GeoBase

Municipal Boundaries
(MUNI)

Data Product Specifications

Edition 1.0

2010-11

Government of Canada
Natural Resources Canada
Canada Centre for Mapping and Earth Observation

GeoGratis Client Services
Telephone: +01-819-564-4857
1-800-661-2638 (Canada and USA)
Fax: +01-819-564-5698
E-mail: geoginfo@NRCan.gc.ca
URL : www.GeoGratis.gc.ca

Canadä

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RELEASE HISTORY

Date	Edition	Description
2010-11	1.0	First release.

These specifications are produced in accordance with *International Standard ISO/TC 211, 19131: 2007 Geographic Information / Geomatics – Data Product Specification*, which refers in particular to standard *ISO 19115: 2003 Geographic information – Metadata.*

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1   OVERVIEW

1.1   Title

Municipal Boundaries (MUNI)

1.2   Reference Date

Data product specifications creation date:

2010-11

1.3   Product Responsible Party

GeoGratis
Government of Canada
Natural Resources Canada
Canada Centre for Mapping and Earth Observation

GeoGratis Client Services
Telephone: +01-819-564-4857
                    1-800-661-2638 (Canada and USA)
Fax: (819) 564-5698
E-mail: geoginfo@NRCan.gc.ca
URL: http://www.GeoGratis.ca

1.4   Language

Languages in which the data product specifications are available in accordance with the ISO 639-3 standard:

eng – English

fra – French

1.5   Terms and Definitions

Attribute:
Characteristic of a feature (for example, the legal name of a municipality).

Class:
Set of objects that share the same attributes, operations, methods, relationships, and semantics (for example, the class of Municipality features).

Feature:
Digital representation of a real world, geographic phenomenon.

Feature ID:
Alphanumeric and immutable identifier of a feature enabling its unique identification at all time.

GDF Order:
Hierarchical level associated to the subdivision of administrative areas within a country according to the Geographic Data Files (GDF) Overall data specification ISO 14825:2004. According to this hierarchy, the highest order of hierarchical Administrative Areas is called the Country. Administrative Areas of GDF Order 1 to 7 are parts of an intermediate level of the administrative hierarchy while GDF Order 8 areas are parts of the lowest order of the administrative hierarchy in the country that is present countrywide.

GeoName:
Name of the geographic feature or place as used in the Geographical Names Search Service (GNSS) Web service queries. The GeoName is also part of the GNSS data model.

Object:
An instance of a class (for example, the Regional Municipality of Ottawa-Carlton is an instance of the Upper Municipality class).

Universal Unique Identifier (UUID):
Unique identifier within a universe defined in an application domain. UUIDs are those proposed by the ISO 19118:2005 standard: Geographic information – Encoding. They are represented by a 32-character hexadecimal string.
The definition and method used for the generation of a UUID is defined in the document *National Vector Data: Identification Rules* available on the ftpsite.

1.6   Abbreviations and Acronyms

CCOG	Canadian Council on Geomatics
CGNDB	Canadian Geographical Names Database
CRSID	Coordinate Reference System Identifier
GML	Geography Markup Language
GNSS	Geographical Names Search Service
GPS	Global Positioning System
IACG	Inter-Agency Committee on Geomatics
ID	Identifier
ISO	International Organization for Standardization
KML	Keyhole Markup Language
MUNI	Municipal Boundaries
NAD83(CSRS)	North American Datum 1983 (Canadian Spatial Reference System)
NID	National Identifier
NRCan	Natural Resources Canada
OGC	Open Geospatial Consortium
TC	Technical Committee
UUID	Universal Unique Identifier

1.7   Informal Description of the Data Product

The Municipal Boundaries data product consists of a series of municipal features (abstract class for *MunicipalBoundary* features within the conceptual model), each defined as a bounded area within a Canadian province or territory. A simplified definition of what a municipal feature is was developed based on the literature and common usage. It is practical to apply this definition everywhere in Canada despite the differences in legislation across the country regarding the rights and responsibilities of municipalities.

A **municipal feature** is an administrative area that meets the following three criteria:

- It is administered locally by a mayor or council or other representatives who are voted into office,

- It carries out taxation (or taxation is carried out on its behalf, with the collected revenue then transferred to the jurisdiction),

- Its legislative powers on its territory are broad in nature.

Decisions regarding what is and what is not considered a municipal feature were all made in consultation with the respective provincial or territorial authority.

The municipal features are described in the document *Municipal Boundaries: Conceptual Data Model – Edition 1.0* accessible on the ftpsite .

Classification of Municipal Features (GDF Order)

More formally, municipal features are considered to be *administrative areas* as described in the Geographic Data Files (GDF) specification and as formally defined in ISO 14825:2004.

The ISO standard introduces the concept of GDF orders of administrative areas based on the notion of a hierarchy of areas. According to this hierarchy, a country is subdivided into GDF Order-1 areas, which for Canada are the thirteen provinces and territories.

Still according to the ISO 14825:2004 standard, the most detailed subdivisions that can be comparably specified across the country are considered as GDF Order-8. In Canada, for the Municipal Boundaries, GDF Order-8 consists of the *municipalities* found in each province and territory. In three of the Canadian provinces (British Columbia, Ontario, and Quebec), *municipalities* may fall within a higher level class, which are defined as *upper municipalities*. They constitute GDF Order-7. In the province of Quebec, *upper municipalities* are contained in a still higher level class, *municipal regional areas,* defined as GDF Order-6.

These three hierarchical levels constitute the Municipal Boundaries data product in Canada.

Coverage of Municipal Features

Two points are worth noting with respect to coverage and municipal features in Canada:

- At any given GDF Order for every province and territory, the municipal features form a coverage that is only partial in nature, with the exception of GDF Order-6 in Quebec, which does completely cover the province. In all other cases, to create such a complete coverage of the province or territory requires that other kinds of boundary features be included, such as aboriginal lands, national parks, other regional areas that are not municipal in nature, etc.

- One can attempt to represent all GDF orders as a single municipal coverage through geoprocessing. Such a coverage falls outside of the data model for Municipal Boundaries and hence the data product specifications. However, where municipal features share boundaries with other municipal features at the same or different GDF Order, the shared sections of the boundaries match exactly with one another, so that it should be simple to create an integrated coverage if one desires so.

Type and Designation of Municipal Features

The following table lists the terms used across the country for Municipal Feature Designation and Type as well as the corresponding GDF Order.

Province/Territory	Municipal Regional Area GDF Order-6	Upper Municipality GDF Order-7	Municipality GDF Order-8	Municipal Feature Designation	Municipal Feature Type
British Columbia			✓	City	Municipality
			✓	District Municipality	Municipality
		✓		Regional District	Regional District
			✓	Town	Municipality
			✓	Village	Municipality
Alberta			✓	City	City
			✓	Regional Municipality	Regional Municipality
			✓	Summer Village	Specialized Municipality
			✓	Town	Town
			✓	Village	Village
Saskatchewan			✓	City	City
			✓	Northern Hamlet	Northern Hamlet
			✓	Northern Town	Northern Town
			✓	Northern Village	Northern Village
			✓	Resort Village	Resort Village
			✓	Rural Municipality	Rural Municipality
			✓	Town	Town
			✓	Village	Village
Manitoba			✓	City	City
			✓	Local Government District	Local Government District
			✓	Rural Municipality	Rural Municipality
			✓	Town	Town
			✓	Village	Village
Ontario			✓	City	Lower Tier

Province/Territory	Municipal Regional Area GDF Order-6	Upper Municipality GDF Order-7	Municipality GDF Order-8	Municipal Feature Designation	Municipal Feature Type
			✓	City	Single Tier
			✓	County	Single Tier
		✓		County	Upper Tier
		✓		District Municipality	Upper Tier
			✓	Municipality	Lower Tier
			✓	Municipality	Single Tier
		✓		Regional Municipality	Upper Tier
			✓	Town	Lower Tier
			✓	Town	Single Tier
			✓	Township	Lower Tier
			✓	Township	Single Tier
		✓		United Counties	Upper Tier
			✓	United Townships	Lower Tier
			✓	Village	Lower Tier
			✓	Village	Single Tier
Quebec		✓		Administration régionale	Administration régionale
			✓	Canton	Municipalité
			✓	Cantons unis	Municipalité
			✓	Municipalité	Municipalité
		✓		Municipalité régionale de comté	Municipalité régionale de comté
			✓	Paroisse	Municipalité
	✓			Région administrative	Région administrative
			✓	Village	Municipalité
			✓	Ville	Municipalité
New Brunswick			✓	City	City
			✓	Rural Community	Rural Community
			✓	Town	Town

Province/Territory	Municipal Regional Area GDF Order-6	Upper Municipality GDF Order-7	Municipality GDF Order-8	Municipal Feature Designation	Municipal Feature Type
			✓	Village	Village
Prince Edward Island			✓	City	City
			✓	Community	Community
			✓	Town	Town
Nova Scotia			✓	Municipal County	Municipal County
			✓	Town	Town
Newfoundland and Labrador			✓	City	City
			✓	Town	Town
Yukon			✓	City	City
			✓	Town	Town
			✓	Village	Village
Northwest Territories			✓	Charter Community	Charter Community
			✓	City	City
			✓	Community Government	Community Government
			✓	Hamlet	Hamlet
			✓	Settlement Corporation	Settlement Corporation
			✓	Town	Town
			✓	Village	Village
Nunavut			✓	City	City
			✓	Hamlet	Hamlet

As can be seen from the table, hierarchies exist in three provinces: British Columbia, Ontario, and Quebec.

- In British Columbia, *Municipalities* are contained in *Regional Districts* that cover most of the province. One large municipality (Northern Rockies Regional Municipality) is not contained in a regional district. This is also the case with one sparsely populated region (Stikine Region) in the extreme North of British Columbia, which is not a municipal feature.

- In Ontario the *Lower Tiers* are grouped into *Upper Tiers*, with each Upper Tier covered entirely by its constituent Lower Tiers. *Single Tiers* cover the major metropolitan areas and are not grouped in any way.

- In Quebec, the province is covered entirely by the administrative regions (*Régions administratives*). The areas designated as regional administrations (*Administrations régionales*) and Regional county municipalities (RCM) (*Municipalités régionales de comté (MRC)*) are contained within the administrative regions, but do not completely fill them. Most municipalities *(Municipalités)* are contained in either regional administrations or Regional county municipalities (RCM); in neither situation do they form a complete coverage. As well, some municipalities fall outside of both the regional administrations, and the Regional county municipalities (RCM). Quebec boundaries are defined by the "*Tracé de 1927*".

The term "Municipal Feature Type" as used in the table above and in the conceptual model (feature type for *MunicipalBoundary*) refers to a classification specified in legislation in each province or territory for their respective municipal features, usually in the context of a level of government vested with certain broad powers and operational requirements. Thus it is easy to relate type to GDF order.

The model also recognizes the "designation" of a municipal feature (designation of the *MunicipalBoundary* Feature). The term refers to the legal status of a municipal feature as typically defined in its incorporation.

The municipal feature "type" and "designation" are often equivalent terms, but in some cases they differ. For Winnipeg both type and designation have the value of *City*. However, in the case of Ottawa, the type is *Single Tier* and the designation is *City*. Saanich, British Columbia, has type and designation values of *Municipality* and *Regional Municipality*, respectively. For Hampshire, Prince-Edward-Island, the two values are *Municipality* and *Community*.

Nomenclature for Municipal Features

The model also provides for a common name and a legal name for municipal features. The common name for Amherst, Quebec, is *Amherst*; its legal name is *Municipalité de Canton de Amherst.* Haines Junction, Yukon, has the common name of *Haines Junction* and the legal name of *Village of Haines Junction*. The corresponding common and legal names for Saskatoon are *Saskatoon* and *City of Saskatoon*.

2   SPECIFICATION SCOPE

2.1   Scope Identification

Global

2.2   Level

005 - dataset

2.3   Level Name

MUNI

2.4   Extent

This section describes the spatial and temporal extent of the scope for the data.

2.4.1 Description

Canadian landmass

2.4.2 Vertical Extent

The MUNI dataset is two-dimensional. There is no elevation (z) associated with the data.

2.4.2.1 Minimum Value

Not applicable

2.4.2.2 Maximum Value

Not applicable

2.4.2.3 Unit of Measure

Not applicable

2.4.2.4 Vertical Datum

Not applicable

2.4.3 Horizontal Extent

2.4.3.1 West Bound Longitude

-139.5 degrees

2.4.3.2 East Bound Longitude

-52.6 degrees

2.4.3.3 South Bound Latitude

41.7 degrees

2.4.3.4 North Bound Latitude

76.5 degrees

2.4.4 Temporal Extent

2.4.4.1 Beginning Date

January 1st, 2004

2.4.4.2 Ending Date

Today

2.5   Coverage

Full extent

3   DATA PRODUCT IDENTIFICATION

3.1   Title

Municipal Boundaries

3.2   Alternate Title

MUNI

3.3   Abstract

The Municipal Boundaries product consists of administrative areas within Canada's ten provinces and three territories. They can be characterized as having: (i) elected local officials, (ii) powers of land taxation, and (iii) a broad mandate. They are represented with polygonal geometry. In British Columbia, Ontario and Quebec the municipal features are structured hierarchically, although the nature of the hierarchical relationships differs in each of the three cases. The lowest, most detailed, level of the hierarchy consists of *Municipalities*; it exists in all 10 provinces and 3 territories. British Columbia, Ontario, and Quebec contain a more general level, referred to as *Upper Municipalities*. Quebec has a still higher level consisting *of Municipal Regional Areas*. The boundaries for Quebec are defined by the "*Tracé de 1927*". The three levels, from more detailed to less detailed, correspond to GDF Order-8, GDF Order-7, and GDF Order-6 respectively in ISO 14825:2004, the Geography Data Files specification. Names in aboriginal languages that do not make use of the Latin alphabet can be accommodated by using the UTF-8 (Unicode) encoding.

3.4   Purpose

The purpose of this data product is to provide a national coverage for *Municipalities*, *Upper Municipalities,* and *Municipal Regional Areas* in Canada. The model and corresponding data also provide a common understanding and common boundary definition of all municipal features across Canada.

The datasets from this product are not to be used for defining boundaries legally. Administrative decisions should be based on legal documents and legal survey plans.

3.5   Topic Category

Main topics for the product, as defined by the ISO 19115 standard:

003 - boundaries

3.6   Spatial Representation Type

Type of spatial representation for the product, as defined by the ISO 19115 standard:

001 - vector

3.7   Spatial Resolution

Spatial resolution denominators of the data:

2 000 – 50 000

The spatial resolution varies greatly within the product as data originate from high accuracy survey to natural features mapped at more general scales.

3.8   Geographic Description

3.8.1 Authority

International Organization for Standardization (ISO)

3.8.1.1 Title

Standard of the code of geographical regions:

ISO 3166-1:1997 Codes for the representation of names of countries and their subdivisions – Part 1: Country codes.

ISO 14825:2004 GDF Order-6, GDF Order-7, and GDF Order-8, as pertinent to administrative areas within countries, also applies.

3.8.1.2 Date

Reference date of the ISO 3166-1 standard:

1997-10-01

3.8.1.3 Date Type Code

Type of date according to ISO 19115 standard:

002 – publication

3.8.2 Code

Code of the geographical region covered by the product according to the ISO 3166-1 standard:

CA – Canada

3.8.3 Extent Type Code

Type of code of the delimitation polygon of the extent according to the ISO 19115 standard:

1 – inclusion

3.9   Reference to Specification Scope

Global

4   DATA CONTENT AND STRUCTURE

4.1   Description

For each of the three hierarchical levels (Municipalities – GDF Order 8, Upper municipalities – GDF Order 7, and Municipal regional areas – GDF Order 6), the Municipal Boundaries product is distributed in the form of an individual dataset for each province and territory. The complete product therefore consists of 17 datasets (13 for Municipalities, 3 for Upper municipalities, and 1 for Municipal regional municipalities).

In all cases the data consists of polygonal entities with associated descriptive attributes. These attributes include: identifier, common name and legal name (if it exists); creation date; revision date; planimetric accuracy, whether the boundary is considered official; etc.

The data for the Municipal Boundaries product is available in KML, GML, and Shapefile (ESRI) formats.

4.2   Feature Information

4.2.1 Application Schema

The conceptual model of the Municipal Boundaries data is presented in the document Municipal Boundaries: Conceptual Data Model – Edition 1.0 accessible on the ftpsite.

For the Object Metadata, the conceptual model includes a creation date (creationDate) and a revision date (revisionDate). If a revision date is provided, the object metadata pertains to the change made to the object and no longer to the creation of the object. In this case, only the creation date pertains to the original version of the object.

4.2.2 Feature Catalogue

The feature catalogue entitled Municipal Boundaries: Feature Catalogue – Edition 1.0 can be found on the on the ftpsite.

4.3   Reference to Specification Scope

Global

5   REFERENCE SYSTEMS

5.1   Spatial Reference System

Spatial data are expressed in geographic coordinates [latitude (φ) and longitude (λ)] in reference to the North American Datum 1983 Canadian Spatial Reference System (NAD83-CSRS). The longitude is stored as a negative number to represent a position west of the prime meridian (0°). Coordinates measuring unit is the degree expressed as a 7-decimal real value.

5.1.1 Authority

5.1.1.1 Title

Coordinate reference system registry:

EPSG Geodetic Parameter Dataset

5.1.1.2 Date

Reference Date:

2007-02-08

5.1.1.3 Date Type Code

Date type according to ISO 19115 standard:

002 - publication

5.1.1.4 Responsible Party

OGP – International Association of Oil and Gas Producers

URL: http://www.epsg.org

5.1.2 Code

Coordinate reference system identifier (CRSID):

4617

5.1.3 Code Space

EPSG - European Petroleum Survey Group

5.1.4 Version

6.12

5.2   Reference to Specification Scope

Global

6   DATA QUALITY

6.1   Completeness

The product is considered as complete for all 13 provinces and territories.

6.1.1 Commissions

The dataset product does not contain any commissions.

6.1.2 Omissions

The dataset product does not contain any omissions.

6.2   Logical Consistency

6.2.1 Conceptual Consistency

The conceptual model of the Municipal Boundaries (MUNI) data is presented in the document Municipal Boundaries: Conceptual Data Model – Edition 1.0, accessible on on the ftpsite.

The physical implementation of the Municipal Boundaries product is consistent with the conceptual model.

6.2.2 Domain Consistency

The attribute values are validated against a list of authorized domain values defined in the feature catalogue.

For corresponding municipal features, the value for NID must match the feature identifier in the Canadian Geographical Names Database (CGNDB), as made available publicly through the Canadian Geographical Names Search Service (CGNSC). It is also preferred that the value for the commonName attribute of the municipal feature match that for the GeoName in the CGNDB.

The GeoBase theme Geographical Names is derived from the CGNDB and also includes municipal names. Thus, for corresponding features the values for NID and commonName should match those for feature identifier and GeoName in the Municipal Boundaries data.

6.2.3 Format Consistency

The Municipal Boundaries data formats conform to the distribution formats described in the document Municipal Boundaries: Product Distribution Formats – Edition 1.0 accessible on the ftpsite.

6.2.4 Topological Consistency

Validation routines are performed on the source data to identify gaps and overlaps within each GDF order for each province and territory. Inconsistencies detected during the validation are reported to the data custodian.

Currently there are two types of known overlaps in the data. The first type of overlap is between the three classes of municipal boundaries (Municipality, Upper Municipality, and Municipal Regional Area). These overlaps are intentional and are recognized in the data model.

The second type of overlap occurs along provincial / territorial boundaries. In most cases adjacent provinces and territories do not have a formal agreement regarding a common definition of their shared boundary. The lack of a single inter-jurisdictional boundary representation results in overlaps and gaps along border regions where municipal features of one province or territory are adjacent to similar features in an adjacent province or territory.

In addition, boundaries of municipal features that fall along provincial boundaries do not necessarily agree with the provincial boundary representations that are provided in the GeoBase Canadian Geopolitical Boundaries theme. Such misalignment can exist between municipal features of a given province and the provincial boundary of that province. A misalignment may also occur between municipal features of a given province and the boundary of the adjacent province or territory. Along a

section of the eastern border of Quebec corresponding to a section of the southern border of Labrador, the boundary is defined by the "*Tracé de 1927*".

Within each of the provinces and territories, the data is topologically consistent. Along the boundaries of adjacent municipal features, the vertices defining the respective boundaries of the two features are identical. Similarly, where municipal features of different GDF orders share portions of boundaries, the corresponding bounding segments are represented identically at the vertex level.

6.3 Positional Accuracy

6.3.1 Absolute External Positional Accuracy

The geometric accuracy of objects is given as the difference between objects position in the dataset and their real ground positions measured in reference to the geodetic network. The accuracy may vary from one object to another. It is thus provided as an attribute with each object occurrence and is expressed according to the Circular Map Accuracy Standard (CMAS).

Standard Circular Error: $\sigma_c = 0.7071 \, (\sigma_x^2 + \sigma_y^2)^{1/2}$
σ_x : standard deviation in the X-axis
σ_y : standard deviation in the Y-axis

Circular Map Accuracy Standard: $CMAS = 2.1460 \, \sigma_c$

There is no planimetric accuracy aimed for the Municipal Boundaries.

Data accuracy is evaluated according to the methods used to control acquisition sources (GPS, imagery, photogrammetry, etc.) and the positioning errors inherent to data extraction. The method for evaluating data accuracy is determined by the data provider. In some cases, boundaries or portions of boundaries may not be surveyed; instead they may have been defined through descriptions of natural boundaries that have been previously mapped at lower accuracies. The positional accuracy as specified in the metadata only apply to the rectilinear boundaries that have been surveyed or derived from survey data and not to any boundary elements taken from topographic maps showing the boundaries of natural features.

6.3.2 Relative Internal Positional Accuracy

Unknown

6.4 Temporal Accuracy

6.4.1 Accuracy of a Time Measurement

Not applicable

6.4.2 Temporal Consistency

Not applicable

6.4.3 Temporal Validity

Not applicable

6.5   Thematic Accuracy

6.5.1 Thematic Classification Correctness

Unknown

6.5.2 Non Quantitative Attribute Accuracy

There is no systematic validation of non quantitative attributes. Attribute issues are resolved as they are identified (by users) and reported to the data custodian.

6.5.3 Quantitative Attribute Accuracy

Not applicable

6.6   Reference to Specification Scope

Global

7   DATA CAPTURE

7.1   Description

Several techniques have been used for data capture. For the rectilinear segments of the municipal boundaries, the boundaries may have been determined from field surveys with or without GPS. They may also have been determined from official documents, dissolving cadastral land parcels in a municipal feature such that only the boundary segments that are coincident with the municipal boundary remain. Afterwards, generalization of the remaining cadastral boundary segments is applied.

Segments of boundaries of natural features collected from topographic maps may also be used. In these cases photogrammetric processes have been employed based on either airborne or satellite imagery. In some cases, natural boundaries may also be determined by automated or manual estimation techniques, as would apply for example to a boundary following a height-of-land (watershed boundary).

Whatever technique is used to determine municipal boundaries for the GeoBase product, they have no legal value whatsoever.

7.2   Reference to the Specification Scope

Global

8   DATA MAINTENANCE

8.1   Description

The update process for Municipal Boundaries is currently being developed in collaboration with the product partners.

8.2   Reference to Specification Scope

Global

9   DATA PRODUCT DELIVERY

9.1   Delivery Format Information, GML

9.1.1 Format Name

GML – Geography Markup Language

9.1.2 Version

2.1.2

9.1.3 Specification

Geography Markup Language – GML – 2.1.2, OpenGIS® Implementation Specifications,
17 September 2002, OGC Document Number 02-069
(http://portal.opengeospatial.org/files/?artifact_id=11339).

The character encoding may be either ISO 8859-1 (ISO Latin 1) or UTF-8 (8-bit Universal Character Set / Unicode Transformation Format). UTF-8 is necessary to encode names expressed in some of the First Nation and Aboriginal languages used in Canada. The use of UTF-8 with GML is governed by the character encoding rules in XML (http://www.w3.org/TR/REC-xml/#charsets). The encoding will be in the header of the file.

9.1.4 Language

The Municipal Boundaries are available in the following languages, with the codes as defined by ISO 639-3:

eng – English

fra – French

9.1.5 Character Set

The character set is a subset of the set of characters specified in ISO 10646-1:2000, also known as Unicode 3.0.1. The encoding of the characters is as specified in 9.1.3 above.

9.2   Delivery Format Information, KML

9.2.1 Format Name

KML – Keyhole Markup Language

9.2.2 Version

2.1

9.2.3 Specification

Open Geospatial Consortium Inc., KML 2.1 Reference – An OGC Best Practice, Version 0.0.9, 2007-05-02, Reference number of this OGC® project document: OGC 07-039r1 (http://www.opengeospatial.org/standards/bp)

The character encoding may be either ISO 8859-1 (ISO Latin 1) or UTF-8 (8-bit Universal Character Set / Unicode Transformation Format). UTF-8 is necessary to encode names expressed in some of the First Nation and Aboriginal languages used in Canada. The use of UTF-8 with KML is governed by the character encoding rules in XML (http://www.w3.org/TR/REC-xml/#charsets). The encoding will be in the header of the file.

9.2.4 Language

The Municipal Boundaries are available in the following languages, with the codes as defined by ISO 639-3:

eng – English

fra – French

9.2.5 Character Set

The character set is a subset of the set of characters specified in ISO 10646-1:2000, also known as Unicode 3.0.1. The encoding of the characters is as specified in 9.2.3 above.

9.3   Delivery Format Information, Shapefile

9.3.1 Format Name

Shapefile – ESRI™

9.3.2 Version

01

9.3.3 Specification

ESRI Shapefile Technical Description, an ESRI White Paper, July 1998 (http://www.esri.com/library/whitepapers/pdfs/shapefile.pdf)

The character encoding may be either ISO 8859-1 (ISO Latin 1) or UTF-8 (8-bit Universal Character Set / Unicode Transformation Format). UTF-8 is necessary to encode names expressed in some of

the First Nation and Aboriginal languages used in Canada. The encoding is not included in the shapefiles, but is in the accompanying XML metadata files.

If UTF-8 encoding is used, certain restrictions may exist when the file is read. ESRI provides guidance on reading shapefiles with UTF-8 encoding in ArcSDE 9.2:

http://support.esri.com/index.cfm?fa=knowledgebase.techarticles.articleShow&d=31834

9.3.4 Language

The Municipal Boundaries are available in the following languages, with the codes as defined by ISO 639-3:

eng – English

fra – French

9.3.5 Character Set

The character set is a subset of the set of characters specified in ISO 10646-1:2000, also known as Unicode 3.0.1. The encoding of the characters is as specified in 9.3.3 above.

9.4   Delivery Medium Information

9.4.1 Units of Delivery

Canadian Province/Territory

9.4.2 Medium

Data are available for ftp or http download on the GeoBase portal (http://www.geobase.ca).

9.4.3 Other Delivery Information

The name of the files, entities and attributes are described in the document *Municipal Boundaries: Product Distribution Formats – Edition 1.0.*

Use of the GeoBase data is subject to the Open Government Licence – Canada.

9.5   Reference to Specification Scope

Global

10 METADATA

10.1 Reference to Specification Scope

Global