

**Twenty-third Session  
Vienna, 28 March – 4 April 2006**

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**Item 8 of the Provisional Agenda:  
Activities relating to the Working Group on  
Toponymic Data Files and Gazetteers**

**The Geographic Names Information System of the United States of America  
Revision & Enhancement Report**

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## **Geographic Names Information System Revision & Enhancement Report**

The Geographic Names Information System (GNIS) is the United States Federal standard for geographic nomenclature. The U.S. Geological Survey (USGS) developed the GNIS for the U.S. Board on Geographic Names as the official repository of domestic geographic names data; the official vehicle for geographic names use by all departments of the Federal Government; and the source for applying geographic names to Federal electronic and printed products.

The GNIS contains information about physical and cultural geographic features of all types in the United States, associated areas, and Antarctica; current and historical, but not including roads and highways. The database holds the Federally recognized name of each feature and defines the feature location by State, county, USGS topographic map, and geographic coordinates. Other attributes include names or spellings other than the official name, feature designations, feature classification, historical and descriptive information, and for some categories the geometric boundaries. The database assigns a unique, permanent feature identifier, the Feature ID, as the official feature reference code, and as the standard Federal key for accessing, integrating, or reconciling feature data across multiple data sets.

The GNIS provides data to all levels of government, to numerous applications, and to the public through a web query site <<http://geonames.usgs.gov>>, web map and feature services, file download services, and customized files upon request. Major Federal systems supported include *The National Map* <<http://nationalmap.usgs.gov>>, *The National Atlas* <<http://nationalatlas.gov>>, and the National Hydrography Dataset <<http://nhd.usgs.gov>>. The GNIS is linked to the National Elevation Dataset <<http://ned.usgs.gov>> for query and display of feature elevation data, and increasingly is accessed dynamically by other Federal, State, local, and non-governmental systems for feature names data.

The Geographic Names Information System utilizes relational and geospatial database, geographic information system, and Internet technology to deliver its many services. It is resident on Sun Solaris servers with an Oracle Spatial database. Web services are provided through the Oracle Internet Application Server, ESRI Spatial Data Engine (SDE) and an ESRI ArcIMS map service. Applications are programmed using the Oracle HTMLDB toolset primarily in the Oracle PL/SQL language with some Java\* elements. The database contains approximately two million records.

Starting in 1976, feature name and attribute data were collected from the largest-scale U.S. Geological Survey topographic maps available, primarily 1:24,000-scale, as well as from records of the U.S. Board on Geographic Names, U.S. Forest Service 1:24,000-scale topographic maps and visitor maps, and National Ocean Service charts. In a second phase of collection starting in 1982, large amounts of data are being compiled under contract

from official state and local sources and other approved sources including historical maps and documents. This process is almost complete with two States in progress, and three waiting processing.

Additions and corrections to the feature data in the GNIS are accepted for consideration from any source, and upon validation, are entered into the database. However for primary data maintenance, the GNIS now collects data from a broad program of partnerships with Federal, State, and local government agencies and other authorized contributors. Non-government organizations with valuable data are considered on a case basis. The latest tools and methodologies are applied to ensure that local data are properly represented in the GNIS and through the GNIS to all Federal agencies and to the public.

Authorized partners have access to web based transaction entry and edit forms, which submit data directly to the GNIS for review and inclusion in the database. Partners also submit batch files in most standard formats and coordinate with the Geographic Names Project to develop joint services, processes, and applications for greatest efficiency. Data entered into the GNIS is validated to ensure compliance with the requirements of the Board on Geographic Names for national names standardization. The data becomes immediately available to all web services and applications dependent on it. For additional information or to request user accounts for entry and edit of production data and web seminar training, contact <gnis\_manager@usgs.gov>.

Since 2004, the Geographic Names Information System completed a thorough redesign of the database and development of entirely new web applications. The Oracle relational database design was simplified, data inconsistencies and anomalies resolved, and greater efficiency achieved. It was spatially enabled to become a full-service geodatabase with the capability to store, manage, and display geospatial data. Applications were reprogrammed to take advantage of emerging technology and to provide expanded and more efficient services.

Partnerships have been begun, enhanced, or expanded with Federal agencies concerned with geographic information, population, ecology, and management of public lands including the U.S. Forest Service, Office of Coast Survey, National Park Service, Bureau of Land Management, Fish & Wildlife Service, National Oceanic & Atmospheric Administration, General Services Administration, and Office of Personnel Management. Several States have recognized the GNIS as the official State names database and are actively contributing data.

Technically the trend has been toward more distributed processes using web technology and integration of traditional text and numeric applications with graphic and geographic capabilities. Personnel of the USGS Geographic Names Project are performing less actual data compilation and entry and more validation of data submitted by partners using the new tools, which is necessary given the sheer volume of the data and its rate of change. Partners increasingly are correlating their Federal, State, and local feature datasets with the GNIS in order to produce a consistent, current, and accurate national picture, particularly with respect to standardized name usage.

One major mission of the GNIS when first developed was to perform this role of valuator and integrator of feature names data in support of the USGS Topographic maps, until recent history the only consistent national geographic representation in existence. With the new technology and the demand for instant, accurate information, this role is even more important.

The Geographic Names Information System always was a geographic information system in the sense that it contained, managed, and displayed locative information. It is therefore natural that new geographic information system (GIS) data management and display functions be applied to the system. The GNIS has evolved in collaboration with other major USGS programs such as, *The National Map* and Geospatial One-Stop, as a major contributor to the 21<sup>st</sup> century's electronic version of the topographic map.

For the future, the GNIS intends to continue applying the emerging technology in support of its mission and the mission of the U.S. Board on Geographic Names. The trends described above are expected to continue. The immediate goals are to achieve better and more efficient web services and better integration with geographic data manipulation and display functions. Feature names data must be widely, quickly, and reliably available to any system or citizen needing it. In addition, it must be kept current, complete, and accurate through distributed partnerships using efficient and reliable tools.

For additional information on the GNIS and related web map and feature services, visit the Geographic Names web site <<http://geonames.usgs.gov>> and the Geographic Names Community in Geospatial One-Stop <<http://gos2.geodata.gov/wps/portal/gos>>, the USGS portal for Federal, State, and local geographic data. Communications concerning the Geographic Names Information System should be addressed to <[gnis\\_manager@usgs.gov](mailto:gnis_manager@usgs.gov)>.

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