

Geospatial Data Management Standards and Procedures

Supporting the Exchange and Replicating of Geospatial Data

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- I. **Overview:** Vermont's Enterprise GIS Consortium (EGC) has established a "Geospatial Data Exchange and Replication Protocol" that defines a robust set of standards and methods for sharing and replicating data across agencies and departments. The protocol defines two primary roles for those EGC members who choose to participate; 1) Publishers and 2) Subscribers. In order to ensure consistency and predictability, Publishers¹ must adhere to the database maintenance standards and procedures define herein.
 - II. **Scope:** The following data maintenance standard is designed to ensure consistency and predictability, and applies to geospatial data exchanged within the context of State's Enterprise GIS System. It supports the EGC's Geospatial Data Exchange and Replication Protocol.
 - III. **Data Management Standards and Procedures:** This document defines common database maintenance standards, procedures, and protocols that ensure consistency and predictability. Publishers are responsible for ensuring that their database's (eg: GDB_VCGI in the case of VCGI) comply with these standards. Publishers must also be linked to the "Distributed VGIS Data Warehouse" system², which will ensure consistency over time. These requirements are limited to those databases³ that will be shared and exchanged within State's Enterprise GIS environment.

¹ **Roles:** Participants in the data exchange/replication process fit into the following roles

- 1. **Publishers:** Agencies and departments that "publish" geospatial data. Publishers must comply with established data management standards and procedures outlined herein.
- 2. **Subscribers:** Agencies and departments that "subscribe" and receive geospatial data provided by Publishers. Subscribers do not need to comply with these standards (assuming they are not a Publishers as well).

² VCGI has implemented a distributed data distribution architecture which provides users with a single portal for discovering and downloading Vermont's GIS (VGIS) data. This system is referred to as the Distributed VGIS Data Warehouse

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- a. **File formats:** The “Geospatial Data Exchange and Replication Protocol” defines specific data exchange format requirements⁴. Publishers must comply with the formats and methods defined in the protocol. However, Publishers can choose to manage their master datasets in whatever format they choose. For example, a Publisher may choose to maintain their master datasets in ESRI shapefile format. However, the data cannot be published and exchanged in that format. It must first be transformed into the format specified in the data exchange protocol (eg: ESRI File Geodatabase 9.2). It must also comply with the naming conventions and other requirements (eg: metadata) stipulated within this standard. Publishers using ArcSDE must comply with the specifications defined in the “ArcSDE Configuration and Management Guidelines”⁵
- b. **Naming conventions:** All geodatabases, layers, and tables must comply with the following naming conventions
 - i. **Geodatabases:** Enterprise (ArcSDE) or File Geodatabases must be given names that comply with the conventions defined in the “ArcSDE Configuration and Management Guidelines”. For example, a geodatabase managed by VCGI would be named GDB_VCGI. A geodatabase managed by ANR would be called GDB_ANR.
 - ii. **Layers:** Features datasets (FDSs) and Feature classes (FCs) must be given names that comply with following naming conventions.

Feature Dataset: **<Theme><Theme_sub>*₆<NAME>**

For example, the BNDHASH layer has the following *feature dataset* layer name: BoundaryOther_BNDHASH. This naming convention groups data by theme..

Standalone feature classes or the individual *feature classes* within each *feature dataset* have the following naming convention;

Feature Class: **<Theme>_<NAME>_<featuretype>_<subtype>**

For example, the line feature class in BNDHASH is named Boundary_BNDHASH_line. Feature types include poly, line, point, route, anno, and raster. **<subtype>** handles cases in which a *dataset* has more than one feature type (ex: more than one route subclass, annotation subclass, annotation arrows, etc.).

(Warehouse). The Warehouse consists of several components, including GIS data, a cataloging database, metadata, and data extract services. The Warehouse is administered by VCGI, but is supported by organizations who create, maintain, and provide GIS data.

³ GDB_VCGI, GDB_ANR, GDB_VTrans, and GDB_ACCD

⁴ Phase I implementation requires that data be exchanged in ESRI File Geodatabase 9.2 format (as of 11/25/2008)

⁵ VGIS Handbook: Part 3 – Guidelines: ArcSDE Configuration and Management Guidelines

⁶ Refer to Appendix A (VGIS Themes and Sub-Themes) for a list of themes and sub-themes.

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Note: Names cannot exceed 32 characters according to ESRI documentation. Therefore <Theme> and <Theme_sub> are limited to 10 characters each. <NAME> can be up to 12 characters, however, the total character length for any feature dataset or feature class name must not exceed 32. This must be taken into consideration when assigning a name. It is recommended that the <NAME> be unique database wide. Tiled data sets must include the tile number as part of the <NAME>.

- iii. **Tables:** Associated lookup tables must comply with the following naming conventions; **Table_<NAME>_<Tablename>**

For example, if LRS2007 (TransRoad_LRS2007) included an associated lookup table called VTHWY.DBF, it would be loaded into a geodatabase and renamed Table_LRS20007_VTHWY.

- c. **Metadata:** All layers must include FGDC compliant metadata. Metadata content and naming must comply with VGIS Data Warehouse conventions (Refer to Attachment B). Metadata records must be associated with feature datasets (not the feature classes within feature datasets).

IV. **VGIS Data Warehouse:** VCGI has implemented a distributed data distribution architecture which provides users with a single portal for discovering and downloading Vermont's GIS (VGIS) data. This system is referred to as the Distributed VGIS Data Warehouse (Warehouse). The Warehouse consists of several components, including GIS data, a cataloging database, metadata, and data extract services. The Warehouse is administered by VCGI, but is supported by organizations who create, maintain, and provide GIS data.

- a. **Options for linking into the Warehouse:** All geospatial data that is to be exchanged or replicated within the State's Enterprise GIS System must be cataloged and loaded into the VGIS Data Warehouse. Data "publishers" can link into the system with one of the following two options:
 - i. **Level I nodes:** VCGI hosts and posts the Publisher's data and metadata. Publisher provides VCGI "snapshots" of their data as defined in the "Geospatial Data Exchange and Replication Protocol". All layers are cataloged within the VGIS Data Warehouse cataloging database.
 - ii. **Level II nodes:** Publisher hosts and posts data and metadata on their own web or FTP server. All layers are cataloged within the VGIS Data Warehouse cataloging database, which points to the Publisher's files (posted on the web/FTP server).
- b. **Loading and cataloging data:** Refer to the standards and procedures outlined in Appendix B.