Title:	CAP-CP Location References
Description:	The list of location geocode references for use with the Canadian Profile of the Common Alerting Protocol (CAP-CP).
Date:	<ADD FINAL DATE>
Version:	1.0
Replaces:	Beta 0.4
Owner	Senior Officials Responsible for Emergency Management (SOREM)
Official Website	www.CAP-CP.ca
Change Management Process	SOREM - Canadian Emergency Management Communications Specification (CEMCS) – Change Management Process (CMP)
Associated Documents:	1. CAP-CP Rules 2. CAP-CP Event References 3. CAP-CP Location References Annex
Reference Standard	OASIS - Emergency Data Exchange Language - Common Alerting Protocol (EDXL-CAP) version 1.2

1. Version Control

Version	Approval Date	Author	Change Description
1.0	TBD	CAP-CP 1.0 Specification Committee established by the SOREM Federal/Provincial/ Territorial (FPT) Interoperability Working Group (IWG)	This is the first version managed to the Canadian Emergency Management Communications Specifications (CEMCS) Change Management Process (CMP). Changes to the CAP-CP Location References over the Beta versions include: - Updated wording for sections 3 through 9. - Improved wording for sections 10 through 12. - Geocode is not required in specific circumstances - Addition of marine references from Environment Canada - The addition of new updated geocodes for Quebec - Copyright change.

2. Table of Contents

3. Purpose of this Document

This document presents the current and complete list of location geocode references that are recognized for use in CAP alerts that conform to the *Canadian Profile of the Common Alerting Protocol* (CAP-CP). Rules associated with this reference list can be found in the associated *CAP-CP Rules* document.

This document is managed and versioned independently of the *CAP-CP Rules* document and the *CAP-CP Event References* document so that it is not dependent on updates to either documents, and is not subject to update each time the others are updated. This approach limits the scope of CAP-CP updates to each of the rules, locations or event references, and supports more specialized focus of the participants to the change management process.

The list is all encompassing, evergreen, and may be broader than a specific community of practice may wish to support. With this in mind, Canadian communities of practice may wish to identify and use subsets of the list for very specific purposes or systems.

4. Copyright

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5. Notices

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Official versions are available at www.CAP-CP.ca.

6. Terms

6.1. "**CEMCS**" refers to Canadian Emergency Management Communications Specifications governed by SOREM.

6.2. "**CEMCS CMP**" refers to the Change Management Process established for managing Canadian Emergency Management Communications Specifications.

6.3. "**ESRI**" refers to a GIS software company.

6.4. "**SC**" refers to Common Alerting Protocol – Canadian Profile (CAP-CP) 1.0 Specification Committee as established under the CEMCS CMP and the CAP-CP 1.0 SC Terms of Reference.

6.5. "**SGC**" refers to the Standard Geographical Classification. It is Statistics Canada's main classification of geographic areas in Canada.

6.6. "**SOREM**" refers to Senior Officials Responsible for Emergency Management. It reports to the Federal/Provincial/ Territorial Deputy Ministers Responsible for Emergency Management.

7. Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in IETF RFC 2119, available at http://www.ietf.org/rfc/rfc2119.txt

8. CAP-CP Sub-Committee

The Specification Committee membership may include both voting and non-voting members. A Chair and Vice-Chair shall be selected from the committee's voting membership with a Secretary selected from either group.

Voting Representation

Organizations with voting oversight of this document included the following:

- Alberta Emergency Management Agency
- Canadian Public Safety Operations Organization (formerly known as the Canadian Association for Public Alerting and Notification)
- Centre for Security Science
- Environment Canada
- Industry Canada
- Natural Resources Canada
- Pelmorex Communications Inc.
- Public Safety Canada
- Sécurité Publique Québec
- NetAlerts Inc.

Non-Voting Representation

Organizations overseeing the process used to manage this document included the following:

- Canadian Radio-television and Telecommunications Commission
- Federal, Provincial, Territorial – Interoperability Working Group (FPT IWG), on behalf of the federal, provincial, territorial Senior Officials Responsible for Emergency Management (SOREM)
- Public Safety Canada – Interoperability Development Office
- Canadian General Standards Board (CGSB) in a consultative role

Acknowledgement

The Specifications Committee gratefully acknowledges the contributions of the following people in the preparation of this CAP-CP document.

- Norm Paulsen (Committee Chair)
- Doug Allport
- Khalil Hayek
- Kirsten Wells
- Robert De La Durantaye
- Thomas Poirier-Blanchet
- Philip Dawe

- Wendy Wu
- Tim Trytten
- Jacob Westfall
- Jannick Asselin
- Jeff Conrad
- Noah Moser

9. Other CAP-CP Documents

The entire CAP-CP is defined by three documents, all of which can be found at www.CAP-CP.ca. The other two documents are titled as follows:

1. *CAP-CP Rules*. This document details the specific requirements, constraints, and recommendations associated with the Canadian Profile of the CAP. It is versioned independently of this document.

2. *CAP-CP Event References*. This document identifies Canadian event references for use with CAP-CP. It is versioned independently of this document.

Additionally, the following Annex is supported:

1. *CAP-CP Location References Geocode Annex*. This document lists the Canadian location references for use with CAP-CP. It is an appendix to the CAP-CP Location References document and contains additional supporting material.

10. CAP Locations References Overview

Location References in a CAP message can be handled in one of two ways. Either by a GIS construct such as a polygon or circle (as defined per the Reference Standard), or by a geocode.

10.1 CAP <valueName> Scheme

When using the <polygon> element, or other GIS construct, the reference CAP standard defines how they are to be used. Only simple polygons are allowed in a CAP message. Multi part polygons (i.e. physical polygons with holes and/or with more than one discrete area), are not permitted.

Note: A multi-part polygon is defined as having more than one physical part with each part all referencing a single set of attributes. And since CAP doesn't include polygon attributes as part of the CAP-XML schema, multi part polygons can't be represented in CAP at this time. However, since there is no limit on the number of <polygon> elements

within an <area> block, more complex areas, such as those suggested by multi part polygons, can be described by creative use of several simple polygons.

10.2 Geocodes

When using the <geocode> element, the reference CAP standard does not define any geocode system and leaves the defining of such a system up to the communities that use CAP. In defining such a system, there is a lot to consider when doing so.

A <geocode> is characterization of a defined location, and can be based on any number of attributes inherent with the location. For example, a political boundary could be used to define the boundaries of a defined location and then each location can be assigned a code to characterize it. One commonly known geocode system in Canada is the Canadian Postal Code system where areas within Canada are assigned a code to facilitate mail delivery.

CAP-CP, prior to version 1.0, referenced the Statistics Canada - Standard Geographical Classification (SGC) system. It is a land based Location Referencing scheme based on political boundaries and population densities and since it was a scheme that covered all of Canada it was chosen for use. (NOTE: It was determined that Postal Codes have too coarse a granularity in remote areas for the purposes of Public Alerting in Canada, and they did not have commonly referred to names, such as villages, towns, townships, etc.).

CAP-CP incorporated the SGC geocode system with two additions:

1) A “none” value was added for areas where there was no code available (such as over marine areas). See *CAP-CP Rules* document for more information.
2) A “00” value was added for use with alerts that are intended for distribution for all of Canada (already defined or not), and for all Canadian interests anywhere in the world.

At version 1.0, CAP-CP moved to its own managed list of Location References with the SGC 2011 serving as the starting point. It was then augmented with new geocodes for marine areas of Canada from Environment Canada and with new geocodes for the Province of Quebec from Sécurité Publique Québec.

In version 1.0, and moving forward, the geocode reference list will be known as the CAP-CP Location References list with the term SGC becoming a historical note on how they originated. The list will be “change managed” going forward from version 1.0 and will change (with new version numbers) when Provinces, Territories, or Environment Canada submit updated geocode lists.

In cases where a Location reference overlaps with another Location reference, both can be considered as correct. Such a situation should not occur by definition, but in any

physical representation of the geocode (such as with a generalized polygon), the perception of overlap will inevitably occur. This is considered acceptable within the margin of error inherent with geospatial targeting of alerts. Some minimal over-alerting is preferred to under-alerting at such boundaries when a hazardous situation exists. The context of the alert message itself should eliminate any ambiguity.

11. CAP-CP Location References

Since the reference CAP Standard leaves the assignment and control of geocodes up to the communities that use CAP, the Canadian Profile standard has undertaken the defining of a CAP-CP geocode set for use in Alerting for Canadian interests. Like the event references list, this list is available for communities to use and incorporate into their alerting pursuits and comes with a set of supporting information that is complete on the national level. These geocodes are required in a CAP-CP conformant message only when no <polygon> element, or other CAP GIS construct, is present.

The geocode “valueName” and “value” comprises the CAP-CP profile standard and only these two pieces of information are required for a CAP-CP conformant message that uses this geocode set. All other pieces of information (i.e. latitude and longitude) provided herein are considered only as additional supporting material that may or may not be used in a CAP-CP conformant messages. They are helpful in communicating the meaning of what the geocode characterizes.

11.1 Location reference <valueName>

The Reference Standard states that, “Values of ‘valueName’ that are acronyms SHOULD be represented in all capital letters without periods”. The standard does not provide any further recommendations on creating a <valueName> or determining the domain of the code nor its format. In CAP-CP, the <valueName> should uniquely identify the value list being used, and if the value list is expected to change, should provide a method to accommodate changes by identifying each unique revision.

CAP-CP has adopted a URN-like scheme for creating valueNames with CAP-CP messages. Location references using the <geocode> element have valueNames that use the following format:

profile:CAP-CP:Location:{version number}

The following <valueName> is defined for this version of the Location References document,

profile:CAP-CP:Location:1.0

11.2 Location List

The format of a CAP-CP geocode is simply a code consisting of a minimum of 2 numeric digits (as defined by the submitting agency). No letters or symbols are part of the CAP-CP geocode except for one additional special code (see the following section below for this exception).

11.3 Unknown area – "none" Value

A value of "none" is included in the geocode list for use when an area of an alert cannot be associated with any other current CAP-CP location code. See *CAP-CP Rules* for specific requirements.

11.4 All of Canada – "00" Value

A value of "00" is included in the geocode list for use with alerts that are intended for distribution to all of Canada or to all of Canadian interests anywhere in the world.

11.5 CAP-CP Location References Table of Values

The complete collection of CAP-CP location reference geocode values is presented in an Annex to this document titled CAP-CP Location References – Geocode Annex.

12. Supporting Material

Material in support of the CAP-CP Location Reference geocode system is also available within the Annex published in coordination with this document. This supporting material is not considered part of the standard itself, and exists only to supplement the geocode list in operational environments where this supplemental information is deemed desirable.

This supporting material may be originally sourced directly from a Province, Territory or federal government department, or as support material provided herein by the committee that oversees the CAP-CP standard. In the Annex it is simply a reference for such information.

Since this supporting material it is not bound by the standard, it is free to be adjusted by a community of users based on situational requirements within the community without notice or comment periods. **Note**: adjustments of the material however by third parties should keep the intent of the material in mind when any adjustments are made in order to keep the integrity of the information intact.

CAP-CP does not verify or certify, and is not responsible for, the accuracy or currency of supplemental geocode data or materials received. Users and contributors of supplemental geocode data or materials are responsible for validating the integrity of the information and/or providing updates to the information.

12.1 Location reference Shape Files

Supporting material of polygon alerting areas indexed to the CAP-CP geocodes, in ESRI shape file format, can be found at the following URL: (final URL forthcoming soon)

Note also that the generalized polygons may overlap one another. The objective of generalization was to limit the number of vertices to common limits of public alerting applications while including all areas defined by the geocode without any area being lost in the generalizing process. This does create overlapping areas in the generalized sets, and if they are used, will add to the concern of over alerting in some systems. However, this overlapping is not considered detrimental to the general task of geo targeting public alerts through multiple channels. And while this generalization may cause jurisdictional concerns at the boundaries of these defined locations, it is considered a small price to pay to help facilitate Public Alerting in dissemination systems that can't precisely target their presentations. Generalized polygons work best as a presentation layer superimposed over more detailed image layers underneath.

In addition to generalized ESRI shape file boundary files for public locations, generalized shape file boundary files for marine areas are also included in the supporting material. Due to the generalization process and accounting for intended audiences, the marine and land based polygons will significantly overlap along shoreline areas.

12.2 Location References Geographic Scale

Supporting material in the form of a list of scale markers was obtained from both Statistics Canada and Environment Canada, and has been incorporated into the Annex for reference. This supporting material is not part of the CAP-CP standard; and geocode usage within a CAP-CP file does not directly involve this scale consideration, but the material has been made available as it existed with the source originator as it may help provide context for the listed geocode values.

12.3 Location Reference Mappings to Previous Version

Supporting material in the form of a list of Location Reference mappings from this version to the previous version has also been made available. This supporting material is not part of the CAP-CP standard but is guidance material generated in support of versioning activities within the many and varied applications that use the CAP-CP Location References geocode system.

For example, the use of these mappings could apply when two or more parties in an alerting community are versioning up using different time tables. The tables are available for originators and distributers alike and can be incorporated into a variety of solutions that best address the environment in use. NOTE: It is also possible to employ more than one version of the CAP-CP Location References within a single CAP message to support a transition period between versions.

12.4 Location Reference English and French Names

Supporting material in the form of a list of location names indexed to CAP-CP geocodes can also be found in the Annex. This supporting material is not part of the CAP-CP standard but is guidance material generated in support of common look and feel efforts.

An initial list of names associated with the geocodes was obtained from both Statistics Canada and Environment Canada, and have been placed in the Annex. The list is provided unchanged from the source and the values given are not necessarily recommended for direct use in alerting applications without undue consideration, as many of the names provided do not have a meaningful name to the general public.

An area name in the CAP <area> block is required, as per the CAP Standard, but the area names used do not have to align with the geocode names as given here. Furthermore, a single area with one name could map to several geocodes. Regardless of whether there is one geocode or many, issuing agencies are free to indicate any name they choose in the area name element. For CAP file recipients, the required area name element is intended to be displayed as given in the file, not the name that the geocode indexes in this supporting material. The CAP file originator is responsible for populating the area name element with appropriate content.

Annex A:

The list of CAP-CP Location Reference geocodes can be found in the accompanying *CAP-CP Location References Annex* document.