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|  | EMERGENCY MEASURES RADIO GROUP |
|  | OTTAWA ARES |

Two Names - One Group - One Purpose

Building Robust Repeaters for Amateur Radio Emergency Communications

All Amateur Repeaters
are Emergency
Repeaters, aren't they?

EXPECTATIONS

- Emergency Management is mostly about planning; what could happen, what could be needed and what resources are available.
- Includes communications, & backup communications.
- When Amateurs say “***our repeater is available for use in an emergency***”, there is an expectation that basic emergency requirements have been considered and are in place.

CLIENT REQUIREMENTS

- Clients are the groups who use EMRG communications services in an emergency.
- EMRG clients are;
 - Community Services (City of Ottawa)
 - Ottawa Red Cross
 - Ottawa Salvation Army
 - Hospitals
- All EMRG strategy, planning, development and training is based on client requirements.

THERE IS A PLAN

- In theory, every Amateur radio repeater is available to assist in an emergency.
- Not all repeaters in Ottawa are included in the EMRG plan.
- Repeaters not in the EMRG plan may still be used in an emergency, however they may not meet the criteria for an emergency repeater.

PLANNING CONSIDERATIONS

RELIABILITY

- Repeaters must be dependable and withstand continuous use for days in an emergency

DIVERSITY

- Some repeaters may not work in an emergency, so enough capacity is required to maintain effective coverage with some infrastructure loss.

CHANNEL CAPACITY

- User requirements and message volumes will vary, so more than one repeater and coverage area is required to effectively meet client needs.

COVERAGE AREA

- Emergency communications for Ottawa cannot be done using a single wide area repeater.
- There is a requirement for multiple channels, serving different groups, requiring different coverage areas, operating on different bands.
- EMRG has 3 categories for repeater coverage;
 - **Wide Area** - Reaches across the City
 - **Regional** - Covers a unique portion of the City, including the core
 - **Community** – Covers a specific local community

POWER

- Repeaters must be able to operate when AC power fails, so they must be located in a critical site with generator power and battery backup.
 - Generator backup is required for extended operation if the AC power fails.
 - Critical Sites have an importance which means they are likely to be refuelled in an emergency.
 - Battery backup is required in case the generator does not start.

SUPPORT & ACCESS

- If the repeater fails during an emergency, there must be a high probability that someone will be available, have the skills required and be able to get access for repairs.
- There must be more than 1 person who can gain access to the repeater site, and more than 1 person capable of working on the equipment.

ANTENNAS

- There must be a high probability that a repeater will remain operational, which includes good antennas that can survive heavy wind and ice.
- Unfortunately, many groups are turning to Amateur fibreglass antennas for repeater service due to the low cost.
- If a club is claiming their repeater is available for an emergency, they must invest in antennas.

REPEATER EQUIPMENT

- In an emergency, a repeater may operate non stop for hours, even days.
- This type of operation requires repeaters to be built from suitable equipment that can withstand continuous duty.
- While a pair of mobiles may work for normal use, especially with a fan, there is a high risk that the system will fail under continuous use.

COMPATABILITY

- Long tails make it difficult to use cross band repeaters because the end user cannot break in.
- CTCSS helps reduce noise from intermod and ensures cross-band repeaters are not adding to the problem. CTCSS IS IMPORTANT.
- In an emergency, the controller should meet license requirements and no more.
 - The long winded announcements just make it more difficult to move messages.

CTCSS TONES

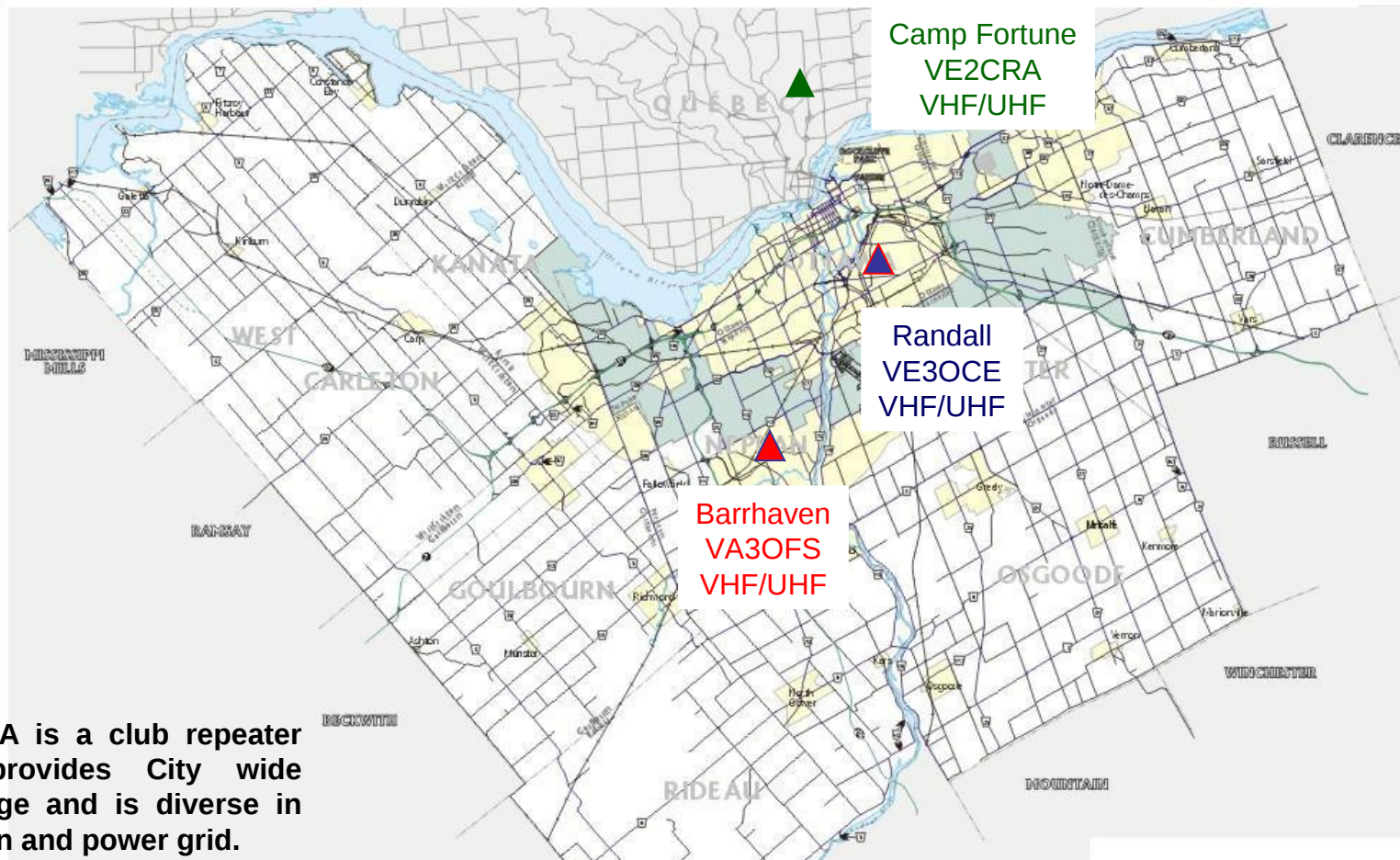
- Many people believe repeaters should not use CTCSS because there are amateurs who have radios that cannot support CTCSS tone encode.
- In reality this is not an issue for three reasons;
 1. Most amateur radios can encode a CTCSS tone
 2. Many people will be partnered with someone and will be using the other persons equipment.
 3. Some locations have permanent radios, plus EMRG is has a supply of radios.

ALTERNATE REPEATERS

- In some cases, there are multiple repeaters that provide coverage in the same area.
- Based on the emergency plan, there needs to be a reasonable number of repeaters with overlapping coverage, in case of failure, but not all repeaters may be required.

REPEATERS IN THE EMRG PLAN

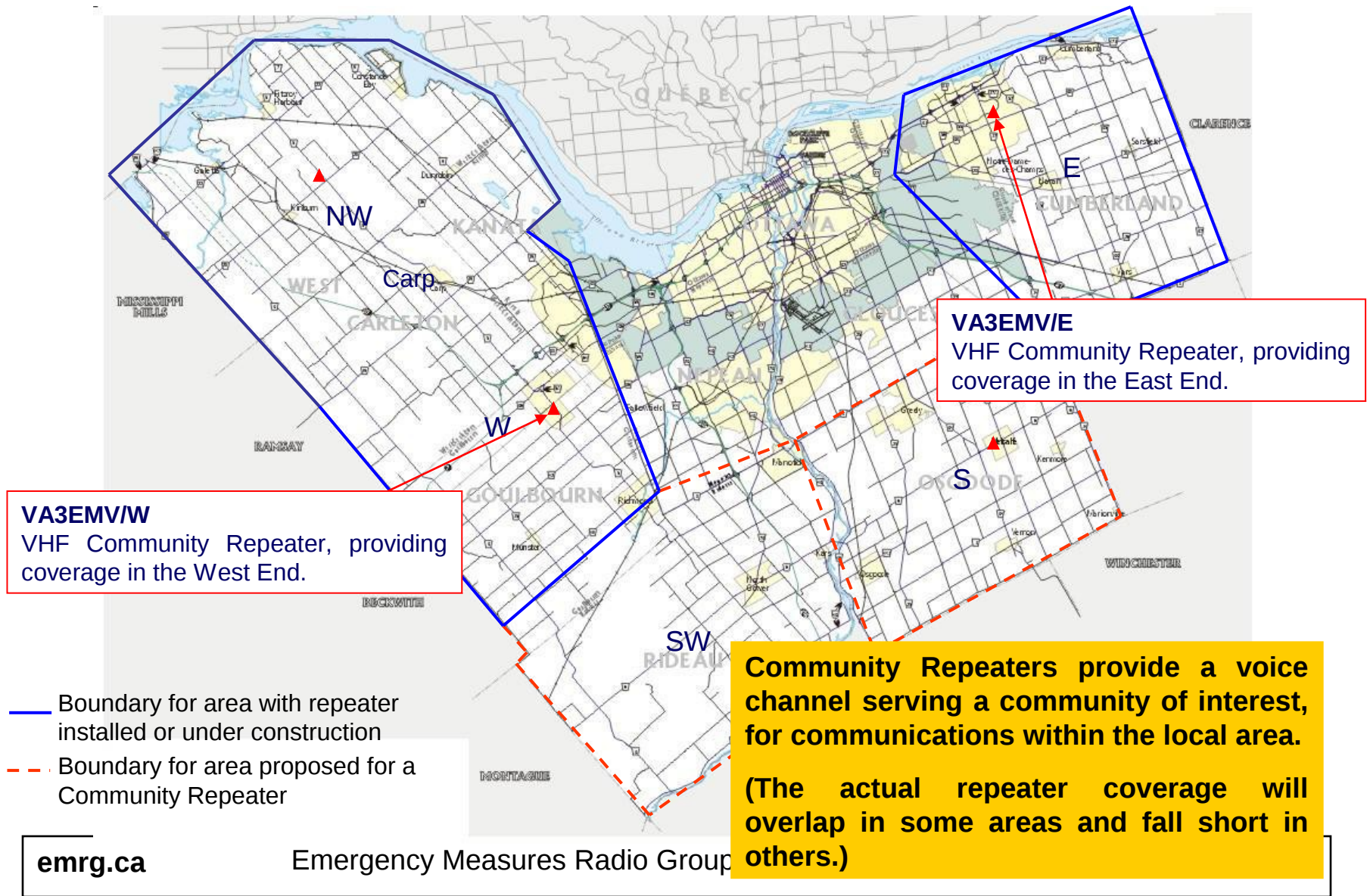
CITY WIDE REPEATERS



VE2CRA is a club repeater that provides City wide coverage and is diverse in location and power grid.

There is no single repeater that can cover the full City of Ottawa. By using several repeaters, most areas are covered and are accessible from key locations.

COMMUNITY REPEATERS



USE OF EMRG REPEATERS

EMRG repeaters are open for use by anyone in the Amateur community under the following understanding;

- The purpose of the repeaters is for emergency communications, so EMRG has priority.
- Conversations should be useful, Amateur radio related and free from personal opinions.
- If the repeater is not working, tell someone. Notify any member of the EMRG management team, or send an email to ve3oce@rac.ca

www.emrg.ca

The EMRG web site provides information related to Amateur radio emergency communications, specifically as it relates to the City of Ottawa.

- Project Information
- Newsletters
- Upcoming Events
- Documentation
- Links to related information

Information: **planning @ emrg . ca**