

# GeoSmart Niagara Metadata Standard

Version 2.2  
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Developed by  
GeoSmart Niagara & Niagara Region

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## **GeoSmart Niagara Metadata Standard**

**A recommended approach to documenting spatially referenced data.**

Metadata is "data about data;" or more specifically, it is descriptive information on data and its availability. This broadly defined category of information encompasses a wide range of data characteristics, from descriptive summaries to detailed information of attribute coding schemes. Metadata often includes data processing histories, file format specifications, as well as instructions for obtaining data. The purpose of metadata is to facilitate access and to guarantee appropriate application of data.

Proper documentation is often overlooked when developing new datasets to be used for geographic information system processing. When essential information about data is missing, its value is severely reduced. Unfortunately, most digital data users have had to interpret data for which there is no documentation as to format, source, or basic characteristics. In many instances, simply extracting information from the delivery media can be difficult. Well-defined metadata reduce or eliminate these difficulties. The best argument for investing in metadata development is that it protects the developer's data investment and helps new users work with the data more easily. For complex datasets, metadata must be consistently available so those users can correctly interpret analysis results.

New technologies in GIS and network communications provide many opportunities for the development and application of metadata resources. One can imagine being easily able to browse a GeoSmart Niagara on-line data catalog, or use an interactive map display through the Internet to determine data availability for a particular area, or to identify variations in data quality over a database. An investment in thorough data documentation can increase data longevity, provide a greater ability to share data, decrease user support requirements, and in some cases, avoid litigation related to data misuse or copyright violations. The establishment and adoption of a GeoSmart Metadata Standard will help facilitate the development of standard systems for data exchange.

The *GeoSmart Niagara Metadata Standard* provides a common approach for documenting all types of geographic data. It has been designed to be straightforward, intuitive and complete. This document describes those guidelines, which are based upon standards developed by the Province of Ontario, the Canadian and US Federal governments as well as the International Standards Organization. In developing the *GeoSmart Niagara Metadata Standard*, staff sought to create an implementation of existing standards that retains the basic meaning of their original content.



<i>GeoSmart Niagara</i>	<i>Field</i>		
<i>Element Name</i>	<i>Type</i>	<i>Domain</i>	<i>Description</i>

<b><i>1. Identification Information</i></b>			
<b>GeoSmart Niagara Clearinghouse ID</b>	number	Automatically generated	A unique identifying code for the metadata document.
<b>Title</b>	text	free text	The title of the map, dataset, or information holding - the name by which the cited resource is known. The title shall be unique within the owning organization(s).
<b>Originator</b>	text	free text	The name of the organization or individual that developed the dataset.
<b>Abstract</b>	text	free text	A brief narrative summary about the dataset, its content and any other pertinent information.
<b>Publication Date</b>	date	yyyy-mm-dd	The date that the dataset was published for internal and/or external use.
<b>Metadata Review Date</b>	date	yyyy-mm-dd	This represents the metadata retention schedule. It is the date by which the metadata file should be reviewed.
<b>Contact Person</b>	text	free text	A person within the development or managing group who can receive inquiries regarding the content or development of the dataset. The contact person is responsible for the dataset. This may not be the same as the distributor.
<b>Contact Organization</b>	text	free text	The name of the organization that can receive inquiries regarding the content or development of the dataset. The contact organization is responsible for the maintenance and holding of the dataset.
<b>Contact Person Position</b>	text	free text	The position held by the Contact Person within the contact organization.
<b>Contact Address Type</b>	text	“mailing address” “mailing and physical address” “physical address”	A description of the information provided by the address.
<b>Contact Address</b>	text	free text	The mailing address of the Contact Person.
<b>Contact Municipality</b>	text	“Niagara Region” “Fort Erie” “Grimsby” “Lincoln” “Niagara Falls” “Niagara-on-the-Lake” “St. Catharines” “Thorold” “Pelham” “Port Colborne” “Welland” “Wainfleet” “West Lincoln” free text	The Municipality of the Contact Person.
<b>Contact Province</b>	text	“ON” free text	The province of the Contact Person.
<b>Contact Postal Code</b>	text	free text	The postal code of the Contact Person.
<b>Contact Voice Phone</b>	number	111-222-3333 ext. 44444	The voice telephone number, including area code and extension, of the Contact Person.
<b>Contact Fax Phone</b>	number	111-222-3333	The facsimile telephone number, including area code, of the Contact Person.
<b>Contact E-mail Address</b>	text	free text	The Internet mail address of the Contact Person.
<b>Security</b>	text	“restricted” “sensitive”	The level of restrictions placed on the use or distribution of the dataset by its’ owners.

<i>GeoSmart Niagara Element Name</i>	<i>Field Type</i>	<i>Domain</i>	<i>Description</i>
<b>Classification</b>		“unclassified”	
<b>License Requirements</b>	Yes/No	“Yes” “No”	Specification of license requirement for distribution and use of the dataset.
<b>Progress</b>	text	“complete” “in work” “planned” “retired”	The status or completeness of the dataset.
<b>Maintenance and Update Frequency</b>	text	“annually” “as needed” “continually” “daily” “irregular” “monthly” “none planned” “quarterly” “unknown” “weekly”	The frequency with which changes and additions are made to the dataset after the initial dataset is completed.
<b>West Bounding Coordinate</b>	number	-180.0 <= West Bounding Coordinate < 180.0	Western-most coordinate of the limit of coverage expressed in longitude or in decimal degree units.
<b>East Bounding Coordinate</b>	number	-180.0 <= East Bounding Coordinate <= 180.0	Eastern-most coordinate of the limit of coverage expressed in longitude or in decimal degree units.
<b>North Bounding Coordinate</b>	number	-90.0 <= North Bounding Coordinate < 90.0 North Bounding Coordinate >= South Bounding Coordinate	Northern-most coordinate of the limit of coverage expressed in latitude or in decimal degree units.
<b>South Bounding Coordinate</b>	number	-90.0 <= South Bounding Coordinate < 90.0 South Bounding Coordinate <= North Bounding Coordinate	Southern-most coordinate of the limit of coverage expressed in latitude or in decimal degree units.
<b>Place Keywords</b>	text	“Niagara Region” “Fort Erie” “Grimsby” “Lincoln” “Niagara Falls” “Niagara-on-the-Lake” “St. Catharines” “Thorold” “Pelham” “Port Colborne” “Welland” “Wainfleet” “West Lincoln” free text	One or more words or phrases summarizing the geographic locations characterized by the dataset.
<b>Theme Keywords</b>	text	free text	One or more commonly used words or phrases used to describe the subject or thematic content of the dataset.
<b>2. Data Quality Information</b>			
<b>Attribute Completeness</b>	Yes/No Text	“Yes” “No” free text	Specification as to how complete the attribute information is for the dataset.
<b>Attribute</b>	Yes/No	“Yes” “No”	Specification as to the normalization of the tabular information. Normalization implies that

<i>GeoSmart Niagara Element Name</i>	<i>Field Type</i>	<i>Domain</i>	<i>Description</i>
<b>Normalization</b>			the tabular component of the dataset has been designed for minimal data redundancy.
<b>Attribute Standardization</b>	Yes/No	“Yes” “No”	Specification as to how well the attributes conform to internal standards i.e. date/time, telephone numbers etc.
<b>Data Dictionary Availability</b>	Yes/No	“Yes” “No”	Specification on the availability of a data dictionary for the dataset. A data dictionary would define the attribute information, increasing the user-friendliness of the dataset.
<b>Horizontal Positional Accuracy</b>	text	free text	An explanation of the accuracy of the horizontal positions (coordinates) of spatial objects and a description of the tests or line of reasoning used to arrive at the estimate.
<b>Vertical Positional Accuracy</b>	text	free text	An explanation of the accuracy of the vertical positions (coordinates) of spatial objects and a description of the tests or line of reasoning used to arrive at the estimate.
<b>Topology Check</b>	Yes/No	“Yes” “No”	Specification as to whether or not the dataset is topologically correct i.e. there are no undershoots, overshoots, overlaps etc.
<b>Suggested Usage Scale</b>	number	>0.0	Suggested scale value for which use of the dataset is intended.
<b>Process Description</b>	text	free text	An explanation about the steps used to process the data. For each processing step provide, where possible, the following: source data name, source data scale, description of processing steps performed, scanning or digitizing specifications, and processing tolerances.
<b>3. Spatial Organization &amp; Reference Information</b>			
<b>Ellipsoid</b>	text	“Clarke 1866” “GRS80” “WGS84”	Identification given to establish representation of the Earth’s shape.
<b>Horizontal Datum</b>	text	“NAD27” “NAD83” “NAD83(CSRs)” free text	The datum used in the horizontal coordinate system. “NAD83 (CSRS)” represents the 1996 adjustment based on the High Accuracy Reference Network (HARN).
<b>Horizontal Units</b>	text	“meters” “international feet” “survey feet” “decimal degrees”	The horizontal distance units. User may specify additional units not listed in domain. NOTE: “feet” is assumed to be imperial feet.
<b>Object Type</b>	text	“raster” “vector” “table”	The type of information presented in the dataset.
<i>If Raster:</i>			
<b>Cell Width</b>	number	> 0.0	The column width of a raster cell expressed in distance units of measure.
<b>Cell Height</b>	number	> 0.0	The row height of a raster cell expressed in distance units of measure.
<i>If Vector:</i>			
<b>Vector Type</b>	text	“point” “line” “polygon” “mixed”	Detailed specification of the vector object presented in the dataset.
<b>Horizontal Coordinate Scheme</b>	text	“geographic” “planar” “other”	The scheme used to define horizontal coordinates as depicted by the domain choices.
<i>If Geographic:</i>			
<b>Latitude Resolution</b>	number	> 0.0	The minimum difference between two adjacent latitude values expressed in Geographic Coordinate Units of measure.
<b>Longitude Resolution</b>	number	> 0.0	The minimum difference between two adjacent longitude values expressed in Geographic Coordinate Units of measure.

<i>GeoSmart Niagara Element Name</i>	<i>Field Type</i>	<i>Domain</i>	<i>Description</i>
<b>If Planar:</b>			
<b>Map Projection Name</b>	text	“Albers Conical Equal Area” “Lambert Azimuthal Equal Area” “Lambert Conformal Conic” “Mercator” “Orthographic” “Sinusoidal” “Space Oblique Mercator” “Stereographic” “Transverse Mercator” “Universal Transverse Mercator” “State Plane Coordinate System” “Other Coordinate Grid System”	Name of the map projection.
<b>Map Projection Parameters</b>	N/A	N/A	See 3b. Map Projection Specifications for the parameters collected for each map projection.
<b>If Other:</b>			
<b>Other Coordinate System’s Definition</b>	text	free text	Explain the reference frame or system from which linear or angular quantities are measured and assigned to the position that a point occupies.
<b>Altitude Datum</b>	text	“NGVD29” “NAVD88” “not applicable” free text	The level surface of reference from which altitudes are measured, if applicable. NGVD29 = National Geodetic Vertical Datum of 1929; NAVD88 = North American Vertical Datum of 1988.
<b>Altitude Units</b>	text	“meters” “feet” “not applicable”	Units in which altitudes are measured.
<b>Depth Datum</b>	text	“Local surface” “Chart datum; datum for sounding reduction” “Lowest astronomical tide” “Highest astronomical tide” “Mean low water” “Mean high water” “Mean sea level” “No correction” free text	The surface of reference from which depths are measured, if applicable.
<b>Depth Units</b>	text	“meters” “feet” “not applicable”	Units in which depths are measured.

### ***3b. Map Projection Specifications***

<i>GeoSmart Niagara Element Name</i>	<i>Field Type</i>	<i>Domain</i>	<i>Description</i>
<b>If Albers Conical Equal Area</b>			
<b>Standard Parallel</b>	number	-90.0 <= Standard Parallel <= 90.0	The line of constant latitude at which the surface of the Earth and the plane or developable surface intersect
<b>Longitude of Central Meridian</b>	number	-180.0 <= Longitude of Central Meridian < 180.0	The line of longitude at the center of a map projection generally used as the basis for constructing the projection.
<b>Latitude of Projection Origin</b>	number	-90.0 <= Latitude of Projection Origin <= 90.0	The latitude chosen as the origin of rectangular coordinates for a map projection.
<b>False Easting</b>	number	>0.0	The value added to all "x" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.
<b>False Northing</b>	number	>0.0	The value added to all "y" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.
<b>If Lambert Azimuthal Equal Area</b>			
<b>Longitude of Projection Centre</b>	number	-180.0 <= Longitude of Projection Center < 180.0	The longitude of the point of projection for azimuthal projections.
<b>Latitude of Projection Centre</b>	number	-90.0 <= Latitude of Projection Center <= 90.0	The latitude of the point of projection for azimuthal projections.
<b>False Easting</b>	number	>0.0	The value added to all "x" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.
<b>False Northing</b>	number	>0.0	The value added to all "y" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.
<b>If Lambert Conformal Conic</b>			
<b>Standard Parallel</b>	number	-90.0 <= Standard Parallel <= 90.0	The line of constant latitude at which the surface of the Earth and the plane or developable surface intersect
<b>Longitude of Central Meridian</b>	number	-180.0 <= Longitude of Central Meridian < 180.0	The line of longitude at the center of a map projection generally used as the basis for constructing the projection.
<b>Latitude of Projection Origin</b>	number	-90.0 <= Latitude of Projection Origin <= 90.0	The latitude chosen as the origin of rectangular coordinates for a map projection.
<b>False Easting</b>	number	>0.0	The value added to all "x" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.
<b>False Northing</b>	number	>0.0	The value added to all "y" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.

<i>GeoSmart Niagara Element Name</i>	<i>Field Type</i>	<i>Domain</i>	<i>Description</i>
			identified in Planar Coordinate Units.
<b><i>If Mercator</i></b>			
<b>Standard Parallel</b>	number	-90.0 <= Standard Parallel <= 90.0	The line of constant latitude at which the surface of the Earth and the plane or developable surface intersect <b>Note:</b> For the mercator projection, there is a choice between populating the Standard Parallel or the Scale Factor at Equator. We have standardized with specifying the Standard Parallel.
<b>Longitude of Central Meridian</b>	number	-180.0 <= Longitude of Central Meridian < 180.0	The line of longitude at the center of a map projection generally used as the basis for constructing the projection.
<b>False Easting</b>	number	>0.0	The value added to all "x" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.
<b>False Northing</b>	number	>0.0	The value added to all "y" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.
<b><i>If Orthographic</i></b>			
<b>Longitude of Projection Centre</b>	number	-180.0 <= Longitude of Projection Center < 180.0	The longitude of the point of projection for azimuthal projections.
<b>Latitude of Projection Centre</b>	number	-90.0 <= Latitude of Projection Center <= 90.0	The latitude of the point of projection for azimuthal projections.
<b>False Easting</b>	number	>0.0	The value added to all "x" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.
<b>False Northing</b>	number	>0.0	The value added to all "y" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.
<b><i>If Sinusoidal</i></b>			
<b>Longitude of Central Meridian</b>	number	-180.0 <= Longitude of Central Meridian < 180.0	The line of longitude at the center of a map projection generally used as the basis for constructing the projection.
<b>False Easting</b>	number	>0.0	The value added to all "x" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.
<b>False Northing</b>	number	>0.0	The value added to all "y" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.
<b><i>If Space Oblique Mercator</i></b>			
<b>Landsat Number</b>	number	>0.0	The number of the Landsat satellite. ( <i>Note: This data element exists solely to provide a parameter needed to define the space oblique mercator projection. It is not used to identify data originating from a remote sensing vehicle.</i> )

<i>GeoSmart Niagara Element Name</i>	<i>Field Type</i>	<i>Domain</i>	<i>Description</i>
<b>Path Number</b>	number	0 < Path Number < 251 for Landsats 1,,2 or 3 0 < Path Number < 233 for Landsats 4 or 5	The number of the orbit of the Landsat satellite. <i>(Note: This data element exists solely to provide a parameter needed to define the space oblique mercator projection. It is not used to identify data originating from a remote sensing vehicle.)</i>
<b>False Easting</b>	number	>0.0	The value added to all “x” values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.
<b>False Northing</b>	number	>0.0	The value added to all “y” values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.
<i>If Stereographic</i>			
<b>Longitude of Projection Centre</b>	number	-180.0 < = Longitude of Projection Center < 180.0	The longitude of the point of projection for azimuthal projections.
<b>Latitude of Projection Centre</b>	number	-90.0 < = Latitude of Projection Center < = 90.0	The latitude of the point of projection for azimuthal projections.
<b>False Easting</b>	number	>0.0	The value added to all “x” values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.
<b>False Northing</b>	number	>0.0	The value added to all “y” values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.
<i>If Transverse Mercator</i>			
<b>Scale Factor at Central Meridian</b>	number	>0.0	A multiplier for reducing a distance obtained from a map by computation or scaling to the actual distance along the central meridian.
<b>Longitude of Central Meridian</b>	number	-180.0 < = Longitude of Central Meridian < 180.0	The line of longitude at the center of a map projection generally used as the basis for constructing the projection.
<b>Latitude of Projection Origin</b>	number	-90.0 < = Latitude of Projection Origin < = 90.0	The latitude chosen as the origin of rectangular coordinates for a map projection.
<b>False Easting</b>	number	>0.0	The value added to all “x” values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.
<b>False Northing</b>	number	>0.0	The value added to all “y” values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.
<i>If Universal Transverse Mercator</i>			
<b>UTM Zone</b>	text	“15” “16” “17” “18”	Identifier for the UTM zone number(s) used.
<b>Scale Factor at Central Meridian</b>	number	>0.0	A multiplier for reducing a distance obtained from a map by computation or scaling to the actual distance along the central meridian.

<i>GeoSmart Niagara Element Name</i>	<i>Field Type</i>	<i>Domain</i>	<i>Description</i>
<b>Longitude of Central Meridian</b>	number	-180.0 <= Longitude of Central Meridian < 180.0	The line of longitude at the center of a map projection generally used as the basis for constructing the projection.
<b>Latitude of Projection Origin</b>	number	-90.0 <= Latitude of Projection Origin <= 90.0	The latitude chosen as the origin of rectangular coordinates for a map projection.
<b>False Easting</b>	number	>0.0	The value added to all "x" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.
<b>False Northing</b>	number	>0.0	The value added to all "y" values in the rectangular coordinates for a map projection. This value frequently is assigned to eliminate negative numbers. Expressed in the unit of measure identified in Planar Coordinate Units.
<i>If State Plane Coordinate System</i>			
<b>SPCS Zone</b>	number	0.0 <= SPCS Zone < 120.0	Identifier for the SPCX zone number(s) used.
<i>If Other Coordinate Grid System</i>			
<b>Describe Other Coordinate System</b>	text	free text	A description of a projection, not defined elsewhere in the standard that was used for the data set. The information provided shall include the name of the projection, names of parameters and values used for the data set, and the citation of the specification for the algorithms that describe the mathematical relationship between Earth and plane or developable surface for the projection
<b>4. Distribution</b>			
<b>Direct Download Availability</b>	Yes/No	"Yes" "No" free text	Specification on the availability of a direct download for non-spatial data such as reports, brochures etc. If direct download is available, a hyperlink to the non-spatial data source would be available.
<b>Preview Availability</b>	Yes/No	"Yes" "No" free text	Specification on the availability of a thumbnail preview image if data is available for direct download.
<b>Related Documents</b>	Yes/No	"Yes" "No" free text	Specification on the availability of related documents. For instance if a report was written and is available for download, and a hardcopy map was created in addition to the report, the related document could be used to note the presence of the hardcopy map. A maximum of 5 related documents can be specified.