

I. PURPOSE

To describe data formats and media available for distribution of VGIS data (provided as options on the Data Request Form).

II. DATA FORMATS FOR GIS DATA LAYERS

A. *pcARC/INFO Coverage.* An Arc/Info data layer is made up of one or more *coverages*. This data format is for use with the pcArc/Info (version 3.4.2, equivalent to 3.4D Plus and 3.4D), or pcArcView software.

B. *ARC/INFO EXPORT Interchange File.* Data will be provided in Arc/Info's EXPORT interchange file format, for coverages, INFO files, plot files or map compositions. EXPORT format is an ASCII text file, generally used only with Arc/Info software for transferring data between hardware platforms. A coverage directory is combined into a single EXPORT file that is 1.5 to 3 times the size of the original coverage.

For EXPORT format, data requestors can specify *full compression (/F)*, the default, or *no compression (/N)*, and the maximum number of lines (*maxlines*) per export file (default is no maxlines). Full compression usually works and is preferred, but should be tested for transfer to a given platform. No compression requires more media but is needed in some cases when transferring data between hardware platforms. Setting 'maxlines' is only needed in rare cases for specific platforms.

C. *DXF Format.* The DXF (Drawing Interchange File) format is used by many Computer Aided Design (CAD) and other computer mapping software packages to exchange data between platforms. DXF format stores feature coordinates and information on feature types in a single file. Arc/Info's *ARCDXF* command is used to convert Arc/Info coverage line, point and/or annotation features into a single DXF file (ASCII text format).

The *Request for Special Data Processing* form can be used to specify how Arc/Info data should be converted to DXF format. With no special processing, the DXF file generated from a coverage will have all lines in a single DXF 'layer', and/or all points in a single DXF 'layer'. Annotations will be converted to text entities, placed into DXF layers corresponding to Arc/Info annotation levels. With special processing,

the requestor can specify how Arc/Info attributes (for lines, points and/or polygons) will be converted to DXF LAYER, COLOR and/or THICKNESS characteristics.

If no special processing is requested, existing line, point and/or polygon attributes can be provided with the DXF data. By default, attributes will be provided in a comma-delimited format. Other formats are available, but only for data stored in pcArc/Info format at VCGI (some data are stored in host, or workstation, Arc/Info). Users may request these attribute formats, which will be provided *if available*:

- DELIMITED - attributes delimited by commas (text in double quotes); the default, available for all coverages
- FIXED - attributes in fixed columns
- DBF - attributes in .DBF format (for xBase DBMSs)
- NO_ATTRIBUTES - no attributes will be provided

Data provided in DXF format will include any of the following files that apply to a given coverage <cover>:

- <cover>.dxf - DXF file with feature coordinates
- <cover>.lav - line attribute values
- <cover>.pav - point attribute values
- <cover>.lit - line item (field) definitions
- <cover>.pit - point item (field) definitions
- <cover>.aat - arc (line) attribute table (in .dbf format)
- <cover>.pat - point attribute table (in .dbf format)

For polygon coverages, the polygon label point coordinates will be provided along with any available polygon attributes.

Some software packages are apparently unable to read DXF files generated by Arc/Info. VCGI cannot guarantee that a particular software package will be able to import data provided in DXF format.

D. ARC/INFO UNGENERATE Format. Arc/Info's *UNGEN* (or *UNGENERATE*) command is used to create this format from an Arc/Info coverage. The format provides the x,y coordinates of arcs and/or points in ASCII files. Ungenerate format is not generally usable by other software packages without manual manipulation of the data.

For polygon coverages, the polygon label point coordinates will be ungenerated, and any available polygon attributes will be provided.

Existing line, point and/or polygon attributes will be provided with the ungenerated data. By default, attributes will be provided in a simple delimited format. Other formats are available, but only for data stored in pcArc/Info format at VCGI (some data are stored in host, or workstation, Arc/Info). Users may request these attribute formats, which will be provided *if available*:

- DELIMITED - attributes delimited by commas (text in double quotes); the default, available for all coverages
- FIXED - attributes in fixed columns
- DBF - attributes in .DBF format (for xBase DBMSs)
- NO ATTRIBUTES - no attributes will be provided

Ungenerated data for coverage <cover> will include applicable files:

- <cover>.ugl - ungenerated line coordinates
- <cover>.ugp - ungenerated point coordinates
- <cover>.lav - line attribute values
- <cover>.pav - point attribute values
- <cover>.lit - line item definitions
- <cover>.pit - point item definitions
- <cover>.aat - arc (line) attribute table (in .dbf format)
- <cover>.pat - point attribute table (in .dbf format)

E. Other Formats. Some users might require other data formats for their software packages. VCGI may be able to provide other formats upon request. If not, VCGI can provide a list of commercial contractors who can provide data conversion and processing services.

III. FORMATS FOR DATA PRODUCTS

The format for each VGIS data product is described with the product's documentation. Many data products come as ASCII text files, xBase (.DBF) files, and pcArc/Info coverages.

IV. DOS MEDIA AND DATA TRANSFER METHODS

A. *Magnetic diskettes, Bernoulli II™ cartridges, and Iomega ZIP Cartridges.*

1. 3.5" high density (HD) disk (1.4 MB).
2. Iomega ZIP disk cartridge (100MB).

Data in DOS format (for IBM-compatible PCs) will be backed up to disks (or cartridges) using data compression software (PKZIP, in self-extracting files). Instructions for restoring the data will be provided.

**V. WORKSTATION
TAPE FORMATS
AND DATA
TRANSFER
METHODS**

VCGI will write data to the following tape cartridges with its DECstation workstation (with the Digital Unix operating system - DEC's flavor of unix), or perhaps with other workstations to which VCGI has access. Available tape formats are described after the tape cartridge descriptions.

There may be additional charges for use of other workstations. As always, the data requestor will be informed in advance if VCGI expects the total cost of data distribution to exceed the requestor's estimated cost.

Tape drive controllers vary between computers, as do the various versions of unix, so there is no guarantee that a tape written by VCGI will be readable on other platforms.

**Workstation
Tape Cartridges**

A. 4 mm DAT Tape (1.2 or 1.8 GB).

Data will be written to a 4 mm DAT tape cartridge (1.2 GB for 60 m, 1.8 GB for 90 m) with a DEC TLZ06 tape drive.

B. 8 mm Tape (5 GB or 2.3 GB).

Data will be written to an 8 mm tape from a unix workstation. Data requestors must specify the desired tape size (5 GB or 2.3 GB).

**Workstation
Tape Formats**

For unix users, tapes will be written with the 'tar' command. In rare cases the tar command is not compatible between unix systems.

For VMS users, data will be written with this unix command (where rmtxh is tape unit x):

```
% ltf -cfB /dev/rmtxh 800 file1 file2 ...
```

In VMS, the tape can then be read into the current directory with these commands (where MTA0: is the user's tape drive):

```
$ MOUNT/DENSITY=6250/BLOCKSIZE=800 MTA0:
```

```
ULTRIX
```

```
$ COPY MTA0:*. *.*
```

For non-unix systems, an ANSI-labelled tape can be written with unix utilities (ltf or dd). The desired blocksize and any other tape parameters should be specified with the data request. Please call VCGI if you are unsure of the proper tape parameters for your system.

VI. INTERNET DIRECT TRANSFER METHOD

A. *Internet ftp public account (direct transfer, no media).*

Data can be transferred directly from VCGI over the Internet by connecting to the VCGI ftp (file transfer protocol) public account. Arc/Info data layers must be in EXPORT format.

VCGI will notify the data requestor (by phone or E-mail) when the data is ready to be downloaded. There is no media fee.

To access the VCGI public ftp account, connect to the VCGI server as follows (underlined text is typed by the user):

<u>ftp.vcgi.uvm.edu</u>	From the user's system
Username: <u>ftp</u>	User logs into VCGI server
Password: _____	Input your E-mail address as your password
ftp:vcgi> <u>cd pub/ddist</u>	User changes to the public directory 'pub', where the data will be placed for downloading

The ftp commands vary slightly from system to system. Typical commands include:

ftp:vcgi> <u>?</u>	Help
ftp:vcgi> <u>status</u>	Show settings for file transfer
ftp:vcgi> <u>ascii</u>	Set file type to ASCII (text)
ftp:vcgi> <u>binary</u>	Set file type to BINARY
ftp:vcgi> <u>get <file></u>	Get one file from our system
ftp:vcgi> <u>nointeractive</u> or <u>prompt</u>	Turn interactive prompting off (or toggle).
ftp:vcgi> <u>mget <files></u>	Multiple get, wildcards OK
ftp:vcgi> <u>bye</u> or <u>quit</u>	Quit FTP

Be sure to set the file type for transfer to ASCII for Arc/Info EXPORT files.

NOTE: VCGI does not allow files to be put to our ftp site