December 30, 1992

Mr. Thomas E. Holder, Manager
Strategic Planning
West Virginia Development Office
Building 6, B-553
Charleston, West Virginia 25305

Dear Mr. Holder:

In this package are one clipped copy and ten bound copies of the final *West Virginia GIS Needs Assessment*. I have reviewed the information provided by all those who submitted their comments and have incorporated changes and enhancements to the report where appropriate. While most of the participants' comments have been incorporated, the report retains the perspective of a statewide project. In some instances, this statewide view overrides a few comments that were from a single agency perspective. The input from project participants has been valuable toward a balanced assessment of statewide GIS needs.

I concur with the January 21st date for the *West Virginia GIS Conceptual Design* review meeting. At this time, I plan to have Mr. Peter Croswell also attend the meeting.

Please call me at the Frankfort office if you have any questions.

Sincerely,

Thomas A. Herrick
Project Manager

Enclosures

GEOGRAPHIC INFORMATION SYSTEM NEEDS ASSESSMENT FOR WEST VIRGINIA

Submitted to:

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SECTION 1
INTRODUCTION

INTRODUCTION

For several years, a group of individuals concerned and interested in geographic information systems (GIS) technology has been meeting on an ad hoc basis. This group is known as the West Virginia GIS Coordinating Committee. The Committee has, among other things, worked toward education concerning GIS and developing the potential for sharing data between current users of the technology. Participants in this group are from local, state, and federal government agencies, and private firms whose interests are strongly tied to the land. Their activities have resulted in a significantly increased awareness of GIS technology and its potential.

The State of West Virginia issued a request for proposals for a consultant to formally study the potential for developing and implementing GIS technology. The goal at this stage is to formulate a long-range plan for geographic information systems in state government in conjunction with local, federal, and private concerns. PlanGraphics, Inc., a consulting firm from Frankfort, Kentucky, that specializes in geographic information system planning and implementation, was selected to prepare the long-range GIS plan. PlanGraphics prepared a scope of work in five series of tasks to accomplish the goal.

The focus of our study is to prepare a long-range plan to develop a statewide system to manage geographic information. Keep in mind that nearly every organization participating in this study already has some sort of system to manage geographic information. These systems range from totally manual maps and tabular listings to well planned and executed automated systems. The objective of this study is to explore options and prepare recommendations that will result in a more effective system for managing geographic information on a statewide basis.

Project Scope

To accomplish the goal of developing a Long-Range GIS Plan, PlanGraphics prepared a scope of work divided into five task series:

- Task Series 1: Information Gathering
- Task Series 2: GIS Needs Assessment
- Task Series 3: Mapping and Data Requirements
- Task Series 4: Strategic Plan, Funding Approaches, and Projected Benefits
- Task Series 5: Final Report Preparation and Presentations.

For further background on the project scope, a synopsis of each task series is presented below.

Task Series 1: Information Gathering

The information gathering process, now complete, began with a series of informational workshops intended to prepare participants for the study process. The first workshop was designed for the cabinet officials to introduce them to the issues surrounding GIS and to the study process. The second workshop was designed to prepare technical staff for the study process.

PlanGraphics prepared survey forms for distribution to each of the participating organizations. Two versions of survey forms were prepared; one set for state government agencies was quite detailed, while the forms for other participants were less rigorous. In large measure, the forms were completed by study participants and returned to PlanGraphics for review and analysis.

PlanGraphics conducted interviews with study participants over the course of two weeks. These interviews were to gather firsthand observations and an accurate perspective on the activities of each agency, current deficiencies and limitations, information flows, and ideas on improvements to the operation within the framework of a statewide GIS.

Task Series 2: Needs Assessment

This report constitutes the needs assessment. One of the prime objectives is to identify potential applications of GIS technology in support of participants' land-related activities. Identifying how the GIS may be used will in turn lay the foundation for identifying hardware, software, mapping, and database requirements in future reports. We also have characterized the current informational resources used by the participants to carry out their land-related activities.

A more detailed accounting of the contents of this report can be found at the end of this section.

Task Series 3: Prepare GIS Conceptual Model

PlanGraphics will identify the types of map data required to support GIS applications identified in the previous task series. We will also indicate map accuracy requirements associated with the potential GIS applications.

PlanGraphics will prepare a high-level description of the contents and structure of the GIS database. The database model will be presented as a series of layers with a description of graphic features and attribute data. This conceptual model will provide a solid view of the database contents, which will form the basis for a detailed database design.

Based on the evaluation of GIS-related functions, applications, and existing systems, PlanGraphics will define the most logical system configuration model for the GIS and will project requirements for an expanded hardware and software configuration. Our

projections will describe hardware device needs, software requirements, and communication needs to guide system development over a period of ten years in the future.

PlanGraphics will recommend and describe an organizational structure that may support development and implementation of the statewide GIS. We will also identify staffing requirements for GIS management and operations, including a description of positions and recommended salary structures.

PlanGraphics will estimate probable costs of system implementation based on mapping and database requirements and system configuration recommendations developed in previous tasks. These cost estimates will take into account all significant costs for procurements and system operation during a 10-year development period.

After this report has been reviewed by the project representatives, cabinet secretaries and department heads from the participating agencies will gather for a half-day meeting to be moderated by PlanGraphics. The purpose of this meeting is to inform senior management about the progress on the project to date and interim results and to get feedback about the GIS planning effort. Our objective in this session is to obtain a consensus from senior management on PlanGraphics' recommended approach to developing a statewide GIS.

Task Series 4: Strategic Plan and Projected Benefits

PlanGraphics will prepare a long-range strategic plan explaining major steps for implementation of the system as described in Task Series 3. This plan will describe major steps associated with different development “tracks” such as hardware/software procurement, database development, staffing and management, etc.

This strategic plan will characterize both short-term and long-term development issues. It will contain specific information necessary to guide implementation activities during early development and to prepare budgets for the next two one-year budget cycles. The plan will ensure coordination with overall information system plans for the state as a whole.

Task Series 5: Prepare GIS Presentations

PlanGraphics will prepare an executive summary of the study findings and recommendations. PlanGraphics will prepare presentation materials that will summarize the results of the study and recommendations for an implementation strategy. Its purpose will be to educate and to inform the audience about the potential applications and benefits of GIS. The presentation will also summarize the strategic plan and recommendations for short- and long-term GIS development.

PROJECT PARTICIPANTS

This study encompasses a wide variety of participants. In addition to all state government agencies, all member organizations of the West Virginia GIS Coordinating Committee were invited to participate. The participants included local government agencies, regional planning councils, state agencies, federal agencies, and private firms. Table 1-1 presents the organizations participating in this study.

Although they are not a technical participant, the Appalachian Regional Commission is responsible for a large portion of the funding for this project. The Appalachian Regional Commission is conducting a GIS planning study of its own.

A representative responsible for coordinating study involvement has been appointed by each participating organization. These individuals will be responsible for ensuring distribution of reports within their organization, consolidation of their organization's collective comments regarding the reports, and representation at meetings to discuss the reports.

NEEDS ASSESSMENT CONTENTS

The focus of **Section 2** is to present potential applications of geographic information system technology that can support participants' ongoing land-related activities. We have prepared an overview that indicates the relationship between activities and applications.

PlanGraphics has inventoried the resources currently used by study participants to support their land-related activities. These resources are inventoried in Appendices attached to the end of the report. In **Section 3**, we discuss these inventories and their relevance to a statewide GIS project.

TABLE 1-1
PARTICIPATING ORGANIZATIONS

State Agencies

Administration	IS&C
Agriculture	Commissioner
Commerce, Labor, Environmental Resources	Bureau of Employment Programs
Commerce, Labor, Environmental Resources	Division of Forestry
Commerce, Labor, Environmental Resources	Division of Natural Resources
Commerce, Labor, Environmental Resources	Division of Tourism and Parks
Commerce, Labor, Environmental Resources	Geological and Economic Survey
Commerce, Labor, Environmental Resources	Miner's Health, Safety & Training
Commerce, Labor, Environmental Resources	Solid Waste Management Board
Commerce, Labor, Environmental Resources	Water Development Authority
Commerce, Labor, Environmental Resources	WVA Development Office
Commerce, Labor, Environmental Resources	Div. of Environmental Protection
Department of Education	Staff
Education and the Arts	Higher Education Central Office
Education and the Arts	Culture and History
Education and the Arts	Network Educational Telecomputing
Governor's Office	Health Care Planning Commission
Health and Human Resources	Bureau of Public Health
Health and Human Resources	Division of Human Services
Health and Human Resources	Health Care Cost Review
Health and Human Resources	Management Information Systems
Legislative Services	Staff
Public Safety	Emergency Services
Public Safety	State Police
Public Safety	Regional Jail Correctional Authority
Public Safety	State Fire Marshall
School Building Authority	Staff
Secretary of State	Secretary
State Soil Conservation Committee	Staff
Tax and Revenue	Property Tax Division
Transportation	Aeronautics Commission
Transportation	Division of Highways
Transportation	Port Authority
Transportation	Parkways, Economic Development & Tourism

TABLE 1-1 (continued)
PARTICIPATING ORGANIZATIONS

Federal Agencies	
Corps of Engineers	Huntington District
Office of Surface Mining	Charleston Field Office
USDA	Forest Service
USDA	Soil Conservation Service
USDI	National Park Service
USEPA	Region III
USGS	Water Resources Division
Universities	
Marshall University	Institute for Regional Development
WVA University	Agriculture & Forestry
WVA University	Geology & Geography
Local/Regional Organizations	
City of Beckley	Department of Engineering
City of Huntington	Sanitary Board
City of Morgantown	Planning and Housing
Morgantown Utility Board	
City of Weirton	Police Department
City of Weirton	Fire Department
City of Weirton	Finance Department
City of Weirton	Department of Public Works
Putnam County Planning Commission	
Regional Planning & Development Councils	Region I
Regional Planning & Development Councils	Region III
Regional Planning & Development Councils	Region IV
Regional Planning & Development Councils	Region V
Regional Planning & Development Councils	Region IX
Regional Planning & Development Councils	Region X
Regional Planning & Development Councils	Region XI
Private Organizations	
Appalachian Power Company	
Chesapeake and Potomac Telephone Company	
Union Oil & Gas	
West Virginia Association of Counties	
Western Pocahontas Properties	
WESTVACO	

SECTION 2
POTENTIAL APPLICATIONS OF GIS

INTRODUCTION

Overview

This section of the *GIS Needs Assessment* presents how GIS technology might be applied to support the land-related activities of West Virginia GIS study participants. The section is divided into subsections, each imparting a different perspective on the issues surrounding the application of GIS technology. Besides this overview, the introduction explains how potential GIS applications drive the design of a GIS. PlanGraphics has analyzed the relationship between participants' land-related activities and potential GIS applications and presents our findings in a matrix. We describe each of the potential GIS application categories that are listed in the matrix table. Finally, in this section, we have prepared a summary of the overall priorities and what we see to be the general direction and focus for the West Virginia Long-Range GIS Planning Project.

Determining potential applications of GIS technology is the first step in identifying requirements for mapping, software, hardware, and other elements of a geographic information system. PlanGraphics identified categories of GIS applications that may be developed and tailored to support the land-related activities of study participants.

PlanGraphics conducted interviews with representatives of state agencies and the other organizations participating in this long-range GIS planning study. We also collected information in the form of surveys. (Blank copies of the survey forms are included with this report as Appendix D.) One of the goals of the survey and interviews was to identify participants' land-related activities. PlanGraphics has analyzed the activities reported by study participants for their potential support through a geographic information system. Most of the activities reported have relevance to a geographic information system project. In this section, we have reviewed the potential for application of GIS technology in support of the reported activities.

Applications Drive Design

One of the most important steps in studying West Virginia's GIS needs is to identify land-related activities that may be supported by using GIS technology. Each use, or application, of the GIS will require specific functionality from the software and hardware as well as graphic and tabular data. To build a statewide concept for the GIS requires that we (both consultant and study participants) understand how the system may be applied to the performance of land-related activities.

Knowledge and understanding of potential applications should drive the GIS conceptual design. PlanGraphics has prepared an initial assessment of the state's potential

applications of GIS technology based on the land-related activities reported to our project team. Readers will notice that Table 1-1 includes more participants than Table 2-1. Not all participants are directly involved with land-related activities; for example, IS&C does not perform land-related activities, but indirectly supports the activities of others by providing computing services. Further, some of the intended participants did not complete the survey forms. However, PlanGraphics is confident through our experience with many other state GIS planning projects that the activities and applications expressed by the majority of participants provide a thorough base from which to determine statewide GIS functionality.

The initial assessment is presented as general types of applications in order to effectively categorize and describe potential statewide use of GIS. From this initial assessment of potential applications, PlanGraphics will develop recommendations for map and tabular geographic data, hardware, software, and data communications. Data and system recommendations will be presented in the next report, *GIS Requirements*. Figure 2-1 graphically shows the relationship between applications and the rest of the GIS project.

FIGURE 2-1
APPLICATIONS DRIVE DESIGN

POTENTIAL APPLICATIONS OF GIS

It is important for the individuals involved in this study to understand how the potential application of GIS technology relates to their current land-related activities. PlanGraphics shows this potential relationship in Table 2-1. Table 2-1 is a matrix comprised of two lists:

- Participants' land-related activities
- Potential GIS application categories.

Participants will recognize their land-related activities in the left-hand column of Table 2-1. However, the listing of GIS application categories across the top of the table will be less recognizable unless one has previous exposure to the technology. These relatively broad categories of GIS applications encompass participants' activities. There are many specific application programs (hundreds, perhaps thousands) that will ultimately be written that fall within the categories. We will use these categories for this study to establish a statewide understanding of the GIS capabilities that are needed.

In Table 2-1, readers will find that each land-related activity may be shown as falling into more than one GIS application category. In most cases, the different application categories were identified from interviews and survey forms. However, PlanGraphics has shown some relationships between activities and application categories as a potential based on our experience.

After Table 2-1, we have prepared descriptions of the GIS application categories in order to shed some light on how the GIS may be used. These descriptions will provide a context for the overall need for GIS as well as a basis for future reports on mapping and system requirements and the long-range plan. Table 2-1 indicates which organizations may make use of the applications and for what purpose.

DESCRIPTIONS OF APPLICATION CATEGORIES

Cartographic Applications

Cartographic applications refer to the use of GIS to support mapping. Participants' activities and PlanGraphics' experience indicate that cartographic applications will include:

- Updating of standard maps
- Standard map plotting
- Compiling map data for custom map production
- Preparing maps showing the location of particular incidents
- Production of maps portraying special data themes
- Preparation of publication and presentation graphics from the map data.

Standard Map Maintenance and Production

Most West Virginia state agencies and other study participants have prepared and maintain maps that, over time, have become standard products. This key application category covers a wide variety of specific application programs that would be written to enable staff to update graphic and tabular databases and produce standard map sets. Some of these standard maps include distribution features, hydrology, election districts and precincts, parcel boundaries, and many other sets of standard map data.

Rather than using pencil or ink to modify hard copy paper or mylar maps, staff would make changes to a digital map file. New data from surveys, plats, inventories, legislative actions, facility installation notes, and other sources can be entered to the GIS using one of several means, whichever is appropriate. Graphic data entry would be performed by digitizing from the source map, or perhaps entering surveyed coordinates or metes and bounds. Each map maintenance program will be written differently for the map to be updated.

Keeping a set of current maps at hand is critical to the operations of many study participants. Generally, because of time and cost considerations, map users don't plot a new map each time a copy is required, even with the fast electrostatic plotters available. A set of reproducible maps is kept up-to-date in accordance with standards set and agreed upon between map users and map producers. These reproducible maps can be copied using standard diazo (blueprint) techniques when multiple copies are required. Programs will be written to retrieve the specific features required for each particular standard map, to format the data, to establish the scale, and to send the data to a plotter.

Custom Map Compilation and Production

One of the more difficult and time-consuming mapping activities is the preparation of maps customized from existing maps and data. Usually, the most time-consuming

element of the process is simply finding the right source material to use. Then, of course, the maps are typically all at different scales and have to be photographically re-scaled, unless the copier is handy... With some planning, most of the map data required to respond to requests for custom mapping will be available in the GIS. That done, the search for data is narrowed to the database; staff always know where to look. Scale changes are handled by the computer by displaying and plotting map data at the scale specified by the user. Already, many of the reasons for not preparing customized special maps are diminished.

The difficulty that remains is with the cartographer to design a map that communicates the particular geographic information effectively. The GIS can be programmed with special symbols, line types, and patterns that the cartographer can use to represent the data. Over time, the cartographer can generate quite a library of map symbols that may be used to establish a particular appearance associated with the organization. For example, the maps from the WV Division of Natural Resources may have a very different appearance from those of the State Police.

The process of map compilation, or gathering and plotting of map data, for custom maps will likely be done "on the fly." That is to say that there will likely not be a standard program for custom maps, unless today's custom map becomes a standard in the future. Map compilation accomplished using a well planned GIS becomes a relatively quick process since the cartographer need not re-plot the data onto a new base map. All data in the well planned GIS will be of a known accuracy, and will be mapped and stored in the database using a standardized frame of reference. This will keep the cartographer from having to re-plot features from one map to another each time a custom map is to be prepared. The cartographer will produce maps on the drafting plotter by establishing map symbols to be used, plot scale, and other parameters.

Incident Mapping

Incident mapping applications use matching routines to compare address or land ownership records to a reference file and to assign geographic identifiers to the records which position the applications spatially with respect to other features. Address geocoding is a powerful and versatile tool that can be a part of a wide variety of processes. For example, it can be used interactively to verify that a given address exists or may exist; it can be used to assign people, objects, or events to specific locations or general areas; and it can be used to logically group or select items by geographic area. Common street number addresses can also be supplanted by the value for highway mileposts in rural areas or river mile markers in navigable waterways.

Incident mapping is the automated counterpart to the traditional "pin map" that uses colored pins, placed on a wall map, to show the location of an object or event. Digital symbols can be overlaid on to base data in a similar manner to show point features or occurrences tied to specific locations. As shown in Table 2-1, this type of application helps support many of the activities identified by the study participants. The advantages of automating the incident map are numerous, and include the following:

- Interactive access by graphics terminal from any location, and by many concurrent users
- Easy and timely updating of the base map supporting the application
- The ability to efficiently store, relate, and retrieve tabular information associated with the particular items being mapped
- Access to computational and spatial routines that can operate on the data
- The ability to geographically relate the items to other items in the database
- The ability to produce, whenever desired, hard copy maps of any scale and geographic extent, showing the mapped items.

Thematic Map Production

Thematic map production refers to the preparation of maps that generally require some analysis and that portray a particular data theme. Many of the thematic maps prepared will be the result of relatively complex application programs. These programs may select several types of data, overlay and compare them, and produce a map showing the results of the analysis.

One example of a thematic map is a landfill siting map. An application program would retrieve data such as soil boundaries and characteristics, slope zone categories, and classifications of transportation corridors. The GIS would produce a map by overlaying and analyzing the spatial relationships between these features. This application program would be written to use criteria already established for the analysis.

As for the custom maps, thematic maps will generally be produced using special symbols, line types, colors, and patterns as deemed appropriate by the cartographer to communicate the information. Symbols can be created, stored in a library, and used for plotting when required.

Publication and Presentation Graphics

This application is quite similar to the custom mapping application, but is reported separately because the characteristics of these maps are typically more generalized. Applications that fall under this category will enable users to create high quality color publication and presentation graphics to use for public meetings, education purposes, displays, posters, presentations, and court cases. Almost every participant has some element of public interface which could be helped by improving the quality of visual presentation. Since the public perception of an organization can have a major impact on the support received, this is an application of particular importance. Graphics include high quality maps, tables, viewgraphs, pie charts, and any information typically used in portraying information to groups or in reports. These products, from the GIS, can be used directly as camera ready products for large volume media production.

Information Management Applications

Standard Queries and Data Display

There are many opportunities to use an automated geographic information system to support standard queries of geographic information and maps. Requests for geographic information are received by phone and in person by citizens, ratepayers, government agencies, developers, contractors, and many other private organizations. Many of these requests are for the same or similar information on a routine basis. From our interviews, it became obvious that for many of the study participants, simply finding the appropriate information is a tedious and time-consuming operation.

This application category encompasses a myriad of specific application programs that may be developed to provide interactive queries and displays of map and tabular data. From an operational viewpoint, standard queries performed using a GIS would not differ radically from those performed using existing tabular data processing systems. The GIS will ensure that users have a new set of options for retrieving data. These options include:

- Retrieving and displaying tabular data records based on pointing to a point or area on a map

- Retrieving and displaying a map showing the feature or features identified in a tabular record.

The ability to quickly retrieve and display maps and tabular data in the manners stated above can go a long way toward reducing the time spent on searching for information.

Public Information and Inquiry Response

These applications will support staff in responding to public inquiries through both standard and ad hoc database queries. Staff would use GIS workstations; the public may gain limited access through specially controlled query terminals in staff-supervised public areas. In the case of a public access terminal, the public would use a special terminal that has limited access to the GIS database or selected database components that reflect commonly asked questions. This approach will require development of special, easy-to-use self-prompting menus in order to relieve staff from having to spend time with routine questions from the more experienced public.

In most cases, staff will remain involved with responding to public inquiries. Common queries can be programmed with menu prompts to enable the user to quickly access the data. More experienced staff may be allowed to run ad hoc queries of a database to answer special questions from the public.

Maintenance Planning and Scheduling

A GIS has many potential uses in the area of maintenance planning and scheduling activities. Two major components of these applications include:

- Storage, query, and mapping of the installation and maintenance history of the facility or infrastructure. The database would be designed to store information concerning installation and maintenance of the facilities. Reports or maps produced using this database would be used to identify or evaluate work efficiency or to plan for future maintenance.

- Complaint or incident monitoring and mapping. Complaints from utility customers or the location of traffic accidents are factors in scheduling maintenance or initiating infrastructure redesign. Complaints and incidents are normally referenced by street address which can be the basis for showing their location using a street centerline map. Address matching commands can be used to plot the locations of complaints or incidents in order to graphically show where they may be concentrated.

Many other maintenance management-related applications can be included under this category. The benefits of using a GIS for maintenance planning and scheduling result from the capability to store and analyze virtually any geographically related facility data and to spatially analyze and display the information.

Utility, Facility and Equipment Inventory

Most of the study participants have physical assets located throughout West Virginia, some statewide, some in more localized areas. These assets include utilities (water, sewer, gas, telephone, electric), facilities (buildings, bridges, etc.), equipment (bulldozers, cars, trucks, etc.), and a wide variety of other holdings. Management of their effective use often requires significant planning and organization. These activities can be facilitated by representing their distribution on maps and developing applications that analyze and optimize their distribution.

These applications include the update and production of maps, at a variety of scales, depicting the locations of utility infrastructure, facilities, and equipment locations. These applications allow the user to maintain an inventory that shows the location of features and includes a database record for each feature. For example, the location of all highway bridges in the state can be mapped and stored in the GIS. For each bridge, a record of its construction, as-built plan number, height, length, weight capacity, and other characteristics can also be created and maintained. Similarly, the location and characteristics of heavy equipment that may be needed in the event of a natural disaster can be recorded in a GIS. Applications of this nature are likely to be used routinely.

Permit Tracking

Tracking and reporting applications involve the monitoring of specific activities, materials, people, natural resources, or occurrences. Tracking may involve the movement of a specific item from one location to another, the change of an item over time, or the change of an area over time. Efficient and accurate tracking and reporting depend on efficient and accurate record keeping.

These applications involve the mapping and tracking of mining or drilling permit applications, mine development and reclamation plans, and other types of commercial and private development plans. Because all of these types of plans and applications must be reviewed by many agencies, and because their approval is dependent on many things, including their relative location to other things in the real world, mapping them and indicating their current status in such a way that many concurrent users have access to this information is a very valuable application.

This application category can also involve mapping and status tracking of scheduled inspections. Closely related to permit and development tracking, these applications can also allow the user to assign inspectors to scheduled inspections based on geographic area, to establish routes, and other spatial criteria.

Complaint Tracking

By placing a symbol at a specific location in the spatial database, these applications allow the user to geographically locate and relate customer/client complaints, billing, and other types of information. Reports and analyses can be generated by geographic area. Incidents of complaints categorized by type can be selected, tabulated, reported, and displayed on a map. These applications may be batch or interactive, and may or may not require the use of a graphics interface.

Complaint tracking can be used in several ways. Complaints regarding utilities, highways, or other infrastructure elements can be tracked to indicate areas that may need special attention. Another use of complaint tracking is by management to ensure that staff are responding in a timely and effective manner to the issues raised by citizens or customers.

Land Ownership/Lease Tracking

Many of the organizations participating in this study have concerns about the ownership of public and/or private land, and lease agreements that may be in effect on these lands. Property ownership and less than fee rights in real property impact many of the participants' activities. They are critical to planning, issuing permits, inspecting and enforcing permits, managing investor interests, notice and public participation in government decisions, etc. These data are usually contained in legal documents that are duly recorded in the appropriate county. This information can be graphically displayed on maps by annotating land parcels with ID numbers, or other reference identifiers.

These maps provide an easy way to geographically reference the locations of particular land holdings, or to identify the ownership or lease condition of a particular land parcel.

These applications include all activities that involve mapping and data management of land lots and parcels. Property mapping includes the production of property maps depicting lots, rights-of-way, assessment parcels, easements, and other legal boundaries defining land rights or ownership. These applications also involve the management and querying of databases which inventory property-related data. These applications are of great potential use to state and federal agencies, counties, regional planning councils, and private firms that use property data.

These applications also include the storage and management of information about land that is owned, leased, or managed by state government. These applications impact all departments that have some responsibility for land management. These are database management applications that involve the maintenance of data about location of properties, management responsibility, ownership or lease status, pertinent dates, and other information. These applications will allow querying public land status, and generating screen displays and maps showing tracts of land coded with status information. Much of this information is automated, in report form, from the Property Tax Division, but there are no automated mapping capabilities as yet. This application will be a very powerful tool in the decision making process for land sales, exchanges, and easements. This information is likely to be used interactively on an extensive basis, and will require intensive use of graphics terminals.

ROW inventory and acquisition tracking applications concentrate on the management of information about public rights-of-way and easements. These applications specifically deal with land rights and ownership as they impact rights-of-way for public streets, trails, and utilities. The applications involve the maintenance and management of data about the location, dates associated with acquisition and vacation, particular rights conveyed, and other information on existing public easements and rights-of-way. GIS users can manage new acquisition projects involving analysis of private owners with proposed rights-of-way and costs associated with acquisition. These applications are likely to be used interactively on a regular basis.

Development Review/Impact Assessment

The process of reviewing, assessing, and implementing site-specific and land development plans has traditionally been plagued by various technical difficulties. A cooperative GIS effort can go a long way toward eliminating these problems. Primarily, a GIS makes it possible for various organizations involved in the review/assessment process to have immediate access to a single up-to-date base map and geographic databases. A GIS allows the users to compare geographic variables based on user-defined constraints. Recent land development, changes in water drainage, or concurrent actions affecting the same property are immediately apparent to the reviewer of a plan. Standard environmental and economic impact calculations can be readily performed using an on-line environmental atlas, and pre-determined assessment models. Additionally, plans which had traditionally been drafted manually or on one automated

system prior to approval, and then transferred to the base map manually or using another automated system, will now be performed on one automated system.

The analysis of land use as related to the impact of development projects can be supported through the use of a GIS by providing users with up-to-date land use information. These types of analyses can pertain to small site-specific development projects, such as a building permit application, or in determining the long-term effect of development patterns over large areas. Users can view land use patterns and make standard comparisons between land use and other factors such as zoning, topography, or highway capacities.

The environmental impact of proposed developments can be assessed using the GIS by superimposing possible scenarios on existing land uses, land covers, wildlife patterns, topography, drainage, etc. GIS applications could use an on-line environmental atlas much in the same way environmental impact statements are prepared.

Economic impact studies also fall into this category of GIS applications. The GIS can be used to model development scenarios and their possible economic impacts. Most of these software models may exist outside of the GIS, but data may be exchanged between systems, and the results of the model may be portrayed geographically on a map.

Analytical Applications

Address Matching

Address matching applications compare address records to a reference file or assign geographic identifiers to the records in order to show their location with respect to other features. Address matching is a powerful and versatile tool that can be part of a wide variety of larger applications, such as incident mapping. One use of address matching is to support the assignment and verification of addresses and to eliminate redundant address records or actual assignment. A master file of addresses should be the responsibility of a single agency (most likely at the county government level). These applications can be used to support the creation and maintenance of a "clean" address file, and to enable the responsible entity to find inconsistent addresses for reassignment. This is a nearly impossible task without the use of a GIS.

Another use of the address matching capability is to support the update or computer-aided dispatching (CAD) systems for emergency service organizations. As part of the update process for street address and road records in the GIS, a work file can be created to pass data to a CAD system. Generally, this data would be "stripped down" from the data stored on the GIS in order to ensure speedy response from the CAD. Often, for security reasons, there cannot be a direct link between the GIS and CAD, and portable magnetic media are used to transfer the data. This application would involve programming on both systems. On the GIS, the application would extract only the data required by the CAD system database. On the CAD system, a program to accept the new

address records will read and format the data for update into that database. There would be no transfer of graphic data between these systems.

Network Analysis

An increasing number of software packages are available to assist administrators, engineers, and planners to study and control the dynamics of networks. These software packages are typically available on PCs for use by transportation specialists, utility system engineers, and others. They are often used to model flow through a network for both operational and planning activities. An integrated GIS opens up the possibility of direct links between such packages and other spatial databases.

The map features (highways, streams, sewer lines, etc.) used for network analyses are divided into segments that contain consistent characteristics. Typically, these segments start and end at intersections, manholes, valves, or stream confluences. However, the map features can be segmented in just about any manner that is appropriate and efficient for the user's needs.

Capacity analyses can be modeled for traffic, water distribution, storm and sanitary systems, and other systems that are designed, or naturally enable, flow of material. These applications require the periodic monitoring of flow at strategic points in the network to support current analysis and predictions.

Transportation modeling and planning applications can be programmed on the GIS, or can simply extract data from the GIS for use with a third-party software system. These applications can include activities such as traffic capacity analysis relating to the impact of development projects on existing roads or the construction of new roads. They can also be used to simulate potential or actual emergency situations in which portions of the road network become impassible and alternative routes must be determined. A similar use of the GIS can derive an optimum route to be taken to pre-determined locations, such as ambulance service to a retirement home, or a sequence of stops to be made during a day or week such as by service or inspection personnel.

Another use for network analysis capabilities is to evaluate utility infrastructure. These applications can be used to maintain an accounting of the activities within a network for financial or technical purposes, thus increasing the system's efficiency. These applications benefit from the ability to graphically display the location of certain characteristics of the infrastructure.

Network analysis applications generally involve the capability of tracing logically through networks of sewer lines, water lines, or other interconnected utility features. Examples of network analyses might involve questions of:

- Determining which water lines would be cut off if a valve is shut
- Determining which valve should be shut if a water main breaks
- Potential maximum sanitary or storm sewer capacity.

Demographic Analysis

Demographic analysis is accomplished by using area-based geocoding. Examples of area-based geocodes include census tracts and blocks, counties, regions, magisterial districts, service districts, and many other areas that can be categorized and mapped by a boundary. Information from census files, market surveys, health statistics, and others can be related to a geocode that is also related to the mapped boundaries of the appropriate features. Specific records can be matched to the geocoded area in order to portray distribution for trend analysis or population projections to support planning efforts or marketing analyses. The ability to spatially depict the results of a statistical analysis on a map is a significant boon to planners and managers.

Comprehensive Planning Analysis

GIS can be used as a tool to support the analyses involved with comprehensive planning. Land use and demographic data can be efficiently stored, interactively retrieved, and plotted on maps of various formats. Land use information can be aggregated into generalized groups to assist in the planning process. Conceptual plans can be translated into publication-quality maps and reports. In addition, alternative development scenarios can be interactively entered onto the system, and the results of various economic, demographic, and transportation models can be visualized using the cartographic capabilities of the GIS.

Land use planning can be supported through the production of maps and reports indicating land use patterns that may be relevant to general, economic, and transportation planning. Standard comparisons between land use patterns and zoning, topography, traffic capacities, etc., can be made using these GIS applications. Demographic data can be viewed in the context of a comprehensive planning effort in multiple scenarios. The ability of GIS software to link census data to their geographic locations makes it possible to analyze demographic patterns as they relate to other mapped features. For example, the effects of a proposed local zoning action on local schools can be predicted by applying certain formulas to the demographic information available for the immediate vicinity of the project.

Applications can be developed to address specific small areas within a larger area, such as a particular well in an oil and gas field, or a specific meadow inside a state park, where a more defined set of criteria needs to be addressed to make a proper evaluation of a particular situation. This may be the evaluation of a reclamation plan or the development of a new foot trail in a specific area.

Emergency Preparedness Planning

Examples of emergency events that require some predictive efforts and preparedness by the state and others include landslides, abandoned mine subsidence, dam breaks, and flood control. The timeliness of reaction by the appropriate resources can be crucial in saving both natural resources and human lives. This group of applications enables the state to plan and prepare for such emergencies.

The landslide prediction application would address advance planning, taking into consideration the natural resources and conditions (i.e., slope) prevalent in a given area (terrain analysis and land cover application), the amount of precipitation, soils type, historical events, and the weather conditions.

These applications help to define service units for emergency response resources, and conversely, help determine where resources will be needed during an emergency situation. These applications use manpower, equipment, and distance from road data, along with transportation-related information, in order to determine ideal placement for equipment in the current facilities, or for the location of new buildings to act as service facilities. They are able to model likely specific emergency scenarios in order to determine which equipment and personnel should respond to that situation.

Terrain Analysis

Terrain analysis applications use digital models to represent regions of the Earth's surface. These digital models are derived from spot elevations gathered by surveyors in the field, contour lines from topographical maps, or from the various other means of acquiring elevation data related to geographic locations. These models can be used for a variety of design activities, including volume calculations, slope analysis, site selection, landscape design, mined land reclamation design, watershed analysis, etc.

Facilities and land development planning and design can benefit from terrain analysis capabilities when selecting and designing sites for construction. Slope analysis routines can be used to select appropriate sites for building construction, based on maximum allowable slope, or design of dam sites, based on minimum slope required for containment. Volumetric routines can estimate quantities of excavation or fill required for grading and landscaping. These activities are usually performed on a project-specific basis.

Terrain modeling can be used to determine the water runoff characteristics of land surfaces and watershed impoundment information from high to low elevations. Floods, man-made water diversions, catastrophic weather events, and other related events can be modeled using digital representations.

Design/Drafting Applications

Engineering Drafting Applications

These applications include the management of drawings in addition to their actual automated drafting. Site plans for parks, highway engineering plans, geodetic survey drawings, and as-built utility drawings are often needed by staff and management, sometimes long after the projects are completed. Questions often arise about construction efforts or surveys done in a particular area in the past. An index to the location of prior activities as represented on their plans, as-builts, and engineering drawings can save untold amounts of time in their retrieval. Rather than searching

through the hard copy plans, opening them to discover that they are irrelevant, reshelving the plan, and moving to the next, staff would have the opportunity to identify a particular area on the digital map and ask for a listing of, say, all previous highway plans. Armed with the list of plan numbers, the search can be narrowed to those needed.

Preliminary Engineering Planning

Computer-aided design and drafting has proven to be an effective tool in the production and maintenance of engineering, structural, and architectural design drawings. Although traditionally not the domain of GIS, GIS software combined with appropriate large-scale data for the project area can serve traditional CAD needs, through the use of their graphics editing capabilities. Among other things, this allows the drawings to be linked to the larger GIS database. In some cases, preliminary engineering design activities can use information from the GIS directly to reduce the level of field data collection. Several participants currently engage in some form of computer-aided drafting, and could benefit from an integration of these functions.

These applications involve the drafting and facility design drawings. These detailed, site-specific drawings show the designed layout of facilities with respect to property and the surrounding environment.

These applications involve the design of new roads, utility infrastructure, and other facilities. These applications would use base map and terrain information in the planning of optimal site locations. They typically include initial calculations of earthwork quantities (cut and fill) required for grading, haul quantities, and distances for highway development. Design functions are facilitated by the input and analysis of multiple organizations to determine the primary use, impact assessment, potential volume, and so forth.

SUMMARY OF GIS APPLICATION NEEDS

Application Priorities

PlanGraphics has prepared recommendations concerning the priority associated with each potential GIS application. The recommendations are based on our analysis of all participants in the context of a statewide GIS project. These recommendations do not, and are not intended to, reflect the priorities of a particular agency; they are intended to provide a composite picture of need on a statewide basis.

In the left hand column of Table 2-2, below, PlanGraphics presents the priorities based simply on the numeric rating described in the previous paragraph. In the right column, PlanGraphics has added its own analysis through experience to the priority listing. The basis for these two priority ratings is explained below.

Numeric Rating Only

As an initial basis for determining application priorities, PlanGraphics quantified the number of participants' responses indicating potential use of an application. Based on our review of the total incidents where participants' land-related activities correspond to an application catetory, the total numbers appear to be grouped into three ranges: high range around 50, a medium range from 17 to 28, and a low range from 6 to 13. Table 2-2 presents the listing of potential GIS application priorities within the three groupings. This priority listing is simply an indication of the potential number of users for a particular application. In the Numeric Rating Only column of Table 2-2, we have not added other influences that we believe must be considered when assigning priorities. Additional influences are brought into the analysis below.

PlanGraphics' Recommendation

In the right-hand column of Table 2-2, PlanGraphics shows a listing of priorities that is modified from the simple numeric rating. PlanGraphics balanced the varying requirements of particular users and modified the simple numeric counts after analyzing the following issues:

- Our understanding of state government operational mandates
- Complexity of developing the data required to support a category of applications
- The need to develop applications for ongoing database maintenance.

PlanGraphics' understanding of state government operational mandates is based on our experience with many other state government GIS planning projects. We understand that some potential GIS applications may be performed by a few or only one agency, but that those applications may be crucial priorities when considering all government programs.

Some applications may require preparation of a database that is relatively involved and time-consuming. One database may require preparation of another set of data as a prerequisite to its own development. For example, parcel mapping should not be started until a base map is complete. The complexity and time required to develop databases will vary widely and will affect the sequence of developing GIS applications. Some applications that may have a higher priority in the number of users or may be critical to operations may end up in a lower priority rating simply due to the time required to develop the database.

As discussed earlier, database maintenance is critical to the operations of the GIS. Databases that are not maintained in accordance with user requirements are likely to languish through disuse. PlanGraphics recommends that GIS applications that support database maintenance should be given a high priority.

In large measure, the GIS application priorities indicated by the numeric accounting of potential use remain as reported by the participants. We believe that the West Virginia

Long-range GIS Plan should be focused toward the priority of application categories indicated under PlanGraphics' Recommendation in Table 2-2.

TABLE 2-2
POTENTIAL GIS APPLICATION PRIORITIES

Numeric Rating Only	**PlanGraphics' Recommendation**
<u>High Priority</u>	<u>High Priority</u>
Incident Map Production	Incident Map Production
Standard Queries and Data Display	Standard Queries and Data Display
	Standard Map Maintenance and Production
<u>Medium Priority</u>	<u>Medium Priority</u>
Standard Map Maintenance and Production	
Thematic Map Production	Thematic Map Production
Maintenance Planning and Scheduling	Maintenance Planning and Scheduling
Utility, Facility, and Equipment Inventory	Utility, Facility, and Equipment Inventory
Permit Tracking	Land Ownership/Lease Tracking
Development Review/Impact Assessment	Permit Tracking
Network Analysis	Development Review/Impact Assessment
Demographic Analysis	Network Analysis
Terrain Analysis	Address Matching
	Demographic Analysis
<u>Low Priority</u>	<u>Low Priority</u>
Custom Map Compilation and Production	
Publication and Presentation Graphics	Custom Map Compilation and Production
Public Information and Inquiry Response	Publication and Presentation Graphics
Complaint Tracking	Public Information and Inquiry Response
Land Ownership/Lease Tracking	Complaint Tracking
Address Matching	Comprehensive Planning Analysis
Comprehensive Planning Analysis	Emergency Preparedness Planning
Emergency Preparedness Planning	Terrain Analysis
Engineering Drafting	Engineering Drafting
Preliminary Engineering Planning	Preliminary Engineering Planning

SECTION 3
EXISTING RESOURCES

INTRODUCTION

This section presents PlanGraphics' findings regarding the maps, tabular information, and data processing systems that study participants currently use in support of their land-related activities. Our aim in this section is to characterize the overall situation regarding the ability of existing resources to meet the geographic information and information processing needs of the participants. We begin characterizing the situation with an assessment of the need for standards, for both mapping and tabular geographic data. Standards may be the most important issue in this project, particularly given the magnitude of participation in the study from local governments, regional planning councils, state and federal government agencies, and a wide range of private companies.

Also in this section, PlanGraphics has characterized existing mapping and tabular geographic information resources in the context of a statewide geographic information system. Existing data processing systems, and GISs in particular, are also discussed in relation to a statewide system.

Our information regarding existing resources was gained through PlanGraphics' on-site interviews, survey forms completed by the participants, and telephone follow-up conversations. We believe that the information gathered portrays a relatively complete picture of the geographic information and data processing situation for the participants.

NEED FOR STANDARDS

Overview

When one is discussing plans for a multi-participant GIS project, one of the most important issues to be understood and ultimately managed is standards. In a single office where a map is created and used only by that office for a single purpose, standards have little meaning. The reason for discussing standards has to do with sharing resources. In order to gain access to more information and to effectively use that information, we need to understand its characteristics. If we are to enhance the ability of sharing data and reducing redundant mapping and data gathering, map and data users as well as providers need to establish standards.

The issue of standards applies to many areas. Some of these are:

- Map accuracy
- Map content
- Map currency

- Tabular geographic data accuracy
- Tabular geographic data currency
- Data formats
- Data communications.

Standards are always an important consideration in planning and executing a GIS project. But, the more that participants are involved adds to the complexity of establishing standards and the need for rigorous enforcement. Below, we have characterized some of the issues concerning standards that we believe are important in the overall GIS needs assessment.

Map and Data Standards

The establishment of standards, and adhering to them, ensures that system users can know what to expect in terms of limitations on the use of maps and tabular geographic data. This is particularly important when decisions are made on the basis of maps. Questions that should arise regarding the use of maps include the following:

- Is this map accurate enough for my purpose?
- How was the map made?
- When was the map made?
- Is it up-to-date?

All too often, these questions are not asked; and generally, the answer is unknown. In many cases, the decisions that are made on the basis of a map need only be qualified in terms of the amount of its accuracy limitations. For example:

Q: Is my house in the floodplain?

A: This map shows that the house lies outside of the 100-year floodplain, but only by ten feet. I recommend that you retain a surveyor to make a site determination.

Q: What's the problem? The map shows my house outside the line.

A: The maps prepared by FEMA use a USGS 1" = 2,000' scale quadrangle as the base map. The flood boundaries were surveyed in the field, but they are plotted on the base map. The USGS quads are only accurate to within 40', so even though they are enlarged to a scale of 1" = 500', they are no more accurate than the original base map.

While the questioner in this example may be disgruntled at the prospect of having to hire a surveyor in order to get a mortgage loan, the person providing the answer was clear in knowing and representing the limitations of the maps. Quite often, it is more important to know how accurate a map is than it is to have a highly accurate map.

Not all map users are going to have a background in cartography or geography; nor do they need to. But it is important that they have some way of determining the characteristics of a map; this is where standards and documentation come in. Users need to have some place to go to find out how often a map is updated, or what its source of information is.

Overall, in West Virginia, there is little documentation or knowledge of the characteristics of maps or geographic data. The mapmakers and individuals who maintain the geographic data files are generally knowledgeable, but there is no time or demand for them to document the characteristics for others. PlanGraphics found numerous cases where users acquiring map or tabular geographic data from an organization, and the data were being used beyond their limitations. This issue becomes more and more common the larger the organization becomes. To overcome problems relating to unknown characteristics of maps and geographic data, standards need to be set and documented. Over time, users will become accustomed to reviewing the standards documentation when they receive a map or geographic data, either in hard copy or on a computer screen.

Computing and Communication Standards

Standards can be applied to data processing in a number of areas, including:

- Hardware and physical connection
- Network communications
- Software
- Data formats
- Data presentation and user access
- User design.

The central reason for adopting standards is to enhance the sharing of resources, both computing and data. The interest in distributed computing demands products that enable connection between devices, exchange of data, flexible access to software programs, and consistent user procedures. The importance of standards is most apparent in cases where hardware and software product vendors must be linked, or where independently created databases must be exchanged.

In recent years, the GIS user community has expressed growing interest in open systems to enable more effective sharing of computing resources. Proprietary systems continue to be used for many specialized tasks, however, distributed networks are becoming increasingly popular in the GIS environment. Integration between GIS and other data processing systems will expand the need for distributed processing and open systems. Computer hardware and software vendors, government data processing agencies, and professional organizations are responding to the changing environment, increasing the effectiveness of open systems.

EXISTING MAP RESOURCES

Introduction

The organizations involved in this study provided PlanGraphics with information on several hundred different maps. The map resources ranged from generalized, almost pictorial, 8 1/2" x 11" sized maps of the entire state to detailed engineering plans for highway intersections. The resources are as diverse as the organizations involved in this study. This range of diversity requires some categorization of the map resources in order to make meaningful representations of the characteristics and their use. We have identified categories of map resources that were reported to PlanGraphics in the survey forms. These categories are:

- Survey Control
- Planimetric Features
- Topography
- Political Boundaries
- Parcels
- Utility Distribution/Collection
- Land Use/Land Cover
- Geology
- Floodplains
- Well Location
- Environmental Features
- Soils
- Incidents
- Census.

Appendix A to this report identifies the existing map resources reported to PlanGraphics and their characteristics. Below, PlanGraphics reports its findings regarding the characteristics and use of maps that fall within the categories listed above.

Description of Existing Map Resources

Survey Control

In this context, survey control refers to the geodetic type of control points. Monumented property corners or similar surveyed points do not fall into this category. Geodetic survey control includes precisely surveyed points established as a primary reference network for other surveying activities. Geodetic control includes both horizontal and vertical control. Most of the geodetic surveying accomplished within West Virginia has been performed by federal agencies, notably the National Geodetic Survey (NGS) and U.S. Geological Survey (USGS). PlanGraphics found little other reporting of geodetic surveys being conducted in the state.

The most notable activity concerning geodetic survey control within the state involves the establishment of a base station for use by organizations that possess Global Positioning System (GPS) equipment. This base station will enable organizations with GPS equipment to conduct observations (take readings of the GPS satellites) almost anywhere in the state and to correlate the observations with the base station. The details of GPS surveying can get rather technical; suffice it to say that establishing the base station results in a significant increase in the accuracy of GPS surveys. Whether the survey is of endangered wildlife locations or highway right-of-way corridors, the base station established at Guthrie, WV, is a significant step toward enhancing the use of GPS in West Virginia.

Also notable is the relative lack of use of the existing geodetic control system by the surveying and mapping community in West Virginia. While there are a few exceptions, most mapping is prepared without use of a coordinate reference system; many surveys are established independently. For each geodetic control monument, coordinates have been established using the West Virginia State Plane Coordinate System. This system provides a common frame of reference that can be shared by all users. This common reference framework can be used to standardize the preparation of maps and surveys and reporting of geographic data.

PlanGraphics believes that West Virginia needs to expand the use of geodetic survey control in its mapping and surveying efforts. We believe that this is a significant area of need, however, the process of expanding its use will take some time. Work to improve the situation should initially involve education regarding the existence and uses of geodetic control. Organizations that intend to share data with others should understand that it is in their long-term interest to use the common reference framework provided by geodetic control.

Planimetric Features

The term "planimetric features" is generally applied to items on the surface of the Earth that can be mapped from aerial photography. These items include roads, bridges, buildings, streams and rivers, lakes and ponds, quarries, airports, and similar features that can be seen on the aerial photograph.

The types of planimetric features, and more specifically, the particular combinations of planimetric features needed by participants, are as varied as the number of participants themselves. For engineering purposes, nearly every feature that exists on the project site must be precisely located and identified. As the size of a user's area of interest increases, such detail becomes confusing and more of a hindrance, not to mention expensive. So, as the area of interest increases, the level of detail should decrease to include those features that provide a clear locational reference for the map.

If there is any commonality between participants regarding the need for planimetric features, it is in the wide use of the USGS 7.5 minute quadrangle. The "quads" are very standardized in the types of planimetric features shown and in portrayal of the features. Most organizations use the USGS quads as a background reference for other data.

Threatened and endangered species, forest types, power transmission corridors, and many other types of mapped information are plotted on the USGS quad, using it as a base map. The features shown on the quad are not used specifically or individually, but collectively, as a spatial reference.

The U.S. Geological Survey has developed a product called the digital line graph, or DLG. This product is essentially a USGS quad in digital form, minus the contours and spot elevations. These files are not generally available statewide at the 1:24,000 scale. A few of the quad maps have been converted in West Virginia, and some are in work. Since the DLG project is being done nationwide, USGS has established criteria to determine the order in which the quads will be converted to digital form. While USGS seems to be doing well on a national scale, this doesn't help the need in West Virginia to have these files now, or soon. There are some paths available that can help speed the process of DLG conversion; PlanGraphics will be exploring these paths and providing recommendations on an approach to working with USGS on this issue.

For now, the largest scale digital mapping of the entire state is available through the Census Bureau's TIGER files. These files are not known for their accuracy, but can provide users with a general road map appropriate for general use. The TIGER Line files were created to spatially index the results of the 1990 census. Participants that use the census data a great deal may want to explore the potential of acquiring the digital TIGER Line Files in addition to any other planimetric mapping that may be needed.

Topography

Topography refers to map features such as contours and spot elevations that represent the character of the Earth's surface. A significant number of activities and potential applications require topographic information as part of an evaluation. Examples of these uses include watershed analysis, landslide analysis, coal reserve estimation, engineering planning, and evaluation of soil erosion potential.

Topographic data is also represented in automated systems as a digital elevation model, or DEM. DEMs are available from USGS covering the entire state at a scale of 1:250,000. This data can be used for very general regional and statewide characterization of the topography and issues related to elevation. A more useful product for more organizations involved in this project is the 1:24,000 scale USGS DEM. However, the 1:24,000 scale DEMs are not available statewide as yet, and it is expected that completion according to the current schedule will take many years.

Political Boundaries

Political boundaries include state, county, and municipal boundaries, and should not be construed to include election districts. Political boundaries are legally established lines, generally surveyed, that are officially recorded. Maps of these boundaries (mostly the county and municipal) are most often used to show the results of statewide statistical studies. For these purposes, the maps need not be particularly accurate. When questions of jurisdictional authority arise, the location of political boundaries becomes a more

critical issue. In some cases, only field survey work will suffice to determine boundary location.

More often, users need to determine issues such as, "Is a particular parcel in my county or the next?," or, "Is the parcel split between counties and by how much?," or, "Does the house of the person trying to register to vote lie in this county or the next?" Political boundaries need to be plotted on a map that is of a quantifiable and consistent level of accuracy in order to reliably relate them to other features.

Parcels

The responsibility for parcel mapping in West Virginia has recently been transferred from the state's Division of Property Taxation to the county assessors. The process of property map updating differs from county to county. The assessor's responsibility is to have a complete mapped inventory of all taxable parcels as of the last day of the tax year. Most of the assessors comply with this requirement.

Most of the property mapping is accomplished using unrectified aerial photographs as the base map. These base maps have worked well for the Division of Property Taxation and the county assessors for quite some time. The important element of parcel mapping was to graphically inventory each property, not to accurately replicate a survey description. However, the unrectified aerial photo base map makes it difficult for users of parcel maps to relate property boundaries to other mapped features with any quantifiable results. These aerial photos are inaccurate as base maps because they are spatially inconsistent; the scale changes throughout the photo due to distortion from the terrain and camera lens. The primary problem is that it is impossible to quantify the accuracy of the parcel maps. In the valleys and on mountainsides, the map scale changes dramatically.

Some assessors have taken a lead by having their property maps digitized for use with software systems designed for computer-aided drafting, automated mapping, or geographic information management. The state has established no standards to date for digital parcel mapping.

PlanGraphics sees digital parcel mapping standards as a significant need for West Virginia. These standards should address issues of map accuracy, content, updating procedures and schedules, and data formats. PlanGraphics does not believe that the standards should dictate a particular brand of software to be used, but that standards for data formatting should enable efficient translation of parcel mapping between systems.

Utility Distribution/Collection

Utility distribution and collection maps include water, sanitary sewer, storm sewer, gas, and electric systems. Most of the utility distribution or collection systems are shown on relatively large-scale maps, ranging in scale from 1" = 100' to 1" = 400'. Most often, these maps are prepared using the county tax map as a base. The water, sanitary sewer, and storm sewer maps are generally maintained by engineers or public works

departments in municipal or county governments. Private companies generally provide gas and electric service and maintain their own maps.

There are needs for information concerning the location and availability of utilities beyond the local provider that could be addressed by a statewide GIS. Regional planning councils and several state and federal agencies have a need to know the location, capacity, and other details of utilities. The most wide use of this information would be in the areas of planning and the allocation of funds to support new infrastructure projects.

There are no statewide standards for utility mapping since nearly all of the mapping is prepared for local needs. In the event that both state and local organizations find that it is in both their interest to share digital utility map files, then standards must be developed by representatives of both entities. PlanGraphics believes that in the long-term, such standards will be beneficial.

Land Use/Land Cover

Land use and land cover are often misunderstood to mean the same thing. Land use refers to the activities that take place on the land. Land cover refers to what is on the land surface. Very few instances of land use or land cover mapping were reported by project participants. The Putnam County Planning Commission has coverage for their county; the WV Development Office has state-wide coverage at a scale of 1:500,000. PlanGraphics believes that there may be more instances of land use or land cover mapping in West Virginia.

Based on initial project interviews and survey form responses, it would appear that land use and land cover mapping is not a high priority. However, preliminary report review comments indicate that several agencies place land use and land cover data in a high priority for their operations.

Geology

Geological mapping has been prepared by the U.S. Geological Survey and by the West Virginia Geological and Economic Survey. Geological maps are available at scales of 1:500,000 and 1:250,000 on a statewide basis, and at 1:62,500 as part of county geological reports. These maps were prepared using photogrammetrically prepared maps as a base for portraying the geological data.

Based on the interviews and survey results, it appears that the use and availability of geological mapping is important, but not widespread among participants. The existing small-scale (1:500,000 and 1:250,000) geological maps can be used appropriately for statewide and regional planning and analysis. The 1:62,500 medium-scale geological maps can be used for more local planning and analysis.

These maps appear to be a reliable source for conversion directly to a GIS if funding is made available for such a project. Of particular note are the 1:62,500 scale geological maps. These maps are on paper only and are relatively old and deteriorating. The West

Virginia Geological and Economic Survey distributes the maps upon request, but will hold back one or two of the final copies available as supplies run out. PlanGraphics believes that the information contained on these maps is vulnerable to being lost. The cost of
re-creating the geological maps would be quite significant today. PlanGraphics recommends that these maps be considered fairly high in the priority list for conversion to digital form.

Floodplains

The most commonly used floodplain map is prepared for the Federal Emergency Management Agency (FEMA). These maps are generally distributed as a pair of maps covering the same area; one is the Flood Insurance Rate Map, and the other is the Flood Boundary and Floodway Map. FEMA works in a contractual arrangement with county and municipal governments to have the field hydraulic surveys completed and the report, which includes the maps, prepared.

The FEMA flood maps are generally prepared at scales of 1" = 500'; 1" = 1,000'; or
1" = 2,000', although alternative scales are sometimes used at the request of the local government. While the hydraulic survey data is highly accurate, the maps are much less reliable. The FEMA flood maps are usually prepared using USGS 7.5 minute quadrangle maps as the base, which are only accurate to within 40 feet. Many users, and in particular homeowners, have expectations that the maps at 1" = 500' scale are much more accurate simply because of their scale.

These maps, regardless of their accuracy, are the official maps in regard to determining flood insurance rates and whether or not a homeowner can get federal flood insurance. When questions arise regarding the 100-year flood boundary on the maps, a qualified surveyor can conduct a survey and certify the location of the flood boundary in the field. Since these maps depict the official FEMA floodplain boundaries, they are the most likely source for conversion to digital form. Due to their widespread use by local, regional, and state organizations, the FEMA floodplain maps should be given a relatively high priority for digital conversion statewide.

Well Location

Well locations include water, oil, and gas wells throughout the state. All wells in the state are subject to a permitting process. Each permitted well location is indexed and correlated to the permit record. Most all gas and oil well locations are plotted on USGS 1:24,000 quadrangle maps, whether mapped by state government or by a provider, such as Union Oil & Gas. Water wells are also plotted on the quad maps.

Well location maps that use the USGS quadrangle as the base map may be converted without additional mapping work to digital form for use in a GIS.

Environmental Features

Environmental features include a wide range of map themes associated with nature. These include wetlands, natural heritage inventories, landslide prone areas, forest types, and others. Most environmental maps are prepared for a regional area and do not provide statewide coverage. Exceptions to this are for very small-scale maps that are more appropriate for general textbook use rather than operational decision-making.

Most of the environmental maps use the USGS 1:24,000 scale quadrangle as the base map. This scale seems to be appropriate for the types of activities where these maps are used. Environmental maps that use the USGS quad as the base map can be converted to digital form with little additional map work required.

Soils

The USDA Soil Conservation Service (SCS) is responsible for preparing soil classification maps nationally. This federal agency has prepared soils maps of West Virginia at a scale of 1:24,000. At this time, all of the large-scale maps are hard copies from the SCS, however, PlanGraphics understands that one or perhaps two counties have converted the SCS soil maps to digital form. The SCS, like USGS, has a program for converting the soil classification maps to digital form on a national basis. At this point, 1:250,000 scale digital soil mapping is available for West Virginia.

Soil maps are used by many organizations for purposes that range from engineering planning to analyzing forest productivity. The potential may exist for project participants to work with the Soil Conservation Service to expedite the process of digital conversion of large-scale (1:24,000) maps for the entire state.

Incidents

Incident maps generally include traffic accident locations, arson locations, maps showing the location of permits issued, and similar items that can be identified individually and plotted on a map. Incident maps, generally called pin maps, have two primary uses. One use is to simply keep track of, or inventory, the location of incidents. The other use is to evaluate the location of incidents with other characteristics, such as traffic accidents with landslide areas, land use with incidents of arson, or complaints regarding drinking water quality with water main segments.

In general, there were not many incident maps reported by the participants. However, the activities indicate a heavy potential use of incident mapping applications. Most incident maps are prepared by matching addresses of the incident to a general road map such as the TIGER Line File. However, the TIGER Line Files, as available from the Census Bureau, require significant clean-up work for the address range values to be effective. Another problem with using this data is that many areas of the state are using rural route and box numbers instead of street names and addresses. Most GIS software that is available has the ability to prepare incident maps by matching standardized street names and addresses, but rural routes and box numbers are not usable for this purpose.

Census

The U.S. Census Bureau prepared a new series of maps for the 1990 census. These maps are available in digital form and are called the TIGER Line files. The files contain a generalized road network as well as streams and rivers, lakes, and other natural drainage features. These features were derived from two primary sources: USGS 1:100,000 scale maps and old Census Bureau DIME files. Updates to the roads for the 1990 TIGER line files were made from nearly any reasonably reliable source available to the Census Bureau. These update sources included everything from parcel maps to state highway maps, as well as private street maps prepared by John Kusner & Associates, Inc., and Champion Map Company.

The primary purpose for the TIGER line files was to assist in the tabulation and reporting of census data. Thus, the map files also include census tracts, block groups and blocks, and political boundaries. These demographic statistical reporting units are widely used by planners for diverse activities, including:

- Health services planning
- Development planning
- Transportation planning
- Re-alignment of voter precincts
- Outdoor recreation planning
- Evaluating police manpower requirements
- Market analyses.

The TIGER Line files are the largest scale and most detailed digital map file that provides comprehensive coverage of the entire state at this time. The West Virginia Development Office State Data Center is responsible for providing census data, including the TIGER Line files. Legislative Services has done a significant amount of work with TIGER data on their PLAN90 system in support of redistricting.

PlanGraphics recommends that the TIGER data be cleaned up in terms of missing road segments and address ranges. The TIGER data can be used for many GIS applications that do not need the more detailed and accurate mapping provided by USGS 1:24,000 scale quad mapping.

Summary of Mapping Needs

PlanGraphics has identified several primary areas of need for mapping in West Virginia. Below we have identified what we believe to be foremost among these needs, and have indicated a relative priority for action on each.

1. Need to complete the acquisition of statewide coverage of the USGS 1:100,000 scale DLGs.

2. Need a medium-scale base map such as the USGS 1:24,000 scale quadrangle in digital form providing statewide coverage.

3. Map and inventory all geodetic survey control from federal, state, and local agencies, and make that data available to the public and private surveying community.

4. Need to prepare large-scale (from 1" = 100' to 1" = 400') photogrammetrically prepared base maps for counties and municipalities, primarily for use as a base for parcel mapping.

5. Parcel mapping needs to be rectified to fit the large scale base maps in Item 4.

PlanGraphics believes that these five needs should be the initial focus of mapping efforts for West Virginia's statewide GIS effort. The intent is to prepare a solid foundation for all other mapping to be accomplished later. This foundation would be the first step in establishing standards for mapping.

EXISTING TABULAR GEOGRAPHIC DATA

Introduction

Project participants reported a significant number of tabular geographic information resources to PlanGraphics in the survey forms. These files included both automated and hard copy data that are geographically related in some manner. Like the map resources, the tabular geographic data resources are quite diverse. PlanGraphics has categorized these resources in order to make meaningful representations of the characteristics and their use. These categories are:

- Permit Data
- Environmental Data
- Demographic Data
- Energy Resources Data
- Ownership Data
- Utility Data
- Transportation Data.

Appendix B to this report lists the existing tabular geographic data resources reported to PlanGraphics as well as their characteristics. Below, PlanGraphics reports its findings regarding the characteristics and use of maps that fall within the categories listed above.

Description of Existing Tabular Geographic Data Resources

Permit Data

Permit data encompasses information regarding regulated activities. These include well drilling permits, building permits, wastewater discharge permits, mining permits, and highway encroachment permits, to name a few examples. Under this category, we would also include inspection files relating to permitted activities.

These permit files contain various geographic identifiers that are used to describe the location of activity. Identifiers include addresses, parcel numbers, highway segment numbers, and other means of locating the permit or place of inspection. Permit data is most often related to either a parcel map or an incident map to show its location.

Most of the permit files reported in the survey forms are maintained on an automated system. The data are generally of a transactional nature with files being updated on a routine basis. These data are used for operational activities such as the permit review process, and for management reporting.

Environmental Data

Environmental data, like the environmental maps, covers a wide span of themes. Some examples of the environmental data reported include:

- Breeding birds
- Natural heritage
- Springs
- Water use
- Air emissions inventory.

These data are used in two ways: for statistical reporting, and in many types of environmental analyses. Linkage of the environmental data to their respective graphic features, whether area boundaries, lines, or point features, will enable staff to evaluate the data from a spatial perspective.

Most of the environmental data in West Virginia are managed by the Division of Natural Resources. Many other agencies and private concerns could benefit by increased access to the tabular environmental data in early planning stages for development by eliminating areas supporting unique features or species from further consideration. While access to these data will not eliminate more extensive reviews and assessments by environmental and regulatory agencies, it could eliminate environmentally unsound alternatives early in the planning process.

Demographic Data

There are several repositories of demographic data within West Virginia. Some of the largest users include the Department of Education, and West Virginia Development

Office, Legislative Services, Marshall University's Institute for Regional Development, and the West Virginia Network for Educational Telecomputing. The basic demographic data is acquired from the U.S. Census Bureau in both digital and hard copy forms. In large measure, these organizations use the data provided by the Census Bureau for their analyses of market potential, population distribution related to election districts, and others. WVNET is one of the main providers of census data in digital form.

Locally generated demographic data are collected and used by agencies such as the Bureau of Public Health, Health Care Planning Commission, and the Health Care Cost Review Authority. These data are generally related to a county, but also to the location of particular health care providers. Most of the analytical work done for planning and oversight review involves spatial analysis of these demographic data. Linkage of these data within a GIS would provide these users with an enhanced ability to perform their activities.

The Department of Commerce, Labor and Environmental Resources (CLER) is also heavily involved with analysis of demographic data that are collected and processed by its agencies. Most of the demographic analyses within CLER involve employment statistics and labor force analysis.

Demographic analyses are one of the most automated activities conducted in West Virginia, and include a notable portion of the GIS work being conducted.

Energy Resources Data

Energy resource data includes files concerning reserves of coal, oil, and gas. The primary organization involved with collecting and managing these data on a statewide basis is the West Virginia Geological and Economic Survey in Morgantown. Much of the data are provided by the private firms involved in the ownership and extraction of these resources. In large part, details of these data are held in confidence due to the proprietary nature of the data. The detailed data are analyzed for trends and reported in a generalized statewide or regional nature.

The West Virginia Geological and Economic Survey maintains these data in digital form on a variety of systems. PlanGraphics believes that these data would be easier to analyze in a larger context were they all available through one system.

The West Virginia Geological and Economic Survey is also the primary provider of the generalized data to state and federal agencies that conduct further analyses.

Ownership Data

Property ownership data are maintained by the County Assessors at a local level, and are passed to the state Division of Property Taxation to populate the statewide property taxation database. Ownership data includes identifiers such as the property identification number, site address, and deed book and page number. These identifiers are often the

key items that are used to link the rest of the tabular ownership data to the graphic parcel data in a GIS.

Property ownership data are perhaps the most used data sets in the state. Most all questions and issues regarding the land have some dealing with ownership. The data are maintained in digital form by the state Division of Property Taxation. The local government participants that responded to the survey forms indicated that they maintain ownership data in digital form. The property record database establishes a statewide data standard in that all counties use the same file format and content developed by the Division of Taxation.

There is currently no automated linkage between property data and the property maps on a statewide basis since the property maps are maintained in hard copy only. Where digital parcel maps are created, the parcel identification number is a likely candidate for establishing a link between the graphic record and the tabular record. PlanGraphics believes that establishing this linkage will provide a significant benefit to users of ownership data in state and county agencies.

Utility Data

Most utility data are maintained by county and municipal agencies and private providers of utility services. For the most part, the tabular data relating to utility infrastructure is maintained in hard copy form. The City of Huntington reported that it has converted infrastructure data on the sewer and water systems to digital form. The City of Beckley is in the planning phases for a similar conversion effort.

No standards for infrastructure data were indicated by the participants, however, there appears to be little call for sharing of utility data between public and private organizations or between neighboring jurisdictions.

Transportation Data

Transportation data includes items such as traffic counts, highway capacities, bridge inspection files, accident statistics, and pavement management. The West Virginia Department of Transportation maintains most of this data in digital form. There are, as yet, few links between tabular data and graphic data on the department's Intergraph system. Most of these files are maintained on independent PC databases. There are many opportunities to enhance the overall system of transportation information management by linking the tabular data to graphic features.

Transportation data are also used by regional planning councils and county planning agencies. Most of the data used regionally or locally are provided by the West Virginia Department of Transportation. Road functional classifications and some traffic count data are collected locally and provided to the state.

PlanGraphics understands that there are well established standards for the collection and reporting of transportation data. These standards have been developed by the Federal Highway Administration and the West Virginia Department of Transportation.

EXISTING DATA PROCESSING SYSTEMS

Overview

There are several major computer centers within West Virginia state government. One in Charleston is managed by the Department of Administration, IS&C. This computer system provides mainframe computing resources to nearly all of the state government agencies in Charleston. The other system is located in Morgantown at the West Virginia University campus and is managed by the West Virginia Network for Educational Telecomputing (WVNET). The users of this system are more widespread throughout the state as WVNET also manages a large data communications network.

WVNET manages an IBM 3090 and a Digital Equipment Corporation VAX cluster of 8200 and 6500 processing units. The organization also maintains an IBM RS/6000 workstation. The data communications network is currently operating over 56Kbps digital leased lines. The line between WVNET and IS&C is being upgraded to a 128Kbps line. WVNET provides data communications between all of the colleges and universities in the state.

IS&C provides computer support largely in the Charleston area for state agencies. Data communications are provided over 19.2Kbps lines. The agency also maintains data communications to each of the 55 county seats providing access to the mainframe by county governments. IS&C also provides assistance in the procurement of computer hardware, software, and related services. The IBM facilities provide users with tabular data management services only; there are no GIS functions provided by IS&C.

Further details of the data processing systems reported by study participants are provided in Appendix C to this report.

There are many organizations that indicated they have installed and are using GIS software. These organizations, and the software being used, include:

- West Virginia Geological and Economic Survey - ARC/INFO, GRASS, IDRISI, Atlas GIS
- Division of Environmental Protection - ARC/INFO
- West Virginia University Geology and Geography Department- ARC/INFO, IDRISI, SPANS, GRASS
- West Virginia University Agriculture and Forestry Department - ARC/INFO, MIPS, GEOSQL, SPANS
- Marshall University - MapInfo
- City of Morgantown

- City of Beckley
- Putnam County - Atlas GIS
- Regional Planning Council, Region X - ARC/INFO
- Regional Planning Council, Region IX - PC ARC/INFO, MIPS
- Regional Planning Council, Region IV - ARC/INFO, MIPS
- West Virginia Department of Transportation - Intergraph
- Huntington Sanitary Board - GEOSQL
- City of Morgantown - Atlas GIS
- Morgantown Utility Board - ARC/INFO, AutoCAD, DCA
- City of Beckley - Intergraph
- CNG Transmission Corporation - Synercom
- Western Pocahontas Properties - GEOSQL
- Westvaco - ARC/INFO
- USDA Forest Service - ARC/INFO, GRASS
- USDA Soil Conservation Service - GRASS
- USGS Water Resources Division - ARC/INFO
- U.S. Corps of Engineers, Huntington District - Intergraph
- USEPA - ARC/INFO.

To date, there are few instances of data sharing between these agencies. Most of the systems have been developed for specific purposes particular to the user organization. In the context of sharing data on a statewide basis, PlanGraphics does not expect the variety of GIS software alone to inhibit data sharing. Rather, the data formats established within the systems will be a larger barrier to overcome.

Needs relating to the GIS environment in West Virginia relate more to the overall lack of exposure to data processing by most staff in most of the participating organizations. There are certainly exceptional agencies; however, in the context of sharing data and data processing resources on a statewide basis, the lack of experience will be a large issue that must be rectified. Automated geographic information system software is not generally the type of system that should be used to introduce staff to data processing. It is much more complex than word processing, spreadsheet, and simple database software. PlanGraphics believes that significant efforts are needed to provide more staff with data processing experience before a wide network of GIS workstations is developed.

APPENDIX A
EXISTING MAP RESOURCES

Map Name	Reporting Organization	Format	Software	Scale	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
Census Maps	Dept. of Education	Hard Copy	N/A	1:1,000,000	Statewide	Store	US Census Bureau	10 Yrs.	Periodic	UNK
Highway Maps	Dept. of Education	Hard Copy	N/A	1:1,000,000	Statewide	Process	UNK	UNK	UNK	UNK
Soils	WV State Soil Conservation Commission	Digital	GRASS	1:24,000	Counties	Compile	USDA-SCS	5 Yrs.	Routine	Upon Request
Redistricting Maps	Legislative Services	Digital	PSA - Plan 90	Varied	Statewide	Compile Process Store	US Census Bureau	10 Yrs.	Routine	All Requests
VDT Outline Maps	Legislative Services	Digital	PSA - Plan 90	1:100,000	County	Compile Process Store	US Census Bureau	10 Yrs.	Routine	All Requests
TIGER/Line File	Legislative Services	Digital	PSA - Plan 90	1:100,000	Statewide	Compile Process Store	US Census Bureau	10 Yrs.	Routine	All Requests
Topography	Legislative Services	UNK	UNK	UNK	Statewide	Compile Process Store	State Data Center	UNK	Sporadic	All Requests
UNK	WV Dept of Agriculture - Pesticide Division	Hard Copy	N/A	1:24,000	Statewide	Compile	US Geological Survey	Daily	UNK	Division of Environ. Protection
State Highways	WV Dept of Agriculture - Pesticide Division	Hard Copy	N/A	1" = 1 Mile	County	Compile	Dept. of Highways	Daily	UNK	UNK
County Emphasis	CLER - Bureau of Employment Programs	Digital	Map Info	UNK	County	Compile Process Store	Internal	Monthly	Daily	Public and Private Users
Partnership for Progress Unemployment Rates	CLER - Bureau of Employment Programs	Hard Copy	Lotus Freelance	UNK	County	Compile Process Store	Internal	Monthly	Daily	Public and Private Users

APPENDIX A (continued))
EXISTING MAP RESOURCES

Map Name	Reporting Organization	Format	Software	Scale	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
USGS Quads	CLER - Division of Natural Resources	Hard Copy	N/A	1:24,000	Statewide	Compile Process Store	USGS	Routine	Daily	Developers
Site Maps	CLER - Division of Natural Resources	Hard Copy	N/A	1"= 200' 1" = 500'	Project Site	Process	Developer	N/A	Routine	None
Facility Maps	CLER - Division of Natural Resources	Hard Copy	N/A	UNK	Statewide	Compile Store	Internal	Daily	Routine	Public
Planning Maps	CLER - Division of Natural Resources	Digital	Atlas	UNK	Statewide	Compile Process	Internal	Daily	Routine	In-house
Regulation Boundary	CLER - Division of Natural Resources	Digital	Atlas, Pagemaker	UNK	Statewide	Compile Store	Internal	Annually	Daily	Public
Natural Heritage	CLER - Division of Natural Resources	Hard Copy	N/A	1:24,000	Statewide	Compile Process Store	Internal	Routine	Daily	Federal and State Agencies, Contractors Public
Wetland Inventory	CLER - Division of Natural Resources	Hard Copy	N/A	1:24,000	Statewide	Process Store	USGS, US Fish & Wildlife	UNK	Daily	Contractors
Site Plans	CLER - Division of Tourism & Parks	Hard Copy	N/A	1" = 50'	Project Site	Compile Process Store	Private	Routine	Routine	National Park Service
Topo Maps	CLER - Division of Tourism & Parks	Hard Copy	N/A	1" = 50'	Project Site	Compile Process Store	Private	Routine	Routine	UNK
Master Plan Maps	CLER - Division of Tourism & Parks	Hard Copy	N/A	1" = 200'	Project Site	Compile Process Store	Private	Sporadic	Routine	UNK
County Report Geologic Maps	CLER - WV Geological and Economic Survey	Hard Copy	N/A	1:62,500	Statewide	Compile Process Store	Internal	N/A	Daily	For Sale

APPENDIX A (continued))
EXISTING MAP RESOURCES

Map Name	Reporting Organization	Format	Software	Scale	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
Mine Map Inventory	CLER - WV Geological and Economic Survey	Hard Copy	N/A	1:24,000	Statewide	Compile Process Store	Internal	Daily	Daily	For Sale
Landslides and Slide Prone Areas	CLER - WV Geological and Economic Survey	Hard Copy	N/A	1:24,000	Various Urban Areas	Compile Process Store	Internal	UNK	UNK	For Sale
Surface Transportation Map	CLER - WV Geological and Economic Survey	Hard Copy	N/A	1:500,000	Statewide	Compile Process Store	Internal	5 Yrs.	UNK	For Sale
State Geologic Map	CLER - WV Geological and Economic Survey	Hard Copy	N/A	1:250,000	Statewide	UNK	Internal	UNK	UNK	For Sale
Oil & Gas Well Location Maps	CLER - WV Geological and Economic Survey	Hard Copy	N/A	1:24,000	Statewide	Compile Process Store	Oil & Gas Information Service	Weekly	Daily	None
Oil & Gas Property Maps	CLER - WV Geological and Economic Survey	Hard Copy	N/A	Various	Regional	Process Store	Various Oil & Gas Operators	None	Daily	None
Oil & Gas Fields Map	CLER - WV Geological and Economic Survey	Hard Copy	N/A	1:250,000	Statewide	Compile Process Store	Internal	10 Yrs.	Daily	For Sale
Permit & 6-Month	CLER - Division of Miner's Health, Safety & Training	Hard Copy	N/A	Various	Project Site	Store	Mining Companies	6-Month	Periodic	Regional Office
Mine Closure	CLER - Division of Miner's Health, Safety & Training	Hard Copy	N/A	Various	Statewide	Store	Agency Files	UNK	Daily	UNK
Wasteshed Disposal Maps	CLER - Solid Waste Management Board	Hard Copy	N/A	UNK	Statewide	Store	Internal	Periodic	Routine	Public Service Comm. Div. of Environ. Protection

APPENDIX A (continued))
EXISTING MAP RESOURCES

Map Name	Reporting Organization	Format	Software	Scale	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
Comprehensive Plan Maps	CLER - Solid Waste Management Board	Hard Copy	N/A	UNK	Regional County	Process	Internal	Periodic	Daily	Public Service Comm., County, Div. of Environ. Protection
Siting Plan Maps	CLER - Solid Waste Management Board	Hard Copy	N/A	UNK	Regional County	Process	Internal	Periodic	Daily	Public Service Comm., County, Div. of Environ. Protection
Approved Plans	CLER - Solid Waste Management Board	Hard Copy	N/A	UNK	Statewide	Compile	Internal	Monthly	Periodic	Public
Traffic Fatalities per County	CLER - WV Development Office	Hard Copy	N/A	UNK	Statewide	Process	WV DOT	Annually	Periodic	N/A
State Highway Map	CLER - WV Development Office	Hard Copy	N/A	UNK	Statewide	Process UNK	UNK	Annually	Sporadic	UNK
Site Plans	CLER - WV Development Office	Hard Copy	N/A	Varies	Project Site	Compile Process Store	Local Private	Periodic	Periodic	National Park Service, Local Gov't
Topo Maps	CLER - WV Development Office	Hard Copy	N/A	1:24,000	County	Process	USGS	Periodic	Sporadic	None
Tax Maps	CLER - WV Development Office	Hard Copy	N/A	1:1,200 & 1:4,800	County	Compile Process Store	State Tax & Revenue	Varies	Periodic	National Park Service, Local Gov't
County Highway Maps	CLER - WV Development Office	Hard Copy	N/A	1:120,000	County	Process	WV DOT	Periodic	Periodic	None
State Highway Map	CLER - WV Development Office	Hard Copy	N/A	1:1,000,000	Statewide	Process	WV DOT	Periodic	Periodic	None

APPENDIX A (continued))
EXISTING MAP RESOURCES

Map Name	Reporting Organization	Format	Software	Scale	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
TIGER/Line Maps	CLER - WV Development Office	Hard Copy	N/A	1:100,000	Statewide	Compile Process Store	US Census Bureau	10 Yrs.	Routine	N/A
Floodplain	CLER - WV Development Office	Hard Copy	N/A	UNK	Project Site	Process Store	FEMA	UNK	Periodic	N/A
Tax Maps	CLER - WV Development Office	Hard Copy	N/A	UNK	Project Site	Process Store	Tax & Revenue	UNK	Periodic	N/A
Land Use/Land Cover	CLER - WV Development Office	Hard Copy	N/A	1:500,000	Statewide	Process Store	USGS	UNK	Sporadic	N/A
Natural Resources	CLER - WV Development Office	Hard Copy	N/A	Various	Statewide	Compile Process Store	Geological Survey	Annually	Sporadic	N/A
Hydrology	CLER - WV Development Office	Hard Copy	N/A	Various	Statewide	Compile Process Store	Geological Survey	Annually	Sporadic	N/A
Utilities	CLER - WV Development Office	Hard Copy	N/A	Various	Statewide	Compile Process Store	Utility Companies	Annually	Sporadic	N/A
Transportation	CLER - WV Development Office	Hard Copy	N/A	Various	Statewide	Compile Process Store	WV DOT	Annually	Sporadic	N/A
Educational Facilities	CLER - WV Development Office	Hard Copy	N/A	Various	Statewide	Compile Process Store	Higher Education	Annually	Sporadic	N/A
Industrial Sites	CLER - WV Development Office	Hard Copy	N/A	Various	Statewide	Compile Process Store	Dept. of Education	Annually	Sporadic	N/A
AML Inventory	CLER - Div. of Environ. Protection	Hard Copy	N/A	1:24,000	Statewide	Compile Store	Internal	Weekly	Daily	US Office of Surface Mining, Public

APPENDIX A (continued))
EXISTING MAP RESOURCES

Map Name	Reporting Organization	Format	Software	Scale	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
Mine Subsidence	CLER - Div. of Environ. Protection	Hard Copy	N/A	1:24,000	Statewide	Process Store	WV Geological Survey	Daily	Daily	N/A
Emergency Plans and Specifications	CLER - Div. of Environ. Protection	Hard Copy	N/A	Varies	Project Site	Compile Store	Internal	Weekly	Daily	US Office of Surface Mining, Public, Contractors
Regular Plans and Specifications	CLER - Div. of Environ. Protection	Hard Copy	N/A	Varies	Project Site	Compile Store	Internal	Weekly	Daily	US Office of Surface Mining, Public, Contractors
Underground Maps	CLER - Div. of Environ. Protection	Hard Copy	N/A	Various	Statewide	Process Store	CLER - Div. of Miner's Health, Safety & Training	Daily	Daily	N/A
Soil Maps	CLER - Div. of Environ. Protection	Hard Copy	N/A	1:24,000	Statewide	Compile Process Store	UNK	Weekly	Routine	Internal and Consultants
USGS Quads	CLER - Div. of Environ. Protection	Hard Copy	N/A	1:24,000	Statewide	Process	USGS	UNK	Periodic	UNK
DOT County Highway Maps	CLER - Div. of Environ. Protection	Hard Copy	N/A	1" = 1 Mile	County	Process	WV DOT	UNK	Periodic	UNK
Plot Plans	CLER - Div. of Environ. Protection	Hard Copy	N/A	Varies	Project Site	Process	Industrial Facilities	UNK	Daily	UNK
Digital Elevation Models	CLER - Div. of Environ. Protection	Digital	N/A	1:24,000	Statewide - in progress	Process	USGS	UNK	Daily	N/A
Digital Elevation Models	CLER - Div. of Environ. Protection	Digital	N/A	1:250,000	Statewide	Process	USGS	UNK	Daily	N/A
Digital Line Graphs	CLER - Div. of Environ. Protection	Digital	N/A	1:100,000	Statewide	Process	USGS	UNK	In Work	N/A

APPENDIX A (continued))
EXISTING MAP RESOURCES

Map Name	Reporting Organization	Format	Software	Scale	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
Digital Line Graph	CLER - Div. of Environ. Protection	Digital	N/A	1:24,000	Project Site	Process	USGS	UNK	Sporadic	N/A
REACH (Streams)	CLER - Div. of Environ. Protection	Digital	N/A	1:100,000	Project Site	Process	USGS	UNK	Daily	N/A
ECOREGIONS	CLER - Div. of Environ. Protection	Digital	N/A	1:1,000,000	Statewide	Process Store	EPA	UNK	Sporadic	N/A
Soils	CLER - Div. of Environ. Protection	Digital	N/A	UNK	Statewide	Process Store	USDA - SCS	UNK	Periodic	N/A
GNIS	CLER - Div. of Environ. Protection	Digital	N/A	UNK	Statewide	Process Store	EPA	UNK	Daily	N/A
Major Watershed Boundaries	CLER - Div. of Environ. Protection	Digital	N/A	1:100,000	Statewide	Process Store	EPA	UNK	Daily	N/A
Public Service Commission Maps	CLER - Div. of Environ. Protection	Hard Copy	N/A	1:63,360	Statewide	Process	Public Service Commission	UNK	Routine	N/A
Statistical Profile	Higher Education Central Office	Hard Copy	N/A	UNK	Statewide	Compile Store	N/A	Annually	Periodic	Governing Boards, Campuses, Legislature
Campus Maps	Higher Education Central Office	Hard Copy	N/A	UNK	Campus	Store	Public Higher Education Campuses	N/A	Sporadic	None
Scenic Trails	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	Various	None	Routine	UNK
Semi-Primitive Areas	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	Jefferson National Forest	None	Routine	UNK
Springs	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	Public Field Survey Maps	None	Routine	UNK

APPENDIX A (continued))
EXISTING MAP RESOURCES

Map Name	Reporting Organization	Format	Software	Scale	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
Trout Streams	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	CLER - Div. of Natural Resources	None	Routine	UNK
Vistas	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	Field Survey, USGS quads	None	Routine	UNK
Wetlands	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	Maps	None	Routine	UNK
Airports	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	FAA	None	Routine	UNK
AM Frequency	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	USGS quads, FAA	None	Routine	UNK
Appalachian Trail	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	Appalachian Trail Orgs.	None	Routine	UNK
Scenic Byways	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	VPI-Blacksburg	None	Routine	UNK
County Boundaries	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	TIGER	None	Routine	UNK
Individual Residences	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	USGS quads	None	Routine	UNK
Land Use	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	Aerial Photographs	None	Routine	UNK

APPENDIX A (continued))
EXISTING MAP RESOURCES

Map Name	Reporting Organization	Format	Software	Scale	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
Karst Areas	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	Field Surveys	None	Routine	UNK
Archaeological Sites	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	DNR Charleston	None	Routine	UNK
DEM	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	USGS	None	Routine	UNK
TIGER	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:100,000	Regional	Compile Process Store	US Census Bureau	None	Routine	UNK
Drainage Basins	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	SCS/WVU	None	Routine	UNK
Roads	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	USGS Aerial Photos	None	Routine	UNK
Hydrology	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	USGS Aerial Photos	None	Routine	UNK
Utility Infrastructure: Water, Sewer	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	Utility Companies	None	Routine	UNK
Census Tracts	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	TIGER (cleaned)	None	Routine	UNK
Land Parcel	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	Aerial Photo	None	Routine	UNK

APPENDIX A (continued))
EXISTING MAP RESOURCES

Map Name	Reporting Organization	Format	Software	Scale	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
Terrain	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	USGS Digital Quad	None	Routine	UNK
Reach Files - Hydrology	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:100,000	Regional	Compile Process Store	Consultants	None	Routine	UNK
High Quality Streams	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	DNR Charleston	None	Routine	UNK
Historic Sites	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	Cultural Div. Charleston	None	Routine	UNK
Overlooks & Shelters	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	National Forest Service	None	Routine	UNK
Private Visual Quality Objectives	West Virginia University - Geology and Geography	Digital	Field Survey	1:24,000	Regional	Compile Process Store	Maps	None	Routine	UNK
Recreational Sites	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	USGS Quads, Field Survey	None	Routine	UNK
Bear Habitat	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	DNR	None	Routine	UNK
State Boundary	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	USGS Quad	None	Routine	UNK
Transmission Lines	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	TIGER	None	Routine	UNK

APPENDIX A (continued))
EXISTING MAP RESOURCES

Map Name	Reporting Organization	Format	Software	Scale	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
Bio-Diversity	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	DNR (Richmond and Charleston)	None	Routine	UNK
Caves	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	UNK	None	Routine	UNK
Future Land Use Plans	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	Counties	None	Routine	UNK
Navigational Beacons	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	FAA	None	Routine	UNK
National Forest Boundary	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	Jefferson National Forest	Regional	Compile Process Store	Maps	None	Routine	UNK
New River Scenic Parkway	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	Consultants	None	Routine	UNK
Schools, Churches, Cemeteries	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	USGS Quads	None	Routine	UNK
Rare and Endangered Species	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	DNR Charleston	Compile Process Store	Maps	None	Routine	UNK
Roads	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	County	Compile Process Store	USGS Quads, State Highway Maps	None	Routine	UNK
100-year Floodplains	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	FEMA	None	Routine	UNK

APPENDIX A (continued))
EXISTING MAP RESOURCES

Map Name	Reporting Organization	Format	Software	Scale	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
FM Towers	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	FAA	None	Routine	UNK
Forest Service Visual Quality Objectives	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	Jefferson National Forest	None	Routine	UNK
Historical Districts	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	District Applications	None	Routine	UNK
Hydrology	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	USGS quads	None	Routine	UNK
Hydrology	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:100,000	Regional	Compile Process Store	USGS quads	None	Routine	UNK
Gypsy Moth Eggmass Survey	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	US Forest Service	Annually	Routine	UNK
Gypsy Moth Male Trap Catches	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	US Forest Service	Annually	Routine	UNK
Gypsy Moth Defoliation	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	US Forest Service	Annually	Routine	UNK
Gypsy Moth Treatment	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	US Forest Service	Annually	Routine	UNK
USGS DLG	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:100,000	Regional	Process	USGS	UNK	Sporadic	UNK

APPENDIX A (continued))
EXISTING MAP RESOURCES

Map Name	Reporting Organization	Format	Software	Scale	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
USGS DEM	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000. 1:250,000	Regional	Process	USGS	UNK	Sporadic	UNK
USGS GIRAS Data	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:250,000	Regional	Process	USGS	UNK	Sporadic	UNK
Threatened and Endangered Species	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Process	WV Heritage Trust	UNK	Sporadic	UNK
West Virginia and Virginia County Boundaries	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:100,000	Regional	Process	Maps	UNK	Sporadic	UNK
National Forest Boundaries	West Virginia University - Geology and Geography	Digital	ARC/INFO SPANS	1:24,000	Regional	Compile Process Store	USGS Quads	UNK	Sporadic	UNK
SPOT Image Imagery - 2 scenes	West Virginia University - Geology and Geography	Digital	ERDAS	UNK	Regional	Compile Process Store	SPOT Image	UNK	Sporadic	UNK
USGS DLG	West Virginia University - Agriculture and Forestry	Digital	ARC/INFO GRASS	1:100,000	Statewide	Compile Process Store	USGS	UNK	Routine	None
DEM	West Virginia University - Agriculture and Forestry	Digital	ARC/INFO GRASS	1:250,000	Statewide	Compile Process Store	USGS	UNK	Routine	UNK
GIRAS Layers	West Virginia University - Agriculture and Forestry	Digital	ARC/INFO GRASS	1:250,000	Statewide	Compile Process Store	USGS	UNK	Routine	UNK

APPENDIX A (continued))
EXISTING MAP RESOURCES

Map Name	Reporting Organization	Format	Software	Scale	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
SCS - STATSGO	West Virginia University - Agriculture and Forestry	Digital	ARC/INFO GRASS	1:100,000	Statewide	Compile Process Store	SCS	UNK	Routine	UNK
TIGER	West Virginia University - Agriculture and Forestry	Digital	ARC/INFO GRASS	1:100,000	Statewide	Compile Process Store	US Census Bureau	UNK	Routine	UNK
SCS - Watersheds	West Virginia University - Agriculture and Forestry	Digital	ARC/INFO GRASS	1:100,000	Statewide	Compile Process Store	SCS	UNK	Routine	UNK
WVNET Configuration	West Virginia Network for Educational Telecomputing	Digital	Interleaf	UNK	Statewide	Compile Process Store	Internal	Quarterly	Routine	Member Schools
Mortality	Bureau of Public Health	Digital	Freelance Graphics	Varies	Statewide	Compile Process Store	Health Statistics Center	Varies	Varies	Varies
Birth	Bureau of Public Health	Digital	Freelance Graphics	Varies	Statewide	Compile Process Store	Health Statistics Center	Varies	Varies	Varies
Behavioral	Bureau of Public Health	Digital	Freelance Graphics	Varies	Statewide	Compile Process Store	Health Statistics Center	Varies	Varies	Varies
Health Manpower Shortage	Health Care Planning Commission	Hard Copy	N/A	UNK	Statewide	Store	Bureau of Public Health	Annually	Periodic	UNK
BRFSS Data	Health Care Planning Commission	UNK	UNK	UNK	UNK	UNK	Bureau of Public Health	UNK	UNK	UNK
Flood Insurance Maps	Office of Emergency Services	Hard Copy	N/A	Varies	County	Store	FEMA	UNK	Sporadic	None
USGS Quads	Office of Emergency Services	Hard Copy	N/A	1:24,000	Statewide	Compile	Geological Survey	Monthly	Daily	None

APPENDIX A (continued))
EXISTING MAP RESOURCES

Map Name	Reporting Organization	Format	Software	Scale	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
Highways	Office of Emergency Services	Hard Copy	N/A	1:100,000	Statewide	Compile	State	Daily	Daily	County Directors
Stream	Office of Emergency Services	Hard Copy	N/A	1:100,000	Statewide	Compile	State	Daily	Daily	None
Adjoining States	Office of Emergency Services	Hard Copy	N/A	1:500,000	Regional	Store	Private	Monthly	Periodic	None
County Highway Maps	State Police	Hard Copy	N/A	Varies	Statewide	Process	WVDOT	Annually	Daily	N/A
City/Area Maps	State Police	Hard Copy	N/A	Varies	Regional	Process	Private Companies	UNK	Periodic	N/A
State Highway Map	State Police	Hard Copy	N/A	Varies	Statewide	Process	WVDOT	Annually	Daily	N/A
USGS Quads	Regional Jail and Correctional Facility Authority	Hard Copy	N/A	1:24,000	Project Site	Process	Hall's	UNK	Sporadic	N/A
Floodplain	Regional Jail and Correctional Facility Authority	Hard Copy	N/A	UNK	Project Site	Process	Corps of Engineers	UNK	Sporadic	N/A
Tax Maps	Regional Jail and Correctional Facility Authority	Hard Copy	N/A	UNK	Project Site	Process	County Assessor	UNK	Sporadic	N/A
County Maps	State Fire Marshall	Hard Copy	N/A	UNK	County	Compile	WVDOT	UNK	Weekly	None
State Map	State Fire Marshall	Hard Copy	N/A	UNK	Statewide	Compile	WVDOT	UNK	Weekly	None
USGS Quads	Regional Planning Council, Mid-Ohio Valley	Hard Copy	N/A	1:24,000	Regional	Process	West Virginia Geological Survey	UNK	Daily	N/A
Highway Map	Regional Planning Council, Mid-Ohio Valley	Hard Copy	N/A	UNK	Regional	Process Store	WVDOT	UNK	Weekly	N/A

APPENDIX A (continued))
EXISTING MAP RESOURCES

Map Name	Reporting Organization	Format	Software	Scale	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
RDP Plan Maps	Regional Planning Council, Mid-Ohio Valley	Hard Copy	N/A	UNK	Regional	Compile Process	MOVRC	Annually	Routine	Local Gov't
Project Map	Regional Planning Council, Mid-Ohio Valley	Hard Copy	N/A	Varies	Regional	Process Store	Various	N/A	Routine	Project Participant
USGS DLG	Regional Planning Council, Region IX	Digital	UNK	1:2,000,000	Regional	UNK	USGS	N/A	N/A	UNK
Planning Maps	Regional Planning Council, Region IX	UNK	UNK	UNK	UNK	UNK	UNK	UNK	UNK	UNK
Hydrology Maps for Jefferson County	Regional Planning Council, Region IX	Digital	PC ARC/INFO	1:24,000	Regional	Process	EPA	UNK	UNK	Local Gov'ts
Road Maps	Regional Planning Council, Region IX	Digital	MIPS	UNK	Regional	Process	UNK	UNK	UNK	Public Information
TIGER Line Files	Regional Planning Council, Region IX	Digital	PC ARC/INFO	1:100,000	Regional	Process	Census Bureau	UNK	Daily	Public Information
Flood Plain Maps	Regional Planning Council, Region IX	Digital	UNK	UNK	UNK	UNK	FEMA	UNK	UNK	UNK
County Tax Maps	Regional Planning Council, Region IX	Digital	UNK	UNK	UNK	UNK	UNK	UNK	UNK	UNK
Well Locations	Regional Planning Council, Region IX	Digital	UNK	UNK	UNK	UNK	State Health Department	UNK	UNK	UNK
USGS Quads	Regional Planning Council, Region X	Hard Copy	N/A	1:24,000	Regional	Process	USGS	UNK	Sporadic	N/A
Census	Regional Planning Council, Region X	Digital	ARC/INFO	1:100,000	Regional	Process	Census Bureau	UNK	Routing	Public/ Private
Roadway Maps	Regional Planning Council, Region X	Hard Copy	N/A	Variable	Regional	Process	WVDOT	UNK	Routine	N/A

APPENDIX A (continued))
EXISTING MAP RESOURCES

Map Name	Reporting Organization	Format	Software	Scale	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
FEMA	Regional Planning Council, Region X	Hard Copy	N/A	N/A	Regional	Process	FEMA	UNK	Sporadic	N/A
Census Maps	Regional Planning Council, Region III	Hard Copy	N/A	1:100,000	Regional	Process Store	US Census Bureau	UNK	Varies	UNK
County Highway Maps	Regional Planning Council, Region III	Hard Copy	N/A	1:63,360	Regional	Process	WVDOT	UNK	Varies	UNK
County Highway ADT Maps	Regional Planning Council, Region III	Hard Copy	N/A	1:126,720	Regional	Process	WVDOT	4 Yrs.	Varies	UNK
Traffic Zone Maps	Regional Planning Council, Region III	Hard Copy	N/A	1:63,360	Regional	Process	WVDOT	10 Yrs.	Varies	UNK
USGS Topographic	Regional Planning Council, Region III	Hard Copy	N/A	1:24,000	Regional	Process Store	USGS	UNK	Varies	N/A
FEMA Floodplain	Regional Planning Council, Region III	Hard Copy	N/A	UNK	Regional	Process Store	FEMA	UNK	Varies	N/A
County Tax Maps	Regional Planning Council, Region III	Hard Copy	N/A	Various	Regional	Process Store	State or County Tax Dept.	UNK	Varies	N/A
USGS Quads	Regional Planning Council, Region IV	Hard Copy	N/A	1:24,000	Regional	Compile Process	Federal	As needed	Routine	N/A
Flood Insurance Rate Maps	Regional Planning Council, Region IV	Hard Copy	N/A	Various	Regional	Compile Process Store	FEMA	As needed	Periodic	N/A
Census Maps	Regional Planning Council, Region IV	Hard Copy	N/A	Various	Regional	Compile Process	State Data Center	10 Yrs.	Routine	General Public
State Highway Maps	Regional Planning Council, Region IV	Hard Copy	N/A	1" = 5,280' 1" = 10,560'	County	Compile Process	WVDOT	As needed	Routine	N/A
TIGER Line Files	Regional Planning Council, Region IX	Digital	ARC/INFO	1:100,000	Regional	Process	US Census Bureau	UNK	Daily	Public

APPENDIX A (continued))
EXISTING MAP RESOURCES

Map Name	Reporting Organization	Format	Software	Scale	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
Hydrogeology	Regional Planning Council, Region IX	Digital	ARC/INFO	1:24,000	Regional	Process	US EPA	UNK	UNK	Local Gov'ts
Road Maps	Regional Planning Council, Region IX	Digital	MIPS	UNK	Regional	Process	UNK	UNK	UNK	Public
State Highway Maps	WWW - Interstate Planning Commission	Hard Copy	N/A	1:24,000	Regional	Store	District Highway Engineer	Annually	Daily	Public
USGS Quads	WWW - Interstate Planning Commission	Hard Copy	N/A	1:24,000	Regional	Store	UNK	UNK	Periodic	N/A
Hope Gas Maps	WWW - Interstate Planning Commission	Hard Copy	N/A	Various Scales	Project Site	Store	Hope Gas Co.	UNK	Periodic	UNK
USGS Quads	KYOVA - Interstate Planning Commission	Hard Copy	N/A	1:24,000	Regional	Process	USGS	As needed	Routine	UNK
Highway Maps (WV and Ohio)	KYOVA - Interstate Planning Commission	Hard Copy	N/A	1" = 1 Mile	Regional	Process	UNK	As needed	Routine	UNK
Tax Maps	KYOVA - Interstate Planning Commission	Hard Copy	N/A	UNK	County	Process	UNK	As needed	Routine	UNK
Own Maps	KYOVA - Interstate Planning Commission	Hard Copy	N/A	1" = 2 Miles	Regional	Process	UNK	As needed	Routine	UNK
Tax Maps	Tax & Revenue - Property Tax Division	Hard Copy	N/A	1:600; 1:1,200; 1:2,400; 1:4,800; 1:9,600	Statewide	Process	County Assessors, Internal	Varies	Daily	WVDOT, DEP, DTR, WVDEVO, Local Gov'ts, Public
Coal Maps	Tax & Revenue - Property Tax Division	Hard Copy	N/A	1:24,000	41 Counties	Process	Some Assessors, Internal	N/A	Sporadic	UNK
Airport Directory	Department of Transportation - Aeronautics Div.	Hard Copy	N/A	UNK	Statewide	Process	Aeronautics Commission	Annually	Periodic	Public

APPENDIX A (continued))
EXISTING MAP RESOURCES

Map Name	Reporting Organization	Format	Software	Scale	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
USGS Quads	Department of Transportation, Highways Division	Hard Copy	N/A	UNK	Regional	Process	Federal	UNK	UNK	UNK
Tax Maps	Department of Transportation, Highways Division	Hard Copy	N/A	UNK	Regional	Process	State, County	UNK	UNK	UNK
Project Maps	Department of Transportation, Highways Division	Digital	Intergraph	UNK	Statewide	Compile Process Store	WVDOT - Design Division	UNK	UNK	UNK
County Highway Maps	Department of Transportation, Highways Division	Hard Copy	N/A	UNK	Statewide	Process	WVDOT - Planning Division	UNK	Routine	UNK
Straight-line Diagrams	Department of Transportation, Highways Division	Hard Copy	N/A	UNK	Statewide	Process	WVDOT - Planning Division	UNK	Routine	UNK
Tax Maps	Department of Transportation, Highways Division	Hard Copy	N/A	UNK	Statewide	Process	Tax & Revenue	UNK	Routine	UNK
Traffic	Department of Transportation, Highways Division	Hard Copy	N/A	UNK	Statewide	Process	WVDOT	UNK	Routine	UNK
Planning, Traffic, Straight-line	Department of Transportation, Highways Division	Hard Copy	N/A	UNK	Statewide	Process	WVDOT	UNK	Routine	UNK
Structures Inventory & Plans	Department of Transportation, Highways Division	Hard Copy	N/A	UNK	Statewide	Process	WVDOT	UNK	Routine	UNK
Railroad Valuation Maps	Department of Transportation, Highways Division	Hard Copy	N/A	1" = 200'; 1" = 400'	Statewide	Process	Railroad Companies	Daily	Routine	None

APPENDIX A (continued))
EXISTING MAP RESOURCES

Map Name	Reporting Organization	Format	Software	Scale	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
Aerial Mapping	Department of Transportation, Highways Division	Digital	Intergraph	Variable	Project Site	Process	Highways Division	N/A	Routine	None
Construction Plans	Department of Transportation, Highways Division	Hard Copy	N/A	1:600	Project Site	Compile Process Store	District Construction Section	N/A	Sporadic	N/A
WV Economic & Geological Survey	Department of Transportation, Highways Division	Hard Copy	N/A	1:1,000,000	Regional	CLER - WVGES	UNK	UNK	Weekly	UNK
County Soil Surveys	Department of Transportation, Highways Division	Hard Copy	N/A	1:126,720	County	UNK	USDA - SCS	UNK	Monthly	UNK
Speed Zone Inv.	Department of Transportation, Traffic Engineering Division	Hard Copy	N/A	UNK	Statewide	Compile Process Store	UNK	Daily	Daily	Districts, Cities, Fed.
Parking Inv.	Department of Transportation, Traffic Engineering Division	Hard Copy	N/A	UNK	Statewide	Compile Process Store	UNK	Daily	Daily	Districts, Cities, Fed.
County Road Maps	Department of Transportation, Programming Division	Hard Copy	N/A	1" = 1 Mile	County	Process	WVDOT - Planning Division	UNK	Daily	UNK
Straight-line Maps	Department of Transportation, Programming Division	Hard Copy	N/A	1" = 1,320'	Statewide	Process	WVDOT - Planning Division	UNK	Daily	UNK
USGS Quads	Department of Transportation, Planning & Research Division	Hard Copy	N/A	1:24,000	Statewide	Process	USGS	N/A	Daily	N/A
WV Roadway Functional Class Map	Department of Transportation, Planning & Research Division	Hard Copy	N/A	1" = 10 Miles	Statewide	Process	WVDOT	5 Yrs.	Periodic	N/A

APPENDIX A (continued))
EXISTING MAP RESOURCES

Map Name	Reporting Organization	Format	Software	Scale	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
WV General Highway Maps	Department of Transportation, Planning & Research Division	Hard Copy	N/A	1" = 2 Miles	Statewide	Process	WVDOT	2 Yrs.	Daily	N/A
Flood Insurance Rate Map	Department of Transportation, Planning & Research Division	Hard Copy	N/A	1" = 400'	Statewide	Process	FEMA	UNK	Periodic	N/A
WV Urban Area Maps	Department of Transportation, Planning & Research Division	Hard Copy	N/A	1" = 1000' to 1" = 200'	Regional	Process	WVDOT	10 Yrs.	Periodic	N/A
Air Service Mapping	Department of Transportation, Planning & Research Division	Hard Copy	N/A	1:250,000	Regional	Process	US Government	UNK	Periodic	N/A
Storm Sewer Map	City of Weirton, Department of Public Works	Hard Copy	N/A	UNK	Citywide	Compile Store	Contractual Service for Updating	As needed	Daily	N/A
City Street Map	City of Weirton, Department of Finance	Hard Copy	N/A	UNK	Regional	UNK	UNK	UNK	Sporadic	UNK
Plat Map	City of Huntington, Huntington Sanitary Board	Digital	AutoCAD	1:1,200	Regional	Compile Process Store	City of Huntington	As needed	Daily	UNK
County Tax Map	City of Huntington, Huntington Sanitary Board	Digital	AutoCAD	1:1,200	Regional	Compile Process Store	State Dept of Tax & Revenue	As needed	Periodic	UNK
Aerial Topographic Map	City of Huntington, Huntington Sanitary Board	Digital	AutoCAD	1:1,200	Regional	Compile Process Store	State Dept of Tax & Revenue	As needed	Periodic	UNK

APPENDIX A (continued))
EXISTING MAP RESOURCES

Map Name	Reporting Organization	Format	Software	Scale	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
Tax Map	City of Morgantown, Planning & Development	Digital	Atlas GIS	1" = 50', 1" = 100'	City	Compile Process Store	UNK	As needed	Daily	Public
Buildings	City of Morgantown, Planning & Development	Digital	Atlas GIS	1" = 50', 1" = 100'	City	Compile Process Store	UNK	As needed	Daily	Public
Topography	City of Morgantown, Planning & Development	Digital	Atlas GIS	1:24,000	City	Process	USGS	UNK	Periodic	Public
TIGER Files	City of Morgantown, Planning & Development	Digital	Atlas GIS	1:100,000	County	Process	State Data Center	UNK	Periodic	Public
Zoning Map	City of Morgantown, Planning & Development	Digital	Atlas GIS	1" = 100'	City	Compile Process Store	In-house	Weekly	Routine	Public
City Map	City of Beckley, City Engineer	Hard Copy	N/A	1" = 600'	City & Environs	Compile Store	City Engineer	Monthly	Periodic	City Dep'ts, County Agencies
County Tax Maps	City of Beckley, City Engineer	Hard Copy	N/A	1" = 100'	County	Process	County Tax Assessor	Annually	Routine	UNK
Sanitary Sewer Maps	City of Beckley, City Engineer	Hard Copy	N/A	1" = 300'	UNK	UNK	UNK	UNK	UNK	UNK
USGS Quads	City of Beckley, City Engineer	Hard Copy	N/A	1:24,000	City	Process Store	USGS	UNK	Weekly	UNK
DOT Highway Maps	City of Beckley, City Engineer	Hard Copy	N/A	1" = 50'	Project Site	Process	WVDOT	N/A	Sporadic	UNK
USGS DLG/DEM	Putnam County Planning Commission	Digital	Atlas GIS	1:24,000	County	UNK	USGS	UNK	UNK	UNK
General Soil Map	Putnam County Planning Commission	Digital	Atlas GIS	UNK	County	UNK	USDA - SCS	UNK	UNK	UNK

APPENDIX A (continued))
EXISTING MAP RESOURCES

Map Name	Reporting Organization	Format	Software	Scale	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
Floodplain Map	Putnam County Planning Commission	Digital	Atlas GIS	UNK	County	UNK	FEMA	UNK	UNK	UNK
Slope Map	Putnam County Planning Commission	Digital	Atlas GIS	UNK	County	UNK	UNK	UNK	UNK	UNK
Sewer and Water Map	Putnam County Planning Commission	Digital	Atlas GIS	UNK	UNK	UNK	UNK	UNK	UNK	UNK
Storm Water Map	Putnam County Planning Commission	Digital	Atlas GIS	UNK	UNK	UNK	UNK	UNK	UNK	UNK
Parcel Map	Putnam County Planning Commission	Digital	Atlas GIS	UNK	UNK	UNK	UNK	UNK	UNK	UNK
Land Use	Putnam County Planning Commission	Digital	Atlas GIS	UNK	County	UNK	UNK	UNK	UNK	UNK
Municipal Boundaries	Putnam County Planning Commission	Digital	Atlas GIS	UNK	County	UNK	UNK	UNK	UNK	UNK
US Census Block Maps	Putnam County Planning Commission	Digital	Atlas GIS	UNK	County	UNK	UNK	UNK	UNK	UNK
Magisterial Districts and Voting Precincts	Putnam County Planning Commission	Digital	Atlas GIS	UNK	County	UNK	UNK	UNK	UNK	UNK
Exchange Maps	C&P Telephone Company	Hard Copy	N/A	1:4,800	Statewide	Compile Process Store	Private Company	Monthly	Weekly	Public Service Comm.
Exchange Area Forecast Section Map	C&P Telephone Company	Hard Copy	N/A	1:24,000	Regional	Compile Process Store	USGS	Periodic	Routine	None
Cable & Pole Records	C&P Telephone Company	Hard Copy	N/A	Various	Project Site	Compile Process Store	Internal	As required	Routine	Within Company
Highway & City Maps	C&P Telephone Company	Hard Copy	N/A	Various	County	Process	WVDOT	UNK	Sporadic	UNK

APPENDIX A (continued))
EXISTING MAP RESOURCES

Map Name	Reporting Organization	Format	Software	Scale	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
Topographical Maps	CNG Transmission Corp.	Digital	Synercom	1" = 1,000'	Statewide	Compile Process Store	Design Engineering	Daily	Daily	Division Districts
Property Map	Western Pocahontas Properties	Digital	AutoCAD	1:2,400; 1:12,000	Regional	Compile Process	USGS Quads	As needed	Routine	None
Reserve Study Maps	Western Pocahontas Properties	Hard Copy	N/A	1:24,000	Regional	Process	USGS Quads	UNK	Sporadic	None
Progress/Projection	Western Pocahontas Properties	Hard Copy	N/A	Various	Project Site	Process	Lessees	None	Routine	None
Timber Cutting Units	Western Pocahontas Properties	Hard Copy	N/A	1:24,000	Regional	Process	USGS Quads, Company Data	UNK	Routine	None
Timber Type Maps	Westvaco Corporation	Digital	ARC/INFO	1:15,840	Project Site	Compile Process Store	Internal	Annually	Routine	Internal
Tract Location Maps	Westvaco Corporation	Digital	ARC/INFO	1:126,720	Regional	Compile Process Store	Internal	As needed	Routine	Internal
Woodlands General Location Maps	Westvaco Corporation	Digital	ARC/INFO	Various	Statewide	Compile Process Store	Internal	Annually	Routine	Internal
TOPO	Union Oil & Gas	Digital	AutoCAD	1:24,000	County	Compile Process Store	American Digital Cartography	Weekly	Daily	On request
Well Locations	Union Oil & Gas	Digital	AutoCAD	1:24,000	County	Compile Process Store	In house	Monthly	Weekly	N/A
Subdivisions	Union Oil & Gas	Hard Copy	N/A	1" = 100; 1" = 200'	County	Process Store	Local Developers & Surveyors	Monthly	Daily	N/A

APPENDIX A (continued))
EXISTING MAP RESOURCES

Map Name	Reporting Organization	Format	Software	Scale	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
USGS Quads	Appalachian Power Company	Hard Copy	N/A	Varied	Regional	Store	USGS	As needed	Routine	N/A
Transmission/ Distribution	Appalachian Power Company	Hard Copy	N/A	Varied	Project Site	Compile Process Store	Internal	Daily	Daily	Internal
USGS Quads	Corps of Engineers - Huntington District	Hard Copy	N/A	1:24,000	Project Site	Store	USGS	UNK	Periodic	N/A
Topographic Mapping	Corps of Engineers - Huntington District	Digital	Intergraph	1:600 1:7,200	Project Site	Process	In-house	UNK	Routine	N/A
Tract Map	National Park Service - New River Gorge	Digital	GRASS	UNK	Regional	Compile Process Store	National Park Service - Denver	UNK	UNK	N/A
Boundary	National Park Service - New River Gorge	Digital	GRASS	UNK	Regional	Compile Process Store	National Park Service - Denver	UNK	UNK	N/A
Rights-of-Way	National Park Service - New River Gorge	Digital	GRASS	UNK	Regional	Compile Process Store	National Park Service - Denver	UNK	UNK	N/A
Rare Species	National Park Service - New River Gorge	Hard Copy	N/A	1:24,000	Regional	Compile Process Store	WVDNR, NPS	Annually	Weekly	N/A
Abandoned Mine Sites	National Park Service - New River Gorge	Digital	GRASS	UNK	Regional	Compile Process Store	WVU, NPS	UNK	UNK	N/A
Vegetation	National Park Service - New River Gorge	Digital	GRASS	UNK	Regional	Compile Process Store	National Park Service - Denver	UNK	UNK	N/A
TIGER	US Environmental Protection Agency, Region III	Digital	ARC/INFO	1:100,000	Statewide	Compile Process Store	US Census Bureau	UNK	Daily	N/A

APPENDIX A (continued))
EXISTING MAP RESOURCES

Map Name	Reporting Organization	Format	Software	Scale	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
River Reach	US Environmental Protection Agency, Region III	Digital	ARC/INFO	1:100,000	Statewide	Compile Process Store	US EPA	None	Weekly	N/A
Ecoregions	US Environmental Protection Agency, Region III	Digital	ARC/INFO	1:2,000,000	Statewide	Store	US EPA	None	Weekly	States
DLG	US Environmental Protection Agency, Region III	Digital	ARC/INFO	1:100,000	Statewide	Store	USGS	None	Weekly	States
DLG	US Environmental Protection Agency, Region III	Digital	ARC/INFO	1:2,000,000	Statewide	Store	USGS	None	Weekly	States
DEM	US Environmental Protection Agency, Region III	Digital	ARC/INFO	1:250,000	Statewide	Store	USGS	None	Sporadic	N/A
USGS Quads	US Office of Surface Mining - Charleston Field Office	Hard Copy	N/A	1:24,000	Regional	Process	USGS	N/A	Sporadic	None
Soils	USDA-Soil Conservation Service	Digital	UNK	1:250,000	Statewide	Compile Store	USDA - SCS	Annually	UNK	UNK
Soils	USDA - Soil Conservation Service	Digital	UNK	1:20,000 1:24,000	County	Compile Store	USDA - SCS	Annually	UNK	UNK
Watersheds	USDA - Soil Conservation Service	Digital	UNK	1:100,000	Statewide	Compile Store	USDA - SCS	N/A	UNK	UNK
Soils	USDA - Forest Service	Hard Copy	N/A	1:24,000	Regional	Compile Process Store	Local & USDA-SCS	UNK	Routine	N/A
Compartment & Stand	USDA - Forest Service	Hard Copy	N/A	1:24,000	Regional	Compile Process Store	Local & USDA-SCS	UNK	Routine	N/A

APPENDIX A (continued))
EXISTING MAP RESOURCES

Map Name	Reporting Organization	Format	Software	Scale	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
Opportunity Areas	USDA - Forest Service	Hard Copy	N/A	1:24,000	Regional	Compile Process Store	Local & USDA-SCS	UNK	Routine	N/A
Cultural Res. Areas	USDA - Forest Service	Hard Copy	N/A	1:24,000	Regional	Compile Process Store	Local & USDA-SCS	UNK	Routine	N/A
Trails	USDA - Forest Service	Hard Copy	N/A	1:24,000	Regional	Compile Process Store	Local & USDA-SCS	UNK	Routine	N/A
Primary Base Series	USDA - Forest Service	Hard Copy	N/A	1:24,000	Regional	Compile Process Store	Local & USDA-SCS	UNK	Routine	N/A
Facilities & Site Plans	USDA - Forest Service	Digital	AutoCAD	Misc.	Project Site	Compile	Local	UNK	Routine	N/A
Intermediate	USDA - Forest Service	Hard Copy	N/A	1:100,000	Regional	UNK	USGS	UNK	Periodic	N/A
U.S.	USDA - Forest Service	Hard Copy	N/A	1:250,000	Regional	UNK	USGS	UNK	Periodic	N/A
State	USDA - Forest Service	Hard Copy	N/A	1:500,000	Statewide	UNK	USGS	UNK	Sporadic	N/A
DLG	USDA - Forest Service	Digital	ARC/INFO	1:2,000,000	Statewide	UNK	USGS	UNK	UNK	UNK
DLG	USDA - Forest Service	Digital	ARC/INFO	1:100,000	Regional	UNK	USGS	UNK	UNK	UNK
National Atlas	USDA - Forest Service	Hard Copy	N/A	1:2,000,000	Statewide	UNK	USGS	UNK	Sporadic	UNK
Forest Cover Types	USDA - Forest Service	Digital	ARC/INFO	1:7,500,000	Statewide	UNK	Society of American Foresters, USFS, US EPA	UNK	Periodic	UNK

APPENDIX A (continued))
EXISTING MAP RESOURCES

Map Name	Reporting Organization	Format	Software	Scale	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution

APPENDIX B
EXISTING TABULAR GEOGRAPHIC DATA RESOURCES

Geographic Data File Name	Reporting Organization	Format	Software	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
Census Data	Department of Education	UNK	N/A	Statewide	Store	US Census Bureau	10 Yrs.	Periodic	N/A
Sample Site Location	WV Dept. of Agriculture	Hard Copy	N/A	County	Compile	USGS	Annual	Routine	Div. of Environ. Protection
Affirmative Action Information	CLER - Bureau of Employ. Programs	UNK	UNK	Statewide	UNK	UNK	Annual	UNK	UNK
West Virginia and Service Delivery Areas Annual Planning Information	CLER - Bureau of Employ. Programs	UNK	UNK	Statewide	UNK	UNK	Annual	UNK	UNK
West Virginia Metropolitan Statistical Areas Annual Planning Information	CLER - Bureau of Employment Programs	UNK	UNK	Project Site	UNK	UNK	Annual	UNK	UNK
West Virginia County Profiles	CLER - Bureau of Employment Programs	UNK	UNK	County	UNK	UNK	6 Mos.	UNK	UNK
Stream Survey Index	CLER - Div. of Natural Resources	Digital	UNK	Statewide	Compile Process Store	CLER - DNR	None	Routine	Varies
Harvest Data	CLER - Div. of Natural Resources	Digital	SAS	County	Compile Process Store	CLER - DNR	Annual	Routine	Public
US Census Data	CLER - Div. of Natural Resources	Digital	LOTUS	County	Process	US Census Bureau	10 Yrs.	Routine	None
Breeding Bird Atlas	CLER - Div. of Natural Resources	Digital	Atlas	Statewide	Compile Process Store	CLER - DNR	N/A	In Work	Scientific Community Federal Agencies; Public

APPENDIX B (continued)
EXISTING TABULAR GEOGRAPHIC DATA RESOURCES

Geographic Data File Name	Reporting Organization	Format	Software	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
Heritage	CLER - Div. of Natural Resources	Digital	dBase; Advanced Revelation	Statewide	Compile Process Store	CLER - DNR	Daily	Daily	Contractor; The Nature Conservancy
Oil & Gas Data System	CLER - Geological & Economic Survey	Digital	DEC CDD; Datatrieve	Statewide	Compile Process Store	CLER - WVGES	Daily	Daily	N/A
Permit Applications	CLER - Geological & Economic Survey	Digital	DEC CDD; Datatrieve	Statewide	Compile Process Store	CLER - WVGES	Weekly	Daily	N/A
Mechanical Logs	CLER - Geological & Economic Survey	Digital	DEC CDD; Datatrieve	Statewide	Compile Process Store	CLER - WVGES	Weekly	Daily	N/A
Samples & Cores	CLER - Geological & Economic Survey	Digital	DEC CDD; Datatrieve	Statewide	Compile Process Store	CLER - WVGES	Daily	Daily	NA
Coal Stratigraphic Database	CLER - Geological & Economic Survey	Digital	Postgres	Statewide	Compile Process Store	CLER - WVGES	Daily	Sporadic	USGS
Coal Quality Database	CLER - Geological & Economic Survey	Digital	Datatrieve	Statewide	Compile Process Store	CLER - WVGES	Daily	Sporadic	N/A
Acid Mine Drainage	CLER - Geological & Economic Survey	Digital	Datatrieve	Regional	Store	CLER - WVGES	UNK	Sporadic	N/A
Springs Database	CLER - Geological & Economic Survey	Digital	Datatrieve	Statewide	Compile Process Store	CLER - WVGES	Sporadic	Sporadic	Public Sales
Water Use Database	CLER - Geological & Economic Survey	Digital	Spread sheet	Statewide	Compile Process Store	CLER - WVGES	Annual	Daily	USGS Div. of Water Resources
Dimersion Stone	CLER - Geological & Economic Survey	Hard Copy	N/A	Statewide	Store	CLER - WVGES	None	Sporadic	N/A

APPENDIX B (continued)
EXISTING TABULAR GEOGRAPHIC DATA RESOURCES

Geographic Data File Name	Reporting Organization	Format	Software	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
Limestone	CLER - Geological & Economic Survey	Digital	FORTRAN - flat files	Statewide	Compile Process Store	CLER - WVGES	Sporadic	Sporadic	N/A
Gazetteer	CLER - Geological & Economic Survey	Digital	FORTRAN - flat files	Statewide	Compile Process Store	CLER - WVGES	Sporadic	Sporadic	N/A
Driller's Logs	CLER - Geological & Economic Survey	Hard Copy	N/A	Statewide	Compile Process	CLER - WVGES	Weekly	Daily	N/A
Oil & Gas Farm Cards	CLER - Geological & Economic Survey	Hard Copy	N/A	Statewide	Compile	CLER - WVGES	Weekly	UNK	N/A
Quarterly Drilling Statistics	CLER - Geological & Economic Survey	Digital	DEC CDD; Datatrieve	Statewide	Compile Process Store	CLER - WVGES	Quarterly	Periodic	CLER - DEP; Oil & Gas
Quarterly Permit Application Statistics	CLER - Geological & Economic Survey	Digital	DEC CDD; Datatrieve	Statewide	Compile Process Store	CLER - WVGES	Quarterly	Periodic	N/A
Petroleum Information Corp. Cards	CLER - Geological & Economic Survey	Hard Copy	N/A	Statewide	Store	Petroleum Information Corp.	Weekly	Periodic	N/A
Safety Information System	CLER - Office of Miner's Health, Safety & Training	Digital	POISE	Statewide	Compile Process Store	CLER - OMHS&T	Daily	Daily	Internal
Plan Status	CLER - Solid Waste Management Board	Digital	LOTUS	Statewide	Compile	CLER - SWMP	Monthly	Periodic	CLER - DEP; Public Service Comm.
West Virginia Crash Data	CLER - Development Office	Hard Copy	N/A	Statewide	Process	WV - DOT	Annually	Periodic	N/A
Narcotic Arrest Survey	CLER - Development Office	Hard Copy	N/A	Statewide	Process	WV DEVO	Annually	Periodic	Police/ Sheriff Department

APPENDIX B (continued)
EXISTING TABULAR GEOGRAPHIC DATA RESOURCES

Geographic Data File Name	Reporting Organization	Format	Software	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
Uniform Crime Reports	CLER - Development Office	Hard Copy	N/A	Statewide	Compile Process	WV State Police	Annually	Periodic	N/A
Juvenile Justice Database	CLER - Development Office	Hard Copy	N/A	Statewide	Process Store	WV Court of Appeals	Annually	Periodic	Local Youth Service Agencies
WV Petroleum Marketer's Directory	CLER - Development Office	Hard Copy	N/A	Statewide	Compile	CLER - WVDEVO	Daily	Sporadic	N/A
Prime Supplier Contact List	CLER - Development Office	Digital	LOTUS	Statewide	Compile	CLER - WVDEVO	Annually	Sporadic	N/A
Cenus Data	CLER - Development Office	Hard Copy	N/A	Statewide	Process Store	US Census Bureau	10 Yrs.	Periodic	N/A
County Distress Data	CLER - Development Office	Hard Copy	N/A	County	Process Store	Appalachain Regional Commission	10 Yrs.	Periodic	N/A
Federal Poverty Data	CLER - Development Office	Hard Copy	N/A	Statewide	Process Store	UNK	Annually	Periodic	N/A
Labor Force Data	CLER - Development Office	Hard Copy	N/A	Statewide	Process Store	CLER - Bur. of Employment Programs	Quarterly	Routine	N/A
Inventory File	CLER - Div. of Environ. Protection	Digital	dBase	Statewide	Compile Process Store	CLER - DEP	Daily	Daily	US OSM; Public
Site Information	CLER - Div. of Environ. Protection	Digital	dBase	Statewide	Compile Process Store	CLER - DEP	Weekly	Daily	US OSM
Project Tracking System	CLER - Div. of Environ. Protection	Digital	dBase	Statewide	Compile Process Store	US OSM	UNK	Weekly	N/A

APPENDIX B (continued)
EXISTING TABULAR GEOGRAPHIC DATA RESOURCES

Geographic Data File Name	Reporting Organization	Format	Software	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
Air Quality Monitoring	CLER - Div. of Environ. Protection	Digital	ESC; AIRS	Statewide	Compile Process Store	UNK	Daily	Daily	US EPA; Public
Emissions Inventory	CLER - Div. of Environ. Protection	Digital	AIRS	Statewide	Compile Process Stpre	Private Firms	Annually	Periodic	US EPA; Public
Compliance Tracking	CLER - Div. of Environ. Protection	Digital	AIRS	Statewide	Compile Process Store	Private Firms	Weekly	Periodic	US EPA
Permits	CLER - Div. of Environ. Protection	Digital	FOXPRO	Statewide	Compile Process Store	Private Firms	Weekly	Daily	US EPA
Certificates to Operate	CLER - Div. of Environ. Protection	Digital	dBase	Statewide	Compile Process Store	Private Firms	Monthly	Periodic	US EPA, Public
USGSGASE	CLER - Div. of Environ. Protection	Digital	SPANS	Statewide	Compile Process Store	USGS	Annually	Routine	Permit Review Team
LIDS	CLER - Div. of Environ. Protection	Digital	SPANS	Statewide	Compile Process Store	NWS	Annually	Sporadic	N/A
METSITES	CLER - Div. of Environ. Protection	Digital	SPANS	Statewide	Compile Process Store	NWS	Annually	Routine	Permit Review Team
PRECIP	CLER - Div. of Environ. Protection	Digital	SPANS	Statewide	Compile Process Store	Sampling Agencies	In Work	Sporadic	N/A
ACIDRAIN	CLER - Div. of Environ. Protection	Digital	SPANS	Statewide	Process Store	US EPA	In Work	Sporadic	N/A
NPDES Outlets	CLER - Div. of Environ. Protection	Digital	SAS	Statewide	Compile Process	CLER - DEP	Quarterly	Routine	US OSM

APPENDIX B (continued)
EXISTING TABULAR GEOGRAPHIC DATA RESOURCES

Geographic Data File Name	Reporting Organization	Format	Software	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
SMCRA Permits	CLER - Div. of Environ. Protection	Digital	IMS	Statewide	Compile Process Store	OIS	N/A	Routine	N/A
Permit Application	CLER - Div. of Environ. Protection	Hard Copy	N/A	Project Site	Compile Process Store	Private Firms	UNK	Daily	OSM, EPA, Permittee
Surface Mining Information System	CLER - Div. of Environ. Protection	Digital	UNK	Statewide	Compile Process Store	State	Daily	Daily	Regional Office, OSM
Permit Compliance System	CLER - Div. of Environ. Protection	Digital	UNK	Statewide	Compile Process Store	EPS	Daily	Daily	EPA
Permit Application Tracking System	CLER - Div. of Environ. Protection	Digital	UNK	Statewide	Compile Process Store	State	Daily	Daily	Regions
Storet	CLER - Div. of Environ. Protection	Digital	UNK	Statewide	Compile Process Store	EPA	N/A	Daily	Agency
Wellrec	CLER - Div. of Environ. Protection	Digital	POISE	Statewide	Compile Process Store	None	Daily	Daily	UNK
Permits	CLER - Div. of Environ. Protection	Digital	POISE	Statewide	Compile Process Store	None	Daily	Daily	UNK
Locations	CLER - Div. of Environ. Protection	Digital	POISE	Statewide	Compile Process Store	None	Daily	Daily	UNK
U/C	CLER - Div. of Environ. Protection	Digital	POISE	Statewide	Compile Process Store	None	Daily	Daily	UNK

APPENDIX B (continued)
EXISTING TABULAR GEOGRAPHIC DATA RESOURCES

Geographic Data File Name	Reporting Organization	Format	Software	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
401.GEN	CLER - Div. of Environ. Protection	Digital	SAS	Statewide	Compile Process Store	CLER - Div. of Environ. Protection	Daily	Routine	Health, Office of Water Resources, Applicant
Student Enrollment File	Higher Education Central Office	Digital	ADABAS	Statewide	Compile Process Store	State College & University Campuses	Semester	Daily	Governing Boards, Campuses, Legislature, Public
Facilities Database	Higher Education Central Office	Digital	dBase, LOTUS	Campus	Compile Proces Store	State College & University Campuses	Biennially	Periodic	N/A
STORET Monitoring	West Virginia University - Agriculture and Forestry	Digital	dBase IV	Statewide	Compile Process Store	US EPA	Annually	Routine	N/A
National Weather Service	West Virginia University - Agriculture and Forestry	Digital	dBase IV	Regional	Compile Process Store	US Dept. of Commerce	Annually	Routine	N/A
Census Data	West Virginia University - Agriculture and Forestry	Digital	dBase IV	Statewide	Compile Process Store	US Census Bureau	10 Yrs.	Routine	N/A
Heritage Data	West Virginia University - Agriculture and Forestry	Digital	dBase IV	Regional	Compile Process Store	CLER - Div. of Natural Resources	N/A	Routine	N/A
Population Projection	Health Care Cost Review Authority	UNK	UNK	Statewide	UNK	Census	Annually	Routine	Upon Request

APPENDIX B (continued)
EXISTING TABULAR GEOGRAPHIC DATA RESOURCES

Geographic Data File Name	Reporting Organization	Format	Software	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
Family Planning	Bureau of Public Health	UNK	UNK	County	Compile Process Store	Medical Providers	Daily	Periodic	UNK
Pediatric	Bureau of Public Health	UNK	UNK	County	Compile Process Store	Medical Providers	Daily	Periodic	UNK
Maternity	Bureau of Public Health	UNK	UNK	County	Compile Process Store	Medical Providers	Daily	Periodic	UNK
Breast & Cervical	Bureau of Public Health	UNK	UNK	County	Compile Process Store	Medical Providers	Daily	Periodic	UNK
Marriage	Bureau of Public Health	UNK	UNK	County	Compile Process Store	Medical Providers	Daily	Periodic	UNK
Divorce	Bureau of Public Health	UNK	UNK	County	Compile Process Store	Medical Providers	Daily	Periodic	UNK
UB 82 Hospital Dis.	Health Care Planning Commission	Digital	UNK	Statewide	Compile Process Store	Hospitals, HCCRA	Monthly	Periodic	N/A
Health Professions Manpower	Health Care Planning Commission	Digital	UNK	Statewide	Compile Process Store	Varied	Annually	Periodic	N/A
Census	Health Care Planning Commission	Digital	UNK	Statewide	Compile Process Store	US Census Bureau	10 Yrs.	Periodic	NA
Contacts	Office of Emergency Services	Digital	dBase IV	Statewide	Compile Store	Business, Federal, State, County, Volunteers	Weekly	Daily	Internal

APPENDIX B (continued)
EXISTING TABULAR GEOGRAPHIC DATA RESOURCES

Geographic Data File Name	Reporting Organization	Format	Software	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
Resources	Office of Emergency Services	Digital	dBase IV	Statewide	Compile Store	State Business	Monthly	Routine	N/A
NFS All Facility Listing	Office of Emergency Services	Hard Copy	N/A	Statewide	Compile Process Store	FEMA	Annually	Routine	County, Local OESs
Reception and Care Facility Listing	Office of Emergency Services	Hard Copy	N/A	Statewide	Compile Process Store	FEMA	Annually	Routine	County, Local OESs
Census Data	Regional Planning Council, Mid-Ohio Valley	Digital	dBase	Regional	Process Store	US Census Bureau	10 Yrs.	Daily	General Public, Local Gov't
Sites Inventory	Regional Planning Council, Mid-Ohio Valley	Hard Copy	N/A	Regional	Compile Process Store	Local Government Development Authority	Annually	Routine	Industrial Parties
Accident Data	Regional Planning Council, Region X	Hard Copy	N/A	County	Process	WVDOT	Annually	Routine	N/A
Industrial Sites	Regional Planning Council, Region X	Hard Copy	N/A	Regional	Compile	Internal	Annually	Routine	N/A
Census Bureau STS's & TIGER	Regional Planning Council, Region X	Digital	ARC/INFO dBase	Statewide	Process	US Census Bureau	10 Yrs.	Routine	Public/ Private
Hazardous Material Sites	Regional Planning Council, Region X	Digital	EMS	County	Compile Store	Ohio County EMS	UNK	Daily	N/A
Census Data	Regional Planning Council, Region III	Digital	UNK	Regional	Process Store	US Census Bureau	UNK	Varies	Nonspecific
ADT Traffic Counts	Regional Planning Council, Region III	Hard Copy	N/A	Regional	Process Store	WVDOT	UNK	Varies	Nonspecific
Urban Intersection Database	Regional Planning Council, Region III	Digital	dBase III+	Urbanized Area	Process Store	WVDOT, RIC	UNK	Varies	Nonspecific

APPENDIX B (continued)
EXISTING TABULAR GEOGRAPHIC DATA RESOURCES

Geographic Data File Name	Reporting Organization	Format	Software	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
Commercial Business List	Regional Planning Council, Region III	Digital	dBase III+	Regional	Compile Process Store	RIC, Various	UNK	Varies	Nonspecific
Long-range Data/Demographics	Regional Planning Council, Region III	Digital	dBase III+	Regional	Compile Process Store	RIC, Various	UNK	Varies	Nonspecific
Traffic Zone	Regional Planning Council, Region III	Digital	dBase III+	Regional	Compile Process Store	RIC, Various	UNK	Varies	Nonspecific
Income Surveys	Regional Planning Council, Region IV	Hard Copy	N/A	Project Site	Compile Process Store	In-house	As needed	Sporadic	N/A
Census Data	Regional Planning Council, Region IV	Hard Copy	N/A	Regional	Process Store	US Census Bureau	10 Yrs.	Routine	General Public
Economic Data	Regional Planning Council, Region IV	Hard Copy	N/A	Regional	Process Store	State and Local Agencies	Monthly	Routine	General Public
Project Data	Regional Planning Council, Region IV	Hard Copy	N/A	County	Compile Process Store	In-house	As needed	Routine	Constituent
EMP DATA	Regional Planning Council, Region VIII	Digital	PFS	Regional	Compile Process Store	EMP. Sec	Monthly	Routine	UNK
WATERSYS	Regional Planning Council, Region VIII	Difital	PFS	Regional	Compile Store	Region 8	Annually	Sporadic	UNK
SEWERSYS	Regional Planning Council, Region VIII	Digital	PFS	Regional	Compile Store	Region 8	Annually	Sporadic	UNK
IND DATA	Regional Planning Council, Region VIII	Digital	PFS	Regional	Compile Process Store	Region 8	Annually	Periodic	UNK

APPENDIX B (continued)
EXISTING TABULAR GEOGRAPHIC DATA RESOURCES

Geographic Data File Name	Reporting Organization	Format	Software	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
STF 1, 2, 3	Regional Planning Council, Region IX	Digital	dBase	Statewide	Compile Process	US Census Bureau	10 Yrs.	Daily	Local Gov'ts, Public
Traffic Counts	WWW - Interstate Planning Commission	Hard Copy	N/A	County	Store	State DOT	UNK	Routine	Public
Accident Data	WWW - Interstate Planning Commission	Hard Copy	N/A	County	Process Store	State DOT	Annually	Routine	UNK
NAL File	Tax & Revenue - Property Tax Division	Digital	Custom	Statewide	Compile Process Store	Assessors, Property Tax Division	Daily	Routine	Local Gov'ts
CAMA File	Tax & Revenue - Property Tax Division	Digital	Custom	Statewide	Compil Process Store	Assessors, Property Tax Division	Daily	Routine	Local Gov'ts
BAMS	Department of Transportation - Engineering Computer Services Division	DIgital	SAS	Statewide	Compile Process Store	Highways	Weekly	Daily	FHWA, Contractor Assoc.
RWPLANS.DBF	Department of Transportation, Highways Division	Digital	dBase IV	Statewide	Compile Store	Right-of-Ways	Monthly	Daily	All District R/W Offices
PROPMAN.DBF	Department of Transportation, Highways Division	Digital	dBase IV	Statewide	Compile Store	Right-of-Ways	Daily	Daily	All District R/W Offices
RRVALS.DBF	Department of Transportation, Highways Division	Digital	dBase IV	Statewide	Compile Store	Right-of-Ways	Monthly	Periodic	All District R/W Offices
RTEINFO.DBF	Department of Transportation, Highways Division	Digital	dBase IV	Statewide	Compile Store	Right of Ways	Monthly	Daily	All District R/W Offices

APPENDIX B (continued)
EXISTING TABULAR GEOGRAPHIC DATA RESOURCES

Geographic Data File Name	Reporting Organization	Format	Software	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
Deed Microfilm Index	Department of Transportation, Highways Division	Digital	SAS	Statewide	Compile Store	Right of Ways	Monthly	Daily	All District R/W Offices
HWJ. USER. CONST	Department of Transportation, Highways Division	Digital	SAS	Statewide	Compile Process Store	District Offices, Materials Division	Daily	Daily	District, Central FHWA
Project Record System	Department of Transportation, Highways Division	Digital	dBase	Statewide	Compile Process Store	Division Project	Daily	Daily	Project District, Central FHWA
Bridge Investigation	Department of Transportation, Highways Division	Digital	dBase	Statewide	Compile Process Store	UNK	Annually	UNK	UNK
Geological Studies	Department of Transportation, Highways Division	Hard Copy	N/A	Statewide	Compile Process Store	UNK	Annually	UNK	UNK
Pavement Studies	Department of Transportation, Highways Division	Hard Copy	N/A	Statewide	Compile Process Store	UNK	Annually	UNK	UNK
Underwater Investigations	Department of Transportation, Highways Division	Digital	dBase	Statewide	Compile Process Store	UNK	Annually	UNK	UNK
Traffic Count	Department of Transportation, Highways Division	Digital	dBase	Regional	Process	WVDOT Traffic Engineering Division	Monthly	Daily	None
Roadway Feature Inventory	Department of Transportation, Highways Division	UNK	UNK	Regional	Compile Process Store	UNK	NK	UNK	UNK

APPENDIX B (continued)
EXISTING TABULAR GEOGRAPHIC DATA RESOURCES

Geographic Data File Name	Reporting Organization	Format	Software	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
Roadway Files	Department of Transportation, Highways Division	UNK	UNK	County	Compile Process Store	UNK	Daily	Daily	UNK
Encroachment and Utility Permits	Department of Transportation, Highways Division	UNK	UNK	Project Site	Compile Process	UNK	Daily	Daily	UNK
Daily Work Records	Department of Transportation, Highways Division	UNK	UNK	Project Site	Compile Process	UNK	Daily	Daily	UNK
Structure Inventory and Appraisal	Department of Transportation, Highways Division	Digital	CICS	Statewide	Compile Process Store	DOT System Services	Daily	Daily	FHWA
Bridge Inspection Management System	Department of Transportation, Highways Division	Digital	SAS	Statewide	UNK	UNK	UNK	UNK	UNK
Bridge Analysis and Rating System	Department of Transportation, Highways Division	Digital	FORTRAN COBOL	Statewide	Compile Process Store	UNK	Daily	Daily	N/A
Structures Division Scour Log	Department of Transportation, Highways Division	Digital	TSO	Statewide	Compile Process Store	DOT Structures Division	Daily	Periodic	DOT Districts
Water Surface Profile	Department of Transportation, Highways Division	Digital	FORTRAN	Statewide	Compile Process Store	FHWA	Daily	Daily	UNK
Speed Zone and Parking Reg.	Department of Transportation, Traffic Engineering Division	Hard Copy	N/A	Statewide	Process	UNK	Daily	Daily	Districts, Cities
Road Inventory	Department of Transportation, Programming Division	Digital	UNK	Statewide	Process	WVDOT - Planning Division	Daily	Daily	UNK

APPENDIX B (continued)
EXISTING TABULAR GEOGRAPHIC DATA RESOURCES

Geographic Data File Name	Reporting Organization	Format	Software	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
Bridge Inventory	Department of Transportation, Programming Division	Digital	UNK	Statewide	Process	WVDOT - Planning Division	Daily	Daily	UNK
Project Tracking	Department of Transportation, Programming Division	Digital	UNK	Statewide	Process Store	WVDOT - Program Division	Daily	Daily	UNK
Road Inventory Log	Department of Transportation, Planning & Research Division	Digital	UNK	Statewide	Process	WVDOT	Annually	Periodic	UNK
WV State Route Diagram	Department of Transportation, Planning & Research Division	Hard Copy	N/A	Statewide	Process	WVDOT	5 Yrs.	Daily	UNK
Transportation Improvement Program	Department of Transportation, Planning & Research Division	Digital	UNK	Statewide	Process	WVDOT	Monthly	Daily	UNK
Accident Record Log	Department of Transportation, Planning & Research Division	Digital	UNK	Statewide	Process	WVDOT	UNK	Periodic	UNK
Bridge Inventory	Department of Transportation, Planning & Research Division	Digital	UNK	Statewide	Process	WVDOT	UNK	Periodic	UNK
Sewer Maintenance Database	City of Huntington, Huntington Sanitary Board	Digital	Paradox	Regional	Compile Process Store	In-house	Daily	Daily	UNK
Lift Station Maintenance Database	City of Huntington, Huntington Sanitary Board	Digital	Paradox	Regional	Compile Process Store	In-house	Daily	Daily	UNK

APPENDIX B (continued)
EXISTING TABULAR GEOGRAPHIC DATA RESOURCES

Geographic Data File Name	Reporting Organization	Format	Software	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
Property Owner Database	City of Huntington, Huntington Sanitary Board	Digital	ORACLE, GEO/SQL	Regional	Compile Process Store	State Dept. of Tax & Revenue	Annually	Periodic	UNK
Sewer Information Database	City of Huntington, Huntington Sanitary Board	Digital	ORACLE, GEO/SQL	Regional	Compile Process Store	State Dept. of Tax & Revenue	Daily	Daily	UNK
Build	City of Morgantown, Planning and Development	Digital	dBase	City	Compile Process Store	Building Inspection Department	Daily	Daily	City Agencies, Public, Federal Gov't
HC (Rental Housing)	City of Morgantown, Planning and Development	Digital	dBase	City	Compile Process Store	Building Inspection Department	Daily	Daily	City Agencies, Public
WALKTOUR 91, 92	City of Morgantown, Planning and Development	Digital	dBase	Central Business District	Compile Process Store	Main Street Morgantown	Annually	Periodic	Public, State
TIGER Files	City of Morgantown, Planning and Development	Digital	dBase	County	Compile Process Store	US Census Bureau	UNK	Periodic	City Agencies
CONDUST File Property	City of Morgantown, Planning and Development	Digital	dBase	City	Compile Process Store	Planning Commission	Monthly	Sporadic	City Agencies
Sewer Customers	City of Beckley, City Engineer	Digital	COBOL	City	Process	Sanitary Board	Weekly	Periodic	UNK
Sewer Manholes and Lines	City of Beckley, City Engineer	Hard Copy	(Planned for ORACLE)	City	Compile Process Store	Sanitary Board	Weekly	Daily	UNK
Parcel Information	City of Beckley, City Engineer	Digital	UNK	County	Process	County Assessor	Weekly	Weekly	UNK

APPENDIX B (continued)
EXISTING TABULAR GEOGRAPHIC DATA RESOURCES

Geographic Data File Name	Reporting Organization	Format	Software	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
Beckley Code Enforcement	City of Beckley, City Engineer	Hard Copy	N/A	City	Compile Process Store	Beckley Code Enforcement	Daily	Daily	UNK
County Emergency Operations Center	City of Beckley, City Engineer	Digital	UNK	County	Compile Process Store	Enhanced 911 System	UNK	UNK	UNK
Building Permits	C&P Telephone Company	Digital	dBase	Statewide	Compile Process Store	In-company	Monthly	Routine	UNK
Dodge Reports	C&P Telephone Company	Digital	Word Perfect	Statewide	Compile Process Store	Dodge Data Line	Monthly	Routine	UNK
Construction Activity	C&P Telephone Company	Digital	dBase	Statewide	Compile Process Store	In-company	Monthly	Routine	UNK
Access Line Gain	C&P Telephone Company	Digital	FOCUS	Statewide	Compile Process Store	In-company	Monthly	Routine	UNK
WV Economic Summary	C&P Telephone Company	Digital	FOCUS	Statewide	Compile Process Store	State of West Virginia	Monthly	Routine	UNK
Continuing Property Record	C&P Telephone Company	Digital	UNK	Statewide	Compile Store	In-company	Daily	Daily	Internal
Interoffice Cables	C&P Telephone Company	Digital	TIRKS	Statewide	Compile Process Store	In-company	Daily	Daily	Internal
Pole Attachments with Other Utilities	C&P Telephone Company	Hard Copy	N/A	Statewide	Compile Process Store	In-company	Weekly	Periodic	Internal

APPENDIX B (continued)
EXISTING TABULAR GEOGRAPHIC DATA RESOURCES

Geographic Data File Name	Reporting Organization	Format	Software	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
Property Tax Information	Western Pocahontas Properties	Digital	ORACLE	Statewide	Compile Process Store	County Assessors	Annually	Routine	County Assessors
Coal Reserve Data	Western Pocahontas Properties	Digital	ORACLE	Regional	Compile Process	Internal	As needed	Routine	None
Timber Inventory	Western Pocahontas Properties	Digital	UNK	Regional	Compile Process	Internal	As needed	Routine	None
Forest Resource Information System	Westvaco Corporation	Digital	ARC/INFO Ingres	Statewide	Compile Process Store	Internal	Annually	Routine	Internal
Subdivision Files	Union Oil & Gas	Digital	dBase IV	County	Compile Process Store	Developers & Surveyors	As required	Daily	Public
Leak Data	Union Oil & Gas	Digital	dBase IV	County	Compile Process Store	County Employees, Public	Daily	Daily	PCS & DOT
Customer Data	Union Oil & Gas	Digital	dBase IV, Image DB	County	Compile Process Store	Customer	Daily	Daily	N/A
Well Data	Union Oil & Gas	Digital	dBase IV, Image DB	County	Compile Process Store	Well Loggers, Production Charts	Monthly	Periodic	N/A
County Profiles	Appalachian Power Company	Digital	WordPerfect	County	Compile Store	Internal	Annually	Daily	Mail List
Topographc - WV, 3 Projs.	Corps of Engineers - Huntington District	Digital	IGDS	Project Site	Compile Process Store	Engr. Div.	UNK	Routine	UNK
Topographic - Ohio, 3 Projs.	Corps of Engineers - Huntington District	Digital	IGDS	Project Site	Compile Process Store	Engr. Div.	UNK	Routine	UNK

APPENDIX B (continued)
EXISTING TABULAR GEOGRAPHIC DATA RESOURCES

Geographic Data File Name	Reporting Organization	Format	Software	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
Water Quality	National Park Service - New River Gorge	Digital	dBase IV	Regional	Compile Process Store	National Park Service	Monthly	Weekly	Parkwide
Ecological Monit.	National Park Service - New River Gorge	Digital	dBase IV	Regional	Compile Process Store	National Park Service	Annually	Periodic	National Park Service-wide
Soils	USDA - Soil Conservation Service	Digital	Informix	Statewide	Compile Process Store	USDA - SCS	Annually	UNK	UNK
NRI	USDA - Soil Conservation Service	Digital	Informix	Statewide	Compile Process Store	USDA - SCS	Annually	UNK	UNK
Forest Comp.	USDA - Soil Conservation Service	Digital	Informix	Statewide	Compile	USDA - SCS	Annually	UNK	UNK
CDS	USDA - National Forest Service	Digital	ORACLE	Regional	Compile Process Store	Forest Service	Daily	Daily	WV DNR
FLUR	USDA - National Forest Service	Digital	ORACLE	Regional	Compile Process Store	Forest Service	Weekly	Weekly	WV DNR
TIS	USDA - National Forest Service	Digital	ORACLE	Regional	Compile Process Store	Forest Service	Monthly	Monthly	WV DNR
STORET	USDA - National Forest Service	Digital	UNK	Regional	Compile Process	Forest Service	Monthly	Monthly	WV DNR
FISH	USDA - National Forest Service	Digital	INFOS II	Regional	Compile Process Store	Forest Service	Monthly	Monthly	WV DNR

APPENDIX B (continued)
EXISTING TABULAR GEOGRAPHIC DATA RESOURCES

Geographic Data File Name	Reporting Organization	Format	Software	Geographic Coverage	Use	Source Organization	Update Cycle	Frequency of Use	Routine Distribution
RRIS	USDA - National Forest Service	Digital	ORACLE	Regional	Compile Process Store	Forest Service	Daily	Daily	N/A
Pheromone Trapping	USDA - National Forest Service	Digital	SPIRES & ARC/INFO	Regional	Compile Process Store	WVDA; USDA FS	Seasonal	Routine	WVDA
Eggmass Survey	USDA - National Forest Service	Digital	SPIRES & ARC/INFO	Regional	Compile Process Store	WVDA; USDA FS	Seasonal	Routine	WVDA
Defoliation	USDA - National Forest Service	Digital	ARC/INFO	Regional	Compile Process Store	WVDA; USDA FS	Seasonal	Routine	WVDA, WVDNR
Treatment	USDA - National Forest Service	Digital	ARC/INFO	Regional	Compile Process Store	WVDA; USDA FS	Seasonal	Routine	WVDA, WVDNR
T&E Species	USDA - National Forest Service	Digital	ARC/INFO	Regional	Compile Process Store	WVDA; WV DNR	As Needed	Sporadic	WVDA, WVDNR

APPENDIX C
DATA PROCESSING RESOURCES

Computer System Name	CPU/Operating System	Reporting Agency	Primary Software Used	Communication/ Network Software	Communication Lines	Databases Supported	No. of Users	Planned Upgrades
Bus Routing	PC - DOS	Department of Education	Edulog; Ecotran	UNK	UNK	N/A	5	N/A
NRI	PC - DOS	State Soil Conservation Commission	GRASS	N/A	N/A	NRI, Soils	18	Yes
Mainframe	VAX3100	Legislative Services	Plan90	Ethernet	N/A	Statewide County	3	Yes
IS&C Mainframe	IBM 3090	Dept. of Administration	CICS; SAS; COBOL; PCI; DYC260	N/A	9 lines	Benefits; Applicants; Job Orders; 202; ACES; Wage; Tax; Secretary of State	31 - 9 terml.	UNK
CLER PC Network	IBM PC-O/S2	CLER - Bureau of Employment Programs	LOTUS 1-2-3; Wordperfect; Freelance; dBase III	LAN Server, 1.3	2 Dial-up telephone lines	Mass Layoff Stats.; Local Area Unemployment Stats.; Current Employment Stats.; Occupational Employment Stats.; ES-202; Economic and Demographic	31 - 24 PCs	YES
IS&C Mainframe	IBM 3090	CLER - Div. of Natural Resources	SAS	3270 Emulation on PC	UNK	License Agents; Sportsman Addresses; Accidents; Prosecutions	12	UNK
WVNET	UNK	CLER - Div. of Natural Resources	SAS	3270 Emulation on PC	UNK	Stockings; Harvests; Creel Surveys; Hunting Permit Applications; Population and Habitat Data	4	UNK
PCs	DOS	CLER - Division of Natural Resources	PC-SAS, FoxPro, Lotus, WordPerfect, Atlas Draw	PC-Talk, RBBS, ProCom	Dial-up	Stockings, Harvests, Surveys, Hunting Applications, Population and Habitat Data	4	UNK
PCs	IBM PS/2 - O/S2	CLER - Div. of Tourism and Parks	Word Perfect; EXCEL; LOTUS; dBase III & IV	3270 Emulation on PC	UNK	Park Attendance & Occupancy; Budget; Long-range Plans; Sales Programs	35	N/A
VAX	VAX 4000 - VMS	CLER - Geological & Economic Survey	CDD DATATRIEVE; SURFACE III	DECnet/Ether-net; Pathworks for VMS	1 Dial-up line	Oil & Gas; Coal; Sandstone; Springs; Gazetteer	50	In progress
PCs	PC - DOS	CLER - Geological & Economic Survey	PC/SAS; dBase; Symphony; QuattroPro; SPASE; LOTUS; PAPYRUS	Pathworks for DOS	3 Dial-up lines	Limestone; Water Use; Oil & Gas; Nuclear Graphite	41- 36 PCs	Yes

APPENDIX C (continued)
DATA PROCESSING RESOURCES

Computer System Name	CPU/Operating System	Reporting Agency	Primary Software Used	Communication/ Network Software	Communication Lines	Databases Supported	No. of Users	Planned Upgrades
Workstations	Silicon Graphics - IRIX	CLER - Geological & Economic Survey	SURFACE III; GSLIB; SPYGLASS; EXPLOR	TCP/IP; NFS; 4DDN; DECnet	None	None	7	Yes
Sun SPARCStations: 1-1+ and 1-IPC	Solaris 1.1	CLER - Geological & Economic Survey	Surface III, GRASS, Perl, Ingres, C	TCP/IP	1 Dial-up (planned)	Coal Stratigraphy, Coal Quality	10	Ues
IBM PC Model 95XP	PC DOS 5.0	CLER - Geological & Economic Survey	ARC/INFO, dBase, C++, SPSS, SAS, GSMAP	TCP/IP	None	Working copy of Coal Quality, Other projects	5	Yes
Safety Information System	MicroVAX-VMS	CLER - Office of Miner's Health, Safety & Training timeshares from MPL Corp.	POISE	UNK	6 leased lines	Mine Permit, Safety, and Mineral Production	40	UNK
PCs	PC - DOS	CLER - Office of Miner's Health, Safety & Training	EXCEL; LOTUS; Word Perfect	Procomm PC3270	6 leased lines	UNK	40	N/A
PC	PC - DOS	CLER - Solid Waste Management Board	Word Perfect; LOTUS; dBase	N/A	N/A	UNK	6	Yes
PC Network	PS/2 - O/S2	CLER - Development Office	Microsoft Word; LOTUS; RBase; Harvard Graphics, ACT, PC Tools	Procomm; O/S2 LAN Server (2 Networks)	1 leased line	N/A	75 and 32	Yes
Office PCs	PS/2 - O/S2	CLER - Div. of Environ. Protection	Word Perfect; FOXPRO; LOTUS	PC LAN; PC3270	1 dedicated digital; 1 dial-up	UNK	25	Yes
IS&C Mainframe	3090 - MVS-XA	CLER - Div. of Environ. Protection	SAS; IMS; ISPF	3270 Emulation	1 - 19.2 leased line	NPDES; SMIS	172	Yes
TIPS (OSM)	Silicon Graphic 4D/4	CLER - Div. of Environ. Protection	Geologic surface modeling modules	TGRAF	9600 dial-up lines	Oracle	2	Yes
Office PCs	25 - 286 & 386; 2 - 486/DOS	CLER - Div. of Environ. Protection	Word Perfect, FOXPRO, LOTUS	PC3270, PC LAN	1 digital dedicated line to IS&C; 1 dial-up line	FOXPRO, dBase	25	Yes
AIRS (USEPA)	IBM Mainframe	CLER - Div. of Environ. Protection	UNK	PC3270; DOSLAN, Kermit	1 digital dedicated line via OS/2	AIRS	8	No
AVS (OSM)	PC	CLER - Div. of Environ. Protection	AutoCAD, Statifact, GSM, ISM, SB Slope, Sed Cad	UNK	9600 baud direct dial	Variable	17	UNK
VAX (MPL Corporation)	VAX	CLER - Div. of Environ. Protection	POISE	Kermit	56Kbps digital line	UNK	18	Yes

APPENDIX C (continued)
DATA PROCESSING RESOURCES

Computer System Name	CPU/Operating System	Reporting Agency	Primary Software Used	Communication/ Network Software	Communication Lines	Databases Supported	No. of Users	Planned Upgrades
PCs	386/DOS	CLER - Div. of Environ. Protection	Windows, Microsoft Word, LOTUS, EXCEL	Kermit	UNK	UNK	UNK	Yes
IBM AS/400	Model B35/ OS/400	CLER - Div. of Environ. Protection	Office/Vision 400	Office/Vision 400	2 Sync dial-up, 2 Async dial-up	UNK	50	Yes
PCs	2-486; 10-386, 30-286/DOS	CLER - Div. of Environ. Protection	LOTUS, dBase III, PC Support 400	PC Support 400	UNK	RCRIS, USTDMS	60	Yes
State Mainframe	IBM 3090/MVS	CLER - Div. of Environ. Protection	SAS	UNK	UNK	DB2	70	UNK
OWR Mini	IBM AS/400, Model D50/ OS/400	CLER - Div. of Environ. Protection	SAA COBOL 400, Query/400, SAA SQL/400, Office/Vision 400	AS/400 PC Support	Token Ring Network, 1 dedicated line to IS&C Mainframe	SQL, DDS, IDDU	70	UNK
PCs	PS/2, DOS	CLER - Div. of Environ. Protection	LOTUS, QUATTRO PRO, Word Perfect, PARADOX, dBase IV, PC Support	PC Support, PC3270	UNK	UNK	70	UNK
iris	RS/6000, AIX	CLER - Div. of Environ. Protection	ARC/INFO	VIADUCT	UNK	UNK	UNK	UNK
PCs	PS/2, DOS	CLER - Div. of Environ. Protection	Permit Compliance System	NETSOL Gateway	UNK	UNK	15	UNK
STORET	PS/2, DOS	CLER - Div. of Environ. Protection	STORET	NETSOL Gateway	UNK	STORET	10	UNK
IBM 3090	IBM 3090, MVS	WVNET	ADABAS, NATURAL	SNA, DECnet, LAT	1	ADABAS, ORACLE	14	UNK
VAX	VAX, VMS	Higher Education Central Office	Windows, WordPerfect, LOTUS, Mail	DECnet, LAT	None	UNK	60+	UNK
IBM	PS/2, MSDOS, OS/2	Division of Culture and History	ENABLE, Word Perfect, dBase III+, PageMaker	ProComm	UNK	ENABLE, dBase III+	13	Yes
DEC/VAX	VAX 3900, VMS	West Virginia University - Geology & Geography	ARC/INFO, Word Perfect, Various Compilers	DEC Pathworks, DECnet	Synchronous line	Education Databases, GIS Databases	200	No
DEC/VAX	VAX 4000, VMS	West Virginia University - Geology & Geography	SAS, Surface III, Various Compilers	DEC Pathworks, DECnet	Synchronous line	Geophysical Databases	200	None
HP	Apollo 900, UNIX	West Virginia University - Geology & Geography	UNK	TCP/IP, Ethernet	None	Geophysical	2	None

APPENDIX C (continued)
DATA PROCESSING RESOURCES

Computer System Name	CPU/Operating System	Reporting Agency	Primary Software Used	Communication/ Network Software	Communication Lines	Databases Supported	No. of Users	Planned Upgrades
DEC/VAX	VAX 3500, VMS	West Virginia University - Geology & Geography	SAS, Surface III	DECnet	None	Geophysical	10	None
VAX Workstations	DEC 2000, VMS	West Virginia University - Geology & Geography	ARC/INFO	DECnet	None	GIS Databases, Geophysical Databases	15	Yes
VAX Workstation	DEC 3100	West Virginia University - Geology & Geography	ARC/INFO	DECnet, Pathworks	None	AP Co. Database, Cultural Resource Database	2	None
PC Lab	11 - DEC 386 PCs, DOS & OS/2	West Virginia University - Geology & Geography	IDRISI, SPANS, MINIFAB	Pathworks	None	Teaching Databases	50	None
PCs	7 - 386, 5 - 286 PCs, DOS	West Virginia University - Geology & Geography	Various	Pathworks	None	Various	26	None
MAC Lab	2 - MAC LCS, MAC 2X	West Virginia University - Geology & Geography	GRASS, Spreadsheet	TCP/IP	None	Various, Forest Service	10	None
DEC/VAX	VAX 5000, ULTRIX	West Virginia University - Geology & Geography	ARC/INFO, GRASS, Khorros	TCP/IP, DECnet	None	Various	2	None
ULTRIX	4 - DEC 5000 Workstations, ULTRIX	West Virginia University - Agriculture and Forestry	ARC/INFO, GRASS, Khorros, LAS	DECnet, Ethernet	ISDN	INFO, RIM	7	Yes
PCs	4 - 386/486 PCs, 1 - MAC	West Virginia University - Agriculture and Forestry	PC/ARC, MIPS, GEOSQL, SPANS, FMSAC	DECnet, Ethernet	ISDN & Modem	Foxbase, INFO, RBase, dBase, ORACLE	8	Yes
WVNMVS & WVNVM	IBM 3090, MVS/XA & EM/ESA	West Virginia Network for Educational Telecomputing	NOIS, CUFS, Banner, SAS, AMS, MSA Payroll	SNA, TCP/IP, Token Ring, Ethernet, X.25, VTAM	20 Ethernet (TCP/IP), 2 Token Ring, 25 SNA	ORACLE, SQL/DS, Spires, ADABAS	1,200	Yes
WVNVMS	VAXcluster 6520/8250, VMS	West Virginia Network for Educational Telecomputing	SAS Compilers	DECnet, LAT, TCP/IP, Ethernet	20 Ethernet	RDB, ORACLE	1,400	No
EXODUS	IBM RS/6000, AIX	West Virginia Network for Educational Telecomputing	UNK	Token Ring, Ethernet, TCP/IP, NOVELL	LAN Connection	System Z, ORACLE	160	None
PC	386/33 and 486/33 PCs, OS/2 & DOS	West Virginia Network for Educational Telecomputing	EXCEL, Word Perfect, Interleaf	TCP/IP, Ethernet, Serial	LAN	SQL, ORACLE	50	None
PS/2	2 - PS/2 PCs, OS/2	Marshall University, Institute for Regional Development	Word Perfect, dBase III+, MS Windows, Harvard Graphics	Novell	UNK	dBase III+, LOTUS	5	UNK
XT Clone	IBM XT Clone	Marshall University, Institute for Regional Development	Word Perfect	Novell	UNK	UNK	3	UNK

APPENDIX C (continued)
DATA PROCESSING RESOURCES

Computer System Name	CPU/Operating System	Reporting Agency	Primary Software Used	Communication/ Network Software	Communication Lines	Databases Supported	No. of Users	Planned Upgrades
IBM PS/2	3 - PS/2 PCs, DOS	Marshall University, Institute for Regional Development	Word Perfect, EXCEL, LOTUS, Paradox, AutoCAD, Smart CAM, CADKEY	Novell, TCP/IP	1 - 2400 baud modem, Ethernet LAN, T1/Microwave to Marshall Univ.	Paradox Platform, dBase Platform	20	UNK
SBCS	2 - 386 PCs, DOS	Marshall University, Institute for Regional Development	AutoCAD, Smart CAM, CADKEY	Novell, TCP/IP	Ethernet LAN, T1/Microwave to Marshall Univ.	UNK	10	UNK
IBM AS/400	AS/400, OS/400	Marshall University, Institute for Regional Development	Office Vision/ 400, MAPICS/DB	TCP/IP, Token Ring	1 - 2400 baud modem, Ethernet LAN, T1/Microwave to Marshall Univ.	MAPICS, SQC/400	6	N/A
DEC Station	DECstation 5000, ULTRIX	Marshall University, Institute for Regional Development	BROVE 3	TCP/IP	Ethernet, T1/Microwave to Marshall Univ.	UNK	3	UNK
IBM RS/6000	RS/6000, AIX	Marshall University, Institute for Regional Development	CADAM, CATIA	TCP/IP	Ethernet, T1/Microwave to Marshall Univ.	UNK	UNK	UNK
IBM RT PC	RT PC, AIX	Marshall University, Institute for Regional Development	CADAM, CATIA	UNK	Ethernet, T1/Microwave to Marshall Univ.	UNK	UNK	UNK
DEC VAX 4000	VAX 4000, VMS	Marshall University, Institute for Regional Development	UNK	TCP/IP, DECnet	Ethernet, T1/Microwave to Marshall Univ.	UNK	UNK	UNK
DEC MicroVAX	VAX 3100, VMS	Marshall University, Institute for Regional Development	UNK	TCP/IP, DECnet	Ethernet, T1/Microwave to Marshall Univ.	UNK	UNK	UNK
WVU Mainframe	UNK	Health Care Cost Review Authority	PL/I, SAS	UNK	1	UNK	15	Yes
PC	PS/2, DOS	Health Care Cost Review Authority	UNK	UNK	UNK	UNK	UNK	UNK
PCs	5 - PCs, DOS, O/S 2	Bureau of Public Health	C&D Base, Freelance, Imagemate, Harvard Graphics, LOTUS	PC3270, Entry Level, Qmodem	Leased Lines to IS&C, 2400 baud dial-up modem	Births, Deaths, Behavioral Risk Survey, Marriage, Divorce, VD, Adoptions	5	No
IS&C Mainframe	IBM 3090, VMS	Bureau of Public Health	PL/I, SAS	3270 Emulation	1 leased line	Births, Deaths, Behavioral Risk Survey, Marriage, Divorce, VD, Adoptions	2	None
PC	2 Hyundai PCs, DOS	Health Care Planning Commission	Word Perfect, Harvard Graphics	N/A	N/A	DB III, Q&A, EPI/INFO	12	Yes

APPENDIX C (continued)
DATA PROCESSING RESOURCES

Computer System Name	CPU/Operating System	Reporting Agency	Primary Software Used	Communication/ Network Software	Communication Lines	Databases Supported	No. of Users	Planned Upgrades
IS&C Mainframe	IBM 3090	Health & Human Resources	UNK	UNK	UNK	DB2	600	N/A
PCs	IBM 386, DOS, O/S 2	Health & Human Resources	Word Perfect, LOTUS, dBase IV, Foxbase, Paradox	NOVELL	UNK	UNK	100+	N/A
PCs	36 - PS/2, 1 - XT, 1 - AT, 26 - PLESSEY	Office of Emergency Services	1 FLOWS, Word Perfect, dBase III+, dBase IV, LOTUS, CARL, PageMaker, EIS/C	PC COMM	Dial-up modem	Rain Gauges, Rain Flow, Tower EQ, HAZMAT, LEPC/SERC, Contacts, Resources, CARL, SARA Title III, ESIC		
IS&C Mainframe	IBM 3090	Regional Jail and Correctional Facility Authority	UNK	UNK	UNK	UNK	UNK	UNK
PCs	IBM PS/2	Regional Jail and Correctional Facility Authority	Word Perfect, LOTUS, Paradox	PRO COMM PLUS	1 Dial-up	UNK	6	UNK
PRIME	UNK, 6 terminals, PRIMOS	Regional Jail and Correctional Facility Authority	UNK	UNK	UNK	UNK	UNK	UNK
PC	IBM PC	Regional Planning Council, Mid-Ohio Valley	dBase, LOTUS	N/A	N/A	UNK	4	Yes
PC	5 - Kaypro 286 PCs	Regional Planning Council, Region I	dBase III+, LOTUS, Wordstar	UNK	1 Modem	UNK	5	Yes
PC	Compaq 486, DOS	Regional Planning Council, Region X	ARC/INFO, dBase, Windows, LOTUS	PROCOMM, XTALK	1	ARC/INFO, dBase, LOTUS	2	No
PC	Compaq 286	Regional Planning Council, Region II	Word Perfect	PRO COMM	UNK	UNK	2	N/A
PCs	IBM PS/2, IBM XT; O/S2, DOS	Regional Planning Council, Region III	LOTUS, dBase III+, Generic CADD	Telix	N/A	N/A	3	Yes
PC	3 - 286 PCs; 1 Laptop; DOS	Regional Planning Council, Region IV	Word Perfect, Quattro Pro, Formtool, PageMaker	PRO COMM	1 2400 baud modem	UNK	5	No
PCs	5 - 286; DOS	Regional Planning Council, Region VIII	Professional Write, Microsoft Works, SuperCalc	N/A	N/A	Professional File	5	UNK
PC	AST 486/33	Regional Planning Council, Region IX	PC ARC/INFO, MIPS, dBase, WordPerfect	N/A	N/A	STF Files, EPA well data, Health Dept. well data	1	Yes

APPENDIX C (continued)
DATA PROCESSING RESOURCES

Computer System Name	CPU/Operating System	Reporting Agency	Primary Software Used	Communication/ Network Software	Communication Lines	Databases Supported	No. of Users	Planned Upgrades
IS&C Mainframe	IBM 3090	Tax & Revenue - Property Tax Division	Custom	UNK	UNK	CAMA, CAPPA	400	N/A
CADD	1 - Intergraph 6105 18 - Intergraph 6040 Wrkstn, 12 - Intergraph 2020 Wrkstn, 24 - Intergraph 2430 Wrkstn, 1 - DEC VAX 8350	Department of Transportation, Engineering Computer Services Division	Microstation 32, Microstation PC, InRoads, MGE-ETI, Informix	Intergraph Network Core, XNS & TCP/IP, Ethernet	56Kbps Leased Line	Informix	75	Yes
BAMS	IS&C IBM 3090, MVS/XA	Department of Transportation, Engineering Computer Services Division	BAMS: PES, LAS, DSS; SAS; ISPF; PL/I	3270 Emulation	Leased Lines	IMS, DB2, VSAM	60	Yes
PC	IBM PS/2, MS-DOS	Department of Transportation, Highways Division	dBase IV, First Choice, WordPerfect, LOTUS	3270 PC Emulation, PC LAN	SDLC - 1	dBase IV	35	Yes
Workstation	Intergraph Interpro; CLIX	Department of Transportation, Highways Division	Microstation 32, InSurv	VT220 Emulation, Ethernet	UNK	dBase IV, ORACLE	8	None
IS&C Mainframe	IBM 3090	Department of Transportation, Highways Division	SAS, Custom	CICS, TSO	32 lines	30 plus databases	150	N/A
PCs	XT, 286, 386 PCs; DOS	Department of Transportation, Highways Division	WordPerfect, LOTUS, dBase IV, Paradox, GBSTAT	UNK	UNK	UNK	150	Yes
PCs	PS/2, Zenith 8088, IBM Model 55SX; DOS	Department of Transportation, Highways Division	VP-Planner, First Choice, RBase	3270 Emulation	1 - 2400 baud modem	Project Estimates, Material Bid Compare	6	N/A
IS&C Mainframe	IBM 3090	Department of Transportation, Traffic Engineering Division	IMS, SAS	3270 Emulation	33 lines	Traffic Records, Accident Database	UNK	UNK
PCs	IBM 386SX; DOS	Department of Transportation, Traffic Engineering Division	None	None	None	None	3	UNK
Project Tracking	IS&C IBM 3090; MVS	Department of Transportation, Programming Division	COBOL/VSAM	CICS	None	BAMS	11	None
PC	IBM 55SX; DOS	Department of Transportation, Programming Division	First Choice, WordPerfect, VP Planner	None	None	None	4	Yes
PC	IBM PS/2, 55SX	Department of Transportation, Planning and Research Division	LOTUS, WordPerfect, dBase IV, First Choice, VP Planner	N/A	N/A	dBase IV	5	Yes

APPENDIX C (continued)
DATA PROCESSING RESOURCES

Computer System Name	CPU/Operating System	Reporting Agency	Primary Software Used	Communication/ Network Software	Communication Lines	Databases Supported	No. of Users	Planned Upgrades
SYS 36	IBM 5360	Department of Transportation, Division of Parkways, Economic Development Authority, and Tourism	In-house developed	N/A	N/A	N/A	15	N/A
DTK-Seagate	IBM PC	Department of Transportation, Division of Parkways, Economic Development Authority, and Tourism	UNK	UNK	UNK	UNK	UNK	None
SCAN	IBM PS/2	Department of Transportation, Division of Parkways, Economic Development Authority, and Tourism	Robertson Software, Weathergraphic	SSI, Surface Systems Inc.	Beckley	UNK	7	None
NLETS	Bull	Department of Transportation, Division of Parkways, Economic Development Authority, and Tourism	UNK	UNK	UNK	UNK	7	None
PCs	2 - IBM PS/2	Department of Transportation, Division of Parkways, Economic Development Authority, and Tourism	UNK	None	None	No	5	None
Star System	Ampex	City of Weirton, Department of Public Works	UNK	UNK	UNK	Dumpster and Special Pick-up Locations/Billing	1	UNK
AST 486	486/25Mhz	Huntington Sanitary Board - GIS/Engineering	AutoCAD, DCA, GEO/SQL	NOVELL, ArcNet	UNK	Paradox, ORACLE	1	N/A
Geonet	486/33Mhz	Huntington Sanitary Board - GIS/Engineering	AutoCAD, DCA, GEO/SQL	NOVELL, ArcNet	UNK	Paradox, ORACLE	2	N/A
Toshiba	T4400 486/25 Mhz	Huntington Sanitary Board - GIS/Engineering	AutoCAD, DCA, GEO/SQL	NOVELL, ArcNet	UNK	Paradox, ORACLE	1	Yes
GIS	Tangent 386 PC; DOS	City of Morgantown, Planning and Development	dBase, MMate, Atlas GIS, Plan Perfect	None	None	Yes	1	Yes
System 36	IBM Sys/36	City of Morgantown, Planning and Development	Custom software	Token Ring for PCs	None	Fire Fee, Sanitation, B&O Tax, Budgetary	8	N/A
GIS	2 - Sun SPARC Workstations	Morgantown Utility Board	ARC/INFO, AutoCAD, DCA	N/A	N/A	Base Mapping, Utility Features	2	UNK
PC	EUEREX 486	City of Beckley, City Engineer	Intergraph Microstation, QuattroPro, WordPerfect	None	None	UNK	1	Yes
Mainframe	UNISYS Mainframe	City of Beckley, City Engineer	COBOL	None	Modem	UNK	2	Yes

APPENDIX C (continued)
DATA PROCESSING RESOURCES

Computer System Name	CPU/Operating System	Reporting Agency	Primary Software Used	Communication/ Network Software	Communication Lines	Databases Supported	No. of Users	Planned Upgrades
PC	2 - 386 PCs; DOS	Putnam County Planning Commission	Atlas GIS, WordPerfect, LOTUS, dBase III	N/A	N/A	Building Permits, Subdivision Appeals	3	N/A
PC	IBM PS/2	C&P Telephone Company	dBase, LOTUS, EXCEL, FOCUS	X-TALK	UNK	UNK	6	UNK
Mainframe	1 - DEC VAX 4300, 6 - DEC 3100 Wrkstns.	CNG TransmissionCorp.	Synercom Informap III	DECnet	UNK	UNK	10	Yes
PC Network	Compaq 386, SBI 486 (for GIS), Compaq 386 server	Western Pocahontas Properties	WordPerfect, LOTUS, ORACLE, AutoCAD, GEO/SQL	Crosstalk, PROCOMM, NOVELL	None	Property Tax, Timber Inventory, Coal Reserve	20	Yes
Sun Network	2 - SUN SPARC 2 Wrkstns; SUNOS, UNIX; 1 - 486 PC; DOS	Westvaco Corporation	ARC/INFO, Ingres	Ethernet, PC NFS, UUCP/Kermit	1 Dial-up modem	Forest Resource Information System	50	Yes
Area Office PCs	3 - 386 PCs; DOS	Westvaco Corporation	PC ARC/INFO, dBase IV, WordPerfect, LOTUS	Softerm	1 Dial-up modem for each office (3)	Forest Resource Information System	30	Ues
HP 1000	HP 1000, Model A600	Union Oil & Gas	Basic, Image Database, In-house	Reflection	1 - 2400 baud modem	HP Image	11	Yes
PCs	1 - 486/33 Mhz 5 - 386/33 Mhz 2 - 386/20 Mhz	Union Oil & Gas	AutoCAD, dBase, WordPerfect, Quattro Pro, LapLink, Radian-CPS/PC	Reflection, Norton PC Anywhere	3 - 2400 baud modems	dBase IV	10	Yes
IBM	IBM	Appalachian Power Company	Enable, WordPerfect, Harvard Graphics	UNK	1 - 3200 baud modem	UNK	4	Yes
Digital Mapping	Intergraph IMA, Intergraph INTV-32C, UNIX	Corps of Engineers - Huntington District	IGDS, Microstation	NFS, NQS	Internet	ORACLE	2	Yes
CADD	Intergraph Interpro 6040 Workstation, UNIX	Corps of Engineers - Huntington District	MGA, MGE, MGM, MGI	NFS, NQS	Internet	ORACLE	80	Yes
DELL	DELL 486	National Park Service - New River Gorge	dBase IV, WordPerfect	N/A	N/A	N/A	4	N/A

APPENDIX C (continued)
DATA PROCESSING RESOURCES

Computer System Name	CPU/Operating System	Reporting Agency	Primary Software Used	Communication/ Network Software	Communication Lines	Databases Supported	No. of Users	Planned Upgrades
Data General	Aviion 5220; UNIX	US EPA - Information Resources	ARC/INFO, Framemaker, TGraph, Soft PC	TCP/IP, NFS	UNK	INFO	7	Yes
PRIME	Prime 850, PRIMOS	US Geological Survey, Water Resources Division	NWIS	Primenet, TCP/IP	Internet	Surface Water, Groundwater Site Inventory, Quality of Water, Water Use Data System	35	Yes
Data General	Aviion 6200 w/ Aviion 300cd Wrkstns; DG/UX	US Geological Survey, Water Resources Division	Framemaker, Statit, P-Stat, Tactition, ARC/INFO, Ingres/SQL	TCP/IP	LAN, Internet	Those listed above are currently under development on this system	35	Yes
PC	PC-Compatible	US Office of Surface Mining - Charleston Field Office	FOXPRO, WordPerfect, DrawPerfect,	TSR Manager, Crosstalk, PC Anywhere	None	UNK	15	None
SUN	SUN SPARC2; UNIX	USDA - Soil Conservation Service	GRASS, Prelude, Informiz, MAPGEN, LTPlus	Blast	3 - Dial-up	Soils, Forestry, Resource Inventories, Climate	6	UNK
AT&T PCs	6 - AT&T 386/33; UNIX	USDA - Soil Conservation Service	GRASS, Prelude, Informix, MAPGEN, LTPlus	Blast	3 - Dial-up	Soils, Forestry, Resource Inventories, Climate	6	UNK
AIPM GIS	IBM PS/2 Model 80	USDA - National Forest Service	ARC/INFO	PROCOMM PLUS	N/A	INFO, dBase	1	N/A
PCs	DELL 486/33; UNIX	USDA - National Forest Service	GRASS, X-Windows	TCP/IP, NFS	None	UNK	4	Yes
District Minicomputers	DG MV/7800 or DG MV15000; AOS/VS	USDA - National Forest Service	CEO Wordprocessing E-Mail, Spreadsheet, ORACLE, SYSTAT, SAS	FTS2000, X.25 WAN, Internet	56Kbps, T-1, 14.2 dial-up	ORACLE, Info II, DG/DBMS, DG/SQL	255	Yes
PCs	Compaq 386, Gateway 486, AT&T 6300, Misc. Portables	USDA - National Forest Service	CEO Write, CEO Spreadsheet, LOTUS, MS Word, Harvard Graphics, HANS-ON, Misc. Survey Packages	CEO Connection, Softerm	Dial-up modem	ORACLE, LOTUS	50	Yes
USDA Mainframe	IBM 3090 Cluster	USDA - National Forest Service	SAS, In-house	X.25, FTS2000	56K, T-1 digital	ORACLE	30	N/A
US EPA Mainframe	IBM Mainframe	USDA - National Forest Service	STORET	X.25, FTS2000	56K, T-1 digital	UNK	2	N/A

FORM 1
GENERAL QUESTIONNAIRE

Department/Division: _____

Respondent(s): _____ Phone: .

1. How important are maps and geographically referenced information to your agency's mission and programs? Give some examples.

2. What are the major limitations faced by your agency in accessing or processing maps and geographically-referenced information that may be eased or eliminated with proper implementation of a geographic information system?

3. What advantages do you see in implementing GIS as part of a statewide GIS development strategy within the context of statewide information management?

4. What technical or organizational obstacles do you see impacting development of a GIS (e.g., funding, training, maintenance, other)?

5. Describe any ideas you have about key applications for GIS and related technology in your Division or Department as a whole.

6. Has your organization prepared any formal or informal information system plans within the last five years? If so, please provide a copy (or synopsis with contact person if appropriate).

FORM 2
LAND-RELATED ACTIVITY DEFINITIONS

(Use one form for each activity)

Department/Division: _____

Respondent's Name: _____

Land-related Activity Name: _____

Current Planned If planned for future, projected initiation date _____

Description of Activity (how the activity applies to your agency)

Programmatic Mandate (source of authority or mandate)

Federal Statute State Statute Regulations Exec. Order Estab. Policy Informal Procedure

If statute, regulation or executive order, provide citations _____

Product or Service/Frequency (What product or service is produced as a result of the activity and how often is it produced?)

	Daily	Routine	Periodic	Sporadic	Comment
Formal Report					
Map or Chart					
Updated Map or File					
Statistical Analysis					
Field Inventory/Report					
Plan Document					
Direct Service to Public					
Response to Ad Hoc Queries					
Approved Action					
_____					
_____					

Daily:	Produced/Performed daily or more often (constant)	Routine:	Produced/Performed from once/day to several times/week
Periodic:	Produced/Performed on schedule (weekly, monthly, annually, etc.)	Sporadic:	Produced/Performed on irregular basis, less than quarterly

Other Agencies/Groups Involved (What agencies/groups are involved and how are they involved?)

Agency Name	**Involvement**				
A _____	Initiate function	Receive products/svcs.	Oversight/ review	Provide information	Participate in performance
B _____	Initiate function	Receive products/svcs.	Oversight/ review	Provide information	Participate in performance
C _____	Initiate function	Receive products/svcs.	Oversight/ review	Provide information	Participate in performance
D _____	Initiate function	Receive products/svcs.	Oversight/ review	Provide information	Participate in performance

FORM 2 (continued)
LAND-RELATED ACTIVITY DEFINITIONS

Please list the types of map and tabular geographic data used to support the activity. Provide commentary as appropriate for further clarification.

Map Data **How Used**

Survey Control _____

Planimetric Features _____

Hydrography _____

Topography _____

Political Boundaries _____

Administrative Boundaries _____

Parcels _____

Energy Transmission Features _____

Utility Dist./Collection _____

Land Cover/Land Use _____

Surficial Geology _____

Floodplains _____

Well Locations _____

Environmental Features _____

Soils _____

Incidents _____

Historic/Archaeological Sites _____

Recreational Facilities _____

Demography _____

Meteorological Information _____

Biological Distribution _____

_____

_____

_____

_____

_____

_____

Tabular Data **How Used**

Permit Data _____

Agricultural Data _____

Environmental Data _____

Demographic Data _____

Energy/Mineral Resources Data _____

Facilities Data _____

Transportation Data _____

_____

_____

_____

_____

_____

FORM 3
MAP RESOURCE INVENTORY

Department/Division: _____

Respondent: _____

On the table below, indicate the maps or map series that you presently use, create, or maintain, and the appropriate information requested. **Please provide a sample of each map and an index map if it is a series of maps.**

Map or Map Series Name	**Format[1]**	**Software**	**Scale** (e.g., 1:4,800; 1:24,000; 1:100,000; etc.)	**Geographic Coverage** S = Statewide R = Regional C = County P = Project site	**Use[2]**	**Source Organization[3]**	**Update Cycle** (e.g., daily, weekly, monthly, annually, etc.)	**Frequency of Use** (e.g., daily, periodic, routine, sporadic)	**Routine Distribution[4]**

(1) Format categories are: **A** - Automated or **H** - Hard copy; include name of software for automated map series.

(2) Use categories are: **C** - Compile/Update; **P** - Process/Analyze; **S** - Store/Distribute (Use multiple codes, if necessary)

(3) Organization or outside group from which map series originates or is acquired (e.g., other state agency, federal agency, private company)

(4) Please list any government agencies or outside groups (including the general public) to which you currently distribute maps.

FORM 4
TABULAR GEOGRAPHIC DATA RESOURCE INVENTORY

Department/Division: _____

Respondent(s) _____

On the table below, indicate the geographically-referenced data files that you presently use, create, or maintain, and the appropriate information requested. These tabular data sources may include such documents or databases as permit forms or summary databases; records of field sampling; well log records; facility inventory and maintenance records; and other information referenced to geographic areas or point locations. **Please provide a sample of hard copy records or digital file data dictionary or list of file contents.**

Data File Name	Format[1]	Software	GeographicCoverage S = Statewide R = Regional C = County P = Project site	Use[2]	Source Organization[3]	Update Cycle (e.g., daily, weekly, monthly, annually, etc.)	Frequency of Use (e.g., daily, periodic, routine, sporadic)	Routine Distribution[4]

(1) Format categories are: **A** - Automated or **H** - Hard copy; include name of software in next column for automated data files.

(2) Use categories: **C** - Compile/Update; **P** - Process/Analyze; **S** - Store/Distribute (Use multiple codes, if necessary)

(3) Organization or outside group from which data file originates or is acquired, e.g., other state agency, federal agency, private company

(4) Please list any government agencies or outside groups (including the general public) to which you currently distribute tabular geographic information in hard copy or digital form.

FORM 5
MAP AND GEOGRAPHIC INFORMATION
DEFICIENCIES AND LIMITATIONS

Respondent _____

Department/Division: _____

1. Please rate and comment upon deficiencies, limitations, or obstacles encountered with maps and geographic information sources in performing your work.

   Severity of Deficiency/Limitation (circle a number): 1 = No deficiencies or limitations; 5 = Severe deficiencies or limitations.

   a) Map accuracy or detail 1 2 3 4 5
      Comment _____

   b) Map scale 1 2 3 4 5
      Comment _____

   c) Availability or completeness of important map features 1 2 3 4 5
      Comment _____

   d) Map sheet size or format 1 2 3 4 5
      Comment _____

   e) Physical or visual quality/readability 1 2 3 4 5
      Comment _____

   f) Timeliness of map or data updates 1 2 3 4 5
      Comment _____

   g) Tabular report format 1 2 3 4 5
      Comment _____

   h) Level of detail on maps or reports 1 2 3 4 5
      Comment _____

   i) Customized map production 1 2 3 4 5
      Comment _____

   j) Accessibility of geographically referenced data in suitable format 1 2 3 4 5
      Comment _____

   k) Cumbersome filing or retrieval 1 2 3 4 5
      Comment _____

   l) Availability of central directory for maps or geographic information 1 2 3 4 5
      Comment _____

   m) Other: 1 2 3 4 5
      Comment _____

2. On the back of this form, please provide other comments about current deficiencies and limitations that may be addressed by GIS and related information system technologies.

FORM 6
EXISTING COMPUTER SYSTEMS

Department/Division: _____

Respondent(s): _____

This form should be used to summarize information about all computer systems (PCs, minicomputers, mainframes) that your agency uses to store and process geographically related data. This form should be filled out by staff who are knowledgeable about computer systems in your organization. This form provides space to describe two computer platforms. **Please use additional forms if necessary.**

System Name		
Processing unit and operating system (make and model)		
Organization operating the system		
Primary software packages used		
Communication and network software		
Remote communication lines (type and number)		
Databases supported		
Approximate number of users		
Upgrades or replacements planned/anticipated		

FORM 7
CURRENT OR PLANNED GIS APPLICATIONS

Department/Division:_____

Respondent(s):_____

Please provide information about current or planned applications for GIS software.

1. Do you currently use GIS software? If so, what is the software package and computer hardware used? How many GIS users are currently in your organization?

2. If you answered "no" to Question 1, do you have specific plans for implementation of GIS? Please describe your plans and intended timing for implementation. If you anwsered "yes" to Question 1, please describe any plans for GIS expansion.

3. Please list and briefly describe up to three or four GIS applications that are critical to your division or section.

4. On the back of this form, please provide other comments or ideas about GIS applications, opportunities, or pitfalls.