REPORT ON THE CATALOGUING WORKSHOP ON DIGITAL CARTOGRAPHIC MATERIAL Edmonton, Alberta, May 2000

Presented by Grace Welch, Mary Larsgaard and Velma Parker

Introduction

This paper summarizes a half-day pre-conference workshop which was held on May 31, 2000 at the Joint Conference of the Association of Canadian Map Libraries and Archives, Canadian Cartographic Association and Western Association of Map Libraries, Edmonton, Alberta. The goal of the workshop was to bring the participants up-to-date with new or revised rules for cataloguing digital cartographic material, or generically "electronic resources", to discuss the status of the rules and to explain their application using examples of electronic atlases and geospatial datasets which are typically found in most map collections.

The workshop, organized by the ACMLA Bibliographic Control Committee, was given by Velma Parker, Grace Welch and Mary Larsgaard. In attendance were 30 map librarians and cataloguers representing libraries from across North America.

Some of the topics covered included basic definitions, hardware/software requirements, status of the rules and a discussion of what types of electronic or digital materials should be considered cartographic. Particular attention was paid to sources of information for cartographic material in electronic form because of the multiplicity of possible sources and the lack of cataloguers' familiarity with this medium.

Mary Larsgaard gave a report on the current status of the proposed rules. Cataloguing rules for digital cartographic materials are still quite new and have not in all cases reached the stage of final approval by the Joint Steering Committee (JSC) for the AACR2. There were two sets of rules submissions, one in February of 2000 and the second in July of 2000, the latter of which JSC did not receive in time for comment prior to the September 2000 meeting in London. The JSC at that September 2000 meeting approved all the February submissions other than those in area 3, where there was considerable comment (not all in agreement) from JSC members. Mary Larsgaard presented a rule-proposal package to the Committee on Cataloging: Description and Access (CC:DA) at the ALA Midwinter meeting (January 2001, Washington, D.C.) This package was composed of the July 2000 proposals, plus responses to JSC's comments on Area 3 proposals. Previous to the presentation of this package, members of the Anglo-American Committee on Cataloguing Cartographic Materials (AACCCM) provided Mary, via email, with their thoughts on what the responses should contain. The rule package was passed by CC:DA and will be presented to the JSC at its April 2-4, 2001, meeting at the Library of Congress.

The new rules presented during the workshop, represent the work of the Anglo-American Cataloguing Committee on Cartographic Materials (AACCCM) which is currently revising *Cartographic Materials: A Manual of Interpretation for AACR2*. The revision will include early cartographic materials and new rules for electronic resources. Recently published articles in two double issues of *Cataloguing and Classification Quarterly*, v. 27 nos. 1/2 and 3/4, 1999 document many of the proposed revisions. The two double issues were re-issued as a separately published monograph, *Maps and Related Cartographic Materials: Cataloging, Classification and Bibliographic Control* (see bibliography at end of article). Even though these publications are quite recent, there have been some changes to certain rules or in their application, and these changes were outlined during the presentation.

Chief Source of Information

There has been significant rethinking of the rule 0.24 which contains the underlying principle

governing description. If the proposed revision is accepted, then both the physical carrier/form (e.g. electronic presentation, microform, manuscript), and the media/content (i.e., cartographic material, music, art works) will both be incorporated into the description and the former rule which forces the cataloguer to emphasize the physical form will be discarded.

Under the current rules, for cartographic material in digital form, we must look first at AACR2 chapter 9 (computer files) and then chapter 3 (cartographic material). The chief source of information for electronic resources (which is the new name for chapter 9) is in the process of revision. While the emphasis is still on evidence internal to the electronic item and secondly on external evidence, the title screen is no longer the primary chief source of information. Now it is only one of a list of internal sources: title screen(s), main menus, program statements, initial display(s) of information, home page(s), the header(s) to the file(s) including the "Subject:" lines, encoded metadata (e.g., TEI (Text Encoding Initiative) headers, HTML/XML meta tags) and other identifying information internal to the file(s). Furthermore, it will be expressly stated in the rule that if the resource is unreadable without additional processing, the information is to be taken from the external sources such as the physical carrier, printed or online documentation, information printed on the container issued by the publisher. This will make cataloguing these materials easier.

The most important external source for cataloguers describing a digital dataset is metadata or "data about data". Most geospatial data is now accompanied by metadata descriptions created according to the *Content Standard for Digital Geospatial Metadata* defined by the Federal Geographic Data Committee (FGDC). Although quite detailed and potentially confusing when first approached, the FGDC metadata contains technical details required for a description of a geospatial dataset, and participants were encouraged to download a copy from the FGDC website. A crosswalk showing the relationship between the elements in the FGDC standard and MARC helps the cataloguer understand what elements in the metadata should be placed into a MARC record; all except two elements in FGDC have MARC equivalents. The FGDC metadata description for digital geospatial data will soon be superseded by a new international ISO standard.

A list of MARC tags for cartographic materials was distributed to participants. The list was published in No. 108, Spring/Summer 2000, of this *Bulletin* and is found on pp.55-56 under the title: "Core level cataloguing for non-serial cartographic materials".

General Material Designation (GMD)

In working through the coming revision to *Cartographic Materials*, the Anglo-American Cataloguing Committee for Cartographic Material approved the resolution to request a change to list 2 of rule 1C1. The requested deletion of "map" and "globe" from list 2 and their replacement by the single GMD "cartographic material" was approved by JSC at their meeting in September 2000. However, the desire to be able to qualify the GMD with the physical format in a manner similar to what is done for braille and large print material (e.g., [cartographic material (electronic resource)] was not submitted formally to JSC. As the concept of the GMD is under review it is unlikely that such a proposal would be considered at this time. Archivists using *Rules for Archival Description* (RAD), may qualify the GMD in this manner with the terms *electronic*, *large print*, *microform*, or *tactile* (e.g., [cartographic material (electronic)]).

For cartographic materials in digital form use the GMD *cartographic material*. There may be instances where the data is not cartographic in nature and so would require the GMD *electronic resource*. To help you decide which is the most correct, the best source is the Library of Congress' online *Guidelines for Distinguishing Cartographic Materials on Computer File Carriers from Other Materials on Computer File Carriers* and the corollary document for coding MARC leader 6 (see bibliography).

Edition for Electronic Resources

There have been a number of changes in what is and is not considered a significant change which

would require a new catalogue entry. An edition occurs when there are significant differences in the intellectual or artistic content of the resource, including additions and deletions; a difference in the programming language; changes to upgrade or improve the efficiency of the resource; modifications in the programming language or operating system that allow the resource to be compatible with other machines and operating systems.

Differences that do not constitute a new edition include: a difference in the type of physical carrier (e.g., from disk to cassette) and/or the size of the physical carrier (e.g., 14 cm to 9 cm disk); differences in printer-related file formats (e.g., ASCII vs. PostScript); differences in system-related formats (e.g., IBM vs. Macintosh); differences relating to the character code or to blocking or recording densities; differences in the output medium or display format (e.g., a remote access resource reproduced on floppy disk and optical disc). Normally, differences that do not constitute a new edition do not warrant the creation of a separate bibliographic record, although a bibliographic agency may choose to do so.

In the case of remote access electronic resources which are often frequently updated, the edition statement is omitted in area 2, and an appropriate note is given in area 7. If an edition statement appears only in the accompanying documentation, it is not wise to assume that the statement also applies to the resource unless information in the documentation indicates that it does so apply.

New Rules for Electronic Resources and the Mathematical Data Area

In describing electronic cartographic resources, the concept of scale is quite different. For the most part, the scale of the map displayed on a computer monitor is determined by the user as they zoom in or zoom out or set the display to a certain scale. AACCCM has recommended to JSC that a new phrase "Scale not applicable" be allowed for electronic resources. The option of allowing "input scale" in field 255 for digital cartographic materials digitized from a printed source is still preferred in Canada and Australia. As one can see, the recording of scale for electronic resources is still in flux and will not likely be resolved until Spring 2001. Until the JSC makes its final decision, cataloguers will have to choose between the four currently available options: "Scale not given", "Scale differs", "Scale varies" or "Scale indeterminable".

(*Workshop update: Since the workshop, there has been considerable discussion about scale and in the final submission to CC:DA, the rule on scale that has been submitted reads as below. This new rule is more flexible than the earlier recommendation presented at the workshop and should eliminate the need to use input scale.)*

For electronic resources, give the scale if the resource has a scale statement or if the scale is already recorded as part of the title proper or other title information. Otherwise, give Scale not given.

Scale 1:3,000,000
(Scale appears in title: ArcWorld 1:3M)

To permit the recording of technical information about geospatial data, two new rules (and three MARC fields) have been proposed for AACR2:

3F Digital Graphic Representation Area
(MARC field 352)
3G Geospatial Reference Data Area
(MARC fields 342 and 343)

In one of the fields, Field 342 $a, the cataloguer can enter the projection name and related details of the dataset if the data has been saved as a projected file. For printed information, projection information is recorded in Field 255 $b. Where then does the cataloguer enter the name of the projection? Is projection name repeated in both fields? AACCCM originally recommended that Field 255 be used to record projection name for printed maps and Field 342 for electronic resources. However, this is being reconsidered as it now seems likely that the technical information about geospatial data will be relegated to the notes area rather than being closely aligned with the mathematical data area. As well, with the ability to link to metadata through the 856 field, the necessity of recording this detailed information in the bibliographic record is not

essential. Therefore, the cataloguer can record the projection name in 255 and link to the metadata, which contains projection related details, through the 856 field. This also ensures a certain consistency with printed cartographic material.

For digital cartographic materials, degrees are expressed as decimal degrees rather than as degrees, minutes and seconds which are normally seen on maps or in bibliographic description. The cataloguer can convert to DD/MM/SS, but it is being recommended that cataloguers be allowed to record decimal degrees in Field 255 as per the example below:

(W 95.15º – W 74.35º/N 56.85º – N 41.73º)

In describing digital cartographic resources, the cataloguer has the choice of how much information they wish to present in the Geospatial Reference Data area. Most of this information is of interest to only very sophisticated users. From a practical perspective, in completing fields 342 and 343, it makes sense to record only basic information and then provide the link through the 856 field to the full metadata description. Basic information is defined as:

Field 342 (repeatable field)
Horizontal coordinate system: geographic or the name of the projection or grid
Datum

For the Digital Graphic Representation Area (Field 352) only the direct reference method (e.g., raster, vector or point) need be recorded.

File characteristics, normally an essential part of the description for electronic resources is also under review. Aside from identifying that the item is computer data, this area usually contains information about the file size (e.g., no. of records, file size). We are suggesting that the number of bytes be moved to physical details.

Examples of how the new fields would appear in a bibliographic record are presented in Appendix A. For a more detailed discussion about these new fields, refer to the articles by Larsgaard and Welch and Williams in the bibliography.

Physical Description for Cartographic Materials in Digital Form

Specific Material Designation (SMD)

Chapter 9 will have additional options for the specific material designation (e.g., CD-ROM, Photo CD, DVD). In addition, it will no longer be optional to leave out the term "computer". It is not yet certain whether the term "computer" will be replaced in the SMD by "electronic", so for this paper we will continue to use "computer". There is still no provision of a physical description for remote-access material even though there are some who would like to enter the number of bytes. There has been a minority position paper suggesting this.

The problem for cartographic material in digital form is the choice of specific material designation (SMD). One would like to be able to state that the material consists of maps, an atlas, remote-sensing images, or some other cartographic item, but the current rules seem to imply that chapter 9 should be used. Even though rule 0.24 has been revised, JSC has decided not to do a consistent revision of the rules to bring every chapter into line with it, which leaves us with rather disjointed descriptions. Concerning this issue, the map library community would like to be able to describe both the content and the carrier such as *x maps on x computer tape cassettes* or *1 atlas on 1 computer optical disc*. Given the revision to rule 0.24, this would seem to be a reasonable choice and will be incorporated into the revisions of *Cartographic Materials*. In this scenario, the GMD, the SMD, and Leader 6 would be in accord. The number of bytes could be put in parentheses which would be similar to what is done for the paging of an atlas (e.g., 1 atlas on 1 computer optical disc (650 GB).

There have been no changes to what is allowed in other physical details, but metric dimensions are now optional for discs, tapes and cassettes.

Notes

There have been a few changes to the note area and a few reminders of existing rules were also presented.

• 9.7B1b. System requirements. The following is being added to the existing list:

> the type of any required or recommended hardware modifications.

• 9.7B1c. When making a note for the mode of access, do not put the URL here, rather put it in Field 856 which is the linking field for this information.

• 9.7B3. As for all electronic data, the note giving the source of the title proper is mandatory.

• [9.7B23?]. There is a new note for items which are frequently updated:

> Item described. If the electronic resource is frequently updated, identify the date on which the resource was described. This note may be combined with other notes, particularly with the note on the source of the title.

Title from Web page (viewed on May 29, 1999)

Description based on lists dated: Oct. 1997; title from title screen (viewed on Sept. 10, 1998)

Description based on: 2nd Interned ed.: title from title screen (viewed on Sept. 16, 1998)

Classification

Classification of digital geospatial data applies both to items on media such as CD-ROMs and perhaps surprisingly to data on hard drive. Let's deal with the former first.

Map libraries that use the Library of Congress (LC) classification schedule for their collections have the option of using the subject code .A25, which is intended for digital geospatial data. As with other subject codes in the "A" section, this code is to be used only when no other code in the other lettered sections applies. Thus, a digital version of a geologic map of California is properly classed at G4361.C5, not at G4361.A25. Libraries that have separate formats filed in different places may choose not to use .A25 at all, but rather to use the actual format as the last line of the call number. To use the digital version of a geologic map of California as an example, one would then use the call number G4361.C5 1999 .C3 CD. This may also be a method of approach for items that are digital versions of paper maps.

Moving on to digital geospatial data stored on a hard drive, we find that it is important to use for digital data the classification scheme one uses for hardcopy data. So, for example, the University of Connecticut map library uses LC classification numbers for the names of its digital map files. Similarly, the Map and Imagery Lab (MIL) of the Davidson Library, University of California at Santa Barbara, creates directories for its files of scanned air photos that exactly follow how the hard-copy air photos are kept. These photos are filed in alphabetical order by flight code/number, and within that by frame number. Thus we have a main directory for digital_data, with a subdirectory for air_photos, and then subdirectories underneath that for each flight, e.g., C9800; PAI 177; TG2400; etc. And a file for the scan of a frame has the name of both the flight and the frame; thus a scan of frame A4 of C9800 will have the file name C9800_A4.

Subject Headings

Subject headings for digital geospatial data are still not where we would like them to be. It would be extremely helpful for a subject heading for digital geospatial data to include the following:

a. genre;
b. form; and
c. whether it is raster or vector.

Thus a subject heading for the aforementioned digital geologic map of California would preferably be something like:

a. for a raster scan of a hardcopy map on a CD:
Geology--California--Maps--Digital, Raster--CD-ROM.
b. for a vector version:
Geology--California--Maps--Digital, Vector.

It would also be very helpful to be able to use "Geographic information system" or "Geographic information database" as a free-floating subdivision, as one uses, e.g., "Maps." Sadly, none of these is acceptable practice under LCSH.

LC's Geography and Map Division is using, in MARC21 field 653 "Maps - Digital - Raster" and "Maps - Digital - Vector", as a result of the work of an ad hoc committee on form/genre headings for cartographic materials (Elizabeth Mangan, chair; Paige Andrew, Mary Larsgaard, Barbara Story), but this hierarchical arrangement has not been approved by LC's CPSO. It is good practice to use the free-floating subdivision, |v Databases, for true databases, which GIS databases are. But "CD-ROMs" is acceptable only for works ABOUT CD-ROMs.

Examples

In the last part of the workshop, several examples were reviewed to show the participants how the rules would be applied to several geospatial datasets. Participants were given copies of the documentation found in, or accompanying, the data and were then walked through the decision making process required to create the cataloguing descriptions (see Appendix A).

Wrap-Up

Despite the uncertainty of some of the rules for cataloguing geospatial data, participants were encouraged to begin the process of describing their digital collections. As well, they were encouraged to provide feedback to their representatives on national cataloguing committees on the various issues related to describing geospatial data which were presented during the workshop.

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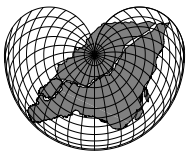

CARTO 2001

APPENDIX A

CATALOGUE ENTRY FOR NATIONAL TOPOGRAPHIC DATA BASE

ENTRY FOR DATA BASE AS A WHOLE

Leader	006 CF	007 CM	007 CF	008 CM
5 = n	00 = m	00 = a	00 = c	06 = s
6 = e	05 = b	01 = j	01 = r	07-14
7 = m	09 = c	03 = c	03 = c	=19901999
	11 = f	04 = z	04 = n	15-17= onc
17 = b		05 = n		25 = z
18 = a		06 = z		28 = f
		07 = n		29 = s
				35-37= eng
				38 = b
				39 = d

034 0b	aab50000$dW1410000$eW0520000$fN0700000$gN0410000
040	$aCaOOU$beng$cOOU
043	$an-cn-on
045 2b	$a$bd1990$bd2000
05X/090	$aG3400 s50 .C5
110 1	$aGeomatics Canada.$bCentre for Topographic Information.
245 00 *or*	$aNational topographic data base $h[cartographic material] $h[cartographic material (electronic resource)] :$b[1:50 000] / $cCentre for Topographic Information.
250	$aEd. 3.
255	$aScale 1:50 000$c(W 141°--W 52°/N 70°--N 41°).
256	$aComputer data.
352	$aVector.
342 02	$aGeographic system: coordinates ;$bunit of measure: decimal degrees.
342 05	$aHorizontal datum: North American Datum of 1983.

342 16 $aVertical datum: Canadian vertical geodetic datum.

260 $aSherbrooke :$bThe Centre,$c1990- .

300 $a1 geospatial database :$bcol.

538 $aGIS software capable of processing Shape files.

500 $aTitle from Simplified user's guide.

500 $aDatabase description based on Simplified user's guide and Readme file.

500 $aNTDB has 112 entities such as roads, contours, water bodies arranged in 13 themes.

514 $aNTDB aims at attaining three classes of accuracy: urban areas with a planimetric accuracy of 10 metres, rural areas with a planimetric accuracy of 25 metre and isolated , 125 metres.
or $aConsult user guide for accuracy report.

520 ƀ $aThe NTDB comprises digital vector data sets that cover the entire Canadian landmass.

530 $aIssued also in CCOGIF, DXF, MID/MIF, ASCII Ungenerate.

540 $aUse governed by "End-user agreement for digital data". Department of Natural Resources, Geomatics Canada.

556 $aEach NTDB file is accompanied by metadata file with the extension ".met". Data accompanied by Simplified user's manual, Metadata Format, Conversion of NTDB edition data into shape Format, and End-user agreement.

535 $aMap Library holds sheets 31G/5 and 31G/6 which are installed on Station B, Map Library. Received via multiple CD-ROMs.

651 00 $aCanada$vMaps, Topographic$vDatabases
650 00 $aLand use$zCanada$vMaps$vDatabases

CATALOGUE ENTRY FOR ONTARIO LAND COVER

ENTRY FOR DATA BASE

Leader	006 CF	007 CM	007 CF	008 CM
5 = n	00 = m	00 = a	00 = c	06 = s
6 = e	05 = ♭	01 = j	01 = r	07-10
7 = m	09 = c	03 = c	03 = c	=1999
17 = ♭	11 = s	04 = z	04 = n	15-17= onc
18 = a		05 = n		25 = z
		06 = z		28 = s
		07 = n		29 = s
				35-37= eng
				38 = ♭
				39 = d

034 0♭	aab250000$dW0960000$eW0740000$fN0570000$gN0410000
040	$aCaOOU$beng$cOOU
043	$an-cn-on
045 2♭	$a$bd1986$bd1997
05X/090	$aG3461.G4 1999 .O5
110 1	$aOntario.$bMinistry of Natural Resources.
245 00	$aNational scale Ontario land cover $h[cartographic material]
or	$h[cartographic material (electronic resource)].
255	$aScale 1:250 000$c(W 96°–W 74°/N 57°–N 41°).
256	$aComputer data.
352	$aVector.
342 02	$aGeographic system: coordinates ;$clatitude resolution: 0.0002 ;$dlongitude resolution: 0.0002 ;$bunit of measure: decimal degrees.
342 05	$aHorizontal datum: NAD27 :$qellipsoid: Clarke 1866.
260	$a[Toronto :$bOntario Ministry of Natural Resources] ;$aOttawa :$bCanada Centre for Remote Sensing [distributor],$cc1999.
300	$a1 geospatial data base :$bcol.

538 $aGIS software capable of processing ARCInfo Export Format (E00) files; distributed as a zip file.

500 $aTitle from Readme file.
246 1♭ $iTitle in metadata file:$aOntario land cover : national scale (1:250,000) version.

500 $a"... compiled by the Ontario Ministry of Natural Resources. ... research and development by the Ontario Provincial Remote Sensing Office, the Ontario Forest Research Institute".–Readme file.

514 $eThe 15-class national land cover is a generalization of the 28-class provincial scale land cover.$gHorizontal position accuracy: based on satellite imagery of 100 metre resolution.

552 $aLand cover polygon$cland cover code$dnumeric code ranging from 1 to 15 for classified, and 99 for unclassified areas.

556 $aUser's manual available from GeoGratis.

530 $aIssued also in UTM proj.

520 ♭ $aDerived from LANDSAT satellite remote-sensing image data recorded between 1986 and 1997, but predominantly in the early 1990s with updates for forest cutovers and burns from 1996 data. The 15 land cover classes include vegetation types (wetlands, forest, tundra), agriculture, water, settlements, mining, and bedrock outcrops. Classes feature a minimum area of 50 hectares, and a pixel size of 100 metres. Data distributed on basis of 1:25,000-scale NTS map sheets.

540 $aUse governed by "GeoGratis user agreement for digital data", Natural Resources Canada.

856 4 $cPKZIP or WINZIP$uhttp://geogratis.cgdi.gc.ca/download/ont_landcover/

650 00 $aLand use$zOntario$vMaps$vDatabases
650 00 $aPhytogeography$zOntario$vMaps$vDatabases
650 00 $aForests and forestry$zOntario$vMaps$vDatabases

710 2♭ $aOntario Forest Research Institute

CATALOGUE ENTRY FOR ONTARIO LAND COVER

ENTRY FOR EASTERN ONTARIO PORTION OF DATA BASE

Leader	006 CF	007 CM	007 CF	008 CM
5 = n	00 = m	00 = a	00 = c	06 = s
6 = e	05 = ♭	01 = j	01 = z	07-10
7 = m	09 = c	03 = c	03 = c	=1999
17 = ♭	11 = s	04 = z	04 = n	15-17= onc
18 = a		05 = n		25 = j
		06 = z		28 = s
		07 = n		29 = s
				35-37= eng
				38 = ♭
				39 = d

034 0♭ aab250000$dW0760000$eW0740000$fN0460000$gN0450000
040 $aCaOOU$beng$cOOU
043 $an-cn-on
045 2♭ $a$bd1986$bd1997

05X/090 $aG3462. A12 G4 1999 .O5

110 1 $aOntario.$bMinistry of Natural Resources.

245 00 $aNational scale Ontario land cover
$h[cartographic material] ***or*** $h[cartographic material (electronic resource)]
:$b[eastern Ontario].

255 $aScale 1:250 000$c(W 76°–W 74°/N 46°–N 45°).

256 $aComputer data.

352 $aVector.

342 02 $aGeographic system: coordinates ;$clatitude resolution: 0.0002 ;$dlongitude resolution: 0.0002 ;$bunit of measure: decimal degrees.

342 05 $aHorizontal datum: NAD27 :$qellipsoid: Clarke 1866.

260 $a[Toronto :$bOntario Ministry of Natural Resources] ;$aOttawa :$bCanada Centre for Remote Sensing [distributor],$cc1999.

300 $a2 maps (ca. 3.33 MB) :$bcol.

538 $aGIS software capable of processing ARCInfo Export Format (E00) files; distributed as a zip file.

500 $aTitle from Readme file.
246 1ƀ $iTitle in metadata file:$aOntario land cover : national scale (1:250,000) version.

500 $a"... compiled by the Ontario Ministry of Natural Resources. ... research and development by the Ontario Provincial Remote Sensing Office, the Ontario Forest Research Institute".–Readme file.

514 $eThe 15-class national land cover is a generalization of the 28-class provincial scale land cover.$gHorizontal position accuracy: based on satellite imagery of 100 metre resolution.

552 $aLand cover polygon$cland cover code$dnumeric code ranging from 1 to 15 for classified, and 99 for unclassified areas.

556 $aUser's manual available from GeoGratis.

530 $aIssued also in UTM proj.

520 ƀ $aDerived from LANDSAT satellite remote-sensing image data recorded between 1986 and 1997, but predominantly in the early 1990s with updates for forest cutovers and burns from 1996 data. The 15 land cover classes include vegetation types (wetlands, forest, tundra), agriculture, water, settlements, mining, and bedrock outcrops. Classes feature a minimum area of 50 hectares, and a pixel size of 100 metres. Data distributed on basis of 1:25,000-scale NTS map sheets.

540 $aUse governed by "GeoGratis user agreement for digital data", Natural Resources Canada.

535 $aLibrary holds data for 31/B and 31/G.

856 4 $cPKZIP or WINZIP$uhttp://geogratis.cgdi.gc.ca/download/ont_landcover/

650 00 $aLand use$zOntario, Eastern$vMaps$vDatabases
650 00 $aPhytogeography$zOntario, Eastern$vMaps$vDatabases
650 00 $aForests and forestry$zOntario, Eastern$vMaps$vDatabases

710 2ƀ $aOntario Forest Research Institute

APPENDIX B

7B NOTES FOR CARTOGRAPHIC MATERIAL OUTLINE FOR ELECTRONIC RESOURCES

AACR2R NOTES	MARC TAG(S)
3.7B1/9.7B1a Nature and scope	500 General note 520 11 = 2 Scope and content note 522 Geographic coverage note
9.7B1b System requirements	538 System details note
9.7B81c Mode of access	500 General note
7B1e Data quality note	514 Data quality note
7B2 Language and script	546 Language note
7B3 Source of title proper	500 General note
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