KHz	781-784	773.8875	803.8875
	25KHz	821-824	774.1375	804.1375
	25KHz	861-864	774.3875	804.3875
	25KHz	917-920	774.7375	804.7375
Cottonwood				
	25KHz	41-44	769.2625	799.2625
	25KHz	81-84	769.5125	799.5125
	25KHz	125-128	769.7875	799.7875
	25KHz	421-424	771.6375	801.6375
	25KHz	533-536	772.3375	802.3375
	25KHz	609-612	772.8125	802.8125

25KHz	785-788	773.9125	803.9125
25KHz	917-920	774.7375	804.7375
Crow Wing			
25KHz	49-52	769.3125	799.3125
25KHz	93-96	769.5875	799.5875
25KHz	173-176	770.0875	800.0875
25KHz	285-288	770.7875	800.7875
25KHz	325-328	771.0375	801.0375
25KHz	389-392	771.4375	801.4375
25KHz	433-436	771.7125	801.7125
25KHz	477-480	771.9875	801.9875
25KHz	513-516	772.2125	802.2125
25KHz	565-568	772.5375	802.5375
25KHz	613-616	772.8375	802.8375
25KHz	669-672	773.1875	803.1875
25KHz	749-752	773.6875	803.6875
25KHz	833-836	774.2125	804.2125
25KHz	905-908	774.6625	804.6625
25KHz	945-948	774.9125	804.9125
Dakota			
25KHz	17-20	769.1125	799.1125
25KHz	93-96	769.5875	799.5875
25KHz	177-180	770.1125	800.1125
25KHz	217-220	770.3625	800.3625
25KHz	257-260	770.6125	800.6125
25KHz	349-352	771.1875	801.1875
25KHz	389-392	771.4375	801.4375
25KHz	465-468	771.9125	801.9125
25KHz	505-508	772.1625	802.1625
25KHz	545-548	772.4125	802.4125
25KHz	585-588	772.6625	802.6625
25KHz	625-628	772.9125	802.9125
25KHz	677-680	773.2375	803.2375
25KHz	717-720	773.4875	803.4875
25KHz	781-784	773.8875	803.8875
25KHz	829-832	774.1875	804.1875
Dodge			
25KHz	281-284	770.7625	800.7625
25KHz	353-356	771.2125	801.2125
25KHz	409-412	771.5625	801.5625
25KHz	537-540	772.3625	802.3625
25KHz	589-592	772.6875	802.6875
25KHz	917-920	774.7375	804.7375
Douglas			
25KHz	93-96	769.5875	799.5875
25KHz	177-180	770.1125	800.1125
25KHz	249-252	770.5625	800.5625
25KHz	289-292	770.8125	800.8125
25KHz	345-348	771.1625	801.1625
25KHz	385-388	771.4125	801.4125
25KHz	429-432	771.6875	801.6875
25KHz	505-508	772.1625	802.1625
25KHz	553-556	772.4625	802.4625
25KHz	625-628	772.9125	802.9125
25KHz	837-840	774.2375	804.2375

	25KHz	909-912	774.6875	804.6875
Faribault				
	25KHz	217-220	770.3625	800.3625
	25KHz	325-328	771.0375	801.0375
	25KHz	377-380	771.3625	801.3625
	25KHz	453-456	771.8375	801.8375
	25KHz	553-556	772.4625	802.4625
	25KHz	613-616	772.8375	802.8375
	25KHz	665-668	773.1625	803.1625
	25KHz	749-752	773.6875	803.6875
	25KHz	913-916	774.7125	804.7125
Fillmore				
	25KHz	89-92	769.5625	799.5625
	25KHz	285-288	770.7875	800.7875
	25KHz	345-348	771.1625	801.1625
	25KHz	393-396	771.4625	801.4625
	25KHz	449-452	771.8125	801.8125
	25KHz	561-564	772.5125	802.5125
	25KHz	633-636	772.9625	802.9625
	25KHz	829-832	774.1875	804.1875
	25KHz	913-916	774.7125	804.7125
Freeborn				
	25KHz	17-20	769.1125	799.1125
	25KHz	93-96	769.5875	799.5875
	25KHz	205-208	770.2875	800.2875
	25KHz	257-260	770.6125	800.6125
	25KHz	337-340	771.1125	801.1125
	25KHz	397-400	771.4875	801.4875
	25KHz	445-448	771.7875	801.7875
	25KHz	597-600	772.7375	802.7375
	25KHz	717-720	773.4875	803.4875
	25KHz	833-836	774.2125	804.2125
	25KHz	873-876	774.4625	804.4625
Goodhue				
	25KHz	161-164	770.0125	800.0125
	25KHz	341-344	771.1375	801.1375
	25KHz	429-432	771.6875	801.6875
	25KHz	473-476	771.9625	801.9625
	25KHz	565-568	772.5375	802.5375
	25KHz	613-616	772.8375	802.8375
	25KHz	665-668	773.1625	803.1625
	25KHz	869-872	774.4375	804.4375
Grant				
	25KHz	13-16	769.0875	799.0875
	25KHz	53-56	769.3375	799.3375
	25KHz	413-416	771.5875	801.5875
	25KHz	469-472	771.9375	801.9375
	25KHz	541-544	772.3875	802.3875
	25KHz	605-608	772.7875	802.7875
	25KHz	709-712	773.4375	803.4375
	25KHz	945-948	774.9125	804.9125
Hennepin				
	25KHz	49-52	769.3125	799.3125
	25KHz	125-128	769.7875	799.7875
	25KHz	165-168	770.0375	800.0375

25KHz	205-208	770.2875	800.2875
25KHz	245-248	770.5375	800.5375
25KHz	285-288	770.7875	800.7875
25KHz	325-328	771.0375	801.0375
25KHz	365-368	771.2875	801.2875
25KHz	421-424	771.6375	801.6375
25KHz	477-480	771.9875	801.9875
25KHz	481-484	772.0125	802.0125
25KHz	533-536	772.3375	802.3375
25KHz	597-600	772.7375	802.7375
25KHz	637-640	772.9875	802.9875
25KHz	709-712	773.4375	803.4375
25KHz	749-752	773.6875	803.6875
25KHz	797-800	773.9875	803.9875
25KHz	865-868	774.4125	804.4125
25KHz	905-908	774.6625	804.6625
25KHz	945-948	774.9125	804.9125
Houston			
25KHz	217-220	770.3625	800.3625
25KHz	257-260	770.6125	800.6125
25KHz	353-356	771.2125	801.2125
25KHz	433-436	771.7125	801.7125
25KHz	569-572	772.5625	802.5625
25KHz	617-620	772.8625	802.8625
25KHz	745-748	773.6625	803.6625
Hubbard			
25KHz	177-180	770.1125	800.1125
25KHz	241-244	770.5125	800.5125
25KHz	365-368	771.2875	801.2875
25KHz	405-408	771.5375	801.5375
25KHz	461-464	771.8875	801.8875
25KHz	525-528	772.2875	802.2875
25KHz	577-580	772.6125	802.6125
25KHz	629-632	772.9375	802.9375
25KHz	909-912	774.6875	804.6875
Isanti			
25KHz	53-56	769.3375	799.3375
25KHz	289-292	770.8125	800.8125
25KHz	357-360	771.2375	801.2375
25KHz	405-408	771.5375	801.5375
25KHz	521-524	772.2625	802.2625
25KHz	713-716	773.4625	803.4625
Itasca			
25KHz	57-60	769.3625	799.3625
25KHz	97-100	769.6125	799.6125
25KHz	205-208	770.2875	800.2875
25KHz	245-248	770.5375	800.5375
25KHz	357-360	771.2375	801.2375
25KHz	401-404	771.5125	801.5125
25KHz	465-468	771.9125	801.9125
25KHz	521-524	772.2625	802.2625
25KHz	569-572	772.5625	802.5625
25KHz	621-624	772.8875	802.8875
25KHz	661-664	773.1375	803.1375
25KHz	701-704	773.3875	803.3875

	25KHz	757-760	773.7375	803.7375
	25KHz	797-800	773.9875	803.9875
	25KHz	837-840	774.2375	804.2375
	25KHz	877-880	774.4875	804.4875
	25KHz	941-944	774.8875	804.8875
Jackson				
	25KHz	17-20	769.1125	799.1125
	25KHz	213-216	770.3375	800.3375
	25KHz	413-416	771.5875	801.5875
	25KHz	457-460	771.8625	801.8625
	25KHz	517-520	772.2375	802.2375
	25KHz	557-560	772.4875	802.4875
	25KHz	705-708	773.4125	803.4125
	25KHz	909-912	774.6875	804.6875
Kanabec				
	25KHz	177-180	770.1125	800.1125
	25KHz	417-420	771.6125	801.6125
	25KHz	505-508	772.1625	802.1625
	25KHz	569-572	772.5625	802.5625
	25KHz	625-628	772.9125	802.9125
	25KHz	741-744	773.6375	803.6375
	25KHz	789-792	773.9375	803.9375
	25KHz	829-832	774.1875	804.1875
Kandiyohi				
	25KHz	49-52	769.3125	799.3125
	25KHz	97-100	769.6125	799.6125
	25KHz	173-176	770.0875	800.0875
	25KHz	213-216	770.3375	800.3375
	25KHz	285-288	770.7875	800.7875
	25KHz	365-368	771.2875	801.2875
	25KHz	433-436	771.7125	801.7125
	25KHz	517-520	772.2375	802.2375
	25KHz	609-612	772.8125	802.8125
	25KHz	673-676	773.2125	803.2125
	25KHz	713-716	773.4625	803.4625
	25KHz	781-784	773.8875	803.8875
	25KHz	829-832	774.1875	804.1875
	25KHz	873-876	774.4625	804.4625
	25KHz	917-920	774.7375	804.7375
Kittson				
	25KHz	125-128	769.7875	799.7875
	25KHz	209-212	770.3125	800.3125
	25KHz	337-340	771.1125	801.1125
	25KHz	405-408	771.5375	801.5375
	25KHz	449-452	771.8125	801.8125
	25KHz	537-540	772.3625	802.3625
	25KHz	605-608	772.7875	802.7875
	25KHz	749-752	773.6875	803.6875
	25KHz	829-832	774.1875	804.1875
	25KHz	869-872	774.4375	804.4375
Koochiching				
	25KHz	49-52	769.3125	799.3125
	25KHz	89-92	769.5625	799.5625
	25KHz	169-172	770.0625	800.0625

	25KHz	321-324	771.0125	801.0125
	25KHz	369-372	771.3125	801.3125
	25KHz	437-440	771.7375	801.7375
	25KHz	477-480	771.9875	801.9875
	25KHz	485-488	772.0375	802.0375
	25KHz	557-560	772.4875	802.4875
	25KHz	613-616	772.8375	802.8375
	25KHz	713-716	773.4625	803.4625
	25KHz	781-784	773.8875	803.8875
	25KHz	901-904	774.6375	804.6375
Lac Qui Parle				
	25KHz	53-56	769.3375	799.3375
	25KHz	93-96	769.5875	799.5875
	25KHz	137-140	769.8625	799.8625
	25KHz	281-284	770.7625	800.7625
	25KHz	333-336	771.0875	801.0875
	25KHz	389-392	771.4375	801.4375
	25KHz	529-532	772.3125	802.3125
	25KHz	605-608	772.7875	802.7875
	25KHz	901-904	774.6375	804.6375
Lake				
	25KHz	49-52	769.3125	799.3125
	25KHz	93-96	769.5875	799.5875
	25KHz	161-164	770.0125	800.0125
	25KHz	205-208	770.2875	800.2875
	25KHz	245-248	770.5375	800.5375
	25KHz	285-288	770.7875	800.7875
	25KHz	349-352	771.1875	801.1875
	25KHz	433-436	771.7125	801.7125
	25KHz	473-476	771.9625	801.9625
	25KHz	481-484	772.0125	802.0125
	25KHz	521-524	772.2625	802.2625
	25KHz	581-584	772.6375	802.6375
	25KHz	621-624	772.8875	802.8875
	25KHz	665-668	773.1625	803.1625
	25KHz	713-716	773.4625	803.4625
	25KHz	757-760	773.7375	803.7375
	25KHz	797-800	773.9875	803.9875
	25KHz	837-840	774.2375	804.2375
	25KHz	877-880	774.4875	804.4875
	25KHz	945-948	774.9125	804.9125
Lake of the Woods				
	25KHz	57-60	769.3625	799.3625
	25KHz	133-136	769.8375	799.8375
	25KHz	209-212	770.3125	800.3125
	25KHz	257-260	770.6125	800.6125
	25KHz	333-336	771.0875	801.0875
	25KHz	377-380	771.3625	801.3625
	25KHz	429-432	771.6875	801.6875
	25KHz	513-516	772.2125	802.2125
	25KHz	577-580	772.6125	802.6125
	25KHz	621-624	772.8875	802.8875
	25KHz	665-668	773.1625	803.1625
	25KHz	705-708	773.4125	803.4125
	25KHz	753-756	773.7125	803.7125

	25KHz	829-832	774.1875	804.1875
	25KHz	869-872	774.4375	804.4375
	25KHz	941-944	774.8875	804.8875
Le Sueur				
	25KHz	209-212	770.3125	800.3125
	25KHz	249-252	770.5625	800.5625
	25KHz	357-360	771.2375	801.2375
	25KHz	405-408	771.5375	801.5375
	25KHz	509-512	772.1875	802.1875
	25KHz	593-596	772.7125	802.7125
	25KHz	713-716	773.4625	803.4625
	25KHz	793-796	773.9625	803.9625
Lincoln				
	25KHz	89-92	769.5625	799.5625
	25KHz	129-132	769.8125	799.8125
	25KHz	385-388	771.4125	801.4125
	25KHz	469-472	771.9375	801.9375
	25KHz	561-564	772.5125	802.5125
	25KHz	781-784	773.8875	803.8875
	25KHz	869-872	774.4375	804.4375
Lyon				
	25KHz	45-48	769.2875	799.2875
	25KHz	121-124	769.7625	799.7625
	25KHz	161-164	770.0125	800.0125
	25KHz	209-212	770.3125	800.3125
	25KHz	253-256	770.5875	800.5875
	25KHz	329-332	771.0625	801.0625
	25KHz	369-372	771.3125	801.3125
	25KHz	417-420	771.6125	801.6125
	25KHz	461-464	771.8875	801.8875
	25KHz	489-492	772.0625	802.0625
	25KHz	601-604	772.7625	802.7625
	25KHz	661-664	773.1375	803.1375
	25KHz	709-712	773.4375	803.4375
	25KHz	757-760	773.7375	803.7375
	25KHz	913-916	774.7125	804.7125
Mahnomen				
	25KHz	173-176	770.0875	800.0875
	25KHz	213-216	770.3375	800.3375
	25KHz	353-356	771.2125	801.2125
	25KHz	409-412	771.5625	801.5625
	25KHz	457-460	771.8625	801.8625
	25KHz	521-524	772.2625	802.2625
	25KHz	569-572	772.5625	802.5625
	25KHz	633-636	772.9625	802.9625
	25KHz	745-748	773.6625	803.6625
	25KHz	825-828	774.1625	804.1625
Marshall				
	25KHz	93-96	769.5875	799.5875
	25KHz	137-140	769.8625	799.8625
	25KHz	253-256	770.5875	800.5875
	25KHz	297-300	770.8625	800.8625
	25KHz	385-388	771.4125	801.4125
	25KHz	425-428	771.6625	801.6625
	25KHz	481-484	772.0125	802.0125

25KHz	521-524	772.2625	802.2625
25KHz	569-572	772.5625	802.5625
25KHz	625-628	772.9125	802.9125
25KHz	797-800	773.9875	803.9875
25KHz	945-948	774.9125	804.9125
Martin			
25KHz	53-56	769.3375	799.3375
25KHz	97-100	769.6125	799.6125
25KHz	161-164	770.0125	800.0125
25KHz	241-244	770.5125	800.5125
25KHz	353-356	771.2125	801.2125
25KHz	393-396	771.4625	801.4625
25KHz	433-436	771.7125	801.7125
25KHz	477-480	771.9875	801.9875
25KHz	573-576	772.5875	802.5875
25KHz	633-636	772.9625	802.9625
25KHz	673-676	773.2125	803.2125
25KHz	829-832	774.1875	804.1875
McLeod			
25KHz	129-132	769.8125	799.8125
25KHz	281-284	770.7625	800.7625
25KHz	341-344	771.1375	801.1375
25KHz	401-404	771.5125	801.5125
25KHz	449-452	771.8125	801.8125
25KHz	513-516	772.2125	802.2125
25KHz	557-560	772.4875	802.4875
25KHz	601-604	772.7625	802.7625
25KHz	661-664	773.1375	803.1375
25KHz	741-744	773.6375	803.6375
25KHz	877-880	774.4875	804.4875
Meeker			
25KHz	137-140	769.8625	799.8625
25KHz	329-332	771.0625	801.0625
25KHz	373-376	771.3375	801.3375
25KHz	417-420	771.6125	801.6125
25KHz	505-508	772.1625	802.1625
25KHz	545-548	772.4125	802.4125
25KHz	585-588	772.6625	802.6625
25KHz	625-628	772.9125	802.9125
25KHz	753-756	773.7125	803.7125
Mille Lacs			
25KHz	217-220	770.3625	800.3625
25KHz	257-260	770.6125	800.6125
25KHz	341-344	771.1375	801.1375
25KHz	453-456	771.8375	801.8375
25KHz	537-540	772.3625	802.3625
25KHz	581-584	772.6375	802.6375
25KHz	781-784	773.8875	803.8875
25KHz	869-872	774.4375	804.4375
Morrison			
25KHz	129-132	769.8125	799.8125
25KHz	369-372	771.3125	801.3125
25KHz	425-428	771.6625	801.6625
25KHz	465-468	771.9125	801.9125
25KHz	497-500	772.1125	802.1125

	25KHz	573-576	772.5875	802.5875
	25KHz	621-624	772.8875	802.8875
	25KHz	677-680	773.2375	803.2375
	25KHz	717-720	773.4875	803.4875
	25KHz	825-828	774.1625	804.1625
	25KHz	877-880	774.4875	804.4875
Mower				
	25KHz	45-48	769.2875	799.2875
	25KHz	121-124	769.7625	799.7625
	25KHz	177-180	770.1125	800.1125
	25KHz	369-372	771.3125	801.3125
	25KHz	437-440	771.7375	801.7375
	25KHz	477-480	771.9875	801.9875
	25KHz	493-496	772.0875	802.0875
	25KHz	577-580	772.6125	802.6125
	25KHz	621-624	772.8875	802.8875
	25KHz	661-664	773.1375	803.1375
	25KHz	709-712	773.4375	803.4375
	25KHz	757-760	773.7375	803.7375
	25KHz	901-904	774.6375	804.6375
Murray				
	25KHz	289-292	770.8125	800.8125
	25KHz	397-400	771.4875	801.4875
	25KHz	481-484	772.0125	802.0125
	25KHz	525-528	772.2875	802.2875
	25KHz	577-580	772.6125	802.6125
	25KHz	637-640	772.9875	802.9875
	25KHz	901-904	774.6375	804.6375
	25KHz	941-944	774.8875	804.8875
Nicollet				
	25KHz	13-16	769.0875	799.0875
	25KHz	57-60	769.3625	799.3625
	25KHz	201-204	770.2625	800.2625
	25KHz	369-372	771.3125	801.3125
	25KHz	437-440	771.7375	801.7375
	25KHz	485-488	772.0375	802.0375
	25KHz	529-532	772.3125	802.3125
	25KHz	577-580	772.6125	802.6125
	25KHz	617-620	772.8625	802.8625
	25KHz	837-840	774.2375	804.2375
Nobles				
	25KHz	133-136	769.8375	799.8375
	25KHz	173-176	770.0875	800.0875
	25KHz	249-252	770.5625	800.5625
	25KHz	325-328	771.0375	801.0375
	25KHz	377-380	771.3625	801.3625
	25KHz	437-440	771.7375	801.7375
	25KHz	493-496	772.0875	802.0875
	25KHz	541-544	772.3875	802.3875
	25KHz	589-592	772.6875	802.6875
	25KHz	713-716	773.4625	803.4625
	25KHz	793-796	773.9625	803.9625
Norman				
	25KHz	345-348	771.1625	801.1625
	25KHz	393-396	771.4625	801.4625

25KHz	433-436	771.7125	801.7125
25KHz	485-488	772.0375	802.0375
25KHz	529-532	772.3125	802.3125
25KHz	601-604	772.7625	802.7625
Olmsted			
25KHz	13-16	769.0875	799.0875
25KHz	57-60	769.3625	799.3625
25KHz	97-100	769.6125	799.6125
25KHz	137-140	769.8625	799.8625
25KHz	213-216	770.3375	800.3375
25KHz	253-256	770.5875	800.5875
25KHz	293-296	770.8375	800.8375
25KHz	333-336	771.0875	801.0875
25KHz	377-380	771.3625	801.3625
25KHz	421-424	771.6375	801.6375
25KHz	461-464	771.8875	801.8875
25KHz	501-504	772.1375	802.1375
25KHz	549-552	772.4375	802.4375
25KHz	601-604	772.7625	802.7625
25KHz	701-704	773.3875	803.3875
25KHz	741-744	773.6375	803.6375
25KHz	797-800	773.9875	803.9875
25KHz	837-840	774.2375	804.2375
25KHz	877-880	774.4875	804.4875
25KHz	945-948	774.9125	804.9125
Otter Tail			
25KHz	41-44	769.2625	799.2625
25KHz	81-84	769.5125	799.5125
25KHz	125-128	769.7875	799.7875
25KHz	169-172	770.0625	800.0625
25KHz	209-212	770.3125	800.3125
25KHz	257-260	770.6125	800.6125
25KHz	325-328	771.0375	801.0375
25KHz	373-376	771.3375	801.3375
25KHz	421-424	771.6375	801.6375
25KHz	477-480	771.9875	801.9875
25KHz	517-520	772.2375	802.2375
25KHz	561-564	772.5125	802.5125
25KHz	617-620	772.8625	802.8625
25KHz	669-672	773.1875	803.1875
25KHz	749-752	773.6875	803.6875
25KHz	789-792	773.9375	803.9375
25KHz	829-832	774.1875	804.1875
25KHz	873-876	774.4625	804.4625
25KHz	917-920	774.7375	804.7375
Pennington			
25KHz	177-180	770.1125	800.1125
25KHz	349-352	771.1875	801.1875
25KHz	413-416	771.5875	801.5875
25KHz	469-472	771.9375	801.9375
25KHz	509-512	772.1875	802.1875
25KHz	549-552	772.4375	802.4375
25KHz	589-592	772.6875	802.6875
25KHz	669-672	773.1875	803.1875
25KHz	709-712	773.4375	803.4375

	25KHz	757-760	773.7375	803.7375
	25KHz	909-912	774.6875	804.6875
Pine				
	25KHz	125-128	769.7875	799.7875
	25KHz	349-352	771.1875	801.1875
	25KHz	473-476	771.9625	801.9625
	25KHz	481-484	772.0125	802.0125
	25KHz	545-548	772.4125	802.4125
	25KHz	585-588	772.6625	802.6625
	25KHz	637-640	772.9875	802.9875
	25KHz	701-704	773.3875	803.3875
	25KHz	753-756	773.7125	803.7125
	25KHz	797-800	773.9875	803.9875
	25KHz	837-840	774.2375	804.2375
	25KHz	917-920	774.7375	804.7375
Pipestone				
	25KHz	341-344	771.1375	801.1375
	25KHz	445-448	771.7875	801.7875
	25KHz	509-512	772.1875	802.1875
	25KHz	549-552	772.4375	802.4375
	25KHz	617-620	772.8625	802.8625
	25KHz	673-676	773.2125	803.2125
	25KHz	833-836	774.2125	804.2125
Polk				
	25KHz	41-44	769.2625	799.2625
	25KHz	81-84	769.5125	799.5125
	25KHz	129-132	769.8125	799.8125
	25KHz	205-208	770.2875	800.2875
	25KHz	245-248	770.5375	800.5375
	25KHz	321-324	771.0125	801.0125
	25KHz	361-364	771.2625	801.2625
	25KHz	401-404	771.5125	801.5125
	25KHz	445-448	771.7875	801.7875
	25KHz	501-504	772.1375	802.1375
	25KHz	541-544	772.3875	802.3875
	25KHz	617-620	772.8625	802.8625
	25KHz	661-664	773.1375	803.1375
	25KHz	701-704	773.3875	803.3875
	25KHz	789-792	773.9375	803.9375
	25KHz	833-836	774.2125	804.2125
	25KHz	873-876	774.4625	804.4625
Pope				
	25KHz	85-88	769.5375	799.5375
	25KHz	133-136	769.8375	799.8375
	25KHz	321-324	771.0125	801.0125
	25KHz	377-380	771.3625	801.3625
	25KHz	441-444	771.7625	801.7625
	25KHz	481-484	772.0125	802.0125
	25KHz	581-584	772.6375	802.6375
	25KHz	821-824	774.1375	804.1375
Ramsey				
	25KHz	57-60	769.3625	799.3625
	25KHz	137-140	769.8625	799.8625
	25KHz	293-296	770.8375	800.8375
	25KHz	333-336	771.0875	801.0875

25KHz	381-384	771.3875	801.3875
25KHz	437-440	771.7375	801.7375
25KHz	513-516	772.2125	802.2125
25KHz	561-564	772.5125	802.5125
25KHz	617-620	772.8625	802.8625
25KHz	661-664	773.1375	803.1375
25KHz	701-704	773.3875	803.3875
25KHz	741-744	773.6375	803.6375
25KHz	789-792	773.9375	803.9375
25KHz	837-840	774.2375	804.2375
25KHz	877-880	774.4875	804.4875
25KHz	917-920	774.7375	804.7375
Red Lake			
25KHz	89-92	769.5625	799.5625
25KHz	169-172	770.0625	800.0625
25KHz	285-288	770.7875	800.7875
25KHz	337-340	771.1125	801.1125
25KHz	381-384	771.3875	801.3875
25KHz	421-424	771.6375	801.6375
25KHz	461-464	771.8875	801.8875
25KHz	517-520	772.2375	802.2375
25KHz	565-568	772.5375	802.5375
25KHz	605-608	772.7875	802.7875
25KHz	749-752	773.6875	803.6875
25KHz	901-904	774.6375	804.6375
25KHz	941-944	774.8875	804.8875
Redwood			
25KHz	169-172	770.0625	800.0625
25KHz	217-220	770.3625	800.3625
25KHz	297-300	770.8625	800.8625
25KHz	337-340	771.1125	801.1125
25KHz	381-384	771.3875	801.3875
25KHz	429-432	771.6875	801.6875
25KHz	565-568	772.5375	802.5375
25KHz	629-632	772.9375	802.9375
25KHz	669-672	773.1875	803.1875
25KHz	749-752	773.6875	803.6875
25KHz	825-828	774.1625	804.1625
Renville			
25KHz	257-260	770.6125	800.6125
25KHz	349-352	771.1875	801.1875
25KHz	393-396	771.4625	801.4625
25KHz	465-468	771.9125	801.9125
25KHz	493-496	772.0875	802.0875
25KHz	537-540	772.3625	802.3625
25KHz	789-792	773.9375	803.9375
25KHz	909-912	774.6875	804.6875
Rice			
25KHz	53-56	769.3375	799.3375
25KHz	169-172	770.0625	800.0625
25KHz	289-292	770.8125	800.8125
25KHz	329-332	771.0625	801.0625
25KHz	373-376	771.3375	801.3375
25KHz	441-444	771.7625	801.7625
25KHz	517-520	772.2375	802.2375

25KHz	573-576	772.5875	802.5875
25KHz	909-912	774.6875	804.6875
Rock			
25KHz	53-56	769.3375	799.3375
25KHz	241-244	770.5125	800.5125
25KHz	349-352	771.1875	801.1875
25KHz	389-392	771.4375	801.4375
25KHz	501-504	772.1375	802.1375
25KHz	605-608	772.7875	802.7875
25KHz	665-668	773.1625	803.1625
25KHz	873-876	774.4625	804.4625
Roseau			
25KHz	45-48	769.2875	799.2875
25KHz	85-88	769.5375	799.5375
25KHz	201-204	770.2625	800.2625
25KHz	241-244	770.5125	800.5125
25KHz	289-292	770.8125	800.8125
25KHz	365-368	771.2875	801.2875
25KHz	417-420	771.6125	801.6125
25KHz	465-468	771.9125	801.9125
25KHz	505-508	772.1625	802.1625
25KHz	545-548	772.4125	802.4125
25KHz	585-588	772.6625	802.6625
25KHz	633-636	772.9625	802.9625
25KHz	717-720	773.4875	803.4875
25KHz	785-788	773.9125	803.9125
25KHz	837-840	774.2375	804.2375
25KHz	877-880	774.4875	804.4875
Scott			
25KHz	297-300	770.8625	800.8625
25KHz	337-340	771.1125	801.1125
25KHz	397-400	771.4875	801.4875
25KHz	453-456	771.8375	801.8375
25KHz	497-500	772.1125	802.1125
25KHz	553-556	772.4625	802.4625
25KHz	609-612	772.8125	802.8125
25KHz	669-672	773.1875	803.1875
25KHz	873-876	774.4625	804.4625
Sherburne			
25KHz	133-136	769.8375	799.8375
25KHz	393-396	771.4625	801.4625
25KHz	441-444	771.7625	801.7625
25KHz	509-512	772.1875	802.1875
25KHz	549-552	772.4375	802.4375
25KHz	605-608	772.7875	802.7875
25KHz	665-668	773.1625	803.1625
Sibley			
25KHz	121-124	769.7625	799.7625
25KHz	161-164	770.0125	800.0125
25KHz	377-380	771.3625	801.3625
25KHz	473-476	771.9625	801.9625
25KHz	569-572	772.5625	802.5625
25KHz	633-636	772.9625	802.9625
25KHz	705-708	773.4125	803.4125
St. Louis			

	25KHz	41-44	769.2625	799.2625
	25KHz	81-84	769.5125	799.5125
	25KHz	129-132	769.8125	799.8125
	25KHz	177-180	770.1125	800.1125
	25KHz	217-220	770.3625	800.3625
	25KHz	257-260	770.6125	800.6125
	25KHz	297-300	770.8625	800.8625
	25KHz	341-344	771.1375	801.1375
	25KHz	393-396	771.4625	801.4625
	25KHz	449-452	771.8125	801.8125
	25KHz	509-512	772.1875	802.1875
	25KHz	549-552	772.4375	802.4375
	25KHz	589-592	772.6875	802.6875
	25KHz	629-632	772.9375	802.9375
	25KHz	673-676	773.2125	803.2125
	25KHz	741-744	773.6375	803.6375
	25KHz	789-792	773.9375	803.9375
	25KHz	829-832	774.1875	804.1875
	25KHz	869-872	774.4375	804.4375
	25KHz	909-912	774.6875	804.6875
Stearns				
	25KHz	17-20	769.1125	799.1125
	25KHz	57-60	769.3625	799.3625
	25KHz	121-124	769.7625	799.7625
	25KHz	161-164	770.0125	800.0125
	25KHz	201-204	770.2625	800.2625
	25KHz	241-244	770.5125	800.5125
	25KHz	297-300	770.8625	800.8625
	25KHz	337-340	771.1125	801.1125
	25KHz	409-412	771.5625	801.5625
	25KHz	473-476	771.9625	801.9625
	25KHz	529-532	772.3125	802.3125
	25KHz	593-596	772.7125	802.7125
	25KHz	633-636	772.9625	802.9625
	25KHz	705-708	773.4125	803.4125
	25KHz	745-748	773.6625	803.6625
	25KHz	793-796	773.9625	803.9625
	25KHz	861-864	774.3875	804.3875
	25KHz	901-904	774.6375	804.6375
	25KHz	941-944	774.8875	804.8875
Steele				
	25KHz	241-244	770.5125	800.5125
	25KHz	321-324	771.0125	801.0125
	25KHz	381-384	771.3875	801.3875
	25KHz	457-460	771.8625	801.8625
	25KHz	557-560	772.4875	802.4875
	25KHz	629-632	772.9375	802.9375
	25KHz	673-676	773.2125	803.2125
	25KHz	745-748	773.6625	803.6625
	25KHz	785-788	773.9125	803.9125
	25KHz	825-828	774.1625	804.1625
Stevens				
	25KHz	329-332	771.0625	801.0625
	25KHz	393-396	771.4625	801.4625

25KHz	449-452	771.8125	801.8125
25KHz	497-500	772.1125	802.1125
25KHz	613-616	772.8375	802.8375
25KHz	677-680	773.2375	803.2375
25KHz	753-756	773.7125	803.7125
25KHz	797-800	773.9875	803.9875
25KHz	869-872	774.4375	804.4375
Swift			
25KHz	41-44	769.2625	799.2625
25KHz	253-256	770.5875	800.5875
25KHz	353-356	771.2125	801.2125
25KHz	421-424	771.6375	801.6375
25KHz	461-464	771.8875	801.8875
25KHz	509-512	772.1875	802.1875
25KHz	569-572	772.5625	802.5625
25KHz	621-624	772.8875	802.8875
25KHz	665-668	773.1625	803.1625
Todd			
25KHz	217-220	770.3625	800.3625
25KHz	281-284	770.7625	800.7625
25KHz	357-360	771.2375	801.2375
25KHz	397-400	771.4875	801.4875
25KHz	457-460	771.8625	801.8625
25KHz	489-492	772.0625	802.0625
25KHz	537-540	772.3625	802.3625
25KHz	601-604	772.7625	802.7625
25KHz	661-664	773.1375	803.1375
25KHz	757-760	773.7375	803.7375
Traverse			
25KHz	97-100	769.6125	799.6125
25KHz	489-492	772.0625	802.0625
25KHz	533-536	772.3375	802.3375
25KHz	781-784	773.8875	803.8875
25KHz	905-908	774.6625	804.6625
Wabasha			
25KHz	41-44	769.2625	799.2625
25KHz	81-84	769.5125	799.5125
25KHz	173-176	770.0875	800.0875
25KHz	245-248	770.5375	800.5375
25KHz	413-416	771.5875	801.5875
25KHz	513-516	772.2125	802.2125
25KHz	789-792	773.9375	803.9375
25KHz	905-908	774.6625	804.6625
Wadena			
25KHz	161-164	770.0125	800.0125
25KHz	201-204	770.2625	800.2625
25KHz	441-444	771.7625	801.7625
25KHz	593-596	772.7125	802.7125
25KHz	701-704	773.3875	803.3875
25KHz	741-744	773.6375	803.6375
25KHz	797-800	773.9875	803.9875
25KHz	901-904	774.6375	804.6375
Waseca			
25KHz	125-128	769.7875	799.7875
25KHz	365-368	771.2875	801.2875

25KHz	425-428	771.6625	801.6625
25KHz	469-472	771.9375	801.9375
25KHz	481-484	772.0125	802.0125
25KHz	533-536	772.3375	802.3375
25KHz	637-640	772.9875	802.9875
Washington			
25KHz	45-48	769.2875	799.2875
25KHz	85-88	769.5375	799.5375
25KHz	129-132	769.8125	799.8125
25KHz	201-204	770.2625	800.2625
25KHz	241-244	770.5125	800.5125
25KHz	281-284	770.7625	800.7625
25KHz	321-324	771.0125	801.0125
25KHz	369-372	771.3125	801.3125
25KHz	457-460	771.8625	801.8625
25KHz	485-488	772.0375	802.0375
25KHz	529-532	772.3125	802.3125
25KHz	577-580	772.6125	802.6125
25KHz	861-864	774.3875	804.3875
25KHz	901-904	774.6375	804.6375
25KHz	941-944	774.8875	804.8875
Watonwan			
25KHz	285-288	770.7875	800.7875
25KHz	333-336	771.0875	801.0875
25KHz	401-404	771.5125	801.5125
25KHz	489-492	772.0625	802.0625
25KHz	581-584	772.6375	802.6375
25KHz	741-744	773.6375	803.6375
25KHz	877-880	774.4875	804.4875
Wilkin			
25KHz	349-352	771.1875	801.1875
25KHz	389-392	771.4375	801.4375
25KHz	457-460	771.8625	801.8625
25KHz	501-504	772.1375	802.1375
25KHz	569-572	772.5625	802.5625
25KHz	717-720	773.4875	803.4875
Winona			
25KHz	49-52	769.3125	799.3125
25KHz	129-132	769.8125	799.8125
25KHz	321-324	771.0125	801.0125
25KHz	361-364	771.2625	801.2625
25KHz	441-444	771.7625	801.7625
25KHz	485-488	772.0375	802.0375
25KHz	529-532	772.3125	802.3125
25KHz	625-628	772.9125	802.9125
25KHz	677-680	773.2375	803.2375
25KHz	717-720	773.4875	803.4875
25KHz	781-784	773.8875	803.8875
25KHz	821-824	774.1375	804.1375
Wright			
25KHz	41-44	769.2625	799.2625
25KHz	81-84	769.5125	799.5125
25KHz	385-388	771.4125	801.4125
25KHz	461-464	771.8875	801.8875
25KHz	489-492	772.0625	802.0625

	25KHz	565-568	772.5375	802.5375	
	25KHz	613-616	772.8375	802.8375	
	25KHz	785-788	773.9125	803.9125	
	25KHz	833-836	774.2125	804.2125	
	25KHz	913-916	774.7125	804.7125	
Yellow Medicine					
	25KHz	177-180	770.1125	800.1125	
	25KHz	357-360	771.2375	801.2375	
	25KHz	453-456	771.8375	801.8375	
	25KHz	513-516	772.2125	802.2125	
	25KHz	553-556	772.4625	802.4625	
	25KHz	593-596	772.7125	802.7125	
	25KHz	701-704	773.3875	803.3875	
	25KHz	741-744	773.6375	803.6375	
	25KHz	861-864	774.3875	804.3875	
	25KHz	945-948	774.9125	804.9125	

State License - Voice 12.5KHz

County	Band	FCC Channel Base Number	Mobile Frequency	Frequency	Notation	
Aitkin						
	12.5KHz	31-32	769.19375	799.19375	B2	(Quadna)
	12.5KHz	71-72	769.44375	799.44375	B2	(Quadna)
	12.5KHz	105-106	769.65625	799.65625	G1	(Logan)
	12.5KHz	111-112	769.69375	799.69375	H2	(Lawler)
	12.5KHz	145-146	769.90625	799.90625	G1	(Logan)
	12.5KHz	151-152	769.94375	799.94375	H2	(Lawler)
	12.5KHz	187-188	770.16875	800.16875	D2	(Ball Bluff Lookout)
	12.5KHz	227-228	770.41875	800.41875	D2	(Ball Bluff Lookout)
	12.5KHz	265-266	770.65625	800.65625	J1	(Sandy Lake)
	12.5KHz	269-270	770.68125	800.68125	K1	(Arthyde)
	12.5KHz	305-306	770.90625	800.90625	J1	(Sandy Lake)
	12.5KHz	309-310	770.93125	800.93125	K1	(Arthyde)
	12.5KHz	651-652	773.06875	803.06875	B2	(Quadna)
	12.5KHz	691-692	773.31875	803.31875	B2	(Quadna)
	12.5KHz	725-726	773.53125	803.53125	G1	(Logan)
	12.5KHz	731-732	773.56875	803.56875	H2	(Lawler)
	12.5KHz	765-766	773.78125	803.78125	G1	(Logan)
	12.5KHz	771-772	773.81875	803.81875	H2	(Lawler)
	12.5KHz	807-808	774.04375	804.04375	D2	(Ball Bluff Lookout)
	12.5KHz	847-848	774.29375	804.29375	D2	(Ball Bluff Lookout)
	12.5KHz	885-886	774.53125	804.53125	J1	(Sandy Lake)
	12.5KHz	889-890	774.55625	804.55625	K1	(Arthyde)
	12.5KHz	925-926	774.78125	804.78125	J1	(Sandy Lake)
	12.5KHz	929-930	774.80625	804.80625	K1	(Arthyde)
Anoka						
	12.5KHz	187-188	770.16875	800.16875	D2	(SN3) (Burschville)
	12.5KHz	227-228	770.41875	800.41875	D2	(SN3) (Burschville)
	12.5KHz	267-268	770.66875	800.66875	J2	(SN2)
	12.5KHz	307-308	770.91875	800.91875	J2	(SN2)
	12.5KHz	807-808	774.04375	804.04375	D2	(SN3) (Burschville)
	12.5KHz	847-848	774.29375	804.29375	D2	(SN3) (Burschville)

	12.5KHz	887-888	774.54375	804.54375	J2	(SN2)
	12.5KHz	927-928	774.79375	804.79375	J2	(SN2)
Becker						
	12.5KHz	31-32	769.19375	799.19375	B2	(Detroit Lakes)
	12.5KHz	71-72	769.44375	799.44375	B2	(Detroit Lakes)
	12.5KHz	105-106	769.65625	799.65625	G1	(Wolf Lake)
	12.5KHz	115-116	769.71875	799.71875	I2	(Juggler Lake)
	12.5KHz	145-146	769.90625	799.90625	G1	(Wolf Lake)
	12.5KHz	155-156	769.96875	799.96875	I2	(Juggler Lake)
	12.5KHz	271-272	770.69375	800.69375	K2	(Flat Lake Lookout)
	12.5KHz	311-312	770.94375	800.94375	K2	(Flat Lake Lookout)
	12.5KHz	651-652	773.06875	803.06875	B2	(Detroit Lakes)
	12.5KHz	691-692	773.31875	803.31875	B2	(Detroit Lakes)
	12.5KHz	725-726	773.53125	803.53125	G1	(Wolf Lake)
	12.5KHz	735-736	773.59375	803.59375	I2	(Juggler Lake)
	12.5KHz	765-766	773.78125	803.78125	G1	(Wolf. Lake)
	12.5KHz	775-776	773.84375	803.84375	I2	(Juggler. Lake)
	12.5KHz	891-892	774.56875	804.56875	K2	(Flat.Lake.Lookout)
	12.5KHz	931-932	774.81875	804.81875	K2	(Flat.Lake.Lookout)
Beltrami						
	12.5KHz	31-32	769.19375	799.19375	B2	(Bemidji.Fire.Twr)
	12.5KHz	33-34	769.20625	799.20625	C1	(Red.Lake)
	12.5KHz	71-72	769.44375	799.44375	B2	(Bemidji.Fire.Twr)
	12.5KHz	73-74	769.45625	799.45625	C1	(Red.Lake)
	12.5KHz	109-110	769.68125	799.68125	H1	(Grygla)
	12.5KHz	113-114	769.70625	799.70625	I1	(Ridge Lookout)
	12.5KHz	149-150	769.93125	799.93125	H1	(Grygla)
	12.5KHz	153-154	769.95625	799.95625	I1	(Ridge Lookout)
	12.5KHz	189-190	770.18125	800.18125	E1	(Sucker Creek)
	12.5KHz	229-230	770.43125	800.43125	E1	(Sucker Creek)
	12.5KHz	271-272	770.69375	800.69375	K2	(Hines)
	12.5KHz	273-274	770.70625	800.70625	L1	(Washkish)
	12.5KHz	311-312	770.94375	800.94375	K2	(Hines)
	12.5KHz	313-314	770.95625	800.95625	L1	(Washkish)
	12.5KHz	651-652	773.06875	803.06875	B2	(Bemidji Fire Twr)
	12.5KHz	653-654	773.08125	803.08125	C1	(Red Lake)
	12.5KHz	691-692	773.31875	803.31875	B2	(Bemidji Fire Twr)
	12.5KHz	693-694	773.33125	803.33125	C1	(Red Lake)
	12.5KHz	729-730	773.55625	803.55625	H1	(Grygla)
	12.5KHz	733-734	773.58125	803.58125	I1	(Ridge Lookout)
	12.5KHz	769-770	773.80625	803.80625	H1	(Grygla)
	12.5KHz	773-774	773.83125	803.83125	I1	(Ridge Lookout)
	12.5KHz	809-810	774.05625	804.05625	E1	(Sucker Creek)
	12.5KHz	849-850	774.30625	804.30625	E1	(Sucker Creek)
	12.5KHz	891-892	774.56875	804.56875	K2	(Hines)
	12.5KHz	893-894	774.58125	804.58125	L1	(Waskish)
	12.5KHz	931-932	774.81875	804.81875	K2	(Hines)
	12.5KHz	933-934	774.83125	804.83125	L1	(Waskish)
Benton						
	12.5KHz	195-196	770.21875	800.21875	F2	(Gillman)
	12.5KHz	235-236	770.46875	800.46875	F2	(Gillman)
	12.5KHz	815-816	774.09375	804.09375	F2	(Gillman)
	12.5KHz	855-856	774.34375	804.34375	F2	(Gillman)
Big Stone						
	12.5KHz	105-106	769.65625	799.65625	G1	(Johnson Landing)

	12.5KHz	109-110	769.68125	799.68125	H1 (Big Stone)
	12.5KHz	145-146	769.90625	799.90625	G1 (Johnson Landing)
	12.5KHz	149-150	769.93125	799.93125	H1 (Big Stone)
	12.5KHz	725-726	773.53125	803.53125	G1 (Johnson Landing)
	12.5KHz	729-730	773.55625	803.55625	H1 (Big Stone)
	12.5KHz	765-766	773.78125	803.78125	G1 (Johnson Landing)
	12.5KHz	769-770	773.80625	803.80625	H1 (Big Stone)
Blue Earth					
	12.5KHz	107-108	769.66875	799.66875	G2 (Faribault)
	12.5KHz	147-148	769.91875	799.91875	G2 (Faribault)
	12.5KHz	767-768	773.79375	803.79375	G2 (Faribault)
Brown					
	12.5KHz	33-34	769.20625	799.20625	C1 (New Ulm)
	12.5KHz	73-74	769.45625	799.45625	C1 (New Ulm)
	12.5KHz	115-116	769.71875	799.71875	I2 (Evan)
	12.5KHz	155-156	769.96875	799.96875	I2 (Evan)
	12.5KHz	653-654	773.08125	803.08125	C1 (New Ulm)
	12.5KHz	693-694	773.33125	803.33125	C1 (New Ulm)
	12.5KHz	735-736	773.59375	803.59375	I2 (Evan)
	12.5KHz	775-776	773.84375	803.84375	I2 (Evan)
Carlton					
	12.5KHz	27-28	769.16875	799.16875	A2 (Mahtowa)
	12.5KHz	67-68	769.41875	799.41875	A2 (Mahtowa)
	12.5KHz	107-108	769.66875	799.66875	G2 (Moose Lake Lookout)
	12.5KHz	147-148	769.91875	799.91875	G2 (Moose Lake Lookout)
	12.5KHz	195-196	770.21875	800.21875	F2 (Esko)
	12.5KHz	235-236	770.46875	800.46875	F2 (Esko)
	12.5KHz	647-648	773.04375	803.04375	A2 (Mahtowa)
	12.5KHz	687-688	773.29375	803.29375	A2 (Mahtowa)
	12.5KHz	727-728	773.54375	803.54375	G2 (Moose Lake Lookout)
	12.5KHz	767-768	773.79375	803.79375	G2 (Moose Lake Lookout)
	12.5KHz	815-816	774.09375	804.09375	F2 (Esko)
	12.5KHz	855-856	774.34375	804.34375	F2 (Esko)
Carver					
	12.5KHz	31-32	769.19375	799.19375	B2 (SN4)
	12.5KHz	71-72	769.44375	799.44375	B2 (SN4)
	12.5KHz	691-692	773.31875	803.31875	B2 (SN4)
Cass					
	12.5KHz	29-30	769.18125	799.18125	B1 (Leader)
	12.5KHz	33-34	769.20625	799.20625	C1 (Longville)
	12.5KHz	69-70	769.43125	799.43125	B1 (Leader)
	12.5KHz	73-74	769.45625	799.45625	C1 (Longville)
	12.5KHz	107-108	769.66875	799.66875	G2 (Cuba Hill Lookout)
	12.5KHz	111-112	769.69375	799.69375	H2 (Ball Club)
	12.5KHz	113-114	769.70625	799.70625	I1 (Backus)
	12.5KHz	147-148	769.91875	799.91875	G2 (Cuba Hill Lookout)
	12.5KHz	151-152	769.94375	799.94375	H2 (Ball Club)
	12.5KHz	153-154	769.95625	799.95625	I1 (Backus)
	12.5KHz	185-186	770.15625	800.15625	D1 (Little Thunder Lk)
	12.5KHz	189-190	770.18125	800.18125	E1 (Cass Lake)
	12.5KHz	225-226	770.40625	800.40625	D1 (Little Thunder Lk)
	12.5KHz	229-230	770.43125	800.43125	E1 (Cass Lake)
	12.5KHz	649-650	773.05625	803.05625	B1 (Leader)
	12.5KHz	653-654	773.08125	803.08125	C1 (Longville)
	12.5KHz	689-690	773.30625	803.30625	B1 (Leader)

	12.5KHz	693-694	773.33125	803.33125	C1	(Longville)
	12.5KHz	727-728	773.54375	803.54375	G2	(Cuba Hill Lookout)
	12.5KHz	731-732	773.56875	803.56875	H2	(Ball Club)
	12.5KHz	733-734	773.58125	803.58125	I1	(Backus)
	12.5KHz	767-768	773.79375	803.79375	G2	(Cuba Hill Lookout)
	12.5KHz	771-772	773.81875	803.81875	H2	(Ball Club)
	12.5KHz	773-774	773.83125	803.83125	I1	(Backus)
	12.5KHz	805-806	774.03125	804.03125	D1	(Little Thunder Lk)
	12.5KHz	809-810	774.05625	804.05625	E1	(Cass Lake)
	12.5KHz	845-846	774.28125	804.28125	D1	(Little Thunder Lk)
	12.5KHz	849-850	774.30625	804.30625	E1	(Cass Lake)
Chippewa						
	12.5KHz	107-108	769.66875	799.66875	G2	(Woods)
	12.5KHz	113-114	769.70625	799.70625	I1	(Watson)
	12.5KHz	147-148	769.91875	799.91875	G2	(Woods)
	12.5KHz	153-154	769.95625	799.95625	I1	(Watson)
	12.5KHz	195-196	770.21875	800.21875	F2	(Granite Falls)
	12.5KHz	235-236	770.46875	800.46875	F2	(Granite Falls)
	12.5KHz	727-728	773.54375	803.54375	G2	(Woods)
	12.5KHz	733-734	773.58125	803.58125	I1	(Watson)
	12.5KHz	767-768	773.79375	803.79375	G2	(Woods)
	12.5KHz	773-774	773.83125	803.83125	I1	(Watson)
	12.5KHz	815-816	774.09375	804.09375	F2	(Granite Falls)
	12.5KHz	855-856	774.34375	804.34375	F2	(Granite Falls)
	Chisago					
	12.5KHz	191-192	770.19375	800.19375	E2	(SN6)
	12.5KHz	231-232	770.44375	800.44375	E2	(SN6)
	12.5KHz	267-268	770.66875	800.66875	J2	(SN2)
	12.5KHz	307-308	770.91875	800.91875	J2	(SN2)
	12.5KHz	811-812	774.06875	804.06875	E2	(SN6)
	12.5KHz	851-852	774.31875	804.31875	E2	(SN6)
	12.5KHz	887-888	774.54375	804.54375	J2	(SN2)
	12.5KHz	927-928	774.79375	804.79375	J2	(SN2)
Clay						
	12.5KHz	25-26	769.15625	799.15625	A1	(Barnesville)
	12.5KHz	29-30	769.18125	799.18125	B1	(Felton)
	12.5KHz	65-66	769.40625	799.40625	A1	(Barnesville)
	12.5KHz	69-70	769.43125	799.43125	B1	(Felton)
	12.5KHz	105-106	769.65625	799.65625	G1	(Hawley)
	12.5KHz	145-146	769.90625	799.90625	G1	(Hawley)
	12.5KHz	645-646	773.03125	803.03125	A1	(Barnesville)
	12.5KHz	649-650	773.05625	803.05625	B1	(Felton)
	12.5KHz	685-686	773.28125	803.28125	A1	(Barnesville)
	12.5KHz	689-690	773.30625	803.30625	B1	(Felton)
	12.5KHz	725-726	773.53125	803.53125	G1	(Hawley)
	12.5KHz	765-766	773.78125	803.78125	G1	(Hawley)
Clearwater						
	12.5KHz	185-186	770.15625	800.15625	D1	(Berner)
	12.5KHz	193-194	770.20625	800.20625	F1	(Alida)
	12.5KHz	225-226	770.40625	800.40625	D1	(Berner)
	12.5KHz	233-234	770.45625	800.45625	F1	(Alida)
	12.5KHz	265-266	770.65625	800.65625	J1	(Bagley)
	12.5KHz	305-306	770.90625	800.90625	J1	(Bagley)
	12.5KHz	805-806	774.03125	804.03125	D1	(Berner)
	12.5KHz	813-814	774.08125	804.08125	F1	(Alida)

	12.5KHz	845-846	774.28125	804.28125	D1 (Berner)
	12.5KHz	853-854	774.33125	804.33125	F1 (Alida)
	12.5KHz	885-886	774.53125	804.53125	J1 (Bagley)
	12.5KHz	925-926	774.78125	804.78125	J1 (Bagley)
Cook					
	12.5KHz	25-26	769.15625	799.15625	A1 (Lutsen)
	12.5KHz	29-30	769.18125	799.18125	B1 (Sawbill)
	12.5KHz	33-34	769.20625	799.20625	C1 (Thrush Lake)
	12.5KHz	65-66	769.40625	799.40625	A1 (Lutsen)
	12.5KHz	69-70	769.43125	799.43125	B1 (Sawbill)
	12.5KHz	73-74	769.45625	799.45625	C1 (Thrush Lake)
	12.5KHz	105-106	769.65625	799.65625	G1 (Grand Portage)
	12.5KHz	109-110	769.68125	799.68125	H1 (Devil Fish Lookout)
	12.5KHz	113-114	769.70625	799.70625	I1 (Bogus Lake)
	12.5KHz	115-116	769.71875	799.71875	I2 (Ricky Lake)
	12.5KHz	145-146	769.90625	799.90625	G1 (Grand Portage)
	12.5KHz	149-150	769.93125	799.93125	H1 (Devil Fish Lookout)
	12.5KHz	153-154	769.95625	799.95625	I1 (Bogus Lake)
	12.5KHz	155-156	769.96875	799.96875	I2 (Ricky Lake)
	12.5KHz	185-186	770.15625	800.15625	D1 (Pine Mtn.)
	12.5KHz	189-190	770.18125	800.18125	E1 (Maple Hill)
	12.5KHz	193-194	770.20625	800.20625	F1 (Cascade River)
	12.5KHz	225-226	770.40625	800.40625	D1 (Pine Mtn.)
	12.5KHz	229-230	770.43125	800.43125	E1 (Maple Hill)
	12.5KHz	233-234	770.45625	800.45625	F1 (Cascade River)
	12.5KHz	269-270	770.68125	800.68125	K1 (Tofte)
	12.5KHz	309-310	770.93125	800.93125	K1 (Tofte)
	12.5KHz	645-646	773.03125	803.03125	A1 (Lutsen)
	12.5KHz	649-650	773.05625	803.05625	B1 (Sawbill)
	12.5KHz	653-654	773.08125	803.08125	C1 (Thrush Lake)
	12.5KHz	685-686	773.28125	803.28125	A1 (Lutsen)
	12.5KHz	689-690	773.30625	803.30625	B1 (Sawbill)
	12.5KHz	693-694	773.33125	803.33125	C1 (Thrush Lake)
	12.5KHz	725-726	773.53125	803.53125	G1 (Grand Portage)
	12.5KHz	729-730	773.55625	803.55625	H1 (Devil Fish Lookout)
	12.5KHz	733-734	773.58125	803.58125	I1 (Bogus Lake)
	12.5KHz	735-736	773.59375	803.59375	I2 (Ricky Lake)
	12.5KHz	765-766	773.78125	803.78125	G1 (Grand Portage)
	12.5KHz	769-770	773.80625	803.80625	H1 (Devil Fish Lookout)
	12.5KHz	773-774	773.83125	803.83125	I1 (Bogus Lake)
	12.5KHz	775-776	773.84375	803.84375	I2 (Ricky Lake)
	12.5KHz	805-806	774.03125	804.03125	D1 (Pine Mtn.)
	12.5KHz	809-810	774.05625	804.05625	E1 (Maple Hill)
	12.5KHz	813-814	774.08125	804.08125	F1 (Cascade River)
	12.5KHz	845-846	774.28125	804.28125	D1 (Pine Mtn.)
	12.5KHz	849-850	774.30625	804.30625	E1 (Maple Hill)
	12.5KHz	853-854	774.33125	804.33125	F1 (Cascade River)
	12.5KHz	889-890	774.55625	804.55625	K1 (Tofte)
	12.5KHz	929-930	774.80625	804.80625	K1 (Tofte)
Cottonwood					
	12.5KHz	267-268	770.66875	800.66875	J2 (Walnut Grove)
	12.5KHz	271-272	770.69375	800.69375	K2 (Windom)
	12.5KHz	307-308	770.91875	800.91875	J2 (Walnut Grove)
	12.5KHz	311-312	770.94375	800.94375	K2 (Windom)
	12.5KHz	887-888	774.54375	804.54375	J2 (Walnut Grove)

	12.5KHz	891-892	774.56875	804.56875	K2 (Windom)
	12.5KHz	927-928	774.79375	804.79375	J2 (Walnut
	12.5KHz	931-932	774.81875	804.81875	K2 (Windom)
Crow Wing					
	12.5KHz	27-28	769.16875	799.16875	A2 (Borden Lake)
	12.5KHz	67-68	769.41875	799.41875	A2 (Borden Lake)
	12.5KHz	189-190	770.18125	800.18125	E1 (Baxter)
	12.5KHz	193-194	770.20625	800.20625	F1 (Emily)
	12.5KHz	229-230	770.43125	800.43125	E1 (Baxter)
	12.5KHz	233-234	770.45625	800.45625	F1 (Emily)
	12.5KHz	273-274	770.70625	800.70625	L1 (Swanburg)
	12.5KHz	313-314	770.95625	800.95625	L1 (Swanburg)
	12.5KHz	647-648	773.04375	803.04375	A2 (Borden Lake)
	12.5KHz	687-688	773.29375	803.29375	A2 (Borden Lake)
	12.5KHz	809-810	774.05625	804.05625	E1 (Baxter)
	12.5KHz	813-814	774.08125	804.08125	F1 (Emily)
	12.5KHz	849-850	774.30625	804.30625	E1 (Baxter)
	12.5KHz	853-854	774.33125	804.33125	F1 (Emily)
	12.5KHz	893-894	774.58125	804.58125	L1 (Swanburg)
	12.5KHz	933-934	774.83125	804.83125	L1 (Swanburg)
Dakota					
	12.5KHz	35-36	769.21875	799.21875	C2 (SA2) (WCAL)
	12.5KHz	75-76	769.46875	799.46875	C2 (SA2) (WCAL)
	12.5KHz	115-116	769.71875	799.71875	I2 (SN5)
	12.5KHz	155-156	769.96875	799.96875	I2 (SN5)
	12.5KHz	655-656	773.09375	803.09375	C2 (SA2) (WCAL)
	12.5KHz	695-696	773.34375	803.34375	C2 (SA2) (WCAL)
	12.5KHz	735-736	773.59375	803.59375	I2 (SN5)
	12.5KHz	775-776	773.84375	803.84375	I2 (SN5)
Dodge					
	12.5KHz	29-30	769.18125	799.18125	B1 (Wasioja)
	12.5KHz	69-70	769.43125	799.43125	B1 (Wasioja)
	12.5KHz	649-650	773.05625	803.05625	B1 (Wasioja)
	12.5KHz	689-690	773.30625	803.30625	B1 (Wasioja)
Douglas					
	12.5KHz	195-196	770.21875	800.21875	F2 (Lake Carlos)
	12.5KHz	235-236	770.46875	800.46875	F2 (Lake Carlos)
	12.5KHz	265-266	770.65625	800.65625	J1 (Hoffman)
	12.5KHz	305-306	770.90625	800.90625	J1 (Hoffman)
	12.5KHz	815-816	774.09375	804.09375	F2 (Lake Carlos)
	12.5KHz	855-856	774.34375	804.34375	F2 (Lake Carlos)
	12.5KHz	885-886	774.53125	804.53125	J1 (Hoffman)
	12.5KHz	925-926	774.78125	804.78125	J1 (Hoffman)
Faribault					
	12.5KHz	31-32	769.19375	799.19375	B2 (Walters)
	12.5KHz	35-36	769.21875	799.21875	C2 (Easton)
	12.5KHz	71-72	769.44375	799.44375	B2 (Walters)
	12.5KHz	75-76	769.46875	799.46875	C2 (Easton)
	12.5KHz	651-652	773.06875	803.06875	B2 (Walters)
	12.5KHz	655-656	773.09375	803.09375	C2 (Easton)
	12.5KHz	691-692	773.31875	803.31875	B2 (Walters)
	12.5KHz	695-696	773.34375	803.34375	C2 (Easton)
Fillmore					
	12.5KHz	27-28	769.16875	799.16875	A2 (Wykoff)
	12.5KHz	67-68	769.41875	799.41875	A2 (Wykoff)

	12.5KHz	185-186	770.15625	800.15625	D1 (Amherst)
	12.5KHz	225-226	770.40625	800.40625	D1 (Amherst)
	12.5KHz	647-648	773.04375	803.04375	A2 (Wykoff)
	12.5KHz	687-688	773.29375	803.29375	A2 (Wykoff)
	12.5KHz	805-806	774.03125	804.03125	D1 (Amherst)
	12.5KHz	845-846	774.28125	804.28125	D1 (Amherst)
Freeborn					
	12.5KHz	111-112	769.69375	799.69375	H2 (Oakland Woods)
	12.5KHz	151-152	769.94375	799.94375	H2 (Oakland Woods)
	12.5KHz	193-194	770.20625	800.20625	F1 (Albert Lea)
	12.5KHz	233-234	770.45625	800.45625	F1 (Albert Lea)
	12.5KHz	731-732	773.56875	803.56875	H2 (Oakland Woods)
	12.5KHz	771-772	773.81875	803.81875	H2 (Oakland Woods)
	12.5KHz	813-814	774.08125	804.08125	F1 (Albert Lea)
	12.5KHz	853-854	774.33125	804.33125	F1 (Albert Lea)
Goodhue					
	12.5KHz	185-186	770.15625	800.15625	D1 (Red Wing)
	12.5KHz	225-226	770.40625	800.40625	D1 (Red Wing)
	12.5KHz	265-266	770.65625	800.65625	J1 (Cannon Falls)
	12.5KHz	273-274	770.70625	800.70625	L1 (Zumbrota)
	12.5KHz	305-306	770.90625	800.90625	J1 (Cannon Falls)
	12.5KHz	313-314	770.95625	800.95625	L1 (Zumbrota)
	12.5KHz	805-806	774.03125	804.03125	D1 (Red Wing)
	12.5KHz	845-846	774.28125	804.28125	D1 (Red Wing)
	12.5KHz	885-886	774.53125	804.53125	J1 (Cannon Falls)
	12.5KHz	893-894	774.58125	804.58125	L1 (Zumbrota)
	12.5KHz	925-926	774.78125	804.78125	J1 (Cannon Falls)
	12.5KHz	933-934	774.83125	804.83125	L1 (Zumbrota)
Grant					
	12.5KHz	273-274	770.70625	800.70625	L1 (Herman)
	12.5KHz	313-314	770.95625	800.95625	L1 (Herman)
	12.5KHz	893-894	774.58125	804.58125	L1 (Herman)
	12.5KHz	933-934	774.83125	804.83125	L1 (Herman)
Hennepin					
	12.5KHz	27-28	769.16875	799.16875	A2 (CORE)
	12.5KHz	31-32	769.19375	799.19375	B2 (SN4)
	12.5KHz	67-68	769.41875	799.41875	A2 (CORE)
	12.5KHz	71-72	769.44375	799.44375	B2 (SN4)
	12.5KHz	107-108	769.66875	799.66875	G2 (CORE)
	12.5KHz	147-148	769.91875	799.91875	G2 (CORE)
	12.5KHz	187-188	770.16875	800.16875	D2 (SN3)
	12.5KHz	227-228	770.41875	800.41875	D2 (SN3)
	12.5KHz	647-648	773.04375	803.04375	A2 (CORE)
	12.5KHz	651-652	773.06875	803.06875	B2 (SN4)
	12.5KHz	687-688	773.29375	803.29375	A2 (CORE)
	12.5KHz	691-692	773.31875	803.31875	B2 (SN4)
	12.5KHz	727-728	773.54375	803.54375	G2 (CORE)
	12.5KHz	767-768	773.79375	803.79375	G2 (CORE)
	12.5KHz	807-808	774.04375	804.04375	D2 (SN3)
	12.5KHz	847-848	774.29375	804.29375	D2 (SN3)
Houston					
	12.5KHz	109-110	769.68125	799.68125	H1 (Reno)
	12.5KHz	115-116	769.71875	799.71875	I2 (Caledonia)
	12.5KHz	149-150	769.93125	799.93125	H1 (Reno)

	12.5KHz	155-156	769.96875	799.96875	I2 (Caledonia)
	12.5KHz	189-190	770.18125	800.18125	E1 (Perkins)
	12.5KHz	229-230	770.43125	800.43125	E1 (Perkins)
	12.5KHz	265-266	770.65625	800.65625	J1 (Spring Grove)
	12.5KHz	305-306	770.90625	800.90625	J1 (Spring Grove)
	12.5KHz	729-730	773.55625	803.55625	H1 (Reno)
	12.5KHz	735-736	773.59375	803.59375	I2 (Caledonia)
	12.5KHz	769-770	773.80625	803.80625	H1 (Reno)
	12.5KHz	775-776	773.84375	803.84375	I2 (Caledonia)
	12.5KHz	809-810	774.05625	804.05625	E1 (Perkins)
	12.5KHz	849-850	774.30625	804.30625	E1 (Perkins)
	12.5KHz	885-886	774.53125	804.53125	J1 (Spring
	12.5KHz	925-926	774.78125	804.78125	J1 (Spring
Hubbard					
	12.5KHz	25-26	769.15625	799.15625	A1 (Mantrap)
	12.5KHz	65-66	769.40625	799.40625	A1 (Mantrap)
	12.5KHz	109-110	769.68125	799.68125	H1 (Nevis)
	12.5KHz	149-150	769.93125	799.93125	H1 (Nevis)
	12.5KHz	645-646	773.03125	803.03125	A1 (Mantrap)
	12.5KHz	685-686	773.28125	803.28125	A1 (Mantrap)
	12.5KHz	729-730	773.55625	803.55625	H1 (Nevis)
	12.5KHz	769-770	773.80625	803.80625	H1 (Nevis)
Isanti					
	12.5KHz	191-192	770.19375	800.19375	E2 (SN6)
	12.5KHz	231-232	770.44375	800.44375	E2 (SN6)
	12.5KHz	811-812	774.06875	804.06875	E2 (SN6)
	12.5KHz	851-852	774.31875	804.31875	E2 (SN6)
Itasca					
	12.5KHz	25-26	769.15625	799.15625	A1 (Deer River)
	12.5KHz	29-30	769.18125	799.18125	B1 (Nashwauk)
	12.5KHz	35-36	769.21875	799.21875	C2 (Grand Rapids)
	12.5KHz	65-66	769.40625	799.40625	A1 (Deer River)
	12.5KHz	69-70	769.43125	799.43125	B1 (Nashwauk)
	12.5KHz	75-76	769.46875	799.46875	C2 (Grand Rapids)
	12.5KHz	105-106	769.65625	799.65625	G1 (Bass Lake Lookout)
	12.5KHz	115-116	769.71875	799.71875	I2 (Goodland)
	12.5KHz	145-146	769.90625	799.90625	G1 (Bass Lake Lookout)
	12.5KHz	155-156	769.96875	799.96875	I2 (Goodland)
	12.5KHz	189-190	770.18125	800.18125	E1 (County NE)
	12.5KHz	195-196	770.21875	800.21875	F2 (Big Thunder Peak)
	12.5KHz	229-230	770.43125	800.43125	E1 (County NE)
	12.5KHz	235-236	770.46875	800.46875	F2 (Big Thunder Peak)
	12.5KHz	269-270	770.68125	800.68125	K1 (Itasca County-Tower)
	12.5KHz	275-276	770.71875	800.71875	L2 (Dixon Lookout)
	12.5KHz	309-310	770.93125	800.93125	K1 (Itasca County-Tower)
	12.5KHz	315-316	770.96875	800.96875	L2 (Dixon Lookout)
	12.5KHz	645-646	773.03125	803.03125	A1 (Deer River)
	12.5KHz	649-650	773.05625	803.05625	B1 (Nashwauk)
	12.5KHz	655-656	773.09375	803.09375	C2 (Grand Rapids)
	12.5KHz	685-686	773.28125	803.28125	A1 (Deer River)
	12.5KHz	689-690	773.30625	803.30625	B1 (Nashwauk)
	12.5KHz	695-696	773.34375	803.34375	C2 (Grand Rapids)
	12.5KHz	725-726	773.53125	803.53125	G1 (Bass Lake Lookout)
	12.5KHz	735-736	773.59375	803.59375	I2 (Goodland)
	12.5KHz	765-766	773.78125	803.78125	G1 (Bass Lake Lookout)

	12.5KHz	775-776	773.84375	803.84375	I2 (Goodland)
	12.5KHz	809-810	774.05625	804.05625	E1 (County NE)
	12.5KHz	815-816	774.09375	804.09375	F2 (Big Thunder Peak)
	12.5KHz	849-850	774.30625	804.30625	E1 (County NE)
	12.5KHz	855-856	774.34375	804.34375	F2 (Big Thunder Peak)
	12.5KHz	889-890	774.55625	804.55625	K1 (Itasca County-Tower)
	12.5KHz	895-896	774.59375	804.59375	L2 (Dixon Lookout)
	12.5KHz	929-930	774.80625	804.80625	K1 (Itasca County-Tower)
	12.5KHz	935-936	774.84375	804.84375	L2 (Dixon Lookout)
Jackson					
	12.5KHz	265-266	770.65625	800.65625	J1 (Lakefield)
	12.5KHz	275-276	770.71875	800.71875	L2 (Brewster)
	12.5KHz	305-306	770.90625	800.90625	J1 (Lakefield)
	12.5KHz	315-316	770.96875	800.96875	L2 (Brewster)
	12.5KHz	885-886	774.53125	804.53125	J1 (Lakefield)
	12.5KHz	895-896	774.59375	804.59375	L2 (Brewster)
	12.5KHz	925-926	774.78125	804.78125	J1 (Lakefield)
	12.5KHz	935-936	774.84375	804.84375	L2 (Brewster)
Kanabec					
	12.5KHz	113-114	769.70625	799.70625	I1 (Woodland)
	12.5KHz	153-154	769.95625	799.95625	I1 (Woodland)
	12.5KHz	265-266	770.65625	800.65625	J1 (Mora)
	12.5KHz	305-306	770.90625	800.90625	J1 (Mora)
	12.5KHz	733-734	773.58125	803.58125	I1 (Woodland)
	12.5KHz	773-774	773.83125	803.83125	I1 (Woodland)
	12.5KHz	885-886	774.53125	804.53125	J1 (Mora)
	12.5KHz	925-926	774.78125	804.78125	J1 (Mora)
Kandiyohi					
	12.5KHz	29-30	769.18125	799.18125	B1 (Willmar)
	12.5KHz	69-70	769.43125	799.43125	B1 (Willmar)
	12.5KHz	187-188	770.16875	800.16875	D2 (New London)
	12.5KHz	227-228	770.41875	800.41875	D2 (New London)
	12.5KHz	649-650	773.05625	803.05625	B1 (Willmar)
	12.5KHz	689-690	773.30625	803.30625	B1 (Willmar)
	12.5KHz	807-808	774.04375	804.04375	D2 (New London)
	12.5KHz	847-848	774.29375	804.29375	D2 (New London)
Kittson					
	12.5KHz	25-26	769.15625	799.15625	A1 (Hallock)
	12.5KHz	65-66	769.40625	799.40625	A1 (Hallock)
	12.5KHz	265-266	770.65625	800.65625	J1 (Lake Bronson)
	12.5KHz	305-306	770.90625	800.90625	J1 (Lake Bronson)
	12.5KHz	645-646	773.03125	803.03125	A1 (Hallock)
	12.5KHz	685-686	773.28125	803.28125	A1 (Hallock)
	12.5KHz	885-886	774.53125	804.53125	J1 (Lake
	12.5KHz	925-926	774.78125	804.78125	J1 (Lake
Koochiching					
	12.5KHz	27-28	769.16875	799.16875	A2 (Northome)
	12.5KHz	67-68	769.41875	799.41875	A2 (Northome)
	12.5KHz	107-108	769.66875	799.66875	G2 (Fort Lookout Twr)
	12.5KHz	111-112	769.69375	799.69375	H2 (Fairland)
	12.5KHz	115-116	769.71875	799.71875	I2 (Little Fork)
	12.5KHz	147-148	769.91875	799.91875	G2 (Fort Lookout Twr)
	12.5KHz	151-152	769.94375	799.94375	H2 (Fairland)
	12.5KHz	155-156	769.96875	799.96875	I2 (Little Fork)
	12.5KHz	185-186	770.15625	800.15625	D1 (Big Falls)

12.5KHz	193-194	770.20625	800.20625	F1 (Johnson Landing)
12.5KHz	225-226	770.40625	800.40625	D1 (Big Falls)
12.5KHz	233-234	770.45625	800.45625	F1 (Johnson Landing)
12.5KHz	265-266	770.65625	800.65625	J1 (Mizpah)
12.5KHz	305-306	770.90625	800.90625	J1 (Mizpah)
12.5KHz	647-648	773.04375	803.04375	A2 (Northome)
12.5KHz	687-688	773.29375	803.29375	A2 (Northome)
12.5KHz	727-728	773.54375	803.54375	G2 (Fort Lookout Twr)
12.5KHz	731-732	773.56875	803.56875	H2 (Fairland)
12.5KHz	735-736	773.59375	803.59375	I2 (Little Fork)
12.5KHz	767-768	773.79375	803.79375	G2 (Fort Lookout Twr)
12.5KHz	771-772	773.81875	803.81875	H2 (Fairland)
12.5KHz	775-776	773.84375	803.84375	I2 (Little Fork)
12.5KHz	805-806	774.03125	804.03125	D1 (Big Falls)
12.5KHz	813-814	774.08125	804.08125	F1 (Johnson Landing)
12.5KHz	845-846	774.28125	804.28125	D1 (Big Falls)
12.5KHz	853-854	774.33125	804.33125	F1 (Johnson Landing)
12.5KHz	885-886	774.53125	804.53125	J1 (Mizpah)
12.5KHz	925-926	774.78125	804.78125	J1 (Mizpah)

Lac qui Parle

12.5KHz	27-28	769.16875	799.16875	A2 (Madison)
12.5KHz	67-68	769.41875	799.41875	A2 (Madison)
12.5KHz	647-648	773.04375	803.04375	A2 (Madison)
12.5KHz	687-688	773.29375	803.29375	A2 (Madison)

Lake

12.5KHz	27-28	769.16875	799.16875	A2 (Slate Lake)
12.5KHz	35-36	769.21875	799.21875	C2 (Mt. Weber)
12.5KHz	67-68	769.41875	799.41875	A2 (Slate Lake)
12.5KHz	75-76	769.46875	799.46875	C2 (Mt. Weber)
12.5KHz	107-108	769.66875	799.66875	G2 (Palisade Head)
12.5KHz	111-112	769.69375	799.69375	H2 (Lake Isabella)
12.5KHz	113-114	769.70625	799.70625	I1 (Larsmont)
12.5KHz	147-148	769.91875	799.91875	G2 (Palisade Head)
12.5KHz	151-152	769.94375	799.94375	H2 (Lake Isabella)
12.5KHz	153-154	769.95625	799.95625	I1 (Larsmont)
12.5KHz	187-188	770.16875	800.16875	D2 (Isabella)
12.5KHz	191-192	770.19375	800.19375	E2 (Beaver Bay)
12.5KHz	227-228	770.41875	800.41875	D2 (Isabella)
12.5KHz	231-232	770.44375	800.44375	E2 (Beaver Bay)
12.5KHz	267-268	770.66875	800.66875	J2 (Beaver Crossing)
12.5KHz	271-272	770.69375	800.69375	K2 (Lake One)
12.5KHz	273-274	770.70625	800.70625	L1 (Finland)
12.5KHz	275-276	770.71875	800.71875	L2 (Silver Cliff)
12.5KHz	307-308	770.91875	800.91875	J2 (Beaver Crossing)
12.5KHz	311-312	770.94375	800.94375	K2 (Lake One)
12.5KHz	313-314	770.95625	800.95625	L1 (Finland)
12.5KHz	315-316	770.96875	800.96875	L2 (Silver Cliff)
12.5KHz	647-648	773.04375	803.04375	A2 (Slate Lake)
12.5KHz	655-656	773.09375	803.09375	C2 (Mt. Weber)
12.5KHz	687-688	773.29375	803.29375	A2 (Slate Lake)
12.5KHz	695-696	773.34375	803.34375	C2 (Mt. Weber)
12.5KHz	727-728	773.54375	803.54375	G2 (Palisade Head)
12.5KHz	731-732	773.56875	803.56875	H2 (Lake Isabelle)
12.5KHz	733-734	773.58125	803.58125	I1 (Larsmont)
12.5KHz	767-768	773.79375	803.79375	G2 (Palisade Head)

	12.5KHz	771-772	773.81875	803.81875	H2 (Lake Isabelle)
	12.5KHz	773-774	773.83125	803.83125	I1 (Larsmont)
	12.5KHz	807-808	774.04375	804.04375	D2 (Isabella)
	12.5KHz	811-812	774.06875	804.06875	E2 (Beaver Bay)
	12.5KHz	847-848	774.29375	804.29375	D2 (Isabella)
	12.5KHz	851-852	774.31875	804.31875	E2 (Beaver Bay)
	12.5KHz	887-888	774.54375	804.54375	J2 (Beaver Crossing)
	12.5KHz	891-892	774.56875	804.56875	K2 (Lake One)
	12.5KHz	893-894	774.58125	804.58125	L1 (Finland)
	12.5KHz	895-896	774.59375	804.59375	L2 (Silver Cliff)
	12.5KHz	927-928	774.79375	804.79375	J2 (Beaver Crossing)
	12.5KHz	931-932	774.81875	804.81875	K2 (Lake One)
	12.5KHz	933-934	774.83125	804.83125	L1 (Finland)
	12.5KHz	935-936	774.84375	804.84375	L2 (Silver Cliff)
Lake of the Woods					
	12.5KHz	25-26	769.15625	799.15625	A1 (Baudette)
	12.5KHz	29-30	769.18125	799.18125	B1 (Roosevelt)
	12.5KHz	65-66	769.40625	799.40625	A1 (Baudette)
	12.5KHz	69-70	769.43125	799.43125	B1 (Roosevelt)
	12.5KHz	267-268	770.66875	800.66875	J2 (Mulligan Lake)
	12.5KHz	307-308	770.91875	800.91875	J2 (Mulligan Lake)
	12.5KHz	645-646	773.03125	803.03125	A1 (Baudette)
	12.5KHz	649-650	773.05625	803.05625	B1 (Roosevelt)
	12.5KHz	685-686	773.28125	803.28125	A1 (Baudette)
	12.5KHz	689-690	773.30625	803.30625	B1 (Roosevelt)
	12.5KHz	887-888	774.54375	804.54375	J2 (Mulligan Lake)
	12.5KHz	927-928	774.79375	804.79375	J2 (Mulligan Lake)
Le Sueur					
	12.5KHz	271-272	770.69375	800.69375	K2 (Le
	12.5KHz	275-276	770.71875	800.71875	L2 (Kilkenny)
	12.5KHz	311-312	770.94375	800.94375	K2 (Le
	12.5KHz	315-316	770.96875	800.96875	L2 (Kilkenny)
	12.5KHz	891-892	774.56875	804.56875	K2 (Le
	12.5KHz	895-896	774.59375	804.59375	L2 (Kilkenny)
	12.5KHz	931-932	774.81875	804.81875	K2 (Le
	12.5KHz	935-936	774.84375	804.84375	L2 (Kilkenny)
Lincoln	12.5KHz	107-108	769.66875	799.66875	G2 (Lake
	12.5KHz	111-112	769.69375	799.69375	H2 (Ivanhoe)
	12.5KHz	147-148	769.91875	799.91875	G2 (Lake
	12.5KHz	151-152	769.94375	799.94375	H2 (Ivanhoe)
	12.5KHz	727-728	773.54375	803.54375	G2 (Lake
	12.5KHz	731-732	773.56875	803.56875	H2 (Ivanhoe)
	12.5KHz	767-768	773.79375	803.79375	G2 (Lake
	12.5KHz	771-772	773.81875	803.81875	H2 (Ivanhoe)
Lyon					
	12.5KHz	189-190	770.18125	800.18125	E1 (Marshall)
	12.5KHz	193-194	770.20625	800.20625	F1 (Russell)
	12.5KHz	229-230	770.43125	800.43125	E1 (Marshall)
	12.5KHz	233-234	770.45625	800.45625	F1 (Russell)
	12.5KHz	809-810	774.05625	804.05625	E1 (Marshall)
	12.5KHz	813-814	774.08125	804.08125	F1 (Russell)
	12.5KHz	849-850	774.30625	804.30625	E1 (Marshall)
	12.5KHz	853-854	774.33125	804.33125	F1 (Russell)
Mahnomen					

	12.5KHz	187-188	770.16875	800.16875	D2 (Mahnomen)
	12.5KHz	227-228	770.41875	800.41875	D2 (Mahnomen)
	12.5KHz	807-808	774.04375	804.04375	D2 (Mahnomen)
	12.5KHz	847-848	774.29375	804.29375	D2 (Mahnomen)
Marshall					
	12.5KHz	27-28	769.16875	799.16875	A2 (Middle River)
	12.5KHz	67-68	769.41875	799.41875	A2 (Middle River)
	12.5KHz	271-272	770.69375	800.69375	K2 (Old Mill St Pk)
	12.5KHz	311-312	770.94375	800.94375	K2 (Old Mill St Pk)
	12.5KHz	647-648	773.04375	803.04375	A2 (Middle River)
	12.5KHz	687-688	773.29375	803.29375	A2 (Middle River)
	12.5KHz	891-892	774.56875	804.56875	K2 (Old Mill St Pk)
	12.5KHz	931-932	774.81875	804.81875	K2 (Old Mill St Pk)
Martin					
	12.5KHz	187-188	770.16875	800.16875	D2 (Sherburne)
	12.5KHz	191-192	770.19375	800.19375	E2 (Fairmont)
	12.5KHz	227-228	770.41875	800.41875	D2 (Sherburne)
	12.5KHz	231-232	770.44375	800.44375	E2 (Fairmont)
	12.5KHz	807-808	774.04375	804.04375	D2 (Sherburne)
	12.5KHz	811-812	774.06875	804.06875	E2 (Fairmont)
	12.5KHz	847-848	774.29375	804.29375	D2 (Sherburne)
	12.5KHz	851-852	774.31875	804.31875	E2 (Fairmont)
McLeod					
	12.5KHz	113-114	769.70625	799.70625	I1 (Biscay)
	12.5KHz	153-154	769.95625	799.95625	I1 (Biscay)
	12.5KHz	733-734	773.58125	803.58125	I1 (Biscay)
	12.5KHz	773-774	773.83125	803.83125	I1 (Biscay)
Meeker					
	12.5KHz	25-26	769.15625	799.15625	A1 (Litchfield)
	12.5KHz	33-34	769.20625	799.20625	C1 (Richmond)
	12.5KHz	65-66	769.40625	799.40625	A1 (Litchfield)
	12.5KHz	73-74	769.45625	799.45625	C1 (Richmond)
	12.5KHz	645-646	773.03125	803.03125	A1 (Litchfield)
	12.5KHz	653-654	773.08125	803.08125	C1 (Richmond)
	12.5KHz	685-686	773.28125	803.28125	A1 (Litchfield)
	12.5KHz	693-694	773.33125	803.33125	C1 (Richmond)
Mille Lacs					
	12.5KHz	29-30	769.18125	799.18125	B1 (Princeton)
	12.5KHz	33-34	769.20625	799.20625	C1 (Onamia)
	12.5KHz	69-70	769.43125	799.43125	B1 (Princeton)
	12.5KHz	73-74	769.45625	799.45625	C1 (Onamia)
	12.5KHz	649-650	773.05625	803.05625	B1 (Princeton)
	12.5KHz	653-654	773.08125	803.08125	C1 (Onamia)
	12.5KHz	689-690	773.30625	803.30625	B1 (Princeton)
	12.5KHz	693-694	773.33125	803.33125	C1 (Onamia)
Morrison					
	12.5KHz	109-110	769.68125	799.68125	H1 (Flensburg)
	12.5KHz	149-150	769.93125	799.93125	H1 (Flensburg)
	12.5KHz	185-186	770.15625	800.15625	D1 (Royalton)
	12.5KHz	225-226	770.40625	800.40625	D1 (Royalton)
	12.5KHz	267-268	770.66875	800.66875	J2 (Freedhem)
	12.5KHz	275-276	770.71875	800.71875	L2 (Lincoln)
	12.5KHz	307-308	770.91875	800.91875	J2 (Freedhem)
	12.5KHz	315-316	770.96875	800.96875	L2 (Lincoln)

	12.5KHz	729-730	773.55625	803.55625	H1 (Flensburg)
	12.5KHz	769-770	773.80625	803.80625	H1 (Flensburg)
	12.5KHz	805-806	774.03125	804.03125	D1 (Royalton)
	12.5KHz	845-846	774.28125	804.28125	D1 (Royalton)
	12.5KHz	887-888	774.54375	804.54375	J2 (Freedhem)
	12.5KHz	895-896	774.59375	804.59375	L2 (Lincoln)
	12.5KHz	927-928	774.79375	804.79375	J2 (Freedhem)
	12.5KHz	935-936	774.84375	804.84375	L2 (Lincoln)
Mower					
	12.5KHz	115-116	769.71875	799.71875	I2 (Elkton)
	12.5KHz	155-156	769.96875	799.96875	I2 (Elkton)
	12.5KHz	735-736	773.59375	803.59375	I2 (Elkton)
	12.5KHz	775-776	773.84375	803.84375	I2 (Elkton)
Murray					
	12.5KHz	25-26	769.15625	799.15625	A1 (Slayton)
	12.5KHz	29-30	769.18125	799.18125	B1 (Chandler)
	12.5KHz	35-36	769.21875	799.21875	C2 (Tracy)
	12.5KHz	65-66	769.40625	799.40625	A1 (Slayton)
	12.5KHz	69-70	769.43125	799.43125	B1 (Chandler)
	12.5KHz	75-76	769.46875	799.46875	C2 (Tracy)
	12.5KHz	645-646	773.03125	803.03125	A1 (Slayton)
	12.5KHz	649-650	773.05625	803.05625	B1 (Chandler)
	12.5KHz	655-656	773.09375	803.09375	C2 (Tracy)
	12.5KHz	685-686	773.28125	803.28125	A1 (Slayton)
	12.5KHz	689-690	773.30625	803.30625	B1 (Chandler)
	12.5KHz	695-696	773.34375	803.34375	C2 (Tracy)
Nobles					
	12.5KHz	113-114	769.70625	799.70625	I1 (Rushmore)
	12.5KHz	153-154	769.95625	799.95625	I1 (Rushmore)
	12.5KHz	733-734	773.58125	803.58125	I1 (Rushmore)
	12.5KHz	773-774	773.83125	803.83125	I1 (Rushmore)
Norman					
	12.5KHz	35-36	769.21875	799.21875	C2 (Twin Valley)
	12.5KHz	75-76	769.46875	799.46875	C2 (Twin Valley)
	12.5KHz	273-274	770.70625	800.70625	L1 (Ada)
	12.5KHz	313-314	770.95625	800.95625	L1 (Ada)
	12.5KHz	655-656	773.09375	803.09375	C2 (Twin Valley)
	12.5KHz	695-696	773.34375	803.34375	C2 (Twin Valley)
	12.5KHz	893-894	774.58125	804.58125	L1 (Ada)
	12.5KHz	933-934	774.83125	804.83125	L1 (Ada)
Olmsted					
	12.5KHz	109-110	769.68125	799.68125	H1 (New Haven)
	12.5KHz	149-150	769.93125	799.93125	H1 (New Haven)
	12.5KHz	187-188	770.16875	800.16875	D2 (Rochester)
	12.5KHz	195-196	770.21875	800.21875	F2 (Viola)
	12.5KHz	227-228	770.41875	800.41875	D2 (Rochester)
	12.5KHz	235-236	770.46875	800.46875	F2 (Viola)
	12.5KHz	267-268	770.66875	800.66875	J2 (Cummingsville)
	12.5KHz	271-272	770.69375	800.69375	K2 (Salem Corners)
	12.5KHz	307-308	770.91875	800.91875	J2 (Cummingsville)
	12.5KHz	311-312	770.94375	800.94375	K2 (Salem Corners)
	12.5KHz	729-730	773.55625	803.55625	H1 (New Haven)
	12.5KHz	769-770	773.80625	803.80625	H1 (New Haven)
	12.5KHz	807-808	774.04375	804.04375	D2 (Rochester)
	12.5KHz	815-816	774.09375	804.09375	F2 (Viola)

	12.5KHz	847-848	774.29375	804.29375	D2 (Rochester)
	12.5KHz	855-856	774.34375	804.34375	F2 (Viola)
	12.5KHz	887-888	774.54375	804.54375	J2 (Cummingsville)
	12.5KHz	891-892	774.56875	804.56875	K2 (Salem Corners)
	12.5KHz	927-928	774.79375	804.79375	J2 (Cummingsville)
	12.5KHz	931-932	774.81875	804.81875	K2 (Salem Corners)
Otter Tail					
	12.5KHz	107-108	769.66875	799.66875	G2 (Eagle Lake)
	12.5KHz	111-112	769.69375	799.69375	H2 (Erhard)
	12.5KHz	115-116	769.71875	799.71875	I2 (Fergus Falls)
	12.5KHz	147-148	769.91875	799.91875	G2 (Eagle Lake)
	12.5KHz	151-152	769.94375	799.94375	H2 (Erhard)
	12.5KHz	155-156	769.96875	799.96875	I2 (Fergus Falls)
	12.5KHz	185-186	770.15625	800.15625	D1 (Henning)
	12.5KHz	191-192	770.19375	800.19375	E2 (Luce)
	12.5KHz	225-226	770.40625	800.40625	D1 (Henning)
	12.5KHz	231-232	770.44375	800.44375	E2 (Luce)
	12.5KHz	727-728	773.54375	803.54375	G2 (Eagle Lake)
	12.5KHz	731-732	773.56875	803.56875	H2 (Erhard)
	12.5KHz	735-736	773.59375	803.59375	I2 (Fergus Falls)
	12.5KHz	767-768	773.79375	803.79375	G2 (Eagle Lake)
	12.5KHz	771-772	773.81875	803.81875	H2 (Erhard)
	12.5KHz	775-776	773.84375	803.84375	I2 (Fergus Falls)
	12.5KHz	805-806	774.03125	804.03125	D1 (Henning)
	12.5KHz	811-812	774.06875	804.06875	E2 (Luce)
	12.5KHz	845-846	774.28125	804.28125	D1 (Henning)
	12.5KHz	851-852	774.31875	804.31875	E2 (Luce)
Pennington					
	12.5KHz	105-106	769.65625	799.65625	G1 (High Landing)
	12.5KHz	145-146	769.90625	799.90625	G1 (High Landing)
	12.5KHz	275-276	770.71875	800.71875	L2 (Thief River Falls)
	12.5KHz	315-316	770.96875	800.96875	L2 (Thief River Falls)
	12.5KHz	725-726	773.53125	803.53125	G1 (High Landing)
	12.5KHz	765-766	773.78125	803.78125	G1 (High Landing)
	12.5KHz	895-896	774.59375	804.59375	L2 (Thief River Falls)
	12.5KHz	935-936	774.84375	804.84375	L2 (Thief River Falls)
Pine					
	12.5KHz	31-32	769.19375	799.19375	B2 (St. Croix St. Park)
	12.5KHz	35-36	769.21875	799.21875	C2 (Askov)
	12.5KHz	71-72	769.44375	799.44375	B2 (St. Croix St. Park)
	12.5KHz	75-76	769.46875	799.46875	C2 (Askov)
	12.5KHz	109-110	769.68125	799.68125	H1 (Pine City)
	12.5KHz	115-116	769.71875	799.71875	I2 (Nickerson)
	12.5KHz	149-150	769.93125	799.93125	H1 (Pine City)
	12.5KHz	155-156	769.96875	799.96875	I2 (Nickerson)
	12.5KHz	651-652	773.06875	803.06875	B2 (St. Croix
	12.5KHz	655-656	773.09375	803.09375	C2 (Askov)
	12.5KHz	691-692	773.31875	803.31875	B2 (St. Croix St. Park)
	12.5KHz	695-696	773.34375	803.34375	C2 (Askov)
	12.5KHz	729-730	773.55625	803.55625	H1 (Pine City)
	12.5KHz	735-736	773.59375	803.59375	I2 (Nickerson)
	12.5KHz	769-770	773.80625	803.80625	H1 (Pine City)
	12.5KHz	775-776	773.84375	803.84375	I2 (Nickerson)
Pipestone					

	12.5KHz	185-186	770.15625	800.15625	D1 (Pipestone)
	12.5KHz	225-226	770.40625	800.40625	D1 (Pipestone)
	12.5KHz	805-806	774.03125	804.03125	D1 (Pipestone)
	12.5KHz	845-846	774.28125	804.28125	D1 (Pipestone)
Polk					
	12.5KHz	33-34	769.20625	799.20625	C1 (Angus)
	12.5KHz	73-74	769.45625	799.45625	C1 (Angus)
	12.5KHz	107-108	769.66875	799.66875	G2 (Crookston)
	12.5KHz	147-148	769.91875	799.91875	G2 (Crookston)
	12.5KHz	191-192	770.19375	800.19375	E2 (Mentor)
	12.5KHz	231-232	770.44375	800.44375	E2 (Mentor)
	12.5KHz	269-270	770.68125	800.68125	K1 (Trail)
	12.5KHz	309-310	770.93125	800.93125	K1 (Trail)
	12.5KHz	653-654	773.08125	803.08125	C1 (Angus)
	12.5KHz	693-694	773.33125	803.33125	C1 (Angus)
	12.5KHz	727-728	773.54375	803.54375	G2 (Crookston)
	12.5KHz	767-768	773.79375	803.79375	G2 (Crookston)
	12.5KHz	811-812	774.06875	804.06875	E2 (Mentor)
	12.5KHz	851-852	774.31875	804.31875	E2 (Mentor)
	12.5KHz	889-890	774.55625	804.55625	K1 (Trail)
	12.5KHz	929-930	774.80625	804.80625	K1 (Trail)
Pope					
	12.5KHz	111-112	769.69375	799.69375	H2 (Terrace)
	12.5KHz	151-152	769.94375	799.94375	H2 (Terrace)
	12.5KHz	191-192	770.19375	800.19375	E2 (Glenwood)
	12.5KHz	231-232	770.44375	800.44375	E2 (Glenwood)
	12.5KHz	731-732	773.56875	803.56875	H2 (Terrace)
	12.5KHz	771-772	773.81875	803.81875	H2 (Terrace)
	12.5KHz	811-812	774.06875	804.06875	E2 (Glenwood)
	12.5KHz	851-852	774.31875	804.31875	E2 (Glenwood)
Ramsey					
	12.5KHz	27-28	769.16875	799.16875	A2 (Core Pointe Bldg)
	12.5KHz	67-68	769.41875	799.41875	A2 (Core Pointe Bldg)
	12.5KHz	107-108	769.66875	799.66875	G2 (Core)
	12.5KHz	147-148	769.91875	799.91875	G2 (Core)
	12.5KHz	647-648	773.04375	803.04375	A2 (Core Pointe Bldg)
	12.5KHz	687-688	773.29375	803.29375	A2 (Core Pointe Bldg)
	12.5KHz	727-728	773.54375	803.54375	G2 (Core)
	12.5KHz	767-768	773.79375	803.79375	G2 (Core)
Redwood					
	12.5KHz	105-106	769.65625	799.65625	G1 (Wabasso)
	12.5KHz	145-146	769.90625	799.90625	G1 (Wabasso)
	12.5KHz	725-726	773.53125	803.53125	G1 (Wabasso)
	12.5KHz	765-766	773.78125	803.78125	G1 (Wabasso)
Renville					
	12.5KHz	265-266	770.65625	800.65625	J1 (Sacred Heart)
	12.5KHz	269-270	770.68125	800.68125	K1 (Morton)
	12.5KHz	273-274	770.70625	800.70625	L1 (Hector)
	12.5KHz	305-306	770.90625	800.90625	J1 (Sacred Heart)
	12.5KHz	309-310	770.93125	800.93125	K1 (Morton)
	12.5KHz	313-314	770.95625	800.95625	L1 (Hector)
	12.5KHz	885-886	774.53125	804.53125	J1 (Sacred Heart)
	12.5KHz	889-890	774.55625	804.55625	K1 (Morton)
	12.5KHz	893-894	774.58125	804.58125	L1 (Hector)

	12.5KHz	925-926	774.78125	804.78125	J1 (Sacred Heart)
	12.5KHz	929-930	774.80625	804.80625	K1 (Morton)
	12.5KHz	933-934	774.83125	804.83125	L1 (Hector)
Rice					
	12.5KHz	113-114	769.70625	799.70625	I1 (Faribault)
	12.5KHz	153-154	769.95625	799.95625	I1 (Faribault)
	12.5KHz	191-192	770.19375	800.19375	E2 (Lonsdale)
	12.5KHz	231-232	770.44375	800.44375	E2 (Lonsdale)
	12.5KHz	733-734	773.58125	803.58125	I1 (Faribault)
	12.5KHz	773-774	773.83125	803.83125	I1 (Faribault)
	12.5KHz	811-812	774.06875	804.06875	E2 (Lonsdale)
	12.5KHz	851-852	774.31875	804.31875	E2 (Lonsdale)
Rock					
	12.5KHz	109-110	769.68125	799.68125	H1 (Blue Mound)
	12.5KHz	149-150	769.93125	799.93125	H1 (Blue Mound)
	12.5KHz	729-730	773.55625	803.55625	H1 (Blue Mound)
	12.5KHz	769-770	773.80625	803.80625	H1 (Blue Mound)
Roseau					
	12.5KHz	35-36	769.21875	799.21875	C2 (Fox)
	12.5KHz	75-76	769.46875	799.46875	C2 (Fox)
	12.5KHz	193-194	770.20625	800.20625	F1 (Greenbush)
	12.5KHz	233-234	770.45625	800.45625	F1 (Greenbush)
	12.5KHz	655-656	773.09375	803.09375	C2 (Fox)
	12.5KHz	695-696	773.34375	803.34375	C2 (Fox)
	12.5KHz	813-814	774.08125	804.08125	F1 (Greenbush)
	12.5KHz	853-854	774.33125	804.33125	F1 (Greenbush)
Scott					
	12.5KHz	31-32	769.19375	799.19375	B2 (SN4)
	12.5KHz	71-72	769.44375	799.44375	B2 (SN4)
	12.5KHz	651-652	773.06875	803.06875	B2 (SN4)
	12.5KHz	691-692	773.31875	803.31875	B2 (SN4)
Sherburne					
	12.5KHz	275-276	770.71875	800.71875	L2 (Zimmerman)
	12.5KHz	315-316	770.96875	800.96875	L2 (Zimmerman)
	12.5KHz	895-896	774.59375	804.59375	L2 (Zimmerman)
	12.5KHz	935-936	774.84375	804.84375	L2 (Zimmerman)
Sibley					
	12.5KHz	109-110	769.68125	799.68125	H1 (Gibbon)
	12.5KHz	149-150	769.93125	799.93125	H1 (Gibbon)
	12.5KHz	185-186	770.15625	800.15625	D1 (Gaylord)
	12.5KHz	225-226	770.40625	800.40625	D1 (Gaylord)
	12.5KHz	729-730	773.55625	803.55625	H1 (Gibbon)
	12.5KHz	769-770	773.80625	803.80625	H1 (Gibbon)
	12.5KHz	805-806	774.03125	804.03125	D1 (Gaylord)
	12.5KHz	845-846	774.28125	804.28125	D1 (Gaylord)
St. Louis					
	12.5KHz	25-26	769.15625	799.15625	A1 (Kabetogama & Shaw)
	12.5KHz	31-32	769.19375	799.19375	B2 (Brimson)
	12.5KHz	33-34	769.20625	799.20625	C1 (Arrowhead Gheen Hill)
	12.5KHz	65-66	769.40625	799.40625	A1 (Kabetogama
	12.5KHz	71-72	769.44375	799.44375	B2 (Brimson)
	12.5KHz	73-74	769.45625	799.45625	C1 (Arrowhead Gheen Hill)
	12.5KHz	105-106	769.65625	799.65625	G1 (Palmers & Ely)
	12.5KHz	109-110	769.68125	799.68125	H1 (Side Lake St Park)
	12.5KHz	113-114	769.70625	799.70625	I1 (Idington)

12.5KHz	145-146	769.90625	G1	(Palmers & Ely)
12.5KHz	149-150	769.93125	H1	(Side Lake St Park)
12.5KHz	153-154	769.95625	I1	(Idington)
12.5KHz	185-186	770.15625	D1	(Duluth DOT & Tower)
12.5KHz	189-190	770.18125	E1	(Sullivan Lake)
12.5KHz	191-192	770.19375	E2	(Picket Lake)
12.5KHz	193-194	770.20625	F1	(Argus Lookout)
12.5KHz	195-196	770.21875	F2	(Hoyt Lakes)
12.5KHz	225-226	770.40625	D1	(Duluth DOT & Tower)
12.5KHz	229-230	770.43125	E1	(Sullivan Lake)
12.5KHz	231-232	770.44375	E2	(Picket Lake)
12.5KHz	233-234	770.45625	F1	(Argus Lookout)
12.5KHz	235-236	770.46875	F2	(Hoyt Lakes)
12.5KHz	265-266	770.65625	J1	(Virginia/Midway)
12.5KHz	271-272	770.69375	K2	(Lavell)
12.5KHz	275-276	770.71875	L2	(Meadowlands Elephant Lk)
12.5KHz	315-316	770.96875	L2	(Meadowlands Elephant Lk)
12.5KHz	645-646	773.03125	A1	(Kabetogama & Shaw)
12.5KHz	651-652	773.06875	B2	(Brimson)
12.5KHz	653-654	773.08125	C1	(Arrowhead Gheen Hill)
12.5KHz	685-686	773.28125	A1	(Kabetogama & Shaw)
12.5KHz	691-692	773.31875	B2	(Brimson)
12.5KHz	693-694	773.33125	C1	(Arrowhead Gheen
12.5KHz	725-726	773.53125	G1	(Palmers & Ely)
12.5KHz	729-730	773.55625	H1	(Side Lake St Park)
12.5KHz	733-734	773.58125	I1	(Idington)
12.5KHz	765-766	773.78125	G1	(Palmers & Ely)
12.5KHz	769-770	773.80625	H1	(Side Lake St Park)
12.5KHz	773-774	773.83125	I1	(Idington)
12.5KHz	805-806	774.03125	D1	(Duluth DOT & Tower)
12.5KHz	809-810	774.05625	E1	(Sullivan Lake)
12.5KHz	811-812	774.06875	E2	(Picket Lake)
12.5KHz	813-814	774.08125	F1	(Argus Lookout)
12.5KHz	815-816	774.09375	F2	(Hoyt Lakes)
12.5KHz	845-846	774.28125	D1	(Duluth DOT & Tower)
12.5KHz	849-850	774.30625	E1	(Sullivan Lake)
12.5KHz	851-852	774.31875	E2	(Picket Lake)
12.5KHz	853-854	774.33125	F1	(Argus Lookout)
12.5KHz	855-856	774.34375	F2	(Hoyt Lakes)
12.5KHz	885-886	774.53125	J1	(Virginia/Midway)
12.5KHz	891-892	774.56875	K2	(Lavell)
12.5KHz	895-896	774.59375	L2	(Meadowlands Elephant Lk)
12.5KHz	925-926	774.78125	J1	(Virginia/Midway)
12.5KHz	931-932	774.81875	K2	(Lavell)
12.5KHz	935-936	774.84375	L2	(Meadowlands Elephant Lk)

Stearns

12.5KHz	105-106	769.65625	G1	(St. Cloud)
12.5KHz	115-116	769.71875	I2	(New Munich)
12.5KHz	145-146	769.90625	G1	(St. Cloud)
12.5KHz	155-156	769.96875	I2	(New Munich)
12.5KHz	189-190	770.18125	E1	(Kimball)
12.5KHz	229-230	770.43125	E1	(Kimball)
12.5KHz	271-272	770.69375	K2	(St. Stephen)
12.5KHz	311-312	770.94375	K2	(St. Stephen)

	12.5KHz	725-726	773.53125	803.53125	G1 (St. Cloud)
	12.5KHz	735-736	773.59375	803.59375	I2 (New Munich)
	12.5KHz	765-766	773.78125	803.78125	G1 (St. Cloud)
	12.5KHz	775-776	773.84375	803.84375	I2 (New Munich)
	12.5KHz	809-810	774.05625	804.05625	E1 (Kimball)
	12.5KHz	849-850	774.30625	804.30625	E1 (Kimball)
	12.5KHz	891-892	774.56875	804.56875	K2 (St. Stephen)
	12.5KHz	931-932	774.81875	804.81875	K2 (St. Stephen)
Steele					
	12.5KHz	33-34	769.20625	799.20625	C1 (Owatonna)
	12.5KHz	73-74	769.45625	799.45625	C1 (Owatonna)
	12.5KHz	105-106	769.65625	799.65625	G1 (Ellendale)
	12.5KHz	145-146	769.90625	799.90625	G1 (Ellendale)
	12.5KHz	653-654	773.08125	803.08125	C1 (Owatonna)
	12.5KHz	693-694	773.33125	803.33125	C1 (Owatonna)
	12.5KHz	725-726	773.53125	803.53125	G1 (Ellendale)
	12.5KHz	765-766	773.78125	803.78125	G1 (Ellendale)
Stevens					
	12.5KHz	25-26	769.15625	799.15625	A1 (Morris)
	12.5KHz	65-66	769.40625	799.40625	A1 (Morris)
	12.5KHz	645-646	773.03125	803.03125	A1 (Morris)
	12.5KHz	685-686	773.28125	803.28125	A1 (Morris)
Swift					
	12.5KHz	35-36	769.21875	799.21875	C2 (Benson)
	12.5KHz	75-76	769.46875	799.46875	C2 (Benson)
	12.5KHz	269-270	770.68125	800.68125	K1 (Appleton)
	12.5KHz	309-310	770.93125	800.93125	K1 (Appleton)
	12.5KHz	655-656	773.09375	803.09375	C2 (Benson)
	12.5KHz	695-696	773.34375	803.34375	C2 (Benson)
	12.5KHz	889-890	774.55625	804.55625	K1 (Appleton)
	12.5KHz	929-930	774.80625	804.80625	K1 (Appleton)
Todd					
	12.5KHz	27-28	769.16875	799.16875	A2 (Sauk Center)
	12.5KHz	31-32	769.19375	799.19375	B2 (Long Prairie)
	12.5KHz	67-68	769.41875	799.41875	A2 (Sauk Center)
	12.5KHz	71-72	769.44375	799.44375	B2 (Long Prairie)
	12.5KHz	647-648	773.04375	803.04375	A2 (Sauk Center)
	12.5KHz	651-652	773.06875	803.06875	B2 (Long Prairie)
	12.5KHz	687-688	773.29375	803.29375	A2 (Sauk Center)
	12.5KHz	691-692	773.31875	803.31875	B2 (Long Prairie)
Traverse					
	12.5KHz	29-30	769.18125	799.18125	B1 (Browns Valley)
	12.5KHz	35-36	769.21875	799.21875	C2 (Wheaton)
	12.5KHz	69-70	769.43125	799.43125	B1 (Browns Valley)
	12.5KHz	75-76	769.46875	799.46875	C2 (Wheaton)
	12.5KHz	649-650	773.05625	803.05625	B1 (Browns Valley)
	12.5KHz	655-656	773.09375	803.09375	C2 (Wheaton)
	12.5KHz	689-690	773.30625	803.30625	B1 (Browns Valley)
	12.5KHz	695-696	773.34375	803.34375	C2 (Wheaton)
Wabasha					
	12.5KHz	25-26	769.15625	799.15625	A1 (Oakwood)
	12.5KHz	65-66	769.40625	799.40625	A1 (Oakwood)
	12.5KHz	193-194	770.20625	800.20625	F1 (Lake City)
	12.5KHz	233-234	770.45625	800.45625	F1 (Lake City)
	12.5KHz	269-270	770.68125	800.68125	K1 (Bear Valley)

	12.5KHz	309-310	770.93125	800.93125	K1 (Bear Valley)
	12.5KHz	645-646	773.03125	803.03125	A1 (Oakwood)
	12.5KHz	685-686	773.28125	803.28125	A1 (Oakwood)
	12.5KHz	813-814	774.08125	804.08125	F1 (Lake City)
	12.5KHz	853-854	774.33125	804.33125	F1 (Lake City)
	12.5KHz	889-890	774.55625	804.55625	K1 (Bear Valley)
	12.5KHz	929-930	774.80625	804.80625	K1 (Bear Valley)
Wadena					
	12.5KHz	35-36	769.21875	799.21875	C2 (Wadena)
	12.5KHz	75-76	769.46875	799.46875	C2 (Wadena)
	12.5KHz	269-270	770.68125	800.68125	K1 (Sebeka)
	12.5KHz	309-310	770.93125	800.93125	K1 (Sebeka)
	12.5KHz	655-656	773.09375	803.09375	C2 (Wadena)
	12.5KHz	695-696	773.34375	803.34375	C2 (Wadena)
	12.5KHz	889-890	774.55625	804.55625	K1 (Sebeka)
	12.5KHz	929-930	774.80625	804.80625	K1 (Sebeka)
Waseca					
	12.5KHz	25-26	769.15625	799.15625	A1 (Janesville)
	12.5KHz	65-66	769.40625	799.40625	A1 (Janesville)
	12.5KHz	269-270	770.68125	800.68125	K1 (New Richland)
	12.5KHz	309-310	770.93125	800.93125	K1 (New Richland)
	12.5KHz	645-646	773.03125	803.03125	A1 (Janesville)
	12.5KHz	685-686	773.28125	803.28125	A1 (Janesville)
	12.5KHz	889-890	774.55625	804.55625	K1 (New Richland)
	12.5KHz	929-930	774.80625	804.80625	K1 (New Richland)
Washington					
	12.5KHz	115-116	769.71875	799.71875	I2 (SN5)
	12.5KHz	155-156	769.96875	799.96875	I2 (SN5)
	12.5KHz	191-192	770.19375	800.19375	E2 (SN6)
	12.5KHz	231-232	770.44375	800.44375	E2 (SN6)
	12.5KHz	273-274	770.70625	800.70625	L1 (SA1)
	12.5KHz	313-314	770.95625	800.95625	L1 (SA1)
	12.5KHz	735-736	773.59375	803.59375	I2 (SN5)
	12.5KHz	775-776	773.84375	803.84375	I2 (SN5)
	12.5KHz	811-812	774.06875	804.06875	E2 (SN6)
	12.5KHz	851-852	774.31875	804.31875	E2 (SN6)
	12.5KHz	893-894	774.58125	804.58125	L1 (SA1)
	12.5KHz	933-934	774.83125	804.83125	L1 (SA1)
Watonwan					
	12.5KHz	27-28	769.16875	799.16875	A2 (St. James)
	12.5KHz	67-68	769.41875	799.41875	A2 (St. James)
	12.5KHz	111-112	769.69375	799.69375	H2 (Comfrey)
	12.5KHz	151-152	769.94375	799.94375	H2 (Comfrey)
	12.5KHz	647-648	773.04375	803.04375	A2 (St. James)
	12.5KHz	687-688	773.29375	803.29375	A2 (St. James)
	12.5KHz	731-732	773.56875	803.56875	H2 (Comfrey)
	12.5KHz	771-772	773.81875	803.81875	H2 (Comfrey)
Wilkin					
	12.5KHz	267-268	770.66875	800.66875	J2 (Everdell)
	12.5KHz	307-308	770.91875	800.91875	J2 (Everdell)
	12.5KHz	887-888	774.54375	804.54375	J2 (Everdell)
	12.5KHz	927-928	774.79375	804.79375	J2 (Everdell)
Winona					
	12.5KHz	25-26	769.15625	799.15625	A1 (Test Site)
	12.5KHz	29-30	769.18125	799.18125	B1 (Pickwick)

	12.5KHz 35-36	769.21875	799.21875	C2	(Wilson)
	12.5KHz 65-66	769.40625	799.40625	A1	(Test Site)
	12.5KHz 69-70	769.43125	799.43125	B1	(Pickwick)
	12.5KHz 75-76	769.46875	799.46875	C2	(Wilson)
	12.5KHz 107-108	769.66875	799.66875	G2	(Elba)
	12.5KHz 111-112	769.69375	799.69375	H2	(Rolling Stone)
	12.5KHz 147-148	769.91875	799.91875	G2	(Elba)
	12.5KHz 151-152	769.94375	799.94375	H2	(Rolling Stone)
	12.5KHz 275-276	770.71875	800.71875	L2	(Aren Dahl)
	12.5KHz 315-316	770.96875	800.96875	L2	(Aren Dahl)
	12.5KHz 645-646	773.03125	803.03125	A1	(Test Site)
	12.5KHz 649-650	773.05625	803.05625	B1	(Pickwick)
	12.5KHz 655-656	773.09375	803.09375	C2	(Wilson)
	12.5KHz 685-686	773.28125	803.28125	A1	(Test Site)
	12.5KHz 689-690	773.30625	803.30625	B1	(Pickwick)
	12.5KHz 695-696	773.34375	803.34375	C2	(Wilson)
	12.5KHz 727-728	773.54375	803.54375	G2	(Elba)
	12.5KHz 731-732	773.56875	803.56875	H2	(Rolling Stone)
	12.5KHz 767-768	773.79375	803.79375	G2	(Elba)
	12.5KHz 771-772	773.81875	803.81875	H2	(Rolling Stone)
	12.5KHz 895-896	774.59375	804.59375	L2	(Aren Dahl)
	12.5KHz 935-936	774.84375	804.84375	L2	(Aren Dahl)
Wright					
	12.5KHz 111-112	769.69375	799.69375	H2	(Buffalo)
	12.5KHz 151-152	769.94375	799.94375	H2	(Buffalo)
	12.5KHz 193-194	770.20625	800.20625	F1	(Enfield)
	12.5KHz 233-234	770.45625	800.45625	F1	(Enfield)
	12.5KHz 731-732	773.56875	803.56875	H2	(Buffalo)
	12.5KHz 771-772	773.81875	803.81875	H2	(Buffalo)
	12.5KHz 813-814	774.08125	804.08125	F1	(Enfield)
	12.5KHz 853-854	774.33125	804.33125	F1	(Enfield)
Yellow	Medicine				
	12.5KHz 31-32	769.19375	799.19375	B2	(Hanley Falls)
	12.5KHz 71-72	769.44375	799.44375	B2	(Hanley Falls)
	12.5KHz 275-276	770.71875	800.71875	L2	(Oshkosh)
	12.5KHz 315-316	770.96875	800.96875	L2	(Oshkosh)
	12.5KHz 651-652	773.06875	803.06875	B2	(Hanley Falls)
	12.5KHz 691-692	773.31875	803.31875	B2	(Hanley Falls)
	12.5KHz 895-896	774.59375	804.59375	L2	(Oshkosh)
	12.5KHz 935-936	774.84375	804.84375	L2	(Oshkosh)

Attachment 8

Region 22 – Minnesota
Allotments by FCC Channel
09/09/15

FCC Channel Notation	Bandwidth	Mobile Frequency	Base Frequency	County	
13-16	25.00 KHz	799.087500 MHz	769.087500 MHz	Aitkin Anoka Beltrami Chippewa Cook Grant Nicollet Olmsted	
17-20	25.00 KHz	799.112500 MHz	769.112500 MHz	Becker Dakota Freeborn Jackson Stearns	
25-26	12.50 KHz	799.156250 MHz	769.156250 MHz	Clay	A1
(Barnesville)					
				Cook	A1
(Lutzen)					
				Hubbard	A1
(Mantrap)					
				Itasca	A1
(Deer River)					
				Kittson	A1
(Hallock)					
				Lake of the Woods	A1
(Baudette)					
				Meeker	A1
(Litchfield)					
				Murray	A1
(Slayton)					
				St. Louis	A1
(Kabetogama & Shaw)					
				Stevens	A1
(Morris)					
				Wabasha	A1
(Oakwood)					
				Waseca	A1
(Janesville)					
				Winona	A1
(Test Site)					
27-28	12.50 KHz	799.168750 MHz	769.168750 MHz	Carlton	A2
(Mahtowa)					
				Crow Wing	A2
(Borden Lake)					
				Fillmore	A2
(Wykoff)					

				Hennepin	A2
(CORE)					
				Koochiching	A2
(Northome)					
				Lac qui Parle	A2
(Madison)					
				Lake	A2
(Slate Lake)					
				Marshall	A2
(Middle River)					
				Ramsey	A2
(Core Pointe Bldg)					
				Todd	A2
(Sauk Center)					
				Watonwan	A2
(St. James)					
29-30	12.50 KHz	799.181250 MHz	769.181250 MHz	Cass	B1
(Leader)					
				Clay	B1
(Felton)					
				Cook	B1
(Sawbill)					
				Dodge	B1
(Washiota)					
				Itasca	B1
(Nashwauk)					
				Kandiyohi	B1
(Willmar)					
				Lake of the Woods	B1
(Roosevelt)					
				Mille Lacs	B1
(Princeton)					
				Murray	B1
(Chandler)					
				Traverse	B1
(Browns Valley)					
				Winona	B1
(Pickwick)					
31-32	12.50 KHz	799.193750 MHz	769.193750 MHz	Aitkin	B2
(Quadna)					
				Becker	B2
(Detroit Lakes)					
				Beltrami	B2
(Bemidji Fire Twr)					
				Carver	B2
(SN4)					
				Faribault	B2
(Walters)					
				Hennepin	B2
(SN4)					
				Pine	B2
(St. Croix St. Park)					
				Scott	B2
(SN4)					

				St. Louis	B2
(Brimson)					
				Todd	B2
(Long Prairie)					
				Yellow Medicine	B2
(Hanley Falls)					
33-34	12.50 KHz	799.206250 MHz	769.206250 MHz	Beltrami	C1
(Red Lake)					
				Brown	C1
(New Ulm)					
				Cass	C1
(Longville)					
				Cook	C1
(Thrush Lake)					
				Meeker	C1
(Richmond)					
				Mille Lacs	C1
(Onamia)					
				Polk	C1
(Angus)					
				St. Louis	C1
(Arrowhead & GheenHill)					
				Steele	C1
(Owatonna)					
35-36	12.50 KHz	799.218750 MHz	769.218750 MHz	Dakota	C2
(SA2) (WCAL)					
				Faribault	C2
(Easton)					
				Itasca	C2
(Grand Rapids)					
				Lake	C2
(Mt. Weber)					
				Murray	C2
(Tracy)					
				Norman	C2
(Twin Valley)					
				Pine	C2
(Askov)					
				Roseau	C2
(Fox)					
				Swift	C2
(Benson)					
				Traverse	C2
(Wheaton)					
				Wadena	C2
(Wadena)					
				Winona	C2
(Wilson)					
41-44	25.00 KHz	799.262500 MHz	769.262500 MHz	Cottonwood Otter Tail Polk St. Louis Swift Wabasha Wright	

45-48	25.00 KHz	799.287500 MHz	769.287500 MHz	Benton Blue Earth Lyon Mower Roseau Washington	
49-52	25.00 KHz	799.312500 MHz	769.312500 MHz	Clearwater Crow Wing Hennepin Kandiyohi Koochiching Lake Winona	
53-56	25.00 KHz	799.337500 MHz	769.337500 MHz	Grant Isanti Lac qui Parle Martin Rice Rock	
57-60	25.00 KHz	799.362500 MHz	769.362500 MHz	Becker Cook Itasca Lake of the Woods Nicollet Olmsted Ramsey Stearns	
65-66	12.50 KHz	799.406250 MHz	769.406250 MHz	Clay	A1
(Barnesville)					
				Cook	A1
(Lutzen)					
				Hubbard	A1
(Mantrap)					
				Itasca	A1
(Deer River)					
				Kittson	A1
(Hallock)					
				Lake of the Woods	A1
(Baudette)					
				Meeker	A1
(Litchfield)					
				Murray	A1
(Slayton)					
				St. Louis	A1
(Kabetogama & Shaw)					
				Stevens	A1
(Morris)					
				Wabasha	A1
(Oakwood)					
				Waseca	A1
(Janesville)					
				Winona	A1
(Test Site)					
67-68	12.50 KHz	799.418750 MHz	769.418750 MHz	Carlton	A2
(Mahtowa)					

				Crow Wing	A2
(Borden Lake)					
				Fillmore	A2
(Wykoff)					
				Hennepin	A2
(CORE)					
				Koochiching	A2
(Northome)					
				Lac qui Parle	A2
(Madison)					
				Lake	A2
(Slate Lake)					
				Marshall	A2
(Middle River)					
				Ramsey	A2
(Core Pointe Bldg)					
				Todd	A2
(Sauk Center)					
				Watonwan	A2
(St. James)					
69-70	12.50 KHz	799.431250 MHz	769.431250 MHz	Cass	B1
(Leader)					
				Clay	B1
(Felton)					
				Cook	B1
(Sawbill)					
				Dodge	B1
(Washiota)					
				Itasca	B1
(Nashwauk)					
				Kandiyohi	B1
(Willmar)					
				Lake of the Woods	B1
(Roosevelt)					
				Mille Lacs	B1
(Princeton)					
				Murray	B1
(Chandler)					
				Traverse	B1
(Browns Valley)					
				Winona	B1
(Pickwick)					
71-72	12.50 KHz	799.443750 MHz	769.443750 MHz	Aitkin	B2
(Quadna)					
				Becker	B2
(Detroit Lakes)					
				Beltrami	B2
(Bemidji Fire Twr)					
				Carver	B2
(SN4)					
				Faribault	B2
(Walters)					
				Hennepin	B2
(SN4)					

				Pine	B2
(St. Croix St. Park)					
				Scott	B2
(SN4)					
				St. Louis	B2
(Brimson)					
				Todd	B2
(Long Prairie)					
				Yellow Medicine	B2
(Hanley Falls)					
73-74	12.50 KHz	799.456250 MHz	769.456250 MHz	Beltrami	C1
(Red Lake)					
				Brown	C1
(New Ulm)					
				Cass	C1
(Longville)					
				Cook	C1
(Thrush Lake)					
				Meeker	C1
(Richmond)					
				Mille Lacs	C1
(Onamia)					
				Polk	C1
(Angus)					
				St. Louis	C1
(Arrowhead & GheenHill)					
				Steele	C1
(Owatonna)					
75-76	12.50 KHz	799.468750 MHz	769.468750 MHz	Dakota	C2
(SA2) (WCAL)					
				Faribault	C2
(Easton)					
				Itasca	C2
(Grand Rapids)					
				Lake	C2
(Mt. Weber)					
				Murray	C2
(Tracy)					
				Norman	C2
(Twin Valley)					
				Pine	C2
(Askov)					
				Roseau	C2
(Fox)					
				Swift	C2
(Benson)					
				Traverse	C2
(Wheaton)					
				Wadena	C2
(Wadena)					
				Winona	C2
(Wilson)					
81-84	25.00 KHz	799.512500 MHz	769.512500 MHz	Chippewa Cottonwood Otter Tail	

				Polk St. Louis Wabasha Wright	
85-88	25.00 KHz	799.537500 MHz	769.537500 MHz	Blue Earth Cass Pope Roseau Washington	
89-92	25.00 KHz	799.562500 MHz	769.562500 MHz	Benton Carlton Carver Clay Fillmore Koochiching Lincoln Red Lake	
93-96	25.00 KHz	799.587500 MHz	769.587500 MHz	Brown Crow Wing Dakota Douglas Freeborn Lac qui Parle Lake Marshall	
97-100	25.00 KHz	799.612500 MHz	769.612500 MHz	Anoka Clearwater Itasca Kandiyohi Martin Olmsted Traverse	
105-106	12.50 KHz	799.656250 MHz	769.656250 MHz	Aitkin	G1
(Logan)					
				Becker	G1
(Wolf Lake)					
				Big Stone	G1
(Johnson Landing)					
				Clay	G1
(Hawley)					
				Cook	G1
(Grand Portage)					
				Itasca	G1
(Bass Lake Lookout)					
				Pennington	G1
(High Landing)					
				Redwood	G1
(Wabasso)					
				St. Louis	G1
(Palmers & Ely)					
				Stearns	G1
(St. Cloud)					
				Steele	G1
(Elendale ?)					

107-108	12.50 KHz	799.668750 MHz	769.668750 MHz	Blue Earth	G2
(Faribault)					
				Carlton	G2
(Moose Lake Lookout)					
				Cass	G2
(Cuba Hill Lookout)					
				Chippewa	G2
(Woods)					
				Hennepin	G2
(CORE)					
				Koochiching	G2
(Fort Lookout Twr)					
				Lake	G2
(Palisade Head)					
				Lincoln	G2
(Lake Benton)					
				Otter Tail	G2
(Eagle Lake)					
				Polk	G2
(Crookston)					
				Ramsey	G2
(Core)					
				Winona	G2
(Elba)					
109-110	12.50 KHz	799.681250 MHz	769.681250 MHz	Beltrami	H1
(Grygla)					
				Big Stone	H1
(Big Stone)					
				Cook	H1
(Devil Fish Lookout)					
				Houston	H1
(Reno)					
				Hubbard	H1
(Nevis)					
				Morrison	H1
(Fiensburg)					
				Olmsted	H1
(New Haven)					
				Pine	H1
(Pine City)					
				Rock	H1
(Blue Mound)					
				Sibley	H1
(Gibbon)					
				St. Louis	H1
(Side Lake St Park)					
111-112	12.50 KHz	799.693750 MHz	769.693750 MHz	Aitkin	H2
(Lawler)					
				Cass	H2
(Ball Club)					
				Freeborn	H2
(Oakland Woods)					
				Koochiching	H2
(Fairland)					

				Lake	H2
(Lake Isabella)					
				Lincoln	H2
(Ivanhoe)					
				Otter Tail	H2
(Erhard)					
				Pope	H2
(Terrace)					
				Watonwan	H2
(Comfrey)					
				Winona	H2
(Rolling Stone)					
				Wright	H2
(Buffalo)					
113-114	12.50 KHz	799.706250 MHz	769.706250 MHz	Beltrami	I1
(Ridge Lookout)					
				Cass	I1
(Bakus)					
				Chippewa	I1
(Watson)					
				Cook	I1
(Bogus Lake)					
				Kanabec	I1
(Woodland)					
				Lake	I1
(Larsmount)					
				McLeod	I1
(Biscay)					
				Nobles	I1
(Rushmore)					
				Rice	I1
(Faribault)					
				St. Louis	I1
(Idington)					
115-116	12.50 KHz	799.718750 MHz	769.718750 MHz	Becker	I2
(Juggler Lake)					
				Brown	I2
(Evan)					
				Cook	I2
(Ricky Lake)					
				Dakota	I2
(SN5)					
				Houston	I2
(Caledonia)					
				Itasca	I2
(Goodland)					
				Koochiching	I2
(Little Fork)					
				Mower	I2
(Elkton)					
				Otter Tail	I2
(Fergus Falls)					
				Pine	I2
(Nickerson)					

				Stearns	I2
(New Munich)					
				Washington	I2
(SN5)					
121-124	25.00 KHz	799.762500 MHz	769.762500 MHz	Beltrami	
				Lyon	
				Mower	
				Sibley	
				Stearns	
125-128	25.00 KHz	799.787500 MHz	769.787500 MHz	Chippewa	
				Cottonwood	
				Hennepin	
				Kittson	
				Otter Tail	
				Pine	
				Waseca	
129-132	25.00 KHz	799.812500 MHz	769.812500 MHz	Lincoln	
				McLeod	
				Morrison	
				Polk	
				St. Louis	
				Washington	
				Winona	
133-136	25.00 KHz	799.837500 MHz	769.837500 MHz	Becker	
				Blue Earth	
				Lake of the Woods	
				Nobles	
				Pope	
				Sherburne	
137-140	25.00 KHz	799.862500 MHz	769.862500 MHz	Cass	
				Cook	
				Lac qui Parle	
				Marshall	
				Meeker	
				Olmsted	
				Ramsey	
145-146	12.50 KHz	799.906250 MHz	769.906250 MHz	Aitkin	G1
(Logan)					
				Becker	G1
(Wolf Lake)					
				Big Stone	G1
(Johnson Landing)					
				Clay	G1
(Hawley)					
				Cook	G1
(Grand Portage)					
				Itasca	G1
(Bass Lake Lookout)					
				Pennington	G1
(High Landing)					
				Redwood	G1
(Wabasso)					
				St. Louis	G1
(Palmers & Ely)					

				Stearns	G1
(St. Cloud)					
				Steele	G1
(Elendale ?)					
147-148	12.50 KHz	799.918750 MHz	769.918750 MHz	Blue Earth	G2
(Faribault)					
				Carlton	G2
(Moose Lake Lookout)					
				Cass	G2
(Cuba Hill Lookout)					
				Chippewa	G2
(Woods)					
				Hennepin	G2
(CORE)					
				Koochiching	G2
(Fort Lookout Twr)					
				Lake	G2
(Palisade Head)					
				Lincoln	G2
(Lake Benton)					
				Otter Tail	G2
(Eagle Lake)					
				Polk	G2
(Crookston)					
				Ramsey	G2
(Core)					
				Winona	G2
(Elba)					
149-150	12.50 KHz	799.931250 MHz	769.931250 MHz	Beltrami	H1
(Grygla)					
				Big Stone	H1
(Big Stone)					
				Cook	H1
(Devil Fish Lookout)					
				Houston	H1
(Reno)					
				Hubbard	H1
(Nevis)					
				Morrison	H1
(Fiensburg)					
				Olmsted	H1
(New Haven)					
				Pine	H1
(Pine City)					
				Rock	H1
(Blue Mound)					
				Sibley	H1
(Gibbon)					
				St. Louis	H1
(Side Lake St Park)					
151-152	12.50 KHz	799.943750 MHz	769.943750 MHz	Aitkin	H2
(Lawler)					
				Cass	H2
(Ball Club)					

				Freeborn	H2
(Oakland Woods)					
				Koochiching	H2
(Fairland)					
				Lake	H2
(Lake Isabella)					
				Lincoln	H2
(Ivanhoe)					
				Otter Tail	H2
(Erhard)					
				Pope	H2
(Terrace)					
				Watonwan	H2
(Comfrey)					
				Winona	H2
(Rolling Stone)					
				Wright	H2
(Buffalo)					
153-154	12.50 KHz	799.956250 MHz	769.956250 MHz	Beltrami	I1
(Ridge Lookout)					
				Cass	I1
(Bakus)					
				Chippewa	I1
(Watson)					
				Cook	I1
(Bogus Lake)					
				Kanabec	I1
(Woodland)					
				Lake	I1
(Larsmount)					
				McLeod	I1
(Biscay)					
				Nobles	I1
(Rushmore)					
				Rice	I1
(Faribault)					
				St. Louis	I1
(Idington)					
155-156	12.50 KHz	799.968750 MHz	769.968750 MHz	Becker	I2
(Juggler Lake)					
				Brown	I2
(Evan)					
				Cook	I2
(Ricky Lake)					
				Dakota	I2
(SN5)					
				Houston	I2
(Caledonia)					
				Itasca	I2
(Goodland)					
				Koochiching	I2
(Little Fork)					
				Mower	I2
(Elkton)					

				Otter Tail	I2
(Fergus Falls)					
				Pine	I2
(Nickerson)					
				Stearns	I2
(New Munich)					
				Washington	I2
(SN5)					
161-164	25.00 KHz	800.012500 MHz	770.012500 MHz	Beltrami	
				Chisago	
				Clay	
				Goodhue	
				Lake	
				Lyon	
				Martin	
				Sibley	
				Stearns	
				Wadena	
165-168	25.00 KHz	800.037500 MHz	770.037500 MHz	Aitkin	
				Chippewa	
				Hennepin	
169-172	25.00 KHz	800.062500 MHz	770.062500 MHz	Benton	
				Koochiching	
				Otter Tail	
				Red Lake	
				Redwood	
				Rice	
173-176	25.00 KHz	800.087500 MHz	770.087500 MHz	Anoka	
				Blue Earth	
				Crow Wing	
				Kandiyohi	
				Mahnomen	
				Nobles	
				Wabasha	
177-180	25.00 KHz	800.112500 MHz	770.112500 MHz	Dakota	
				Douglas	
				Hubbard	
				Kanabec	
				Mower	
				Pennington	
				St. Louis	
				Yellow Medicine	
185-186	12.50 KHz	800.156250 MHz	770.156250 MHz	Cass	D1
(Little Thunder Lk)					
				Clearwater	D1
(Berner)					
				Cook	D1
(Pine Mtn.)					
				Fillmore	D1
(Amhearst)					
				Goodhue	D1
(Red Wing)					
				Koochiching	D1
(BigFalls)					

				Morrison	D1
(Royalton)					
				Otter Tail	D1
(Henning)					
				Pipestone	D1
(Pipestone)					
				Sibley	D1
(Gaylord)					
				St. Louis	D1
(Duluth DOT & Tower)					
187-188	12.50 KHz	800.168750 MHz	770.168750 MHz	Aitkin	D2
(Ball Bluff Lookout)					
				Anoka	D2
(SN3) (Burshville)					
				Hennepin	D2
(SN3)					
				Kandiyohi	D2
(New London)					
				Lake	D2
(Isabella)					
				Mahnomen	D2
(Mahnomen)					
				Martin	D2
(Sherburne)					
				Olmsted	D2
(Rochester)					
189-190	12.50 KHz	800.181250 MHz	770.181250 MHz	Beltrami	E1
(Sucker Creek)					
				Cass	E1
(Cass Lake)					
				Cook	E1
(Maple Hill)					
				Crow Wing	E1
(Baxter)					
				Houston	E1
(Perkins)					
				Itasca	E1
(County NE)					
				Lyon	E1
(Marshall)					
				St. Louis	E1
(Sullivan Lake)					
				Stearns	E1
(Kimball)					
191-192	12.50 KHz	800.193750 MHz	770.193750 MHz	Chisago	E2
(SN6)					
				Isanti	E2
(SN6)					
				Lake	E2
(Beaver Bay)					
				Martin	E2
(Fairmont)					
				Otter Tail	E2
(Luce)					

				Polk	E2
(Mentor)					
				Pope	E2
(Glenwood)					
				Rice	E2
(Lonsdale)					
				St. Louis	E2
(Picket Lake)					
				Washington	E2
(SN6)					
193-194	12.50 KHz	800.206250 MHz	770.206250 MHz	Clearwater	F1
(Alida)					
				Cook	F1
(Cascade River)					
				Crow Wing	F1
(Emily)					
				Freeborn	F1
(Albert Lea)					
				Koochiching	F1
(Johnson Landing)					
				Lyon	F1
(Russell)					
				Roseau	F1
(Greenbush)					
				St. Louis	F1
(Argus Lookout)					
				Wabasha	F1
(Lake City)					
				Wright	F1
(Enfield)					
195-196	12.50 KHz	800.218750 MHz	770.218750 MHz	Benton	F2
(Gillman)					
				Carlton	F2
(Esko)					
				Chippewa	F2
(Granite Falls)					
				Douglas	F2
(Lake Carlos)					
				Itasca	F2
(Big Thunder Peak)					
				Olmsted	F2
(Viola)					
				St. Louis	F2
(Hoyt Lakes)					
201-204	25.00 KHz	800.262500 MHz	770.262500 MHz	Carlton	
				Clay	
				Nicollet	
				Roseau	
				Stearns	
				Wadena	
				Washington	
205-208	25.00 KHz	800.287500 MHz	770.287500 MHz	Chippewa	
				Freeborn	
				Hennepin	
				Itasca	

				Lake	
				Polk	
209-212	25.00 KHz	800.312500 MHz	770.312500 MHz	Benton	
				Kittson	
				Lake of the Woods	
				Le Sueur	
				Lyon	
				Otter Tail	
213-216	25.00 KHz	800.337500 MHz	770.337500 MHz	Anoka	
				Cook	
				Jackson	
				Kandiyohi	
				Mahnomen	
				Olmsted	
217-220	25.00 KHz	800.362500 MHz	770.362500 MHz	Beltrami	
				Big Stone	
				Dakota	
				Faribault	
				Houston	
				Mille Lacs	
				Redwood	
				St. Louis	
				Todd	
225-226	12.50 KHz	800.406250 MHz	770.406250 MHz	Cass	D1
(Little Thunder Lk)					
				Clearwater	D1
(Berner)					
				Cook	D1
(Pine Mtn.)					
				Fillmore	D1
(Amhearst)					
				Goodhue	D1
(Red Wing)					
				Koochiching	D1
(BigFalls)					
				Morrison	D1
(Royalton)					
				Otter Tail	D1
(Henning)					
				Pipestone	D1
(Pipestone)					
				Sibley	D1
(Gaylord)					
				St. Louis	D1
(Duluth DOT & Tower)					
227-228	12.50 KHz	800.418750 MHz	770.418750 MHz	Aitkin	D2
(Ball Bluff Lookout)					
				Anoka	D2
(SN3) (Burshville)					
				Hennepin	D2
(SN3)					
				Kandiyohi	D2
(New London)					
				Lake	D2
(Isabella)					

				Mahnomen	D2
(Mahnomen)					
				Martin	D2
(Sherburne)					
				Olmsted	D2
(Rochester)					
229-230	12.50 KHz	800.431250 MHz	770.431250 MHz	Beltrami	E1
(Sucker Creek)					
				Cass	E1
(Cass Lake)					
				Cook	E1
(Maple Hill)					
				Crow Wing	E1
(Baxter)					
				Houston	E1
(Perkins)					
				Itasca	E1
(County NE)					
				Lyon	E1
(Marshall)					
				St. Louis	E1
(Sullivan Lake)					
				Stearns	E1
(Kimball)					
231-232	12.50 KHz	800.443750 MHz	770.443750 MHz	Chisago	E2
(SN6)					
				Isanti	E2
(SN6)					
				Lake	E2
(Beaver Bay)					
				Martin	E2
(Fairmont)					
				Otter Tail	E2
(Luce)					
				Polk	E2
(Mentor)					
				Pope	E2
(Glenwood)					
				Rice	E2
(Lonsdale)					
				St. Louis	E2
(Picket Lake)					
				Washington	E2
(SN6)					
233-234	12.50 KHz	800.456250 MHz	770.456250 MHz	Clearwater	F1
(Alida)					
				Cook	F1
(Cascade River)					
				Crow Wing	F1
(Emily)					
				Freeborn	F1
(Albert Lea)					
				Koochiching	F1
(Johnson Landing)					

				Lyon	F1
(Russell)					
				Roseau	F1
(Greenbush)					
				St. Louis	F1
(Argus Lookout)					
				Wabasha	F1
(Lake City)					
				Wright	F1
(Enfield)					
235-236	12.50 KHz	800.468750 MHz	770.468750 MHz	Benton	F2
(Gillman)					
				Carlton	F2
(Esko)					
				Chippewa	F2
(Granite Falls)					
				Douglas	F2
(Lake Carlos)					
				Itasca	F2
(Big Thunder Peak)					
				Olmsted	F2
(Viola)					
				St. Louis	F2
(Hoyt Lakes)					
241-244	25.00 KHz	800.512500 MHz	770.512500 MHz	Carlton	
				Clay	
				Hubbard	
				Martin	
				Rock	
				Roseau	
				Stearns	
				Steele	
				Washington	
245-248	25.00 KHz	800.537500 MHz	770.537500 MHz	Brown	
				Hennepin	
				Itasca	
				Lake	
				Polk	
				Wabasha	
249-252	25.00 KHz	800.562500 MHz	770.562500 MHz	Benton	
				Douglas	
				Le Sueur	
				Nobles	
253-256	25.00 KHz	800.587500 MHz	770.587500 MHz	Anoka	
				Cass	
				Cook	
				Lyon	
				Marshall	
				Olmsted	
				Swift	
257-260	25.00 KHz	800.612500 MHz	770.612500 MHz	Dakota	
				Freeborn	
				Houston	
				Lake of the Woods	
				Mille Lacs	

				Otter Tail Renville St. Louis	
265-266	12.50 KHz	800.656250 MHz	770.656250 MHz	Aitkin	J1
(Sandy Lake)					
				Clearwater	J1
(Bagley)					
				Douglas	J1
(Hoffman)					
				Goodhue	J1
(Cannon Falls)					
				Houston	J1
(Spring Grove)					
				Jackson	J1
(Lakefield)					
				Kanabec	J1
(Mora)					
				Kittson	J1
(Lake Bronson)					
				Koochiching	J1
(Mizpah)					
				Renville	J1
(Sacred Heart)					
				St. Louis	J1
(Virginia/Midway)					
267-268	12.50 KHz	800.668750 MHz	770.668750 MHz	Anoka	J2
(SN2)					
				Chisago	J2
(SN2)					
				Cottonwood	J2
(Walnut Grove)					
				Lake	J2
(Beaver Crossing)					
				Lake of the Woods	J2
(Muligan Lake)					
				Morrison	J2
(Freedhem)					
				Olmsted	J2
(Cummingsville)					
				Wilkin	J2
(Everdell)					
269-270	12.50 KHz	800.681250 MHz	770.681250 MHz	Aitkin	K1
(Arthyde)					
				Cook	K1
(Tofte)					
				Itasca	K1
(Itasca County - Tower)					
				Polk	K1
(Trail)					
				Renville	K1
(Morton)					
				Swift	K1
(Appleton)					
				Wabasha	K1
(Bear Valley)					

				Wadena	K1
(Sebeka)					
				Waseca	K1
(New Richland)					
271-272	12.50 KHz	800.693750 MHz	770.693750 MHz	Becker	K2
(Flat Lake Lookout)					
				Beltrami	K2
(Hines)					
				Cottonwood	K2
(Windom)					
				Lake	K2
(Lake One)					
				Le Sueur	K2
(LeSueur)					
				Marshall	K2
(Old Mill St Pk)					
				Olmsted	K2
(Salem Corners)					
				St. Louis	K2
(Lavell)					
				Stearns	K2
(St. Stephen)					
273-274	12.50 KHz	800.706250 MHz	770.706250 MHz	Beltrami	L1
(Washkish)					
				Crow Wing	L1
(Swanburg)					
				Goodhue	L1
(Zumbrota)					
				Grant	L1
(Herman)					
				Lake	L1
(Finland)					
				Norman	L1
(Ada)					
				Renville	L1
(Hector)					
				Washington	L1
(SA1)					
275-276	12.50 KHz	800.718750 MHz	770.718750 MHz	Itasca	L2
(Dixon Lookout)					
				Jackson	L2
(Brewster)					
				Lake	L2
(Silver Cliff)					
				Le Sueur	L2
(Kilkenny)					
				Morrison	L2
(Lincoln)					
				Pennington	L2
(Thief River Falls)					
				Sherburne	L2
(Zimmerman)					
				St. Louis	L2
(Meadowlands & ElephantLk)					

				Winona	L2
(Aren Dahl)					
				Yellow Medicine	L2
(Oshkosh)					
281-284	25.00 KHz	800.762500 MHz	770.762500 MHz	Beltrami	
				Carlton	
				Dodge	
				Lac qui Parle	
				McLeod	
				Todd	
				Washington	
285-288	25.00 KHz	800.787500 MHz	770.787500 MHz	Becker	
				Crow Wing	
				Fillmore	
				Hennepin	
				Kandiyohi	
				Lake	
				Red Lake	
				Watonwan	
289-292	25.00 KHz	800.812500 MHz	770.812500 MHz	Douglas	
				Isanti	
				Murray	
				Rice	
				Roseau	
293-296	25.00 KHz	800.837500 MHz	770.837500 MHz	Blue Earth	
				Cass	
				Olmsted	
				Ramsey	
297-300	25.00 KHz	800.862500 MHz	770.862500 MHz	Chisago	
				Clay	
				Marshall	
				Redwood	
				Scott	
				St. Louis	
				Stearns	
305-306	12.50 KHz	800.906250 MHz	770.906250 MHz	Aitkin	J1
(Sandy Lake)					
				Clearwater	J1
(Bagley)					
				Douglas	J1
(Hoffman)					
				Goodhue	J1
(Cannon Falls)					
				Houston	J1
(Spring Grove)					
				Jackson	J1
(Lakefield)					
				Kanabec	J1
(Mora)					
				Kittson	J1
(Lake Bronson)					
				Koochiching	J1
(Mizpah)					
				Renville	J1
(Sacred Heart)					

				St. Louis	J1
(Virginia/Midway)					
307-308	12.50 KHz	800.918750 MHz	770.918750 MHz	Anoka	J2
(SN2)					
				Chisago	J2
(SN2)					
				Cottonwood	J2
(Walnut Grove)					
				Lake	J2
(Beaver Crossing)					
				Lake of the Woods	J2
(Muligan Lake)					
				Morrison	J2
(Freedhem)					
				Olmsted	J2
(Cummingsville)					
				Wilkin	J2
(Everdell)					
309-310	12.50 KHz	800.931250 MHz	770.931250 MHz	Aitkin	K1
(Arthyde)					
				Cook	K1
(Tofte)					
				Itasca	K1
(Itasca County - Tower)					
				Polk	K1
(Trail)					
				Renville	K1
(Morton)					
				Swift	K1
(Appleton)					
				Wabasha	K1
(Bear Valley)					
				Wadena	K1
(Sebeka)					
				Waseca	K1
(New Richland)					
311-312	12.50 KHz	800.943750 MHz	770.943750 MHz	Becker	K2
(Flat Lake Lookout)					
				Beltrami	K2
(Hines)					
				Cottonwood	K2
(Windom)					
				Lake	K2
(Lake One)					
				Le Sueur	K2
(LeSueur)					
				Marshall	K2
(Old Mill St Pk)					
				Olmsted	K2
(Salem Corners)					
				St. Louis	K2
(Lavell)					
				Stearns	K2
(St. Stephen)					

313-314	12.50 KHz	800.956250 MHz	770.956250 MHz	Beltrami	L1
(Washkish)					
				Crow Wing	L1
(Swanburg)					
				Goodhue	L1
(Zumbrota)					
				Grant	L1
(Herman)					
				Lake	L1
(Finland)					
				Norman	L1
(Ada)					
				Renville	L1
(Hector)					
				Washington	L1
(SA1)					
315-316	12.50 KHz	800.968750 MHz	770.968750 MHz	Itasca	L2
(Dixon Lookout)					
				Jackson	L2
(Brewster)					
				Lake	L2
(Silver Cliff)					
				Le Sueur	L2
(Kilkenny)					
				Morrison	L2
(Lincoln)					
				Pennington	L2
(Thief River Falls)					
				Sherburne	L2
(Zimmerman)					
				St. Louis	L2
(Meadowlands & ElephantLk)					
				Winona	L2
(Aren Dahl)					
				Yellow Medicine	L2
(Oshkosh)					
321-324	25.00 KHz	801.012500 MHz	771.012500 MHz	Benton	
				Brown	
				Carlton	
				Cook	
				Koochiching	
				Polk	
				Pope	
				Steele	
				Washington	
				Winona	
325-328	25.00 KHz	801.037500 MHz	771.037500 MHz	Chippewa	
				Crow Wing	
				Faribault	
				Hennepin	
				Nobles	
				Otter Tail	
329-332	25.00 KHz	801.062500 MHz	771.062500 MHz	Clearwater	
				Lyon	
				Meeker	

				Rice Stevens
333-336	25.00 KHz	801.087500 MHz	771.087500 MHz	Aitkin Lac qui Parle Lake of the Woods Olmsted Ramsey Watonwan
337-340	25.00 KHz	801.112500 MHz	771.112500 MHz	Becker Chisago Freeborn Kittson Red Lake Redwood Scott Stearns
341-344	25.00 KHz	801.137500 MHz	771.137500 MHz	Beltrami Goodhue McLeod Mille Lacs Pipestone St. Louis
345-348	25.00 KHz	801.162500 MHz	771.162500 MHz	Anoka Blue Earth Douglas Fillmore Norman
349-352	25.00 KHz	801.187500 MHz	771.187500 MHz	Cass Dakota Lake Pennington Pine Renville Rock Wilkin
353-356	25.00 KHz	801.212500 MHz	771.212500 MHz	Carver Dodge Houston Mahnomen Martin Swift
357-360	25.00 KHz	801.237500 MHz	771.237500 MHz	Isanti Itasca Le Sueur Todd Yellow Medicine
361-364	25.00 KHz	801.262500 MHz	771.262500 MHz	Benton Big Stone Brown Cook Polk Winona
365-368	25.00 KHz	801.287500 MHz	771.287500 MHz	Clay Hennepin Hubbard

				Kandiyohi
				Roseau
				Waseca
369-372	25.00 KHz	801.312500 MHz	771.312500 MHz	Carlton
				Koochiching
				Lyon
				Morrison
				Mower
				Nicollet
				Washington
373-376	25.00 KHz	801.337500 MHz	771.337500 MHz	Meeker
				Otter Tail
				Rice
377-380	25.00 KHz	801.362500 MHz	771.362500 MHz	Faribault
				Lake of the Woods
				Nobles
				Olmsted
				Pope
				Sibley
381-384	25.00 KHz	801.387500 MHz	771.387500 MHz	Aitkin
				Becker
				Ramsey
				Red Lake
				Redwood
				Steele
385-388	25.00 KHz	801.412500 MHz	771.412500 MHz	Blue Earth
				Douglas
				Lincoln
				Marshall
				Wright
389-392	25.00 KHz	801.437500 MHz	771.437500 MHz	Crow Wing
				Dakota
				Lac qui Parle
				Rock
				Wilkin
393-396	25.00 KHz	801.462500 MHz	771.462500 MHz	Beltrami
				Fillmore
				Martin
				Norman
				Renville
				Sherburne
				St. Louis
				Stevens
397-400	25.00 KHz	801.487500 MHz	771.487500 MHz	Chisago
				Freeborn
				Murray
				Scott
				Todd
401-404	25.00 KHz	801.512500 MHz	771.512500 MHz	Benton
				Itasca
				McLeod
				Polk
				Watonwan
405-408	25.00 KHz	801.537500 MHz	771.537500 MHz	Chippewa
				Cook

				Hubbard Isanti Kittson Le Sueur
409-412	25.00 KHz	801.562500 MHz	771.562500 MHz	Brown Dodge Mahnomen Stearns
413-416	25.00 KHz	801.587500 MHz	771.587500 MHz	Anoka Grant Jackson Pennington Wabasha
417-420	25.00 KHz	801.612500 MHz	771.612500 MHz	Cass Kanabec Lyon Meeker Roseau
421-424	25.00 KHz	801.637500 MHz	771.637500 MHz	Cottonwood Hennepin Olmsted Otter Tail Red Lake Swift
425-428	25.00 KHz	801.662500 MHz	771.662500 MHz	Carlton Marshall Morrison Waseca
429-432	25.00 KHz	801.687500 MHz	771.687500 MHz	Douglas Goodhue Lake of the Woods Redwood
433-436	25.00 KHz	801.712500 MHz	771.712500 MHz	Carver Crow Wing Houston Kandiyohi Lake Martin Norman
437-440	25.00 KHz	801.737500 MHz	771.737500 MHz	Big Stone Clearwater Koochiching Mower Nicollet Nobles Ramsey
441-444	25.00 KHz	801.762500 MHz	771.762500 MHz	Aitkin Clay Pope Rice Sherburne Wadena Winona
445-448	25.00 KHz	801.787500 MHz	771.787500 MHz	Chisago Freeborn

				Pipestone
				Polk
449-452	25.00 KHz	801.812500 MHz	771.812500 MHz	Fillmore
				Kittson
				McLeod
				St. Louis
				Stevens
453-456	25.00 KHz	801.837500 MHz	771.837500 MHz	Beltrami
				Faribault
				Mille Lacs
				Scott
				Yellow Medicine
457-460	25.00 KHz	801.862500 MHz	771.862500 MHz	Jackson
				Mahnomen
				Steele
				Todd
				Washington
				Wilkin
461-464	25.00 KHz	801.887500 MHz	771.887500 MHz	Blue Earth
				Hubbard
				Lyon
				Olmsted
				Red Lake
				Swift
				Wright
465-468	25.00 KHz	801.912500 MHz	771.912500 MHz	Cook
				Dakota
				Itasca
				Morrison
				Renville
				Roseau
469-472	25.00 KHz	801.937500 MHz	771.937500 MHz	Anoka
				Becker
				Grant
				Lincoln
				Pennington
				Waseca
473-476	25.00 KHz	801.962500 MHz	771.962500 MHz	Goodhue
				Lake
				Pine
				Sibley
				Stearns
477-480	25.00 KHz	801.987500 MHz	771.987500 MHz	Chippewa
				Crow Wing
				Hennepin
				Koochiching
				Martin
				Mower
				Otter Tail
481-484	25.00 KHz	802.012500 MHz	772.012500 MHz	Cass
				Hennepin
				Lake
				Marshall
				Murray
				Pine

				Pope
				Waseca
485-488	25.00 KHz	802.037500 MHz	772.037500 MHz	Benton
				Chippewa
				Koochiching
				Nicollet
				Norman
				Washington
				Winona
489-492	25.00 KHz	802.062500 MHz	772.062500 MHz	Aitkin
				Cook
				Lyon
				Todd
				Traverse
				Watonwan
				Wright
493-496	25.00 KHz	802.087500 MHz	772.087500 MHz	Beltrami
				Clay
				Mower
				Nobles
				Renville
497-500	25.00 KHz	802.112500 MHz	772.112500 MHz	Morrison
				Scott
				Stevens
501-504	25.00 KHz	802.137500 MHz	772.137500 MHz	Anoka
				Blue Earth
				Olmsted
				Polk
				Rock
				Wilkin
505-508	25.00 KHz	802.162500 MHz	772.162500 MHz	Dakota
				Douglas
				Kanabec
				Meeker
				Roseau
509-512	25.00 KHz	802.187500 MHz	772.187500 MHz	Becker
				Le Sueur
				Pennington
				Pipestone
				Sherburne
				St. Louis
				Swift
513-516	25.00 KHz	802.212500 MHz	772.212500 MHz	Crow Wing
				Lake of the Woods
				McLeod
				Ramsey
				Wabasha
				Yellow Medicine
517-520	25.00 KHz	802.237500 MHz	772.237500 MHz	Carlton
				Jackson
				Kandiyohi
				Otter Tail
				Red Lake
				Rice
521-524	25.00 KHz	802.262500 MHz	772.262500 MHz	Isanti

				Itasca
				Lake
				Mahnomen
				Marshall
525-528	25.00 KHz	802.287500 MHz	772.287500 MHz	Carver
				Hubbard
				Murray
529-532	25.00 KHz	802.312500 MHz	772.312500 MHz	Aitkin
				Lac qui Parle
				Nicollet
				Norman
				Stearns
				Washington
				Winona
533-536	25.00 KHz	802.337500 MHz	772.337500 MHz	Beltrami
				Cook
				Cottonwood
				Hennepin
				Traverse
				Waseca
537-540	25.00 KHz	802.362500 MHz	772.362500 MHz	Clay
				Dodge
				Kittson
				Mille Lacs
				Renville
				Todd
541-544	25.00 KHz	802.387500 MHz	772.387500 MHz	Anoka
				Blue Earth
				Grant
				Nobles
				Polk
545-548	25.00 KHz	802.412500 MHz	772.412500 MHz	Big Stone
				Cass
				Dakota
				Meeker
				Pine
				Roseau
549-552	25.00 KHz	802.437500 MHz	772.437500 MHz	Becker
				Brown
				Olmsted
				Pennington
				Pipestone
				Sherburne
				St. Louis
553-556	25.00 KHz	802.462500 MHz	772.462500 MHz	Douglas
				Faribault
				Scott
				Yellow Medicine
557-560	25.00 KHz	802.487500 MHz	772.487500 MHz	Chisago
				Clearwater
				Jackson
				Koochiching
				McLeod
				Steele
561-564	25.00 KHz	802.512500 MHz	772.512500 MHz	Benton

				Carlton Fillmore Lincoln Otter Tail Ramsey
565-568	25.00 KHz	802.537500 MHz	772.537500 MHz	Crow Wing Goodhue Red Lake Redwood Wright
569-572	25.00 KHz	802.562500 MHz	772.562500 MHz	Houston Itasca Kanabec Mahnomen Marshall Sibley Swift Wilkin
573-576	25.00 KHz	802.587500 MHz	772.587500 MHz	Cook Martin Morrison Rice
577-580	25.00 KHz	802.612500 MHz	772.612500 MHz	Chippewa Clay Hubbard Lake of the Woods Mower Murray Nicollet Washington
581-584	25.00 KHz	802.637500 MHz	772.637500 MHz	Carver Lake Mille Lacs Pope Watonwan
585-588	25.00 KHz	802.662500 MHz	772.662500 MHz	Cass Dakota Meeker Pine Roseau
589-592	25.00 KHz	802.687500 MHz	772.687500 MHz	Anoka Big Stone Dodge Nobles Pennington St. Louis
593-596	25.00 KHz	802.712500 MHz	772.712500 MHz	Le Sueur Stearns Wadena Yellow Medicine
597-600	25.00 KHz	802.737500 MHz	772.737500 MHz	Brown Freeborn Hennepin
601-604	25.00 KHz	802.762500 MHz	772.762500 MHz	Beltrami Chisago

				Lyon McLeod Norman Olmsted Todd
605-608	25.00 KHz	802.787500 MHz	772.787500 MHz	Aitkin Blue Earth Grant Kittson Lac qui Parle Red Lake Rock Sherburne
609-612	25.00 KHz	802.812500 MHz	772.812500 MHz	Becker Cottonwood Kandiyohi Scott
613-616	25.00 KHz	802.837500 MHz	772.837500 MHz	Cook Crow Wing Faribault Goodhue Koochiching Stevens Wright
617-620	25.00 KHz	802.862500 MHz	772.862500 MHz	Carlton Houston Nicollet Otter Tail Pipestone Polk Ramsey
621-624	25.00 KHz	802.887500 MHz	772.887500 MHz	Carver Itasca Lake Lake of the Woods Morrison Mower Swift
625-628	25.00 KHz	802.912500 MHz	772.912500 MHz	Clay Dakota Douglas Kanabec Marshall Meeker Winona
629-632	25.00 KHz	802.937500 MHz	772.937500 MHz	Anoka Hubbard Redwood St. Louis Steele
633-636	25.00 KHz	802.962500 MHz	772.962500 MHz	Fillmore Mahnomen Martin Roseau Sibley

637-640	25.00 KHz	802.987500 MHz	772.987500 MHz	Stearns Cass Chippewa Hennepin Murray Pine Waseca	
645-646	12.50 KHz	803.031250 MHz	773.031250 MHz	Clay	A1
(Barnesville)					
				Cook	A1
(Lutzen)					
				Hubbard	A1
(Mantrap)					
				Itasca	A1
(Deer River)					
				Kittson	A1
(Hallock)					
				Lake of the Woods	A1
(Baudette)					
				Meeker	A1
(Litchfield)					
				Murray	A1
(Slayton)					
				St. Louis	A1
(Kabetogama & Shaw)					
				Stevens	A1
(Morris)					
				Wabasha	A1
(Oakwood)					
				Waseca	A1
(Janesville)					
				Winona	A1
(Test Site)					
647-648	12.50 KHz	803.043750 MHz	773.043750 MHz	Carlton	A2
(Mahtowa)					
				Crow Wing	A2
(Borden Lake)					
				Fillmore	A2
(Wykoff)					
				Hennepin	A2
(CORE)					
				Koochiching	A2
(Northome)					
				Lac qui Parle	A2
(Madison)					
				Lake	A2
(Slate Lake)					
				Marshall	A2
(Middle River)					
				Ramsey	A2
(Core Pointe Bldg)					
				Todd	A2
(Sauk Center)					
				Watonwan	A2
(St. James)					

649-650	12.50 KHz	803.056250 MHz	773.056250 MHz	Cass	B1
(Leader)					
				Clay	B1
(Felton)					
				Cook	B1
(Sawbill)					
				Dodge	B1
(Washiota)					
				Itasca	B1
(Nashwauk)					
				Kandiyohi	B1
(Willmar)					
				Lake of the Woods	B1
(Roosevelt)					
				Mille Lacs	B1
(Princeton)					
				Murray	B1
(Chandler)					
				Traverse	B1
(Browns Valley)					
				Winona	B1
(Pickwick)					
651-652	12.50 KHz	803.068750 MHz	773.068750 MHz	Aitkin	B2
(Quadna)					
				Becker	B2
(Detroit Lakes)					
				Beltrami	B2
(Bemidji Fire Twr)					
				Carver	B2
(SN4)					
				Faribault	B2
(Walters)					
				Hennepin	B2
(SN4)					
				Pine	B2
(St. Croix St. Park)					
				Scott	B2
(SN4)					
				St. Louis	B2
(Brimson)					
				Todd	B2
(Long Prairie)					
				Yellow Medicine	B2
(Hanley Falls)					
653-654	12.50 KHz	803.081250 MHz	773.081250 MHz	Beltrami	C1
(Red Lake)					
				Brown	C1
(New Ulm)					
				Cass	C1
(Longville)					
				Cook	C1
(Thrush Lake)					
				Meeker	C1
(Richmond)					

				Mille Lacs	C1
(Onamia)					
				Polk	C1
(Angus)					
				St. Louis	C1
(Arrowhead & GheenHill)					
				Steele	C1
(Owatonna)					
655-656	12.50 KHz	803.093750 MHz	773.093750 MHz	Dakota	C2
(SA2) (WCAL)					
				Faribault	C2
(Easton)					
				Itasca	C2
(Grand Rapids)					
				Lake	C2
(Mt. Weber)					
				Murray	C2
(Tracy)					
				Norman	C2
(Twin Valley)					
				Pine	C2
(Askov)					
				Roseau	C2
(Fox)					
				Swift	C2
(Benson)					
				Traverse	C2
(Wheaton)					
				Wadena	C2
(Wadena)					
				Winona	C2
(Wilson)					
661-664	25.00 KHz	803.137500 MHz	773.137500 MHz	Itasca	
				Lyon	
				McLeod	
				Mower	
				Polk	
				Ramsey	
				Todd	
665-668	25.00 KHz	803.162500 MHz	773.162500 MHz	Faribault	
				Goodhue	
				Lake	
				Lake of the Woods	
				Rock	
				Sherburne	
				Swift	
669-672	25.00 KHz	803.187500 MHz	773.187500 MHz	Crow Wing	
				Otter Tail	
				Pennington	
				Redwood	
				Scott	
673-676	25.00 KHz	803.212500 MHz	773.212500 MHz	Anoka	
				Kandiyohi	
				Mahnomen	
				Martin	

				Pipestone	
				St. Louis	
				Steele	
677-680	25.00 KHz	803.237500 MHz	773.237500 MHz	Beltrami	
				Brown	
				Cook	
				Dakota	
				Morrison	
				Stevens	
				Winona	
685-686	12.50 KHz	803.281250 MHz	773.281250 MHz	Clay	A1
(Barnesville)					
				Cook	A1
(Lutzen)					
				Hubbard	A1
(Mantrap)					
				Itasca	A1
(Deer River)					
				Kittson	A1
(Hallock)					
				Lake of the Woods	A1
(Baudette)					
				Meeker	A1
(Litchfield)					
				Murray	A1
(Slayton)					
				St. Louis	A1
(Kabetogama & Shaw)					
				Stevens	A1
(Morris)					
				Wabasha	A1
(Oakwood)					
				Waseca	A1
(Janesville)					
				Winona	A1
(Test Site)					
687-688	12.50 KHz	803.293750 MHz	773.293750 MHz	Carlton	A2
(Mahtowa)					
				Crow Wing	A2
(Borden Lake)					
				Fillmore	A2
(Wykoff)					
				Hennepin	A2
(CORE)					
				Koochiching	A2
(Northome)					
				Lac qui Parle	A2
(Madison)					
				Lake	A2
(Slate Lake)					
				Marshall	A2
(Middle River)					
				Ramsey	A2
(Core Pointe Bldg)					

				Todd	A2
(Sauk Center)					
				Watonwan	A2
(St. James)					
689-690	12.50 KHz	803.306250 MHz	773.306250 MHz	Cass	B1
(Leader)					
				Clay	B1
(Felton)					
				Cook	B1
(Sawbill)					
				Dodge	B1
(Washiota)					
				Itasca	B1
(Nashwauk)					
				Kandiyohi	B1
(Willmar)					
				Lake of the Woods	B1
(Roosevelt)					
				Mille Lacs	B1
(Princeton)					
				Murray	B1
(Chandler)					
				Traverse	B1
(Browns Valley)					
				Winona	B1
(Pickwick)					
691-692	12.50 KHz	803.318750 MHz	773.318750 MHz	Aitkin	B2
(Quadna)					
				Becker	B2
(Detroit Lakes)					
				Beltrami	B2
(Bemidji Fire Twr)					
				Carver	B2
(SN4)					
				Faribault	B2
(Walters)					
				Hennepin	B2
(SN4)					
				Pine	B2
(St. Croix St. Park)					
				Scott	B2
(SN4)					
				St. Louis	B2
(Brimson)					
				Todd	B2
(Long Prairie)					
				Yellow Medicine	B2
(Hanley Falls)					
693-694	12.50 KHz	803.331250 MHz	773.331250 MHz	Beltrami	C1
(Red Lake)					
				Brown	C1
(New Ulm)					
				Cass	C1
(Longville)					

				Cook	C1
(Thrush Lake)					
				Meeker	C1
(Richmond)					
				Mille Lacs	C1
(Onamia)					
				Polk	C1
(Angus)					
				St. Louis	C1
(Arrowhead & GheenHill)					
				Steele	C1
(Owatonna)					
695-696	12.50 KHz	803.343750 MHz	773.343750 MHz	Dakota	C2
(SA2) (WCAL)					
				Faribault	C2
(Easton)					
				Itasca	C2
(Grand Rapids)					
				Lake	C2
(Mt. Weber)					
				Murray	C2
(Tracy)					
				Norman	C2
(Twin Valley)					
				Pine	C2
(Askov)					
				Roseau	C2
(Fox)					
				Swift	C2
(Benson)					
				Traverse	C2
(Wheaton)					
				Wadena	C2
(Wadena)					
				Winona	C2
(Wilson)					
701-704	25.00 KHz	803.387500 MHz	773.387500 MHz	Blue Earth Itasca Olmsted Pine Polk Ramsey Wadena Yellow Medicine	
705-708	25.00 KHz	803.412500 MHz	773.412500 MHz	Clay Jackson Lake of the Woods Sibley Stearns	
709-712	25.00 KHz	803.437500 MHz	773.437500 MHz	Cass Grant Hennepin Lyon Mower Pennington	

713-716	25.00 KHz	803.462500 MHz	773.462500 MHz	Becker	
				Big Stone	
				Isanti	
				Kandiyohi	
				Koochiching	
				Lake	
				Le Sueur	
				Nobles	
717-720	25.00 KHz	803.487500 MHz	773.487500 MHz	Brown	
				Carlton	
				Dakota	
				Freeborn	
				Morrison	
				Roseau	
				Wilkin	
				Winona	
725-726	12.50 KHz	803.531250 MHz	773.531250 MHz	Aitkin	G1
(Logan)					
				Becker	G1
(Wolf Lake)					
				Big Stone	G1
(Johnson Landing)					
				Clay	G1
(Hawley)					
				Cook	G1
(Grand Portage)					
				Itasca	G1
(Bass Lake Lookout)					
				Pennington	G1
(High Landing)					
				Redwood	G1
(Wabasso)					
				St. Louis	G1
(Palmers & Ely)					
				Stearns	G1
(St. Cloud)					
				Steele	G1
(Elendale ?)					
727-728	12.50 KHz	803.543750 MHz	773.543750 MHz	Blue Earth	G2
(Faribault)					
				Carlton	G2
(Moose Lake Lookout)					
				Cass	G2
(Cuba Hill Lookout)					
				Chippewa	G2
(Woods)					
				Hennepin	G2
(CORE)					
				Koochiching	G2
(Fort Lookout Twr)					
				Lake	G2
(Palisade Head)					
				Lincoln	G2
(Lake Benton)					

				Otter Tail	G2
(Eagle Lake)					
				Polk	G2
(Crookston)					
				Ramsey	G2
(Core)					
				Winona	G2
(Elba)					
729-730	12.50 KHz	803.556250 MHz	773.556250 MHz	Beltrami	H1
(Grygla)					
				Big Stone	H1
(Big Stone)					
				Cook	H1
(Devil Fish Lookout)					
				Houston	H1
(Reno)					
				Hubbard	H1
(Nevis)					
				Morrison	H1
(Fiensburg)					
				Olmsted	H1
(New Haven)					
				Pine	H1
(Pine City)					
				Rock	H1
(Blue Mound)					
				Sibley	H1
(Gibbon)					
				St. Louis	H1
(Side Lake St Park)					
731-732	12.50 KHz	803.568750 MHz	773.568750 MHz	Aitkin	H2
(Lawler)					
				Cass	H2
(Ball Club)					
				Freeborn	H2
(Oakland Woods)					
				Koochiching	H2
(Fairland)					
				Lake	H2
(Lake Isabelle)					
				Lincoln	H2
(Ivanhoe)					
				Otter Tail	H2
(Erhard)					
				Pope	H2
(Terrace)					
				Watonwan	H2
(Comfrey)					
				Winona	H2
(Rolling Stone)					
				Wright	H2
(Buffalo)					
733-734	12.50 KHz	803.581250 MHz	773.581250 MHz	Beltrami	I1
(Ridge Lookout)					

				Cass	I1
(Bakus)					
				Chippewa	I1
(Watson)					
				Cook	I1
(Bogus Lake)					
				Kanabec	I1
(Woodland)					
				Lake	I1
(Larsmount)					
				McLeod	I1
(Biscay)					
				Nobles	I1
(Rushmore)					
				Rice	I1
(Faribault)					
				St. Louis	I1
(Idington)					
735-736	12.50 KHz	803.593750 MHz	773.593750 MHz	Becker	I2
(Juggler Lake)					
				Brown	I2
(Evan)					
				Cook	I2
(Ricky Lake)					
				Dakota	I2
(SN5)					
				Houston	I2
(Caledonia)					
				Itasca	I2
(Goodland)					
				Koochiching	I2
(Little Fork)					
				Mower	I2
(Elkton)					
				Otter Tail	I2
(Fergus Falls)					
				Pine	I2
(Nickerson)					
				Stearns	I2
(New Munich)					
				Washington	I2
(SN5)					
741-744	25.00 KHz	803.637500 MHz	773.637500 MHz	Beltrami Kanabec McLeod Olmsted Ramsey St. Louis Wadena Watonwan Yellow Medicine	
745-748	25.00 KHz	803.662500 MHz	773.662500 MHz	Houston Mahnomen Stearns Steele	

749-752	25.00 KHz	803.687500 MHz	773.687500 MHz	Crow Wing	
				Faribault	
				Hennepin	
				Kittson	
				Otter Tail	
				Red Lake	
				Redwood	
753-756	25.00 KHz	803.712500 MHz	773.712500 MHz	Lake of the Woods	
				Meeker	
				Pine	
				Stevens	
757-760	25.00 KHz	803.737500 MHz	773.737500 MHz	Anoka	
				Blue Earth	
				Clay	
				Itasca	
				Lake	
				Lyon	
				Mower	
				Pennington	
				Todd	
765-766	12.50 KHz	803.781250 MHz	773.781250 MHz	Aitkin	G1
(Logan)					
				Becker	G1
(Wolf Lake)					
				Big Stone	G1
(Johnson Landing)					
				Clay	G1
(Hawley)					
				Cook	G1
(Grand Portage)					
				Itasca	G1
(Bass Lake Lookout)					
				Pennington	G1
(High Landing)					
				Redwood	G1
(Wabasso)					
				St. Louis	G1
(Palmers & Ely)					
				Stearns	G1
(St. Cloud)					
				Steele	G1
(Elendale ?)					
767-768	12.50 KHz	803.793750 MHz	773.793750 MHz	Blue Earth	G2
(Faribault)					
				Carlton	G2
(Moose Lake Lookout)					
				Cass	G2
(Cuba Hill Lookout)					
				Chippewa	G2
(Woods)					
				Hennepin	G2
(CORE)					
				Koochiching	G2
(Fort Lookout Twr)					

				Lake	G2
(Palisade Head)					
				Lincoln	G2
(Lake Benton)					
				Otter Tail	G2
(Eagle Lake)					
				Polk	G2
(Crookston)					
				Ramsey	G2
(Core)					
				Winona	G2
(Elba)					
769-770	12.50 KHz	803.806250 MHz	773.806250 MHz	Beltrami	H1
(Grygla)					
				Big Stone	H1
(Big Stone)					
				Cook	H1
(Devil Fish Lookout)					
				Houston	H1
(Reno)					
				Hubbard	H1
(Nevis)					
				Morrison	H1
(Fiensburg)					
				Olmsted	H1
(New Haven)					
				Pine	H1
(Pine City)					
				Rock	H1
(Blue Mound)					
				Sibley	H1
(Gibbon)					
				St. Louis	H1
(Side Lake St Park)					
771-772	12.50 KHz	803.818750 MHz	773.818750 MHz	Aitkin	H2
(Lawler)					
				Cass	H2
(Ball Club)					
				Freeborn	H2
(Oakland Woods)					
				Koochiching	H2
(Fairland)					
				Lake	H2
(Lake Isabelle)					
				Lincoln	H2
(Ivanhoe)					
				Otter Tail	H2
(Erhard)					
				Pope	H2
(Terrace)					
				Watonwan	H2
(Comfrey)					
				Winona	H2
(Rolling Stone)					

				Wright	H2
(Buffalo)					
773-774	12.50 KHz	803.831250 MHz	773.831250 MHz	Beltrami	I1
(Ridge Lookout)					
				Cass	I1
(Bakus)					
				Chippewa	I1
(Watson)					
				Cook	I1
(Bogus Lake)					
				Kanabec	I1
(Woodland)					
				Lake	I1
(Larsmount)					
				McLeod	I1
(Biscay)					
				Nobles	I1
(Rushmore)					
				Rice	I1
(Faribault)					
				St. Louis	I1
(Idington)					
775-776	12.50 KHz	803.843750 MHz	773.843750 MHz	Becker	I2
(Juggler Lake)					
				Brown	I2
(Evan)					
				Cook	I2
(Ricky Lake)					
				Dakota	I2
(SN5)					
				Houston	I2
(Caledonia)					
				Itasca	I2
(Goodland)					
				Koochiching	I2
(Little Fork)					
				Mower	I2
(Elkton)					
				Otter Tail	I2
(Fergus Falls)					
				Pine	I2
(Nickerson)					
				Stearns	I2
(New Munich)					
				Washington	I2
(SN5)					
781-784	25.00 KHz	803.887500 MHz	773.887500 MHz	Clearwater	
				Cook	
				Dakota	
				Kandiyohi	
				Koochiching	
				Lincoln	
				Mille Lacs	
				Traverse	
				Winona	

785-788	25.00 KHz	803.912500 MHz	773.912500 MHz	Cass	
				Cottonwood	
				Roseau	
				Steele	
				Wright	
789-792	25.00 KHz	803.937500 MHz	773.937500 MHz	Kanabec	
				Otter Tail	
				Polk	
				Ramsey	
				Renville	
				St. Louis	
				Wabasha	
793-796	25.00 KHz	803.962500 MHz	773.962500 MHz	Le Sueur	
				Nobles	
				Stearns	
797-800	25.00 KHz	803.987500 MHz	773.987500 MHz	Brown	
				Clay	
				Hennepin	
				Itasca	
				Lake	
				Marshall	
				Olmsted	
				Pine	
				Stevens	
				Wadena	
805-806	12.50 KHz	804.031250 MHz	774.031250 MHz	Cass	D1
(Little Thunder Lk)					
				Clearwater	D1
(Berner)					
				Cook	D1
(Pine Mtn.)					
				Fillmore	D1
(Amhearst)					
				Goodhue	D1
(Red Wing)					
				Koochiching	D1
(BigFalls)					
				Morrison	D1
(Royalton)					
				Otter Tail	D1
(Henning)					
				Pipestone	D1
(Pipestone)					
				Sibley	D1
(Gaylord)					
				St. Louis	D1
(Duluth DOT & Tower)					
807-808	12.50 KHz	804.043750 MHz	774.043750 MHz	Aitkin	D2
(Ball Bluff Lookout)					
				Anoka	D2
(SN3) (Burshville)					
				Hennepin	D2
(SN3)					
				Kandiyohi	D2
(New London)					

				Lake	D2
(Isabella)					
				Mahnomen	D2
(Mahnomen)					
				Martin	D2
(Sherburne)					
				Olmsted	D2
(Rochester)					
809-810	12.50 KHz	804.056250 MHz	774.056250 MHz	Beltrami	E1
(Sucker Creek)					
				Cass	E1
(Cass Lake)					
				Cook	E1
(Maple Hill)					
				Crow Wing	E1
(Baxter)					
				Houston	E1
(Perkins)					
				Itasca	E1
(County NE)					
				Lyon	E1
(Marshall)					
				St. Louis	E1
(Sullivan Lake)					
				Stearns	E1
(Kimball)					
811-812	12.50 KHz	804.068750 MHz	774.068750 MHz	Chisago	E2
(SN6)					
				Isanti	E2
(SN6)					
				Lake	E2
(Beaver Bay)					
				Martin	E2
(Fairmont)					
				Otter Tail	E2
(Luce)					
				Polk	E2
(Mentor)					
				Pope	E2
(Glenwood)					
				Rice	E2
(Lonsdale)					
				St. Louis	E2
(Picket Lake)					
				Washington	E2
(SN6)					
813-814	12.50 KHz	804.081250 MHz	774.081250 MHz	Clearwater	F1
(Alida)					
				Cook	F1
(Cascade River)					
				Crow Wing	F1
(Emily)					
				Freeborn	F1
(Albert Lea)					

				Koochiching	F1
(Johnson Landing)					
				Lyon	F1
(Russell)					
				Roseau	F1
(Greenbush)					
				St. Louis	F1
(Argus Lookout)					
				Wabasha	F1
(Lake City)					
				Wright	F1
(Enfield)					
815-816	12.50 KHz	804.093750 MHz	774.093750 MHz	Benton	F2
(Gillman)					
				Carlton	F2
(Esko)					
				Chippewa	F2
(Granite Falls)					
				Douglas	F2
(Lake Carlos)					
				Itasca	F2
(Big Thunder Peak)					
				Olmsted	F2
(Viola)					
				St. Louis	F2
(Hoyt Lakes)					
821-824	25.00 KHz	804.137500 MHz	774.137500 MHz	Anoka	
				Beltrami	
				Blue Earth	
				Cook	
				Pope	
				Winona	
825-828	25.00 KHz	804.162500 MHz	774.162500 MHz	Big Stone	
				Carver	
				Mahnomen	
				Morrison	
				Redwood	
				Steele	
829-832	25.00 KHz	804.187500 MHz	774.187500 MHz	Dakota	
				Fillmore	
				Kanabec	
				Kandiyohi	
				Kittson	
				Lake of the Woods	
				Martin	
				Otter Tail	
				St. Louis	
833-836	25.00 KHz	804.212500 MHz	774.212500 MHz	Crow Wing	
				Freeborn	
				Pipestone	
				Polk	
				Wright	
837-840	25.00 KHz	804.237500 MHz	774.237500 MHz	Chippewa	
				Clay	
				Douglas	

				Itasca	
				Lake	
				Nicollet	
				Olmsted	
				Pine	
				Ramsey	
				Roseau	
845-846	12.50 KHz	804.281250 MHz	774.281250 MHz	Cass	D1
(Little Thunder Lk)					
				Clearwater	D1
(Berner)					
				Cook	D1
(Pine Mtn.)					
				Fillmore	D1
(Amhearst)					
				Goodhue	D1
(Red Wing)					
				Koochiching	D1
(BigFalls)					
				Morrison	D1
(Royalton)					
				Otter Tail	D1
(Henning)					
				Pipestone	D1
(Pipestone)					
				Sibley	D1
(Gaylord)					
				St. Louis	D1
(Duluth DOT & Tower)					
847-848	12.50 KHz	804.293750 MHz	774.293750 MHz	Aitkin	D2
(Ball Bluff Lookout)					
				Anoka	D2
(SN3) (Burshville)					
				Hennepin	D2
(SN3)					
				Kandiyohi	D2
(New London)					
				Lake	D2
(Isabella)					
				Mahnomen	D2
(Mahnomen)					
				Martin	D2
(Sherburne)					
				Olmsted	D2
(Rochester)					
849-850	12.50 KHz	804.306250 MHz	774.306250 MHz	Beltrami	E1
(Sucker Creek)					
				Cass	E1
(Cass Lake)					
				Cook	E1
(Maple Hill)					
				Crow Wing	E1
(Baxter)					
				Houston	E1
(Perkins)					

				Itasca	E1
(County NE)					
				Lyon	E1
(Marshall)					
				St. Louis	E1
(Sullivan Lake)					
				Stearns	E1
(Kimball)					
851-852	12.50 KHz	804.318750 MHz	774.318750 MHz	Chisago	E2
(SN6)					
				Isanti	E2
(SN6)					
				Lake	E2
(Beaver Bay)					
				Martin	E2
(Fairmont)					
				Otter Tail	E2
(Luce)					
				Polk	E2
(Mentor)					
				Pope	E2
(Glenwood)					
				Rice	E2
(Lonsdale)					
				St. Louis	E2
(Picket Lake)					
				Washington	E2
(SN6)					
853-854	12.50 KHz	804.331250 MHz	774.331250 MHz	Clearwater	F1
(Alida)					
				Cook	F1
(Cascade River)					
				Crow Wing	F1
(Emily)					
				Freeborn	F1
(Albert Lea)					
				Koochiching	F1
(Johnson Landing)					
				Lyon	F1
(Russell)					
				Roseau	F1
(Greenbush)					
				St. Louis	F1
(Argus Lookout)					
				Wabasha	F1
(Lake City)					
				Wright	F1
(Enfield)					
855-856	12.50 KHz	804.343750 MHz	774.343750 MHz	Benton	F2
(Gillman)					
				Carlton	F2
(Esko)					
				Chippewa	F2
(Granite Falls)					

				Douglas	F2
(Lake Carlos)					
				Itasca	F2
(Big Thunder Peak)					
				Olmsted	F2
(Viola)					
				St. Louis	F2
(Hoyt Lakes)					
861-864	25.00 KHz	804.387500 MHz	774.387500 MHz	Beltrami	
				Blue Earth	
				Carlton	
				Cook	
				Stearns	
				Washington	
				Yellow Medicine	
865-868	25.00 KHz	804.412500 MHz	774.412500 MHz	Becker	
				Hennepin	
869-872	25.00 KHz	804.437500 MHz	774.437500 MHz	Brown	
				Goodhue	
				Kittson	
				Lake of the Woods	
				Lincoln	
				Mille Lacs	
				St. Louis	
				Stevens	
873-876	25.00 KHz	804.462500 MHz	774.462500 MHz	Chisago	
				Freeborn	
				Kandiyohi	
				Otter Tail	
				Polk	
				Rock	
				Scott	
877-880	25.00 KHz	804.487500 MHz	774.487500 MHz	Itasca	
				Lake	
				McLeod	
				Morrison	
				Olmsted	
				Ramsey	
				Roseau	
				Watonwan	
885-886	12.50 KHz	804.531250 MHz	774.531250 MHz	Aitkin	J1
(Sandy Lake)					
				Clearwater	J1
(Bagley)					
				Douglas	J1
(Hoffman)					
				Goodhue	J1
(Cannon Falls)					
				Houston	J1
(Spring Grove)					
				Jackson	J1
(Lakefield)					
				Kanabec	J1
(Mora)					

				Kittson	J1
(Lake Bronson)					
				Koochiching	J1
(Mizpah)					
				Renville	J1
(Sacred Heart)					
				St. Louis	J1
(Virginia/Midway)					
887-888	12.50 KHz	804.543750 MHz	774.543750 MHz	Anoka	J2
(SN2)					
				Chisago	J2
(SN2)					
				Cottonwood	J2
(Walnut Grove)					
				Lake	J2
(Beaver Crossing)					
				Lake of the Woods	J2
(Muligan Lake)					
				Morrison	J2
(Freedhem)					
				Olmsted	J2
(Cummingsville)					
				Wilkin	J2
(Everdell)					
889-890	12.50 KHz	804.556250 MHz	774.556250 MHz	Aitkin	K1
(Arthyde)					
				Cook	K1
(Tofte)					
				Itasca	K1
(Itasca County - Tower)					
				Polk	K1
(Trail)					
				Renville	K1
(Morton)					
				Swift	K1
(Appleton)					
				Wabasha	K1
(Bear Valley)					
				Wadena	K1
(Sebeka)					
				Waseca	K1
(New Richland)					
891-892	12.50 KHz	804.568750 MHz	774.568750 MHz	Becker	K2
(Flat Lake Lookout)					
				Beltrami	K2
(Hines)					
				Cottonwood	K2
(Windom)					
				Lake	K2
(Lake One)					
				Le Sueur	K2
(LeSueur)					
				Marshall	K2
(Old Mill St Pk)					

				Olmsted	K2
(Salem Corners)					
				St. Louis	K2
(Lavell)					
				Stearns	K2
(St. Stephen)					
893-894	12.50 KHz	804.581250 MHz	774.581250 MHz	Beltrami	L1
(Washkish)					
				Crow Wing	L1
(Swanburg)					
				Goodhue	L1
(Zumbrota)					
				Grant	L1
(Herman)					
				Lake	L1
(Finland)					
				Norman	L1
(Ada)					
				Renville	L1
(Hector)					
				Washington	L1
(SA1)					
895-896	12.50 KHz	804.593750 MHz	774.593750 MHz	Itasca	L2
(Dixon Lookout)					
				Jackson	L2
(Brewster)					
				Lake	L2
(Silver Cliff)					
				Le Sueur	L2
(Kilkenny)					
				Morrison	L2
(Lincoln)					
				Pennington	L2
(Thief River Falls)					
				Sherburne	L2
(Zimmerman)					
				St. Louis	L2
(Meadowlands & ElephantLk)					
				Winona	L2
(Aren Dahl)					
				Yellow Medicine	L2
(Oshkosh)					
901-904	25.00 KHz	804.637500 MHz	774.637500 MHz	Blue Earth	
				Koochiching	
				Lac qui Parle	
				Mower	
				Murray	
				Red Lake	
				Stearns	
				Wadena	
				Washington	
905-908	25.00 KHz	804.662500 MHz	774.662500 MHz	Crow Wing	
				Hennepin	
				Traverse	
				Wabasha	

909-912	25.00 KHz	804.687500 MHz	774.687500 MHz	Benton	
				Clay	
				Douglas	
				Hubbard	
				Jackson	
				Pennington	
				Renville	
				Rice	
				St. Louis	
913-916	25.00 KHz	804.712500 MHz	774.712500 MHz	Faribault	
				Fillmore	
				Lyon	
				Wright	
917-920	25.00 KHz	804.737500 MHz	774.737500 MHz	Beltrami	
				Cook	
				Cottonwood	
				Dodge	
				Kandiyohi	
				Otter Tail	
				Pine	
				Ramsey	
925-926	12.50 KHz	804.781250 MHz	774.781250 MHz	Aitkin	J1
(Sandy Lake)					
				Clearwater	J1
(Bagley)					
				Douglas	J1
(Hoffman)					
				Goodhue	J1
(Cannon Falls)					
				Houston	J1
(Spring Grove)					
				Jackson	J1
(Lakefield)					
				Kanabec	J1
(Mora)					
				Kittson	J1
(Lake Bronson)					
				Koochiching	J1
(Mizpah)					
				Renville	J1
(Sacred Heart)					
				St. Louis	J1
(Virginia/Midway)					
927-928	12.50 KHz	804.793750 MHz	774.793750 MHz	Anoka	J2
(SN2)					
				Chisago	J2
(SN2)					
				Cottonwood	J2
(Walnut Grove)					
				Lake	J2
(Beaver Crossing)					
				Lake of the Woods	J2
(Muligan Lake)					
				Morrison	J2
(Freedhem)					

				Olmsted	J2
(Cummingsville)					
				Wilkin	J2
(Everdell)					
929-930	12.50 KHz	804.806250 MHz	774.806250 MHz	Aitkin	K1
(Arthyde)					
				Cook	K1
(Tofte)					
				Itasca	K1
(Itasca County - Tower)					
				Polk	K1
(Trail)					
				Renville	K1
(Morton)					
				Swift	K1
(Appleton)					
				Wabasha	K1
(Bear Valley)					
				Wadena	K1
(Sebeka)					
				Waseca	K1
(New Richland)					
931-932	12.50 KHz	804.818750 MHz	774.818750 MHz	Becker	K2
(Flat Lake Lookout)					
				Beltrami	K2
(Hines)					
				Cottonwood	K2
(Windom)					
				Lake	K2
(Lake One)					
				Le Sueur	K2
(LeSueur)					
				Marshall	K2
(Old Mill St Pk)					
				Olmsted	K2
(Salem Corners)					
				St. Louis	K2
(Lavell)					
				Stearns	K2
(St. Stephen)					
933-934	12.50 KHz	804.831250 MHz	774.831250 MHz	Beltrami	L1
(Washkish)					
				Crow Wing	L1
(Swanburg)					
				Goodhue	L1
(Zumbrota)					
				Grant	L1
(Herman)					
				Lake	L1
(Finland)					
				Norman	L1
(Ada)					
				Renville	L1
(Hector)					

				Washington	L1
(SA1)					
935-936	12.50 KHz	804.843750 MHz	774.843750 MHz	Itasca	L2
(Dixon Lookout)					
				Jackson	L2
(Brewster)					
				Lake	L2
(Silver Cliff)					
				Le Sueur	L2
(Kilkenny)					
				Morrison	L2
(Lincoln)					
				Pennington	L2
(Thief River Falls)					
				Sherburne	L2
(Zimmerman)					
				St. Louis	L2
(Meadowlands & ElephantLk)					
				Winona	L2
(Aren Dahl)					
				Yellow Medicine	L2
(Oshkosh)					
941-944	25.00 KHz	804.887500 MHz	774.887500 MHz	Becker	
				Blue Earth	
				Itasca	
				Lake of the Woods	
				Murray	
				Red Lake	
				Stearns	
				Washington	
945-948	25.00 KHz	804.912500 MHz	774.912500 MHz	Crow Wing	
				Grant	
				Hennepin	
				Lake	
				Marshall	
				Olmsted	
				Yellow Medicine	

Attachment 9

Grouping and Allotment Plan For 700 MHz Statewide Channels 12/23/04 (edited 9/22/15)

Groups	700 MHz Statewide Channels	
A_1*	25-26	645-646
	65-66	685-686
A_2	27-28	647-648
	67-68	687-688
B_1	29-30	649-650
	69-70	689-690
B_2	31-32	651-652
	71-72	691-692
C_1	33-34	653-654
	73-74	693-694
C_2*	35-36	655-656
	75-76	695-696

* Adjacent to Interop and **former** Reserve Channels

Groups	700 MHz Statewide Channels	
D_1*	185-186	805-806
	225-226	845-846
D_2	187-188	807-808
	227-228	847-848
E_1	189-190	809-810
	229-230	849-850
E_2	191-192	811-812
	231-232	851-852
F_1	193-194	813-814
	233-234	853-854
F_2*	195-196	815-816
	235-236	855-856

* Adjacent to Interop and **former** Reserve Channels

Groups	700 MHz Statewide Channels	
G_1*	105-106	725-726
	145-146	765-766
G_2	107-108	727-728
	147-148	767-768
H_1	109-110	729-730
	149-150	769-770
H_2	111-112	731-732
	151-152	771-772
I_1	113-114	733-734
	153-154	773-774
I_2*	115-116	735-736
	155-156	775-776

* Adjacent to Interop and **former** Reserve Channels

Groups	700 MHz Statewide Channels	
J_1*	265-266	885-886
	305-306	925-926
J_2	267-268	887-888
	307-308	927-928
K_1	269-270	889-890
	309-310	929-930
K_2	271-272	891-892
	311-312	931-932
L_1	273-274	893-894
	313-314	933-934
L_2*	275-276	895-896
	315-316	935-936

* Adjacent to Interop and **former** Reserve Channels