# Implementation Plan

## WAYNE COUNTY
Geographic Information System

CLOUGH HARBOUR & ASSOCIATES LLP

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# Introduction

Wayne County has contracted Clough Harbour & Associates LLP (CHA) to prepare a Geographic Information Systems (GIS) Needs Assessment and Implementation Plan. The primary objective of this initiative is to explore and document opportunities for using GIS to better access, share, preserve, and protect the County's spatially oriented records and information.

This Implementation Plan Report is the final document in a series of three reports summarizing the findings and recommendations generated during the Needs Assessment process. The purpose of this document is to provide a detailed, step-by-step plan for deploying the proposed GIS applications and their supporting components. The report includes hardware, software and data specifications as well as recommended installation, training, and maintenance strategies. Estimated costs are included for each of these components along with a suggested timeline for conducting the implementation.

The following sections include descriptions of the priority items that the County should pursue during the first year of its GIS implementation. These items include applications, data and supporting systems that offer the greatest return on investment in terms of improving records management functionality and process improvement. Estimated costs are provided for budgeting purposes. This report also provides information on expected ongoing maintenance needs, as well as suggestions to help minimize these costs.

# Project Initiation

The implementation process should begin with the formation of a GIS Steering Committee that will be tasked with guiding the project through to completion. A project kickoff meeting should be held to provide the team with an opportunity to review the project objectives and schedule. This team will most likely be lead by Bret DeRoo from the County Planning Department or by the County's GIS Administrator if such a position has been created prior to the project kickoff. It should also include representatives from each of the organizational units that participated in the Needs Assessment.

An experienced GIS consultant should also be hired to provide technical expertise and support throughout the implementation process. This consultant will serve as an additional member of the Steering Committee and will support its efforts by providing the following services:

- Technical Support and Guidance
- Data Gathering, Development, and Improvement
- Hardware and Software Procurement, Installation and Configuration Services
- Custom Application Development
- Training

# Data Gathering, Development and Improvement

One of the initial objectives of the GIS Steering Committee will be to assemble a core set of GIS data layers that will provide base mapping for the proposed applications. The County Planning Department has already compiled a number of useful layers, but others will need to be updated, created, or acquired from other sources.

Correcting the positional accuracy and alignment problems in the County's existing tax maps is the top priority in this area. The County has indicated that survey level accuracy will not be required for the tax parcel boundaries, as they will be used primarily for general information and planning purposes. Therefore, it is recommended that the County utilize NYSDOP aerial imagery as a guide to "best fit" the parcels to visible, known landmarks such as fence lines, stone walls or pavement centerlines. The County contains approximately 44,000 parcels mapped in AutoCAD format. The corrected mapping will remain in AutoCAD.

The Steering Committee should establish a methodology for reviewing the updated parcels and providing quality control. It is recommended that a countywide grid be established to aid in this process. Using a grid would allow reviewers to break the County into manageable sections for review and also to communicate the locations of discrepancies more easily.

Wayne County's current tax parcel numbering system is based in part on the geographic coordinate values of the center point, or centroid, of each property. Adjusting the parcels' boundary lines will result in changes to the coordinates of many of these centroids. Where modifications result in small positional changes, the coordinates and associated parcel IDs may be left as is. Where parcel boundary modifications cause the former centroids to fall outside of the boundaries of the newly revised parcels, the centroids and related ID values must be updated.

These center points may be generated easily using simple tools available within desktop GIS software. However, to avoid data corruption and broken linkages to other County systems, it is suggested that the County maintain the old coordinate values in a historic Parcel ID field. Future relational database systems may be linked to the updated ID column, while older legacy systems may use the historic ID as needed.

Developing an accurate and complete street centerline layer will be another priority task for the County. Currently the County works with a combination of centerline datasets generated from different sources including tax maps, E911's base maps, and New York State's ALIS data. Each of these layers differs in terms of completeness, naming conventions, format and accuracy.

The County E911 Department has already taken steps to improve the quality of its street centerline file. A consultant was hired and has been assisting E911 in rectifying the centerlines to aerial orthoimagery, improving the accuracy of addressing information, and standardizing naming conventions in conjunction with County tax mapping. As a result

of these efforts it is anticipated that this layer will provide the most accurate and complete centerline file for use in Countywide mapping applications. As the tax parcels are updated and rectified to the aerial imagery, any alignment differences between the existing tax maps and the E911 centerlines will also be eliminated.

It is recommended that the County establish a documented process for the ongoing upkeep and future maintenance of the centerline data. This process may be managed by the County's GIS administrator or E911 staff. To the extent possible, corrections and updates should also be fed back to the NYS Office of Cyber Security & Critical Infrastructure Coordination, to help other statewide users by improving the accuracy of it's ALIS street centerlines.

Once the County has established a solid base of tax parcels, aerial imagery and street centerlines it may proceed with developing some of the additional high priority datasets identified in the needs assessment. Some of these data layers may be developed by digitizing scanned record maps or directly off the aerial imagery. Other layers would need to be collected in the field using GPS or traditional survey methods.

One of the key data layers required by the County will be culverts. The County Highway Department is responsible for approximately 4,000 culverts and currently uses an aging paper-based map to locate these features when performing maintenance activities and responding to drainage issues. Having this data in a GIS format along with elevation data, streams and wetlands would help the Highway Department analyze the current drainage system in greater detail and be more proactive in preventing future problems. The most cost effective method for developing the culverts layer would involve scanning, geo-referencing, and digitizing the existing Highway culvert map. GPS field data collection might also be used to locate the culverts with higher accuracy. Attribute fields including the street name, x coordinate, and y coordinate may also be added and populated where information is available. As additional fieldwork is completed over time, Highway staff may be able to utilize GPS to update the positional accuracy of the culverts as well as add attribute data such as the last maintenance date, diameter, condition, and hyperlinked digital photos.

Elevation data will be another key component required for analyzing drainage issues; and could be used for a wide range of other planning and general reference purposes. 10-foot elevation contours may be generated using available Digital Elevation Models (DEMs) for New York State. A vector contours layer should also be developed for overlay and display applications within various County GIS applications. Generating a polygon layer showing steep slope areas (over 15% slope) would also facilitate the use of land use analysis applications.

Additional key emergency management related data sets should also be developed as a priority initiative. Emergency Response Planning Areas (ERPAs), traffic control points, access control points and evacuation routes may be digitized from existing paper maps. Siren Locations and Radiological Sampling Points related to the Ginna Nuclear Power Facility may also be obtained from the plant's owner. Bridges (with clearance and

maximum weight limits listed), as well as railroad crossings, may also be obtained from the NYS Department of Transportation rather then developed in house. Locations of mobility-impaired individuals requiring emergency pickup could also be geocoded from available address lists using desktop GIS software.

Fire hydrants are another key dataset identified for use in emergency management applications as well as water systems management. However, consistent and accurate hardcopy maps of hydrant locations throughout the County are not available, and the hydrants themselves are not clearly visible on aerial imagery. There are 2,800 hydrants countywide that would need to be mapped. It is suggested that these features should be collected in the field via GPS or traditional survey methods. Due to the large number of features to be collected, the process of field data collection would be time consuming and may be extended beyond the first year of implementation.

The County has also considered the possibility of obtaining updated aerial photography for the County through Pictometry. The County's existing Pictometry images were captured in 2006 and are out of date in areas where new development has occurred. New imagery would undoubtedly be a beneficial resource for data development and mapping efforts as well as emergency response and law enforcement applications. However, the cost of re-flying the County could range between $130,000 - $140,000. In addition, the need for updated Pictometry images may be reduced once the NYSDOP distributes its next round of improved imagery, which is expected in 2009.

The County should also look to supplement its existing data library by acquiring data from the NYS GIS Clearinghouse, the Cornell University Geospatial Information Repository and other sources. These resources provide a wide range of data layers; and the cost and effort associated with gathering this information is relatively minimal. In conjunction with its data gathering, improvement and development efforts, the GIS Steering Committee should also make certain to establish appropriate metadata. The committee should also develop a Data Maintenance Plan, documenting the process and frequency with which these layers will be updated, and identifying who will be responsible for maintaining and updating the information.

## Web-Based GIS Data Viewer (Public Access)

In order to make GIS data more accessible to County workers, municipal staff and residents, the County should consider implementing a publicly available web-based GIS data viewer. Web-based systems offer the most efficient and cost-effective means of delivering maps and data to large groups of people. This type of application also offers the potential to alleviate many of the most common, time-consuming data requests fielded by County agencies, and should be pursued as a priority item in year one.

The public web-based data viewer application could be accessible via the Internet using a standard web browser and would not require any additional software or plug-ins to operate. As noted in the Conceptual System Design Report, the web and map server

software and data could be installed on an internal web server, or hosted off-site to minimize the burden and cost of maintaining these items internally.

A dedicated application/file server should be procured for delivering web-based GIS applications if the County does not elect to have these hosted externally. This server should be equipped with a 2.33 GHz or higher processor, 2 GB RAM, and a tape backup system.

Utilizing open source technologies for the development of the web-based applications would eliminate the cost of purchasing map server software, eliminate ongoing licensing fees and minimize server hardware requirements. This would allow the County to devote more of its implementation budget toward developing the applications and tools themselves.

Prior to allowing public access to the application, it is recommended that County staff pilot the application for a minimum of two months. This would allow them to thoroughly test the application in its day-to-day operations, and to become better acquainted with its features prior to opening the system up to public use.

The County's implementation consultant should provide an on-site training session and demonstration of the application to all interested staff prior to the beginning of the pilot period. After the pilot, the application may be opened up for users at local Towns and Villages, and eventually to the public.

The application itself would include the following tools and functions:

Zoom In
This tool will allow users to click on a location to zoom in by a factor of two times, or to click and drag a box to zoom in to a specific area on the map.

Zoom Out
This tool will enable users to click on the map to zoom out by a factor of two times.

Pan
This tool will allow users to shift the features on the map in any direction. When the user clicks on the map, the image will be redrawn, centered on the point selected.

Quick Zooms
A series of three dropdown boxes will be included to allow users to zoom directly to a set of predefined locations including prominent town landmarks, public buildings, and Town projects.

Identify Features
This tool will allow users to click on any of the features displayed on the map and view the associated attributes displayed in a Results Window. Attribute information will be displayed for all map layers that are visible in the map window.

Map Layers Visibility Control

This feature will allow users to turn layers on and off. Clicking a checkbox or menu will draw the features of the data layer in the map display. Clearing the checkbox or menu will remove those features from the map. The application will be designed to support up to 50 data layers including thematically symbolized data sets with predefined color schemes. It is anticipated the application will initially include the layers listed below:

- Farmland Protection Areas
- Federal Wetlands
- Flood Plains
- NYSDOP Aerial Photography
- School Districts
- State Wetlands
- Streams and Water Features
- Street Centerlines
- Tax Parcel Boundaries
- USGS Quadrangle Base Maps

The application will also include expansion capabilities to allow additional layers to be added as needed. Such layers might be designed to provide information on County services and transit routes, or to promote tourism, historic preservation, and economic development.

Legend Display

This feature will display the names of the layers that have been turned on and how the layer is symbolized. The Legend will be updated automatically as layers are turned on or off.

Measure Distance

This tool will enable the user to measure distances on the map. The user will click once on the map to start measuring and then click at a second location to finish a line segment. The result of the measurement (distance from the starting and ending points defined by the user) will be displayed on the screen. The user can then measure another line segment (accumulative length will display in addition to the current segment length) or double click to end the measuring operation.

Application Window Size Control

This function will allow the user to maximize the application window within the web browser to expand to standard screen resolution dimensions (such as 800 x 600 or 1024 x 768).

Find Parcel by Street Address, Owner Name or Parcel ID

This query function will be used to search the map for tax parcels based on the owner's name, street address, or parcel ID number. Users will be able to type all or part of a search criteria in a field and then click a button to execute the search. The query will then execute and generate a list of those parcels that meet the selected criteria. All of the selected parcels would also appear highlighted in the map display.

Abutters List Tool

This function will allow the user to select all properties within a specified distance of the currently selected property. Users may enter a distance value in feet, and all properties within the specified distance will be displayed in a list and also appear highlighted in the map display.

Print Map
This function will allow the user to generate, preview, and print hardcopies of on-screen maps. The maps will include the currently displayed map window with all visible layers, a legend, a user-defined map title, north arrow, Town logo, date, and disclaimer statement. The maps will be available in both standard 8.5" x 11" and 11" x 17" formats. Maps may also be viewed in Adobe Acrobat (.pdf) format and saved locally as .pdf files.

Metadata
A hyperlink will be included in the legend next to each layer that, when clicked, will open a separate browser window containing HTML based metadata documentation for all data layers.

Help System
This function will open a separate application page with help documentation. The documentation should use text and images to explain the use of each function or operation of the application.

Overview Map
An overview or inset will be included to help users identify which portion of the County is currently being shown within the map window.

## Web-Based GIS Data Viewer (Staff Only)

A modified, staff only version of the web-based GIS data viewer may also be established to provide designated County agencies with secure access to additional GIS capabilities and datasets. This application would include all of the data layers and functionality available in the public access application, as well as some additional advanced features and datasets that are sensitive or subject to licensing restrictions. The application would be accessible via the Internet, but would require users to enter a user name and password to log in. Multiple department-specific sites with unique logins may be created if desired, to allow agencies to limit access to selected data layers.

Additional data layers that might be added to the staff only site might include extended property data fields, Pictometry images, water system info, etc. The added features that would appear in the application include:

Advanced Search
This query function will be used to select one or more features in a specific data layer based on a simple query statement (e.g., Select Parcels where Acreage = 10). The query

will generate data in an information tab featuring attribute records for the selected parcels. All of the selected features will appear highlighted in the map display.

Buffer Tool
This function will be used to generate a buffer of a user-specified distance (e.g., 100 feet) around selected features of a specific data layer. The buffer will appear as a boundary feature in the map display. The user may then specify a target data layer. The features of the target layer that are located partially or completely within the buffer will become selected. The selected records of the target features will appear highlighted in the map display and a Results Window of attribute records for the selected features will open.

Photo Hyperlinking
This tool will allow photos associated with a geographic feature to be opened and viewed via the map interface. When a user selects a feature, a hyperlink field will be visible in the attribute record of the feature. Clicking on the link will open the image in a new browser window.

Area Calculator Tool
The Area Calculator tool will allow users to draw an on-screen polygon and have the acreage of the polygon be displayed automatically.

Mailing List Creator
This feature will provide the requested functionality identified for the Mailing List Application. It will allow users to select a parcel using the Identify, Buffer or Advanced Search tools and then generate a mailing list that can be printed to standard size label sheets, or downloaded as a text (.txt) file for use outside the application in a mail merge operation.

## Desktop GIS Applications

The Planning, Highway, E911, Real Property Tax and Emergency Management Departments have specialized mapping requirements that would be best addressed through the use of desktop GIS software rather than web-based applications. Users in these agencies have expressed the need to create and edit GIS data or to conduct advanced analytical operations. The County should not be required to make any significant upgrades to its computer equipment and peripherals in order to support the proposed desktop GIS applications to be developed. However, the County will need to purchase updated desktop software for these agencies.

It is recommended that the County procure and install 4 concurrent licenses of ArcView 9.2 for use by designated individuals within the agencies listed above. The primary uses of this software will be to allow data custodians to edit and update GIS data layers and attribute data, conduct ad hoc queries, and plot large format maps. The ArcView 9.2 license software would be loaded on a designated license server in the IT network room and made accessible to users as needed via a network connection. Bandwidth and processing requirements for running the license server and providing access to license

files would be extremely minimal. Under this configuration all users would share a single license of ArcView, however, only one user would be able to access the program at a time. The County should consider purchasing 1-2 additional stand-alone seats of ArcView 9.2 in addition to the concurrent seats noted above. These seats could be used to provide dedicated access to the software for key users such as the GIS Administrator or 911 staff. The stand-alone licenses could also be installed on laptops to provide a mobile platform for providing GIS demonstrations at public meeting or conducting field work when the network license server is inaccessible.

In order to make desktop map making and other GIS operations more efficient, the County should establish ArcView map templates for each department. These templates would be pre-loaded with the most commonly used datasets and have preset bookmarks for quickly jumping to frequently accessed locations and views. Standardized symbols, colors and labels should also be established to give a consistent look and feel to County produced maps, and avoid the need to reproduce these settings each time new maps are created. Specialized templates should also be developed to help users carry out specific GIS operations and applications. Examples might include a Highway Culverts Map and various Emergency Response Planning Maps.

In additions to ArcView, a floating license of the Publisher extension should be purchased for use by individuals in the Planning Department. The extension may be used to prepare ArcReader maps for other County agencies. County users wishing to access these maps should be supplied with ArcReader, the free viewer application available from ESRI. Having Publisher and ArcReader will provide the County with another low cost alternative for distributing maps and data. Together they provide an ideal platform for users who have specialized needs that are not suited to web-based applications, but who also do not require the full capabilities of ArcView. Examples of these types of needs may include the need to plot higher quality printed maps, or access data where Internet connectivity is unavailable.

One specific example where ArcReader may prove very useful is in developing and deploying a Crime/Accident Analysis Application for the Sherriff's Office. This application would provide designated Sherriff's Office staff with a means to map and geographically analyze data from its TraCS and SJS systems. Data could be linked or exported from these systems and incorporated into a dynamic ArcReader map. Point data would be categorized and color-coded according to predefined categories. Using ArcReader would offer several advantages to developing this type of application using web-based tools or traditional desktop ArcView software. Unlike a web application, ArcReader would allow users to maintain local control of these sensitive datasets, allowing them to update the data on demand and more effectively ensure the security and confidentiality of this information. ArcReader is also preferable to ArcView in this case because direct editing of the data is not required, the required mapping needs are very basic, and the cost would be much less.

Obtaining a site license of CommunityViz is also recommended for the Planning Department. This application would allow County Planners to model various land use planning alternatives in greater detail, as well as more quickly and efficiently.

CommunityViz also provides an invaluable tool for conveying the impact of proposed land use decisions using maps, charts and 3D visualizations. The application acts as an extension to ArcView and can only be installed on PCs where ArcView is loaded. Once a site license is purchased, this application could be installed on up to 3 County PCs.

For users wishing to access routing applications, copies of MapPoint should be purchased. This program will allow users to type in an address or import a list of addresses for use in identifying the most efficient driving route to various destinations. Routes may then be adjusted and optimized based on driving preferences, scheduling needs, or the need to add or remove stops. The application will also allow users to view routes on the map and print written directions. This low cost application may be acquired and provided to users at DSS, Probation, and the Sherriff's Office as needed.

## Staffing and Training

As noted in the Conceptual System Design Report, the addition of a dedicated GIS Administrator position at the County level is a critical factor in ensuring the ongoing success of the County's GIS program. This individual would spearhead the implementation process, and provide a central point of contact for all inquiries and support requests. They would also help ensure that the County's GIS data, software, and hardware are kept up to date; coordinate upgrades; and establish protocols for ongoing maintenance. Specific duties of this individual might include updating the County's tax property shape files and provide those on a scheduled basis to E-911, updating Wayne County centerline shape files (adding new streets, update address ranges) and coordinating the addressing and readdressing of new and existing roads with developers, tax assessors, and planning boards so that new properties and developments will be represented within the Wayne County E911 centerline shape files. A review of available GIS industry salary surveys and interviews with other NYS Counties suggests the salary range for a full time GIS Administrator may range between $40,000 and $45,000 depending on experience and job requirements.

Support from the IT Department would also be needed to assist in the procurement, installation and configuration of any hardware and software components on the County's network. Where needed, the County may also look to outside consultants and vendors to provide support during the implementation process and beyond.

Training on the use of the proposed web-based and desktop applications should be provided to all County staff members who will utilize the applications. Because the web-based applications feature basic functions and would be delivered through a familiar web browser interface, minimal training needs are anticipated. It is recommended, however, that the County arrange a brief in house demonstration of the applications for its staff prior to rolling out these systems. The training could be conducted at the Wayne County Fire Training Center on Route 31. Staff from local municipalities could also be invited to the training if desired.

ArcView users should be provided more in depth, hands on training. It is recommended that the County arrange an in-house ArcView training session for up to 10 users, or send individuals to any of the standard 3-day Introductory ArcView training classes provided by ESRI. It is anticipated that users from Planning, E-911, Emergency Management, Real Property and the Highway Department would attend these sessions. To supplement this training, users may also wish to enroll in some of the free or low cost on-line courses offered through the ESRI website's Virtual Campus.

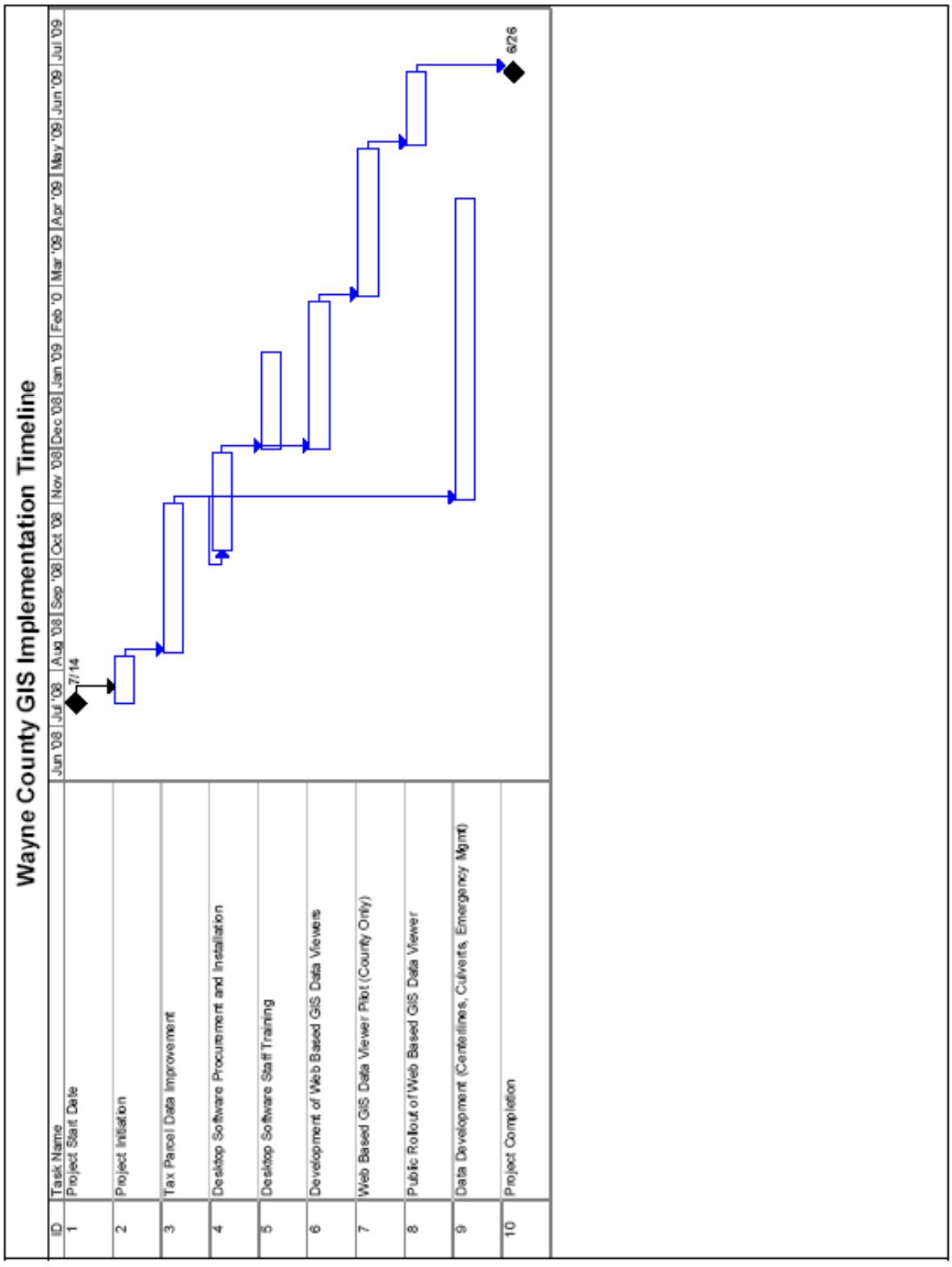
Additionally, two users from Real Property Tax Department should attend an advanced AutoCAD Map training session. The Planning department may also wish to consider arranging a CommunityViz training session. CommunityViz training is offered through Placeways, LLC. Instruction is available on site or via the web. MapPoint users will need limited training to utilize its built in routing features. Brief one-on-one meetings between these users and the GIS Administrator or the implementation consultant should suffice for providing this instruction.

## Ongoing Maintenance Considerations

Once the primary GIS applications and supporting systems are up and running the County will need to be prepared for those costs associated with the ongoing operation and maintenance of the system. These include periodic updates to GIS data layers, software licensing, web hosting, hardware maintenance, and expansions to the system required to accommodate future growth. Having a dedicated GIS Administrator position in place would help make the coordination of these activities much smoother. The County should also plan to review and update its Data Maintenance Plan annually to make certain its procedures for updating, storing, and backing up its geographic records are current. A further breakout of expected annual maintenance costs is included in the Estimated Costs section of this document.

## Implementation Timeline

A recommended schedule for implementing the GIS has been included in the timeline below. This schedule assumes a July 2008 start date and it is assumed that the Project would be managed by the GIS Steering Committee and the County GIS Administrator. Note that in order to comply with New York State Archives Local Government Records Management Improvement Fund (LGRMIF) requirements all grant funded implementation efforts must be completed before July 31, 2009.


Wayne County GIS Implementation Timeline
ID
Task Name
Jun '08
Jul '08
Aug '08
Sep '08
Oct '08
Nov '08
Dec '08
Jan '09
Feb '0
Mar '09
Apr '09
May '09
Jun '09
Jul '09
1
Project Start Date
7/14
2
Project Initiation
3
Tax Parcel Data Improvement
4
Desktop Software Procurement and Installation
5
Desktop Software Staff Training
6
Development of Web Based GIS Data Viewers
7
Web Based GIS Data Viewer Pilot (County Only)
8
Public Rollout of Web Based GIS Data Viewer
9
Data Development (Centerlines, Culverts, Emergency Mgmt)
10
Project Completion
6/26

# Estimated Costs

The table below provides a summary of the approximated costs that would be incurred in year one of this implementation plan:

| **Data Development** | **Cost** |
|---|---|
| Tax Parcel and Street Centerline Data Improvement | $55,000 - $85,000 |
| Culvert Mapping | $45,000 - $55,000 |
| Emergency Management Data Layer Development | $6,000 - $8,000 |
| Additional Data Gathering and Formatting Costs (Data Acquisition, Map Template Development, Symbolization) | $4,000 - $8,000 |
| Updated Pictometry Imagery (Countywide Flyover) | $133,000 - $140,000 |
| | **$243,000 – $296,000** |
| **Web GIS Application (Internal Hosting Option)** | **Cost** |
| GIS Web Application Server Hardware and Software | $6,000 - $8,000 |
| Hardware and Software Procurement, Installation and Configuration Assistance | $4,000 - $6,000 |
| Web GIS Data Viewer (Public) Application Development | $12,000 - $15,000 |
| Web GIS Data Viewer (Staff Only) Application Development | $15,000 - $25,000 |
| | **$37,000 - $54,000** |
| **Web GIS Application (External Hosting Option)** | **Cost** |
| Web-Based GIS Application Hosting (1 Year) | $3,000 - $5,000 |
| Web GIS Data Viewer (Public) Application Development | $12,000 - $15,000 |
| Web GIS Data Viewer (Staff Only) Application Development | $15,000 - $25,000 |
| | **$30,000 - $45,000** |
| **Desktop GIS Applications** | **Cost** |
| ArcView 9.2 Concurrent Use, 4 Seats (possible upgrade pricing available) (Includes 1st Year Maintenance) | $10,000 – $14,000 |
| ArcView 9.2 Stand Alone, 2 Seats (Includes First Year Maintenance) | $5,000 |
| Publisher Extension, 1 Seat (Includes 1st Year Maintenance) | $2,500 |
| Spatial Analyst Extension (Upgrade to 9.2 + 1 yr Maint.) | $1,000 |
| ArcReader | Free |
| Microsoft MapPoint (3 Seats) | $750 |
| CommunityViz (3 User Site License + 1 Year Maintenance) | $750 |
| Software Procurement, Installation and Configuration Assistance | $1,000 - $2,000 |
| | **$20,000 – $24,000** |
| **Training, Staffing and Consulting Services** | **Cost** |
| GIS Administrator Annual Salary | $40,000 - $45,000 |
| Training | $15,000 - $20,000 |
| Consulting, Meetings and Technical Support | $4,000 - $6,000 |
| | **$59,000 - $71,000** |
| **TOTAL:** | **$352,000 – $445,000** |

The County in cooperation with its partnering agencies and municipalities may pursue up to $125,000 in implementation funding from NYS Archives through the LGRMIF to support the expenses listed above. Note that some expenses, such as ongoing maintenance activities, are not reimbursable under this grant. The County may consider self-funding these initiatives, or may wish to investigate other grant funding opportunities as a means of financing these initiatives.

Once the GIS has been implemented the County must make certain to budget adequately for the ongoing maintenance needs of the new system. The implementation plan outlined in this report has been designed to minimize these costs wherever possible, yet like any computer based system, upgrades, patches, and licensing fees are to be expected. Keeping up to date on these items is critical to the ongoing success of the system. Beyond the first year it is estimated that the County would need to budget between $20,000 to $40,000 per year for the ongoing maintenance and upkeep of the system hardware, software and data components. The County should also allot adequate funding for user training and salaries of GIS personnel which may exceed $40,000. These costs would include:

- ArcView Software Maintenance for 1 Primary and 3 Secondary Seats ($700/year for each primary and $500/year for each secondary seat)
- ArcView Software Maintenance for 2 stand Alone Seats ($400/year per license)
- Publisher Extension Maintenance ($500/year)
- Spatial Analyst Extension Maintenance ($500/year)
- CommunityViz Technical Support Fees ($600/year)
- Web Hosting and Data Maintenance Fees ($3,000 - $4,000/year)
- Computer Hardware and Software Upgrades
- General GIS Consulting and Technical Support Services
- Training for New Users
- GIS Analyst Salary ($40,000 - $45,000/year)

# Conclusion

The needs assessment process has revealed that there are many opportunities for Wayne County to utilize GIS technology as a means to increase efficiency, improve public access to spatial data, and enhance its records management and preservation capabilities. Wayne County and its partnering agencies and municipalities are very committed to pursuing these opportunities and developing a strong GIS program. An overwhelming level of support for this initiative was demonstrated throughout the interview and needs assessment process from all parties involved. This support will be critical to the success of any implementation efforts, as well as the ongoing maintenance of the system.

In documenting the findings of its efforts through a series of Needs Assessment, Conceptual System Design and Implementation Plan Reports the County has also developed a detailed blue print for implementing its new systems. The objectives outlined within these reports are both realistic and achievable, and provide solutions to the County’s most critical records management needs. The applications outlined were

selected because they address these critical needs in the most appropriate and cost effective manner possible, and because they offer the greatest capacity to maximize the County's return on investment over the near and long term. Obtaining the funding needed to act on this plan is the critical next step in the process, and a New York State Archives LGRMIF Grant application should be filed in 2008 to pursue this opportunity.