

## Land Information Ontario

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# **Detailed Standard NRVIS Interchange Format SNIF Subscription Specifications for Structured Products**

SNIF Subscription 2.0 version 10  
Issued: December 2006

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## Additional Information

For more information about this document, please contact Land Information Ontario at (705) 755-1878 or [lio@ontario.ca](mailto:lio@ontario.ca).

## Document Summary

These specifications explain the structure and content of a SNIF package. Subscribers of specific data classes will receive data classes from the OLIW in the form of a SNIF package. A companion document, entitled Detailed Standard NRVIS Interchange Format SNIF Publication Specifications for Structured Products, describes SNIF packages from the perspective of a publisher of information to the OLIW data. The primary users of the information in this document will be registered subscribers of data stored in the Ontario Land information Warehouse.

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Document Control..... **Error! Bookmark not defined.**

Contributors ..... **Error! Bookmark not defined.**

Approvals..... **Error! Bookmark not defined.**

## Document Conventions

- Items in ***bold italics*** contained in angle brackets (“<” and “>”) signify mandatory parameters and options that are dependent on variable information provided automatically by a site or user.
- Items in *normal italics* are boilerplate and appear “as is” where identified.
- Items separated by a vertical bar (“|”) identify a limited list of possible parameters or options.
- Items terminating in an ellipsis (“...”) identify a comma-delimited list with an undetermined number of members.
- All file names are in lower case.
- All OLIW table, column and class names are in upper case.
- Item values in **bold** represent the only applicable value for subscription.

## SNIF Package Conventions

- All dates will be in the following standard format: yyyy-mm-dd.hh:mm:ss  
e.g. 1999-09-30-08:13:29.
- Tabular data files are given the same name as the corresponding Oracle database table, appended with a “.tbl” extension.
- All records in files that contain tabular data are terminated with a line feed (ASCII character 0x0a, decimal 10).
- Double quotation marks (“”) are not permitted within attribute fields in an attribute data file (“1”, “This is “ not permitted”, “and this is “not” permitted”). Double quotes are reserved for delimiting attributes in an attribute data file.
- For transmission, the directory structure will be rolled up into a WIN zip file archive using relative directories and having the SNIF package name as the top-level directory.
- Each SNIF packaged being distributed from the OLIW will contain only one data class. The exception to this will be classes with consolidations and classes that have co-dependencies.
- All geometry is presented in latitude / longitude decimal degrees.
- The directory structure is organized as a hierarchy of directories and files.
- All file names are in lower case.

## Major Changes From SNIF Version 8

SNIF 2.0 subscription specification version 10 has very few format changes incorporated since version 8 (version 9 was pre-empted for version 10). The most significant change to the format is that additional attributes *might* be attached on the .dbf portion of the shapefile. Eventually all tables that participate in a 1:1 relationship with the GEOG\_UNIT table will have some of their attributes appended to the dbf portion of the shapefile. Those data classes that have the greatest demand will be implemented first. This will have an advantage for users who order using the “graphics only” option in the LIDS system as the file will be readily useable for GIS platforms that use a shapefile.

The common table restructuring project will have significant changes to the content of the SNIF package for subscribers who use this information. Some of the common tables are removed, others have different attribute information and some new tables are added. This will obviously change how subscribers process and store common table information. Therefore, examples used in this document have been updated to reflect the new tables and attributes found in the common table structure.

Within this version there are some minor changes to the packing slip item keywords.

# 1 BACKGROUND INFORMATION

## 1.1. Background

The Standard NRVIS Interchange Format (SNIF) was initially developed as part of MNR's geo-data standardization effort. It is the standard for importing and exporting data from NRVIS between MNR districts and/or their business partners. The SNIF specification has been expanded to incorporate the increased user base and functionality of the Ontario Land Information Warehouse (OLIW). For the OLIW, SNIF was ideally suited as the standard exchange format for publication and distribution of warehouse data between the Ontario Government and its internal and external data sharing partners. The specifications outlined in this document recognize the expanded scope and function of the OLIW as a data distribution facility for the Province.

The Land Information Data Subscription service (LIDS) provides user subscription and order fulfillment tools, which support the extraction and delivery of geo-spatial data maintained in the (OLIW). The SNIF subscription specifications define the format and packaging of structured data products delivered to registered subscribers. LIDS delivers both structured data and packaged products. Structured data products consist of classes of similar geographic entities (e.g. roads, spawning areas, etc) that are subject to the same spatial, data integrity, security and business rules. Structured data products are packages that ultimately reside in the OLIW database after going through a complete analysis and modeling process. Packaged products are proprietary to a supplier and reside outside the OLIW database as an "off-the-shelf" product. Packaged Products are unstructured data that is not subject to the same rigorous analysis and modeling process as structured data products. This specification pertains to structured data products. For information related to packaged products please contact the Information Access Section (see Appendix A) to obtain a document entitled "Packaged Products User Guide".

## 1.2. Objectives

The primary objectives of the Standard NRVIS Interchange format are to:

- Standardize the packaging of data delivered to subscribers from the OLIW.
- Facilitate the distribution of geospatial data from the OLIW.
- Promote the exchange and dissemination of geo-spatial data within the Province.

## 1.3. Data Class SNIF Reports

Each data class in the warehouse has a SNIF report. A SNIF report describes the data and relationships within and amongst data classes. These reports will prove to be invaluable when working with a SNIF package. Each SNIF report describes one data class with the following information:

- A brief description of the data class which includes the abstract class and basic rules and terms used in the report.
- If necessary a table relationship diagram showing the database tables specific to the data class, excluding common tables (available in a separate report). This diagram has tables, associated columns, and data type, as well as, arrows showing the relationships between tables.
- For each column in a table:
  - Their data type.
  - A description.
  - Whether the column is mandatory,
  - And a range of values if appropriate.
  - For look-up-table values, a time stamp indicating when a value was expired.

## 2 SNIF FILE CONVENTIONS

### 2.1. SNIF Packages

The SNIF subscription specifications provide a standard packaging format for vector based spatial data sets distributed from the Ontario Land Information. The structured data product (henceforth structured data) SNIF package consists of groups of files stored in a hierarchical directory structure. There are several different components to a SNIF package, namely:

1. A packing slip, which provides metadata about the package content including the data source.
2. Information on the geodetic projection for the spatial data objects.
3. The spatial geometry (points, lines and polygons) of the data set.
4. Tabular data elements of the data set.
5. Common data elements (tables containing attributes that are commonly used by nearly all OLIW data classes).
6. If applicable, information on co-dependant classes.
7. Objects that may have been removed from the data class since the subscriber's last scheduled update.

A more detailed description of the above components is described in section 3.0.

A SNIF package consists of the components listed above. As a minimum, a package will contain a packing slip file and at least one other component. A SNIF package **may** consist of the following components:

- Only spatial objects.
- Only textual/tabular attributes.
- A combination of spatial objects and tabular attributes.

### 2.2. File Formats

Data from the OLIW is distributed using the following formats:

1. Either ESRI standard shapefiles; or
2. ESRI ARC/INFO coverages for the spatial geometry; and
3. ASCII files for tabular data, projection files, and packing slips.

#### 2.2.1. ESRI Shapefiles

ESRI Shapefiles are a simple, non-topological format for storing the geometric location and attribute information of geographic features. All objects in a Shapefile have the same geometry type (point, line or polygon) and usually represent a group of similar data. ESRI has made the format of these files open, for a complete reference to shapefiles see "ESRI Shapefile Technical Description" available online at <http://www.esri.com>. The geometry and attributes are contained in a number of files, specifically:

1. **.shp** files, which store the feature geometry.
2. **.shx** files, which store the index of the feature geometry.
3. **.dbf** files, which store the attribute information of features.
4. **.prj** file which stores the projection information on the spatial data. This file is not part of the Shapefile technical description, however it is produced in ArcView as projection metadata or in ArcGIS with the "Define Projection Wizard" Tool.

### 2.2.2. ESRI Arc/Info Coverages

The coverage is ESRI's proprietary digital spatial data file format for storing information about similar geographic entities. This format was the basic unit of vector data storage in ARC/INFO (version 7.x and earlier). Coverages stores geographic features using arc-node topology. Spatial features are represented using units of regions, polygons, lines and points. These units are represented by the topological and composite relationship of more basic features such as points (labels), vectors and nodes. Tics, map extent, links and annotation are secondary features that support the entire coverage. Associated feature attribute tables describe and store attributes of the geographic features.

**Note:** The coverage is still supported in ARC/INFO version 8.x, but the geodatabase and its internal representations provide the core of ESRI's future development endeavours.

### 2.2.3. ASCII Text Files

Non-spatial tabular data stored in the Oracle Database are provided in the SNIF package as comma delimited ASCII files. The packing slip and projection file (if appropriate) are also distributed as ASCII files. The keywords presented in the packing slip are described in Section 3.2.

## 2.3. SNIF Package Naming Convention

The name of a SNIF package is derived from the following components (see Figure 2.1):

- The SNIF structured package keyword *sc*.
- SNIF version number, the current version is 2.0 represented as 20. Note the absence of the "." In Figure 2.1.
- The data supplier code, this is always *lio* for products distributed from the OLIW.
- Creation date and time of the SNIF package.
- The supplier sequence number.

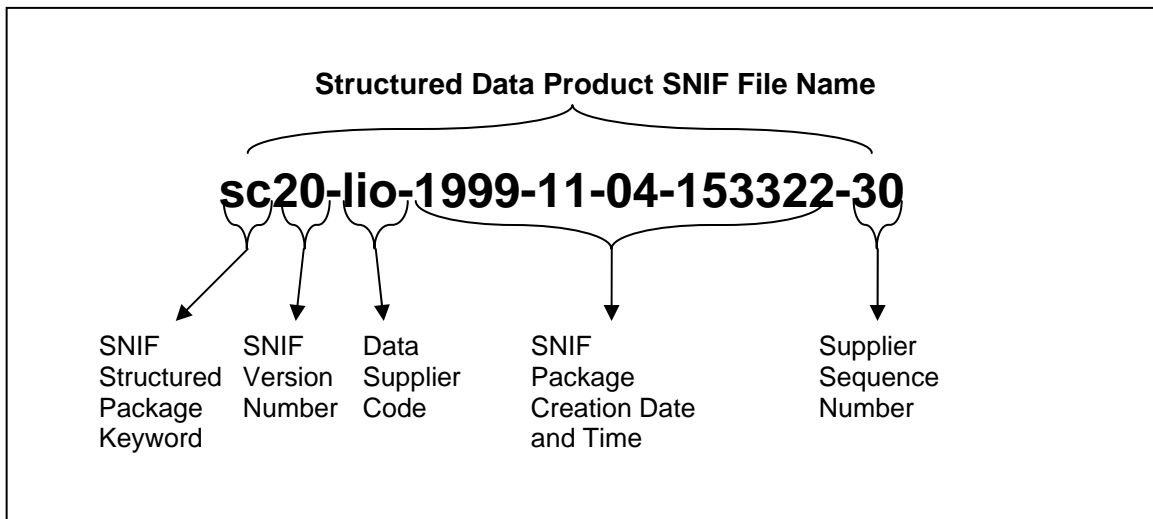


Figure 2.1 - SNIF file naming convention for structured data classes.

**Note:** The package name is always the top-level directory in the SNIF package directory structure.

### 3 SNIF FILE COMPONENTS

#### 3.1. SNIF Directory Structure for Structured Data Products

A SNIF package (in an unzipped state) consists of files and sub-directories that are stored in a hierarchical structure (see figure 3.1). The package includes metadata information, which describes its source and contents.

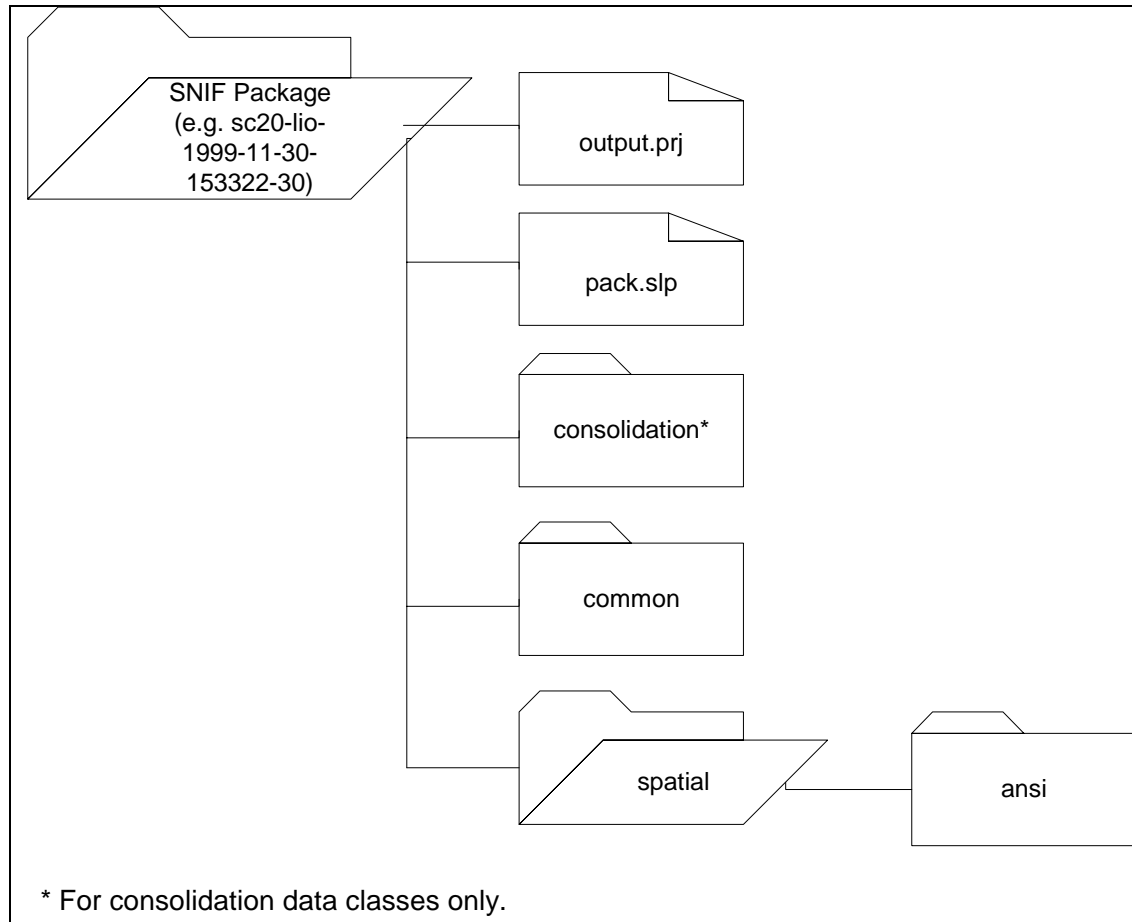


Figure 3.1 SNIF hierarchical directory structure for structured class data sent by OLIW.

The top-level directory may contain:

1. A file named "pack.slp" which is a packing slip that contains metadata information.
2. A projection file named "output.prj" which describes the projection for all spatial geometry in the package.
3. A sub-directory named "common" which contains information on tables defined as common in the OLIW data dictionary.
4. A sub-directory named "spatial" which contains another directory for the class containing the spatial geometry and class-specific attributes.
5. For consolidation data classes a sub-directory named "consolidation" which contains another directory for the class containing information describing collections of spatial objects.

### 3.2. Packing Slip

The packing slip is an ASCII file that contains specific information about a SNIF package. Table 3.1 describes the contents of a packing slip file. Keywords specified in the packing slip apply to all data classes contained in the package. The packing slip will always be named slip.pck. All SNIF packages will contain a packing slip.

**Table 3.1: Packing Slip Keywords Used for Structured Products**

KEYWORD	DESCRIPTION
package_name=sc<snif_version_no>-<suppliers_code>-<yyyy-mm-dd-hhmmss>-<suppliers_latest_sequence_number>	See section 2.3 SNIF Package Naming Convention
suppliers_last_sequence_number=<number>	This number is generated by the OLIW. It is incremented by 1 for each new structured data package created and distributed by the OLIW irrespective of the subscriber. The subscriber should always ensure that the sequence number is of a higher value than the last sequence number found on the previous SNIF package received from the OLIW. If the sequence number is of a lower value than the one on the package last received from the OLIW please contact the OLIW/NRVIS support staff (Appendix A).
snif_package_type=<concrete_class packaged_product>	Describes the SNIF package type. The value for structured data products is <i>concrete_class</i> .
col_type=<upd   dst>	The value for structured data products is <i>upd</i> .
creator=<user-id>	The user-id of the system that created the package. The user-id will normally be <i>lids</i> .
num_sp_class=<number>	Number of spatial classes or layers in the package will be greater than or equal to zero (>=0).
sp_class_list=<class 1:geometry, class 2:geometry   NONE...>	Comma separated list of spatial classes in the package and their spatial data format. "geometry" will be either <i>Shape</i> or <i>Coverage</i> depending on the requested spatial data format (e.g. TRAPLINE:Shape or TRAPLINE:Coverage). The <i>none</i> option indicates that no spatial geometry files are included in the package.
num_con_class=<number>	Total number of consolidation classes contained in the SNIF package, will be greater than or equal to zero (>=0)
con_class_list=<class1, class2.....>	Comma separated list of consolidation classes in the package.
num_nsp_class=0	Not currently used, will default to 0.
nsp_class_list= <b>Error! Bookmark not defined.</b>	Not currently used, item will be blank.
num_comm_elements=<number>	Represents the number of common tables in the package. Will be greater than or equal to 0 (>=0).
comm_list=<file 1, file 2...>	Comma separated list of common tables included in the package (if num_comm_elements > 0).
snif_version=<number>	Current version of SNIF specification (i.e. 2.0).
data_supplier_name =<db_id>	Source database name is the name used to identify the supplier of the data. For the subscription system this value is always <i>'lio'</i>
source_database_version=<version_no>	Supplier's source database version. This is the database version for the OLIW (i.e. 2.0).

### 3.2.1. Example of a Packing Slip File

```

package_name= sc20-lio-1999-11-30-153322-30
suppliers_last_sequence_number=30
snif_package_type=concrete_class
col_type=upd
creator=lids
num_sp_class=1
sp_class_list=ANSI:Shape
num_con_class=0
con_class_list=
num_nsp_class=0
nsp_class_list=
num_comm_elements=12
comm_list=GEOG_UNIT_AND_SOURCE, JUSTIFICATION, GEOG_UNIT_AND_JUSTIF
snif_version=2.0
data_supplier_name =lio
source_database_version=2.0

```

### 3.2.2. Packing Slip File Structure

Packing slips produced by the OLIW are constructed with:

- All the keywords will be found on separate lines.
- The package name will be the first keyword listed in the packing slip file.
- Keywords that contain lists or comments will use only one line and not exceed 1024 characters (example above is line-wrapped due to page width restrictions).

## 3.3. The Projection File

The projection file (*output.prj*) provides specific information about the geodetic projection of the spatial data. A projection file will contain several keywords as well as the following parameters:

```

PROJECTION GEOGRAPHIC
DATUM NAD 83 CNT
UNITS DD
PARAMETERS
END

```

- Currently the Ontario Land Information Warehouse supports the geographic coordinate system (latitude and longitude). All spatial files delivered to a subscriber will be in latitude and longitude.
  - The datum is NAD 83, National Transformation v.2 (ESRI keyword CNT).
  - Units are in decimal degrees.
  - This file is not identical to an ESRI projection (\*.prj) file.
- Information on the data projection is only relevant if the SNIF package contains spatial data.

### 3.4. SNIF Sub-Directories

One or more of the three subdirectories may be present in the top-level directory of a SNIF package:

- COMMON
- SPATIAL
- CONSOLIDATION

#### 3.4.1. COMMON Sub-Directory

The **common** elements sub-directory contains common tables for the data classes found in the SNIF package. A common table is usually a database table shared by several data classes in the database. The structure of the common elements sub-directory is subject to the following provisions:

- There will be an attributed data file in the common elements sub-directory for each common table included in the package.
- The exception to the above point is that if all common tables are empty for the subscribed data class, the common subdirectory will not exist in the SNIF package. If at least one common table has records for the subscribed data class, then all of the common table possibly associated with this data class will exist as empty attribute data files (i.e. will contain only column headers).
- These files correspond to the OLIW's common database tables and have the same name as the corresponding database table with a .tbl extension (i.e. the JUSTIFICATION table will be named justification.tbl).
- The first line of each of these files contains a comma delimited list of column names from the database. Each column name is contained in double quotation marks.

The following is a list of some of the more important common tables (Oracle) in the OLIW; for a complete listing of the common tables please see the Common Table SNIF Report:

1. **GEOG\_UNIT\_AND\_JUSTIF** – An intersection table between GEOG\_UNIT and JUSTIFICATION containing information about when and what action (one of *Create, Delete, or Modify*) caused the record to be manipulated in the OLIW.
2. **JUSTIFICATION** - The justification (i.e. reason) for the addition of, or changes to an object.
3. **GEOG\_UNIT\_AND\_SOURCE** - Table which provides more detail about the SOURCE record. This record includes information about what part of the source record pertains to the object being added/modified.
4. **GEOG\_UNIT\_AND\_SUPP\_MATERIAL** - Intersection table between Geographic Unit and Supporting Material.
5. **GEOG\_UNIT\_DATABASE\_REFERENCE** – Used to reference a record in an external database or an internal object in the same database.
6. **GEOG\_UNIT\_OTHER\_INFORMATION** – This table is used to store additional information about a data class which currently has no placeholder in any of its tables. The table content will be analysed periodically to determine if the field(s) should be incorporated into the regular data class structure.
7. **GEOG\_UNIT\_PARTY** - An association between the Party and a Role table to signify that this Party plays this specific role.
8. **SUPPORTING\_MATERIAL** – Used to reference external data which provides additional information about an object (e.g. URL to a digital photo).

##### 3.4.1.1. Attribute Data Files for Common Tables

Attribute data files are ASCII files that contain information on the attributes associated with a table. These attribute data files are used to distribute subscription requests from OLIW. These files are named *<table\_name>.tbl*

where *<table\_name>* is the name of the corresponding Oracle table in the OLIW Oracle database. For example, the OLIW Oracle table JUSTIFICATION would be named justification.tbl.

#### 3.4.1.2. Attribute Data File Structure and Conventions

The first line of each file is created subject to the conventions below; the remainder of the file may be blank. The first line of the attribute data file will have:

- Column names appearing as defined in the database (see SNIF report for common tables). Not all columns may appear if the subset option was used in LIDS.
- Column's delimited by commas.
- All column names (header information) are enclosed in quotation marks (e.g. " FMF\_OBJECT\_ID").
- All column names in upper case.

The remainder of the attribute data file will have:

- All row values enclosed in double quotes (e.g. "Actual").
- Column values separated with a comma (e.g. "Actual", "112.32", "Yes").
- Columns having no values represented using open and closed quotes and separated from the next column value with a comma. All columns are represented even if there is no value (e.g. "", "Actual", "112.32", "Yes").
- All the information for the column appearing on the same line (i.e. no line-feed or carriage return).

For more information on the attribute that will be present refer to the data class SNIF report generated for each data class.

#### 3.4.1.3 Example of "geog\_unit\_and\_justif.tbl" in the Common Table Directory

```
"FMF_OBJECT_ID","JUST_FMF_OBJECT_ID","ACTION_TYPE","CONC_CLASS_SHORT_NAME",
"EFFECTIVE_DATETIME","EXPIRY_DATETIME","EXT_EFFECTIVE_DATETIME",
"EXT_EXPIRY_DATETIME"
"50846836","50839280","Create","","2005-09-13-14:06:05","","2003-12-02-08:46:10",""
"50846837","50839280","Create","","2005-09-13-14:06:05","","2003-12-02-08:46:10",""
"50846837","51114427","Modify","","2005-09-13-14:06:05","","2003-12-02-08:46:10",""
"50846839","50839280","Create","","2005-09-13-14:06:05","","2003-12-02-08:46:10",""
"50846840","50839280","Create","","2005-09-13-14:06:05","","2003-12-02-08:46:10",""
"50846841","50839280","Create","","2005-09-13-14:06:05","","2003-12-02-08:46:10",""
"50846841","51114427","Modify","","2005-09-13-14:06:05","","2003-12-02-08:46:10",""
"50846842","50839280","Create","","2005-09-13-14:06:05","","2003-12-02-08:46:10",""
"50846842","51114427","Modify","","2005-09-13-14:06:05","","2003-12-02-08:46:10",""
```

### 3.4.2. SPATIAL Sub-Directory

The *spatial* sub-directory provides information on spatial objects for a given data class and could include, depending on the subscribers subscription options, one or more of the following:

- All existing spatial objects of the data class.
- Only modified (new, deleted and changed) spatial object of the data class. The modified objects are based on a time period, generally the objects changed since the subscriber's last request.
- As above except that the related tabular records are included.

For data coming out of the OLIW through the subscription system, there is only one sub-directory created within the "spatial" sub-directory. The name of the sub-directory corresponds to the short form name of the OLIW concrete (data) class delivered in the SNIF package.

**Example:** If a SNIF package contained information on geographic townships, a directory named "geotwn" (the short form name of the GEOGRAPHIC TOWNSHIP data class) is created under the *spatial* sub-directory. The "geotwn" directory would contain the spatial data requested from the OLIW's GEOGRAPHIC TOWNSHIP class.

The contents of the data class level sub-directory can be one or more of the following six components (see figure 3.2 and 3.3):

- A packing slip file (mandatory).
- One or more data files that contain attribute and related information for the spatial objects in the package.
- An ESRI shapefile (including predetermined attributes) or ARC/INFO coverage that contains all objects, or only modifications (new and modified), in the data class.
- A projection file.
- An ESRI shapefile and related components that contains a polygon(s) representing the area defined by the subscriber in his/her data request.
- A list of features deleted in the data class since the last scheduled update.

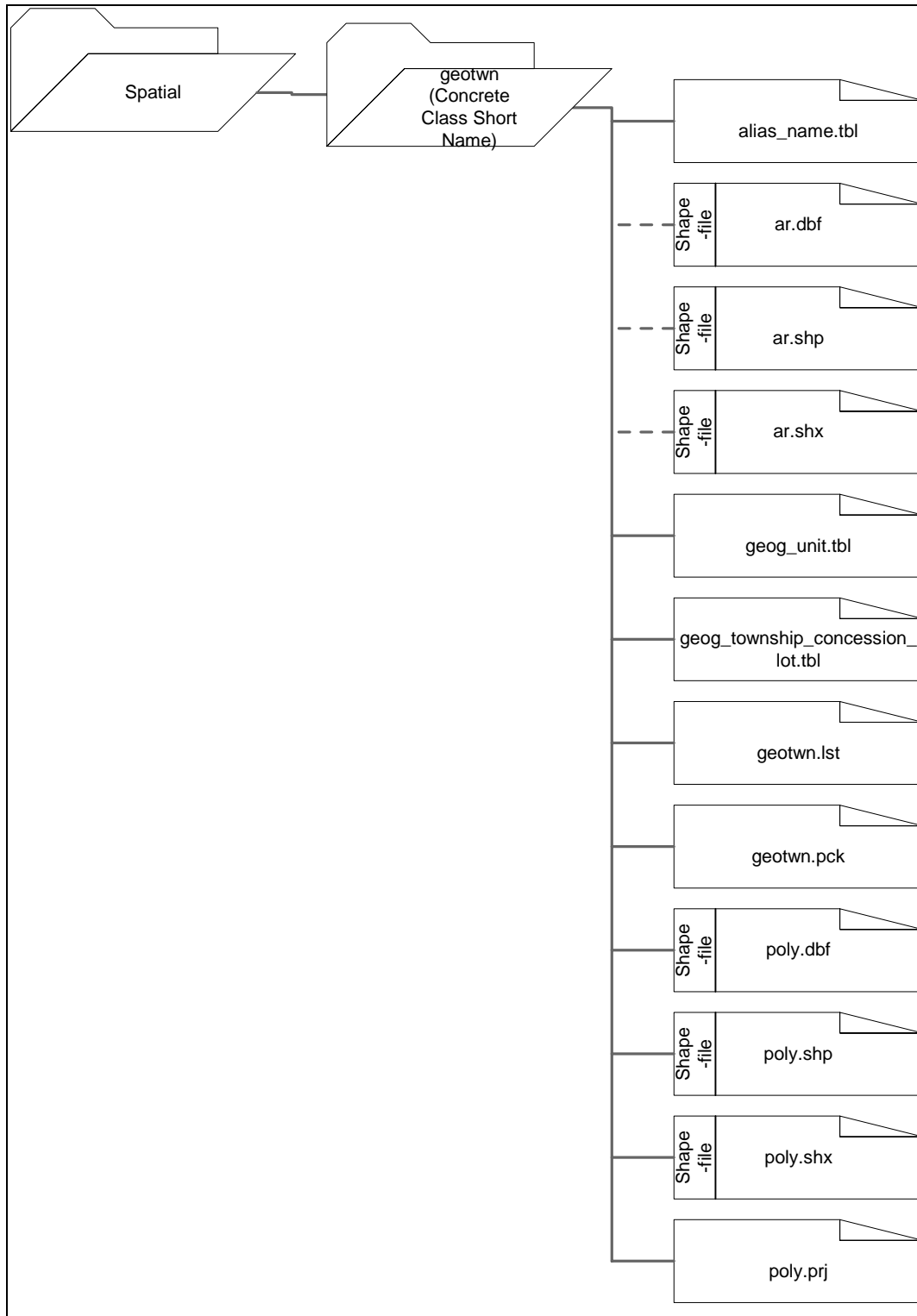


Figure 3.2: Spatial sub-directory for shapefiles.

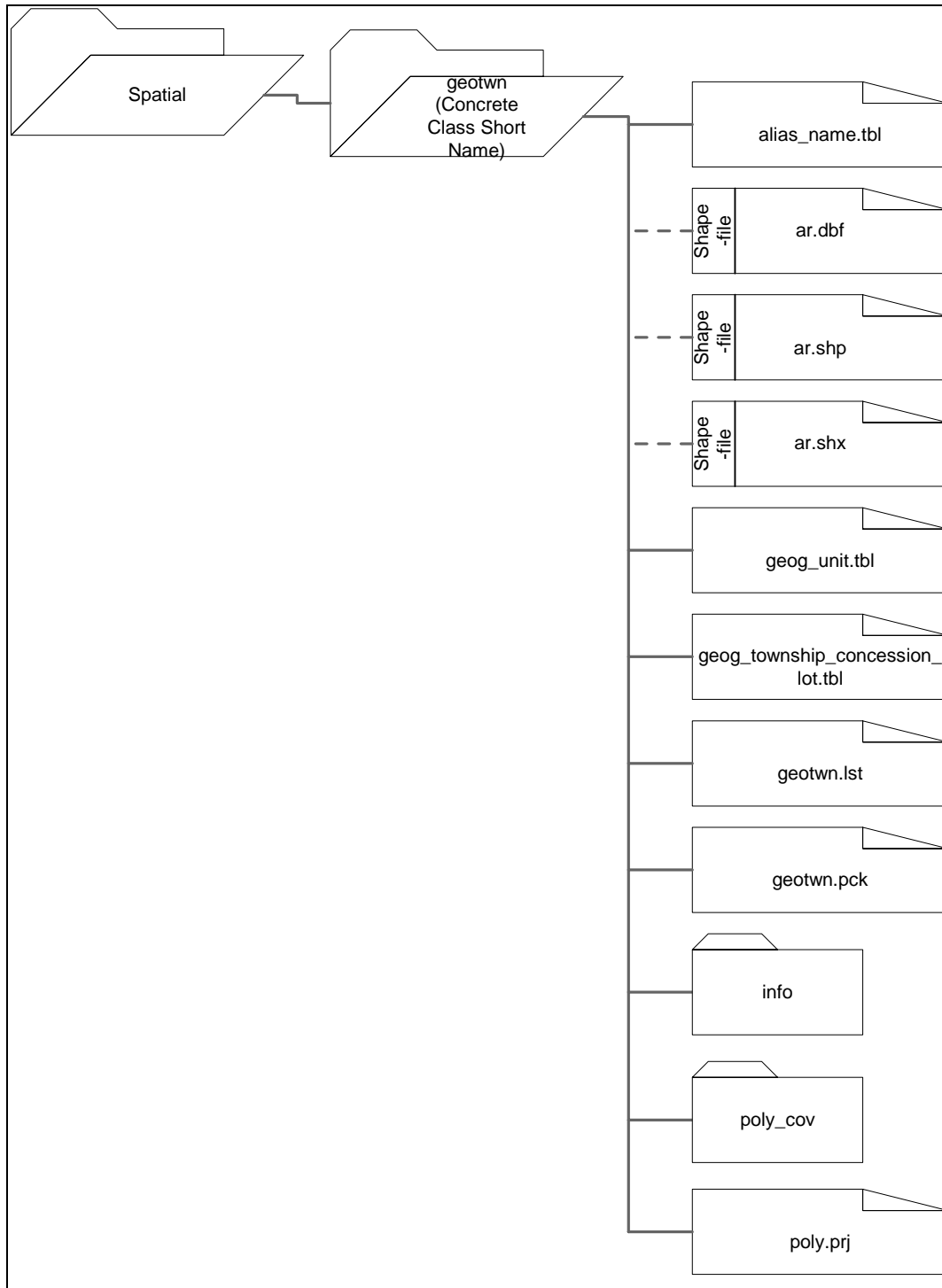


Figure 3.3 Spatial sub-directory for ESRI Arc/INFO coverages.

## 3.4.2.1. Class Packing Slip File

The packing slip file contains class specific information. This file is named from the short form name of a concrete class and a “.pck” extension (i.e. <concrete\_class\_short\_name>.pck). The packing slip file for the GEOGRAPHIC TOWNSHIP data class in the GEOTWN subdirectory would be **geotwn.pck**. The packing slip is made up of the following keywords and values:

KEYWORD	DESCRIPTION
business_effective_date=<yyyy-mm-dd-hh:mm:ss>	The latest date and time that an object in the data class was created, modified or deleted. This indicates that data included in this package is current up to and including the business effective date.
delete= <all   list   area_passthrough   area_within>	<p>The values in the delete keyword indicate which objects get included in a SNIF package. Listed below are the options relevant for the subscription system:</p> <p><i>all</i>: Signifies that there was no restriction by geography in the subscriber’s data request (as opposed to <i>area_passthrough</i> or <i>area_within</i>).</p> <p><i>list</i>: Signifies that there is a file name using the concrete class short name with a <i>.lst</i> extension included in the package. The file lists the objects that were deleted in the OLIW since the last scheduled update. The subscribers need to delete these objects from their local database.</p> <p><i>Note</i>: Only applies to data classes with history enabled.</p> <p><i>area_passthrough</i>: For the Subscription system, this option reflects the fact that the subscriber specified a spatial extent with the <i>area_passthrough</i> option to filter requested data. An accompanying shape file (Area Replace file described below) was added to the package. The Area Replace file contains one polygon, which may be multi-part. Only objects that are at least partially within the polygon are included in the SNIF package.</p> <p><i>area_within</i>: For the Subscription system, this option reflects the fact that the subscriber specified a spatial extent with the <i>area_within</i> option to filter requested data. An accompanying shape file (Area Replace file) was added to the package. The Area Replace file contains one polygon which may be multi-part. Only objects that are totally within the polygon are included in the SNIF package.</p>
changes_only =<yes   no>	This value <i>yes</i> indicates that only changes to the data class that occurred since the last order were included in the package. The value <i>no</i> indicates that all the objects in the data class were included for the specified extent.
changes_from_date=<yyyy-mm-dd-hh:mm:ss>	This keyword displays the earliest date from which the changes to the data in the SNIF package took place. The value for this keyword when <i>changes_only</i> is set to <i>no</i> is an arbitrary date of 1970-01-01-00:00:00.

attribute_scope=<full   subset   graphics>	The attribute scope refers to the amount of information made available to a subscriber by the custodian.
	<i>full</i> indicates the subscriber received all the spatial objects including all.
	<i>subset</i> indicates that the subscriber receives all spatial objects and only attributes designated by the custodian.
	<i>graphics</i> spatial information and selected attributes are included in the dbf portion of shapefile. Note: coverages will have very limited attribution e.g. object_id, Descr, GUT and label.
extract_date=< yyyy-mm-dd-hh:mm:ss >	Represents the creation date and time of the package.

Example of Geographic Township (GEOTWN) class packing slip file:

```
business_effective_date=2000-08-25-10:58:53
delete=area_within
changes_only=yes
changes_from_date=2000-07-13-13:10:55
attribute_scope=full
extract_date=2000-11-28-09:30:25
```

### 3.4.2.2. Attribute Data Files

The spatial sub-directory **may** contain one or more text files which contain the attributes of a data class. It is possible for a SNIF package to contain only attribute data files. This occurs when updates affect only the non-spatial component of a data class. That is, the SNIF package does not contain any new or changes to spatial objects for a data class since the last scheduled update.

The attribute files are in ASCII format and they correspond to tables in the OLIW database. They are given the same file name as their corresponding Oracle table, except that they will have a ".tbl" extension.

The attribute data files included in a SNIF package are class dependant. There will be one or more of these files per data class depending on its underlying data model. The first line of each attribute data file contains a series of column names delimited by commas and enclosed in double quotation marks (see example below).

Example of an attribute data file for the ANSI Oracle table (ansi.tbl):

```
"FMF_OBJECT_ID","OFFICIAL_NAME","ANSI_SIGNIFICANCE_CODE","ANSI_STATUS_CODE",
"LANDOWNER_CONTACT_IND","ACTIVITY_RESTRICT_DESCR","SPECIES_PLANNING_CONSID",
"RES_MGMT_PLAN_PREP_IND","EFFECTIVE_DATETIME","EXPIRY_DATETIME",
"OFFICIAL_NAME_UPPER"
"1160969705","Sewrell","P","A","","","","","2000-04-16-14:21:22","","SEWRELL"
"1160969711","Goodingham","P","A","Yes","","","Yes","2001-04-17-10:44:00","","GOODINGHAM"
"1160969712","Silver Creek","P","C","","","","","2000-04-17-10:58:32","","SILVER CREEK"
```

There maybe several other tables that may exist in the spatial sub-directory depending on the data class. The following tables may be present depending on the underlying data class (for details see the SNIF report for specific data class):

- Other data class specific Oracle tables further describing the object.
- *geog\_unit.tbl* – shared by most data classes in the OLIW. It contains pieces of information about a specific object, such as its location accuracy, verification status, sensitivity, effective dates, access indicators, metrics, etc.
- *alias\_name.tbl* – It contains (alternate) local names for objects which have official names.

Within the SNIF package of a data class that partakes in a consolidation, there will be one or more attribute data files containing attributes of the individual portions of the consolidation (e.g. those particular to the spatial object) and there will be an 'intersection' attribute data file. This intersection table will identify the link between the spatial object or segment and its associated consolidation (through FMF\_OBJECT\_ID). Consolidations are dealt with in more detail in section 3.5.

### 3.4.2.3. Spatial Data Files

The geometry of spatial objects for a given data class are provided as either an ESRI shapefile or Arc/Info coverage.

#### Shapefiles

There is one shapefile per geometric element type that participates in a class. These files are identified by the geometry type (polygon, arc, arc with measure and point) and reflected by their file name (i.e. *poly.shp poly.shx poly.dbf; arc.shp arc.shx arc.dbf; arcm.shp, arcm.shx, arcm.dbf; point.shp point.shx point.dbf*). Depending on the dataclass, the shapefile will contain multiple attributes beyond the standard ESRI attributes. The following attributes are included, as well as, all the attributes from tables that participate in a 1-1 relationships with the spatial object (i.e.. all 1-1 relationships for the data class are traversed). At the very least this includes:

- OBJECT\_ID – the unique identifier used in the OLIW. This column is used as the key to relate spatial objects to other attribute tables (i.e. a join between the attribute data of the shapefile or coverage and another table). The other attribute tables typically have a column called FMF\_OBJECT\_ID as their primary key.
- DESCR - a textual description of the object based it's the data class.
- GUT\_NUMBER - the geographic unit type number (code). Each data class in the OLIW may be sub-typed with one or more unique gut numbers (i.e. Tower data class could have up to 7 geographic unit types, each identifying a different type of tower such as Fire Tower, Microwave Tower, etc).

- GEOG\_UNIT table attributes, if part of the data class.

Attribute names are limited to 10 characters, therefore they may not have the same as the long name found in the attribute data files. The SNIF reports will eventually document both attribute names. Look up table values will be decoded and added as an additional attributes.

**Note:** As of November 2006 only 43 data classes have additional attributes added on the dbf portion of the shapefile. All data classes will have the additional attributes added, if appropriate, as time permits.

### Coverages

ESRI coverage files will be named either region, poly, arc, arcm or point depending on the geometry they contain. Coverages will contain few attributes beyond the standard ESRI attributes. These attributes are in the following columns:

- OBJECT\_ID – the unique identifier used in the OLIW. This column is used as the key to relate spatial objects to other attribute tables (i.e. a join between the attribute data of the shapefile or coverage and another table). The other attribute tables typically have a column called FMF\_OBJECT\_ID as their primary key.
- DESCR - a textual description of the object based it's the data class.
- GUT\_NUMBER - the geographic unit type number (code). Each data class in the OLIW may be sub-typed with one or more unique gut numbers (i.e. Tower data class could have up to 7 geographic unit types, each identifying a different type of tower such as Fire Tower, Microwave Tower, etc).

#### 3.4.2.4. Geodetic Projection File

The geodetic projection file will be named either: *point.prj*, *line.prj* or *poly.prj*. It contains 1 line of information used to describe geodetic projection used by the OLIW (see below).

```
GEOGCS["GCS_North_American_1983",DATUM["D_North_American_1983",SPHEROID["GRS_1980",6378137.0,298.257222101]],PRIMEM["Greenwich",0.0],UNIT["Degree",0.0174532925199433]]
```

#### 3.4.2.5. Area Replace File

An area replace file will be present in the package when one of the following keywords was used in the delete item of the class packing slip file:

- *area\_passthru*
- *area\_within*

An area replace file is a shape file (*ar.shp*, *ar.shx*, *ar.dbf*) that may contain one or more polygons defining the geographic extent of the data extracted from the target data class.

When the keyword *area\_passthru* is used in the packing slip file, all objects within as well as objects that cross the boundary of the polygon(s) defined by the area replace file will be found in the SNIF package.

When the keyword *area\_within* is used in the packing list file of a class, only objects that were fully contained within the polygon(s) defined by the area replace file will be found in the SNIF package.

#### 3.4.2.6. Delete List File

If the delete item in the packing slip file was used an additional file will be in the spatial directory. The file is named using a combination of the concrete class short name and an “.lst” file extension (e.g. *ansi.lst*). This file contains a list of the identifiers (OBJECT\_ID/FMF\_OBJECT\_ID) of the spatial and corresponding tabular objects that were deleted from the OLIW since the last scheduled SNIF update. Only one OBJECT\_ID will be found per line (see example below).

Example of delete list *ansi.lst*

```
1150327540
1150327541
1150327542
1150327543
1150327551
1150327553
1150327554
```

### 3.5. Consolidation Sub-Directory

A consolidation object is a collection of spatial objects or segments. The segments that make up a consolidation have their own attributes and belong to their own data class. These consolidations have attributes that describe the collection of segments as a whole.

Depending on the data class a segment can belong to multiple consolidations. For example, the same stretch of ROAD SEGMENT can be part of two different roads: Highway 115 and Highway 35. Examples of consolidation classes include ROAD, WATERBODY and TRAIL:

- A ROAD consolidation is made up of one or more road segments.
- A WATERBODY is comprised of one or more WATERBODY segments.
- A TRAIL is made up of one or more trail segments.

The consolidation class sub-directory corresponds to the name of the consolidation’s OLIW concrete class short name. The contents of this directory are:

- A class packing slip (mandatory).
- Tabular data associated with a consolidation component (optional).
- A delete list file (optional).

In a consolidation SNIF package the spatial sub-directory contains as per section 3.4.2.:

- One directory per segment class. The name of the class sub-directory corresponds to the name of the segment’s OLIW concrete class short name (e.g. TRAILSEG).
- Information on the collections of segments associated with the consolidation. This information is found in an attribute data file corresponding intersection table in the OLIW (e.g. ARA\_AND\_WATERBODY\_SEGMENT, ROAD\_AND\_ROAD\_SEGMENT, TRAIL\_SEGMENT\_DETAIL, WATERBODY\_AND\_SEGMENT, WETLAND\_UNIT etc).

### 3.5.1. Packing Slip File

The packing slip file is a text file that contains metadata about a consolidation class. Table 3.3 describes the contents of a packing slip file.

KEYWORD	DESCRIPTION
business_effective_date=<yyyy-mm-dd-hhmmss>	The latest date and time that an object in the data class was created, modified or deleted. This indicates that data included in this package is current up to and including the business effective date.
delete= <all   list>	The options in the delete keyword get used to control which objects get included in a SNIF package. Some of the options are relevant only to the Land Information Publication System. Listed below are the options relevant for the subscription system:
	<i>all</i> : Indicates that no objects were deleted since the last scheduled update when subscribing for changes only. Otherwise all the objects are included.
	<i>list</i> : List of objects that should be deleted when the subscriber is receiving scheduled updates of changes from the OLIW.
changes_only =<yes   no>	This value <i>yes</i> indicates that only changes to the data class that occurred since the last order were included in the package. The value <i>no</i> indicates that all the objects in the data class were included for the specified extent.
changes_from_date=<yyyy-mm-dd-hhmmss>	This keyword displays the date from which the changes to the dataset took place. The value for this keyword when changes_only is set to <i>no</i> is an arbitrary date of 1970-01-01-00:00:00.
attribute_scope=<full   subset >	Defines the attribute scope or user access privilege for a data class. This can be <i>full</i> for all related objects (except for individual and sensitive attributes) or a custodian defined <i>subset</i> .
extract_date=<yyyy-mm-dd-hh:mm:ss >	Represents the creation date and time of the package.

**Note:** Object-ids listed in the delete list are used to delete consolidation objects only, the related segments are not effected.

Example of a class packing slip (trail.pck) for the trail consolidation data class.

```
business_effective_date=2004-05-04-13:19:54
delete=none
changes_only=No
changes_from_date=1970-01-01-00:00:00
attribute_scope=full
extract_date=2004-05-04-13:19:54
```

### 3.5.2. Consolidation Attribute Data Files

Consolidation data files follow the same rules as all other attribute data files.

### 3.5.3. Consolidation Delete List File

This file indicates which consolidation objects were deleted since the subscribers last scheduled update. The name of the file corresponds to the concrete class short name and the .lst extension (e.g. trail.lst). The segments (e.g. spatial objects) are not deleted, just the consolidation objects. This file is the same as the delete list file for spatial objects (see section 3.4.2.6.).

## 3.6. Guidelines for Updating Subscriber's Local Databases

This section is relevant for subscribers who receive regularly scheduled SNIF packaged which contain changes to a data class that occurred since their last update. These steps will vary depending upon the local databases underlying architecture (i.e. some may just have the spatial features, others will include progressively more attribute data, and others may wish to replicate the OLIW data structure). The subscriber should take the following steps to update their local database with the contents of a scheduled SNIF package:

1. Delete the objects in the local database that are found in the delete list file. For consolidations do not delete the associated segments.
2. Using the data in spatial data file:
  - a. Add objects whose identifier is not currently used in their local database.
  - b. Replace or update objects whose identifier is currently used in their local database with those from the spatial data file.
3. For each attribute data file in the spatial, consolidation, and common directory:
  - a. Add objects whose identifier is not currently used in their local database.
  - b. Replace or update objects whose identifier is currently used in the local database with those from their spatial data file.

Note: It is possible for a SNIF package to have the same identifier in the delete list file as well as the spatial data file and attribute data files. This occurs when the changes to the object are complex (e.g. part of a composite key changed or a related record is removed). To reconcile the object the subscriber should first delete the spatial object and its related records from their database before adding the updated object.

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## Appendix A - Contact Information

There are two main contacts for the Ontario Land Information Warehouse. For technical issues regarding publication, subscription and SNIF Packages contact OLII/NRVIS Support:

**Email:** [support.nrvis@webmail.mnr.gov.on.ca](mailto:support.nrvis@webmail.mnr.gov.on.ca)

**Phone:** (705) 755-1650

**OLII/NRVIS Support**

**Ministry of Natural Resources**

**300 Water Street**

**Peterborough, Ontario**

**K9J 8M5**

For information regarding access to data in the Ontario Land Information Warehouse contact the Data Exchange Administrator:

**Email:** [info-access@webmail.mnr.gov.on.ca](mailto:info-access@webmail.mnr.gov.on.ca)

**Phone:** (705) 755-1878

**Information Access Section**

**Ministry of Natural Resources**

**P.O. Box 7000**

**300 Water Street**

**Peterborough, Ontario**

**K9J 8M5**

*Published December 2006*  
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