

Appendix E

Department of Recreation and Parks



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1 Department of Recreation and Parks

1.1 Agency Overview

The primary responsibility of the Baltimore County Department of Recreations and Parks (DRP) is to manage and maintain the recreation areas and open space within Baltimore County. The agency provides quality recreational and leisure opportunities to the citizens of Baltimore County. Thousands of recreational programs, including individual and team sports, arts and crafts, social clubs and activities, and special events are provided through a cooperative effort with 45 volunteer Recreation and Parks Councils throughout the County. The agency purchases property, and manages assets and personnel to accomplish this task. Each of these responsibilities fall to the divisions within the agency. Most of these programs use GIS technology and associated products to meet these needs and many more encounter mapping-related products that affect the business of the agency.

The Baltimore County DRP bureaus and divisions the utilized GIS are noted below.

Recreation Services:

Recreation Services manages each of the park and recreation services provided by the agency.

Capital Planning and Development:

Capital Planning and Development is responsible for proposing and planning new parks, facilities and open spaces to be acquired and developed.

Revenue Generating Facilities:

Revenue Generating Facilities manages the facilities owned by the agency that are rented or leased to citizens for various reasons. Farmland is leased to citizens for agricultural purposes and picnic areas are rented for various events.

Park Maintenance

Park Maintenance is responsible for maintaining each of the park and recreation assets within Baltimore County.

The following activities within the agency have been found to use GIS in some regard:

- Capital Projects Engineering and Design - Parklands
- Mapping Required for Permit or Approval Processes
- Park Development Planning
- Park Maintenance
- Parkland and Open Space Acquisition Site Analysis
- Parkland and Open Space Complaint Research



- Parkland Needs Analysis
- Presentation and Publication Mapping

The Agency’s primary customers are the citizens of Baltimore County. Personnel coordinate with other agencies within the county, including PDM, DPW, OP and OIT. Maps and mapping data are frequently key ingredients in successfully working with these customers to communicate issues, determine priorities, understand challenges and make informed decisions.

1.2 Agency Study Participants

Agency personnel contributed to the study by completing the short form online survey, participating in interviews, and providing miscellaneous data to support information provided throughout the report.

Nine people completed the online short form survey, which was used to determine each person’s role within the department and determine if these individuals were using GIS to support their activities. Each of the short form responses have been included in the appendix of this document. The following personnel completed the online short form survey:

Short Form Respondent
Bruce Gill
Francis Chrismer
Jan M. Cook
Jean Tansey
John Markley
Michael Grossman
Patrick McDougall
Patrick McGregor
Tim Winters

Table 1 - Short Form Respondents

There were a total of seven individuals that participated in interviews conducted over several weeks in November 2006. These individuals are:

Interviewee
Patrick McDougall
Jean Tansey
Michael Grossman
Tim Winters
Pat McGregor
John Markley
Bud Chrismer

Table 2 – Interviewees



2 Cost/Benefit Information

This section outlines the annual costs and benefits that are associated with GIS use and maintenance within Recreation and Parks. The total benefits and costs have been summarized in the table below, which are discussed in further detail in the remainder of this section.

Summary – Total Annual GIS Benefits	
Time Benefits:	\$93,815.17
Other Benefits:	\$54,300
Total Annual Benefits:	\$148,115.17
Summary - Total Annual GIS Costs	
Total Annual Costs:	\$33,834.13
Summary - Total GIS Cost/Benefit	
Total GIS Cost/Benefit:	+\$114,281.04

Table 3 – Annual Agency Cost and Benefit Summary

This table only includes benefits that are associated with capital returns and does not consist of other benefits such as more accurate information, faster response times, etc. A detailed review of all qualitative benefits realized by GIS users will be documented and analyzed in the Enterprise volume of the report.

2.1 Annual Agency Cost

Recreation and Parks does not contribute significantly to the cost of supporting the Enterprise GIS for Baltimore County. This agency maintains relatively few GIS datasets, holds almost no related operational costs, and carries less than one fulltime employee equivalent. The total annual agency costs to support all of these elements is \$33,834.13.

Total Agency GIS Cost: \$33,834.13

Details of each of the cost issues are discussed in the sections below.



2.1.1 Annual Operational Costs

Recreation and Parks does not support any external training. The following costs represent the Recreation and Parks GIS operational costs related to the use of GIS in the agency.

Supplies Items	Annual Costs
Administrative Costs	\$401.00
Supplies & Materials Costs	\$754.00
Total Operational Costs	\$1,155.00

Table 4 - GIS Supply Costs

2.1.2 Annual Resources (GIS Staff)

The agency only contains one staff member that performs some activity that supports GIS for the agency. This assistance includes GIS database development efforts, as well as GIS application installation, configuration, and support. \$7,190 is spent annually to support the personnel associated with GIS maintenance activities (these data layers are listed in section 3.1.4), which is based the salary and overhead of each GIS personnel multiplied by the percentage of time performing GIS maintenance activities. This individual is listed in the table below, along with the percentage of time allocated to GIS maintenance activities.

GIS Personnel	% Allocated to GIS Maintenance Activities
Patrick McDougall	10.55%
Total GIS Personnel Cost:	\$7,190.00

Table 5 – Annual GIS Personnel Costs

2.1.3 Annual Enterprise Costs

Each of the costs for providing the enterprise GIS have been totaled for the county and distributed among each of the county agencies relative to the number of users in each agency. These costs have been categorized as operating cost, or the cost that is expended to provide GIS support and resources (such as database management, infrastructure, software licensing etc.), and capital costs, which reflect the cost of purchasing GIS data (such as Orthophotography or Contours). The total annual operating cost for the County GIS enterprise is \$859,717.21 and the total annual capital cost is \$272,000.00. DRP has a relatively low number of GIS users, 6 (or 2.25% of the total users in the county). Annual enterprise costs have been proportionately distributed to DRP based on this 2.25% factor. These costs



are calculated as \$19,363.00 in operating costs and \$6,126.13 in capital costs, totaling \$25,489.13. Each of these figures have been provided in the table below.

# of Users	% of Total Users	Factor of Operating Cost Applied to Agency	Factor of Capital Cost Applied to Agency	Total Annual Enterprise Cost Applied to Agency
5	2.25%	\$19,363.00	\$6,126.13	\$25,489.13

Table 6 – Annual Enterprise GIS Costs

2.2 Agency Benefit Assessment

Recreation and Parks has seen moderate benefits from GIS usage in relation to the size of the department and in comparison to other agencies within the county of similar magnitude. GIS is used to communicate issues to the public and solve spatial problems, providing both qualitative and quantitative benefits to the agency. These are discussed in the following sections.

2.2.1 Existing GIS Benefits

The existing benefits realized by Recreation and Parks have been determined for each activity by analyzing the effort needed to perform a task with GIS in comparison to the time spent without GIS. This examination allows each activity to be measured in terms of time, which has been then recomputed to dollars that are realized annually. Each of the existing benefits that are currently being realized have been summarized by program below and have been aggregated to give an annual dollar figure. These benefits are discussed in more detail in section 4. All dollar amounts are based on a flat rate of \$33.95 per hour.

Activity	Capital Projects Engineering and Design – Parklands
Description	The cross functionality of ArcMap with AutoCAD is utilized to provide consultants and in-house staff with data that is used for formal park design and engineering projects.
Time Benefits (Annual)	\$37,888.20 (1116 hours)
Other Benefits (Annual)	\$54,300 This is savings derived from performing work in-house as opposed to using consultants.
Total Benefits	\$92,188.20



Activity	Mapping Required for Permit or Approval Processes
Description	GIS is utilized to prepare assorted maps needed for the procurement of permits, and for various project review and approval processes. Types of permits include Chesapeake Bay Critical Areas Program permits and county permits.
Time Benefits (Annual)	\$814.80 (24 Hours)
Other Benefits (Annual)	N/A
Total Benefits	\$814.80
Activity	Park Development Planning
Description	Use of geographic data to produce maps for park development planning.
Time Benefits (Annual)	\$4,888.80 (144 hours)
Other Benefits (Annual)	N/A
Total Benefits	\$4,888.80
Activity	Park Maintenance
Description	This activity oversees the maintenance activities of all DRP assets. Each asset is contained within the MaintStar application as a site or piece of equipment. Work orders are created within this application and database for each maintenance activity, which are assigned to maintenance personnel.
Time Benefits (Annual)	\$ 1,697.50 (50 hours)
Other Benefits (Annual)	N/A
Total Benefits	\$ 1,697.50
Activity	Parkland and Open Space Acquisition Site Analysis
Description	Sites being considered for potential acquisition as parklands are analyzed to determine their viability for park construction and/or general land conservation. GIS also provided more up to date topography information. This activity also supports the Neighbor Space Program, which acquires individual vacant lots. GIS helps determine if lots are suitable for their needs.
Time Benefits (Annual)	\$14,259.00 (420 hours)
Other Benefits (Annual)	N/A
Total Benefits	\$14,259.00



Activity	Parkland and Open Space Complaint Research
Description	GIS is used to research complaint location, verify ownership of land at complaint location, evaluate the condition of the complaint property, and to determine if problem or issue should be resolved by the County. GIS is also used to determine if there are any relevant easements near the complaint location. GIS maps are emailed to personnel when field visits are necessary, in order to give a preliminary idea of the property details.
Time Benefits (Annual)	\$14,711.67 (433.33 hours)
Other Benefits (Annual)	N/A
Total Benefits	\$14,711.67
Activity	Parkland Needs Analysis
Description	Analysis of existing parkland and open space networks on a geographic basis, typically at the neighborhood level or higher.
Time Benefits (Annual)	\$4,888.80 (144 hours)
Other Benefits (Annual)	N/A
Total Benefits	\$4,888.80
Activity	Presentation and Publication Mapping
Description	A wide variety of maps are prepared for use at public meetings and events, or to be used within an assortment of publications. Community meetings are held to solicit input on the use of properties determined as viable for parkland during the Parkland and Open Space Acquisition Site Analysis activity. Community meetings are also held to get consensus on a preferred plan for a potential park. Site maps are made for these meetings that include orthophotography, property boundaries, topography, hydrography, and stream buffers (for environmental concerns), which are used as a valuable public relations tool to communicate potential uses of a property.
Time Benefits (Annual)	\$14,666.40 (432 hours)
Other Benefits (Annual)	N/A
Total Benefits	\$14,666.40

Table 7 - Existing GIS Benefits by Activity



Total Annual GIS Benefits Summary			
Time Benefits Summary (By Activity):	Hours Saved	Labor Rate (Avg)	Annual Time Benefits
Capital Projects Engineering and Design - Parklands	1116	\$33.95	\$37,888.20
Mapping Required for Permit or Approval Processes	24	\$33.95	\$814.80
Park Development Planning	144	\$33.95	\$4,888.80
Park Maintenance	50	\$33.95	\$ 1,697.50
Parkland and Open Space Acquisition Site Analysis	420	\$33.95	\$14,259.00
Parkland and Open Space Complaint Research	433.33	\$33.95	\$14,711.67
Parkland Needs Analysis	144	\$33.95	\$4,888.80
Presentation and Publication Mapping	432	\$33.95	\$14,666.40
Total Time Benefits:	2763.33	\$33.95	\$93,815.17
Other Benefits Summary (By Activity):			Annual Other Benefits
Capital Projects Engineering and Design - Parklands			\$54,300
Total Other Benefits:			\$0.00
Grand Total Annual Benefits:			\$148,115.17

Table 8 – Total Annual GIS Benefits



Each of the benefits for the activities listed in section 4 have been depicted in the figure below, which provides a clear picture of the areas that are receiving the most benefits from GIS usage.

DRP GIS Benefits

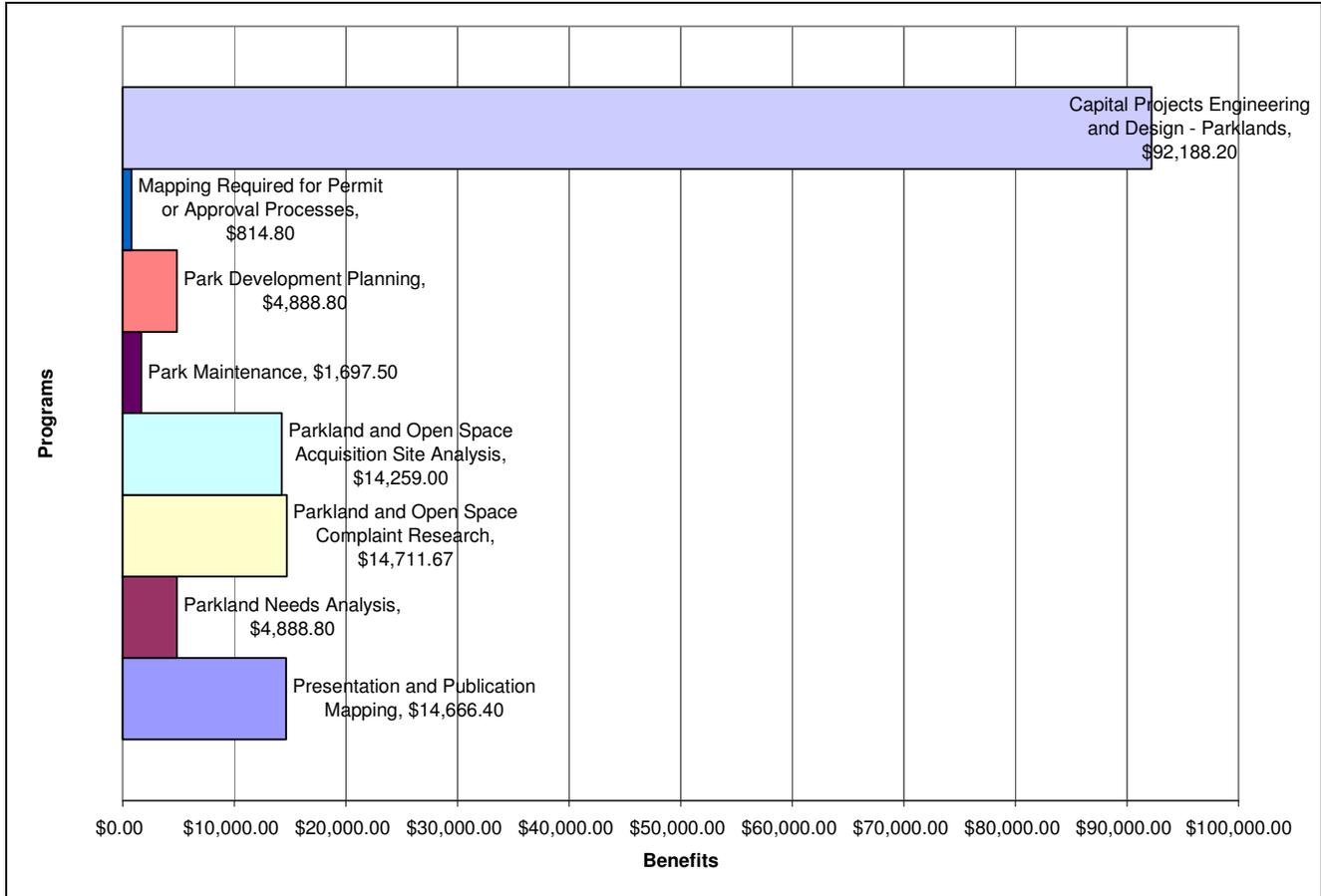


Figure 1 - Department of Recreation and Parks GIS Benefits

The Capital Projects Engineering and Design activity has managed to receive more benefits than the rest of the programs within the agency. Parkland and Open Space Acquisition, Parkland and Open Space Complaint Research, and Presentation and Publication Mapping each see similar moderate benefits, and the rest of the activities very little benefits.



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3 GIS Utilization and Recommendations

3.1 GIS Utilization Analysis

GIS has a moderate use within DRP, serving most of the activities in a basic manner. GIS is being used effectively throughout most of the agency to provide spatial analysis, mapping needs, resource management, and service planning and development.

3.1.1 GIS Personnel

GIS specialists and GIS-trained personnel are not prominent within DRP. One person handles most of the GIS analysis and map production, resulting in significant constraints in GIS use within the agency. Complex spatial analysis, which is dependant on GIS specialists, is not being performed to the level it could be and there is a reliance on other agencies within the county to perform GIS work when resources are not available.

DRP has already invested in providing GIS training through the Computer Training Center in the Office of Information Technology for its staff. The following shows a breakdown of the levels of training and the number of staff that have received training at that level:

Basic Training (DataQuery, ArcView)	Mid-Level (ArcGIS Intro)	Advanced (ArcGIS 8x or higher)
13	1	3

Most of the training provided has been more basic GIS usage. These personnel that have been trained are not necessarily using GIS at the present time.

3.1.2 GIS Data Usage

DRP uses many of the GIS datasets provided by OIT’s ArcSDE services via the County WAN. These datasets are used in a variety of ways. The datasets used by all of the agency’s activities are listed in the table below:

GIS Data Layer	Used by # Programs
Easement	7
Government Lands	7
Hydrologic Facilities	7
Hydrology	7
Orthophoto (2002)	7



GIS Data Layer	Used by # Programs
Orthophoto (2005)	7
Railroads	7
Roads	7
Storm Water Management Facilities	7
Stormwater (Geodatabase)	7
Streams and Ponds	7
Street Centerlines	7
Street Centerlines (View)	7
Tax Parcel	7
Trails	7
Trails - Walkways	7

Table 7 - Data Usage

3.1.3 GIS Applications Usage

The few GIS personnel within Recreation and Parks have utilized the enterprise GIS applications provided by OIT. The sole application used by personnel is the ArcGIS standard toolset, which is occasionally used in conjunction with ESRI extensions to support business processes. ArcGIS version 9.0, service pack 3 (SP3) is the current County standard that is deployed throughout the various agencies. This software appears to be effectively used where incorporated and personnel are proficient with these programs. Other applications, such as web mapping services, custom applications, or asset management applications, are not used.

3.1.4 GIS Database Maintenance

GIS data maintenance responsibilities are also small. DRP relies on OIT to produce most of the needed datasets and uses map documents provided by other agencies, such as PDM, when GIS data is not available.



DRP is responsible for maintaining the following layers in support of the enterprise GIS:

Dataset	Description	Update Frequency	Location	Complete	Activities Using Data
Park Points	Location of each of the county-owned and maintained parks	Weekly	Local	Complete	<ul style="list-style-type: none"> • Capital Projects Engineering and Design - Parklands • Mapping Required for Permits or Approval Processes • Park Development Planning • Park Maintenance • Parkland and Open Space Acquisition Site Analysis • Parkland and Open Space Complaint Research • Parkland Needs Analysis • Presentation and Publication Mapping

Table 8 - Agency Data Maintenance

The cost of maintaining each of these data layers are discussed in section 2.1.2.

3.1.5 Assessment of Business Process with GIS

GIS is being effectively used to support most of the business processes within the agency. GIS has been used for many years, and with the aid of capable staff, has been intelligently incorporated into the workflow of most activities.

GIS involvement in each of these activities business processes are discussed in the table below.

Activity	Business Process Assessment
Capital Projects Engineering and Design - Parklands	GIS is used to support data used in CADD applications, as well as for conducting simple designs. Applications and data are used to design new agency projects.
Mapping Required for Permits or Approval Processes	GIS data and maps are used to understand the landscape and cultural features for areas surrounding sites of permits.
Park Development Planning	GIS is used to map the existing landscape characteristics for a piece of property, in order to understand what types of services could be constructed.



Activity	Business Process Assessment
Park Maintenance	GIS is used to create maps of new maintenance sites and sites added to the maintenance contract, in order to plan for maintenance of mowing areas.
Parkland and Open Space Acquisition Site Analysis	GIS data and applications are used to determine where potential sites for parks could be located. Information pertaining to land use and cadastral are used to understand what the limitation and benefits of various properties would be.
Parkland and Open Space Complaint Research	GIS data is used to determine where a complaint is coming from and whether the agency is responsible for the complaint. GIS is used to communicate the complaint to field operations.
Parkland Needs Analysis	GIS is used to determine where there are parks available and where the needs for park and recreation services are situated.
Presentation and Publication Mapping	GIS is used to communicate various park related issues to the public and other agencies. GIS is used to create maps for presentations and well as various fliers and brochures that are shared with the public.

Table 9 - GIS Integration with Business Processes, by Activity

The involvement of GIS in specific activities is discussed more thoroughly in section 4. There are several ways that GIS could be used to integrate the system more fully into business processes, which are discussed in detail in section 3.2.4.

3.2 GIS Needs Assessment

3.2.1 Applications

There are several custom applications that could be developed to support the business processes of DRP, which are discussed below.

- Parkland Accessibility** – An application could be developed to determine the accessibility that residents have to various types of park facilities, which could be used to assess what areas are in greater need of certain types of park services. Accessibility might be calculated by measuring the shortest travel distance from each residence to each type of park service (baseball fields, picnic areas, etc.). This could be displayed as a weighted surface that could be used to visualize where there are holes in service, or the distance could be averaged and aggregated to some enumeration unit or area (such as a neighborhood or census block group) in order to give a measure of accessibility. This could save time spent conducting needs assessments for park use and could provide a more accurate evaluation of where additional park services need to be supplied.
- Trail Route Calculation** – An application could be developed that determines a best set of routes for a new trail to be located. This application could find optimal path options for trails that would be used to link two parks together, taking into account prohibitive landscape constraints, as well as the cost of land acquisition. A user could develop a raster model for the



area of interest that included land costs (from state assessment dataset or some model that determines land costs based on comparable sales for similar properties), constraints (such as wetlands, industrial sites, etc.), and amenities (using data such as land cover, viewsheds, or hydrography), where each cell would be assigned a friction value, or cost. This model could be used as a surface in the application that is used to find the cheapest route between two given points. This could save the county time and money spend researching potential locations of these trails. This could also save the county money spent on acquiring land for trails.

3.2.2 Data

There are several datasets that could be developed to support the needs of various activities in DRP. Some of these datasets are listed in the table below. These datasets may also provide value to other agencies.

Dataset	Activities That Could Benefit From Data
County-owned Easements	<ul style="list-style-type: none"> • Capital Projects Engineering and Design - Parklands • Mapping Required for Permits or Approval Processes • Park Development Planning • Parkland and Open Space Acquisition Site Analysis • Parkland and Open Space Complaint Research • Parkland Needs Analysis
Hiking/ Biking Trails	<ul style="list-style-type: none"> • Capital Projects Engineering and Design - Parklands • Park Development Planning • Park Maintenance • Parkland and Open Space Acquisition Site Analysis • Parkland Needs Analysis • Presentation and Publication Mapping
County-owned Property	<ul style="list-style-type: none"> • Capital Projects Engineering and Design - Parklands • Mapping Required for Permits or Approval Processes • Park Development Planning • Park Maintenance • Parkland and Open Space Acquisition Site Analysis • Parkland and Open Space Complaint Research • Parkland Needs Analysis • Presentation and Publication Mapping

Table 10 - Datasets That Need to be Created



Some other datasets would benefit from a link to address points or tax parcels, giving these datasets a spatial representation. These are:

Dataset	Activities That Could Benefit From Data
Recreation and Park Assets	<ul style="list-style-type: none"> • Capital Projects Engineering and Design - Parklands • Park Development Planning • Park Maintenance • Parkland and Open Space Acquisition Site Analysis • Parkland and Open Space Complaint Research • Parkland Needs Analysis • Presentation and Publication Mapping
Recreation and Park Complaints	<ul style="list-style-type: none"> • Park Maintenance • Parkland and Open Space Complaint Research

Table 11 - Datasets That Need Spatial Representation

3.2.3 Training

Personnel would benefit from exposure to more complex spatial analysis tools and methodology. Routing, 3D analysis, and overlaying could be given as training exercises. These activities could be given in the context of ESRI extensions that are provided by the county and could be coupled with online courses available through ESRI’s website.

Additional GIS specialists available within the agency would allow subject-matter experts to perform complex analysis that cannot currently be performed. A GIS analyst could be hired or trained within the department to fulfill this need.

3.2.4 Best Practices

There was one way that was initially determined for Recreation and Parks to take advantage of best practices that have been implemented by other agencies or counties with similar business processes. This method is to:

- **Spatially Manage Maintenance and Complaints** – The agency could utilize a system similar to CASS WORKS in DPW, which would enable the agency to spatially track complaints received about complaints regarding property and assets owned by the agency. The MainStar application used for maintenance of assets has a spatial component that could be taken advantage of to map and analyze complaints. This would allow for these complaints to be tracked spatially, in order to determine if a complaint has been received for the same property, or if there is a spatial trend to the complaints.

3.2.5 Communication and Agency Coordination

GIS within Recreation and Parks supports communication of issues between the public and agency personnel by providing various hardcopy maps that are used and public meetings and events.



However, GIS could further support this communication by providing online mapping sites, either through interactive ArcIMS web pages or static images, in order to provide messages regarding parks to a larger audience. Communication between county agencies is not supported by GIS, since the constraints of the network make it difficult to transfer digital spatial information. Further effort in this area could improve synchronization of information between agencies.

3.3 Recommendations

Recreation and Parks could further benefit from GIS in several ways. This section outlines recommendations that can be implemented in the short-term and mid-term to enhance the agency's GIS usage and further take advantage of the enterprise system provided by the county. These will in turn reduce time and money spent on activities performed by DRP and increase the level of service provided to customers. Since DRP's responsibilities mostly have spatial components, benefits can be gained in several ways from using GIS within the agency.

3.3.1 Short-term Recommendations & Potential Benefits

There are several undertakings that should be implemented in the near term to improve GIS usage within the agency and meet the needs that were outlined in the previous section. These recommendations are categorized by activities that can be quickly deployed with little effort and by activities that require a greater investment but are greatly needed. Each of these recommendations are discussed below. See section 4 for more detailed recommendations to support individual activities.

3.3.1.1 Quick Deployment

The following recommendations have the potential to provide additional benefits to the agency and can be implemented with few additional resources:

Opportunity 1: Serve Data to Enterprise

Each of the datasets maintained by Recreations and Parks, including park points, should be made available to the enterprise. This data is currently stored within the agency, but could be used by many other agencies throughout the county. Currently, the WAN connection prohibits timely and efficient data uploads. This data can be delivered on a media format such as a CD to the OIT department, which can then load the data into the enterprise database. Making this data available to the county can reduce potential data creation and maintenance redundancy, as well as increase the accuracy and amount of information available related to parks in the county.



3.3.1.2 Additional Investment Opportunities

Opportunity 1: Develop Hiking/ Biking Trail Feature Class

A hiking / biking feature class is currently available from the enterprise data layers, but is not accurate and complete enough to meet the needs of DRP. GPS has been recently obtained, which could be used to map these features. The dataset could help the agency understand where existing trails are, in order to plan how to connect trails and lay new trails to link parks together. This could save time and money spent researching the location of these features. This feature class could also help the agency understand where existing trails are, in order to map these trails for use by the public. This would benefit the public by giving them an additional piece of information to see where hiking and biking services are provided within the county.

3.3.2 Mid-term Recommendations & Potential Benefits

There are several undertakings that can be implemented in the mid-term to improve GIS usage within the agency. These are summarized below. See section 4 for more detailed recommendations to support individual activities.

Opportunity 1: Increase Network Speed

The WAN used to connect to the enterprise ArcSDE database provided by OIT is cumbersome, preventing data from being used effectively. This connection should be increased to allow for faster communication between the DRP office and OIT. This will allow for personnel to use the data services provided by the county (instead of performing data dumps periodically), as well as post data that has been created within the department. This will save time spend managing data dumps, increase the accuracy of the data by providing DRP users up-to-date data, and improve collaboration between county agencies.

Opportunity 2: Develop Spatial Asset Management System

The MaintStar application used for maintenance could be supported with GIS data. This would allow for the maintenance software to be used in a spatial manner, supporting the asset management and maintenance activities. Each of these can help distribute maintenance work among teams and plan the best routes for completing maintenance activities. This could help save time and money in the field traveling to maintain assets, as well as in allocating resources for maintenance purposes.

Opportunity 3: Map Park and Recreation Assets

The park and recreation assets that the agency is responsible for could be mapped as a point feature class. This would allow for the location of items such as tennis courts, baseball fields,



benches, picnic tables, restrooms, and fences to be mapped. GPS has been recently obtained and could be used to support this effort. Orthophotography could also be used to map larger features. These features would help to manage these assets more effectively and aid in maintaining the features over time. Complaints can also be associated with these mapped assets.



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4 Programs and Activities

Each of the interviews conducted with agency officials and personnel were used to compile information about the business processes used for each program within the agency, as well as look at how GIS is being used and benefits are being realized.

Each program is described below, listed with GIS-related funding and mandates, as well as any social or political benefits that are being seen as a result of using GIS. The associated products, customers served, and data/ applications used are also discussed. Activities have also been included under their associated programs, along with the process with and without GIS used to complete this activity, benefits that have been realized, and recommendations for additional GIS implementation where appropriate.



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4.1 Capital Projects Engineering and Design - Parklands

Activity: Capital Projects Engineering and Design - Parklands					
Primary Point of Contact:					
Pat McDougall					
Overview:					
The cross functionality of Arcmap with AutoCAD is utilized to provide consultants and in-house staff with data that is used for formal park design and engineering projects.					
Interviewee(s) Providing Information:					
Pat McDougall					
Data (Enterprise Layers are Listed in Bold):					
<ul style="list-style-type: none"> • Buildings • Bulkheads • Contours • Easement • Geology • Government Lands • Hydrologic Facilities • Hydrology • Impervious Polygons 	<ul style="list-style-type: none"> • Orthophoto (2002) • Orthophoto (2005) • Pipelines • Railroads • Roads • Sewer • Soil Type • Soils 	<ul style="list-style-type: none"> • Spot Elevations • Storm Water Management Facilities • Stormwater (Geodatabase) • Streams and Ponds • Street Centerlines • Street Centerlines (View) • Tax Parcel 			
Process with GIS:					
A project area is defined within ArcMap. The data from this area is extracted from the GIS data and exported to an AutoCAD format. GIS is occasionally used to create simple plans, which would involve drawing in new features in the GIS on top of existing data.					
Process without GIS:					
Each dataset would need to be digitized from hardcopy maps into a CADD format. Maps would have to be compiled, scanned, and registered, and then features would have to be digitized into vector format.					
Benefits Assessment: (H, M, L) Identify confidence level					
<ul style="list-style-type: none"> • High 					
Benefits to Using GIS for this Activity:					
<ul style="list-style-type: none"> • GIS saves time and money spent compiling data and creating new data used for engineering projects. 					
Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on \$33.95/hr)
14	2	12	93	1116	\$37,888.20



Other Benefits: \$54,300
GIS saves approximately \$5,000 a month that would be spent to hire a consultant to do design work that is currently handled in house. This work takes on average 2 days to complete in-house, costing \$475. This gives a net benefit of \$4,525 per month, or \$54,300 per year.
Total Annual Benefit: \$92,188.20
Areas for Improvement:
<ul style="list-style-type: none">• None determined.
New Opportunities:
<ul style="list-style-type: none">• A 100-year floodplain dataset would benefit this activity, since these areas are used to determine the environmental impact of an area and influence the design of a park. This would save time and money spent looking at these features on hardcopy maps.• Features constructed within CADD could be exported back to a facilities or asset feature class, which could be used for maintenance management and map creation. This would save time and money creating these features within GIS.
Benefits of Pursuing New Opportunities:
<ul style="list-style-type: none">• GIS could save time and money spent researching landscape features.• Time and money would be saved from reducing time spent creating GIS data.



4.2 Mapping Required for Permits or Approval Processes

Activity: Mapping Required for Permits or Approval Processes		
Primary Point of Contact:		
Pat McDougall		
Overview:		
GIS is utilized to prepare assorted maps needed for the procurement of permits. These maps are used to show the proposed projects in relation to the surrounding landscape and cultural features. Types of permits include Chesapeake Bay Critical Areas Program permits and county permits.		
Interviewee(s) Providing Information:		
Pat McDougall		
Data (Enterprise Layers are Listed in Bold):		
<ul style="list-style-type: none"> • Agricultural Preservation • Buildings • Bulkheads • Conservation Easements • Contours • Councilmanic Districts (2002) • County Boundary • Easement • Election Districts • Geology • Government Lands • Greenways • Hydrologic Facilities • Hydrology • Impervious Polygons • Legislative Districts (2002) 	<ul style="list-style-type: none"> • Orthophoto (2002) • Orthophoto (2005) • Park Points • Pipelines • Priority Funding Areas • Railroads • Recreation and Parks Council Boundaries • Reservoir • Roads • Rural Legacy • Sewer • Soil Type • Soils • Spot Elevations • State Legislative District 	<ul style="list-style-type: none"> • Storm Water Management Facilities • Stormwater (Geodatabase) • Streams and Ponds • Street Centerlines • Street Centerlines (View) • Tax Parcel • Trails • Trails - Walkways • Transmission Lines • Tree Cover • Tree Rows • Urban Rural Demarcation Line (URDL) • Wetlands • Zoning
Process with GIS:		
A map would be developed that contains the location of features for which permits and/or approvals are being sought, as well as the dimensions to property lines.		
Process without GIS:		
Information would have to be gathered from hardcopy maps and aerial photography. This information would need to be copied and pasted into a new map and manually symbolized.		
Benefits Assessment: (H, M, L) Identify confidence level		
<ul style="list-style-type: none"> • High 		



Benefits to Using GIS for this Activity:																	
<ul style="list-style-type: none"> • GIS is not used for every permit, but saves approximately 2 hours per month researching information needed to complete permit reviews. 																	
<table border="1"> <thead> <tr> <th>Staff Hours w/o GIS (Manual)</th> <th>Staff Hours with GIS</th> <th>Difference</th> <th>Annual # Iterations Per Year</th> <th>Total Hours Saved Using GIS</th> <th>Annual Time Savings Benefit (Based on \$33.95/hr)</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td>24</td> <td>\$814.80</td> </tr> </tbody> </table>						Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on \$33.95/hr)					24	\$814.80
Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on \$33.95/hr)												
				24	\$814.80												
Annual Benefit: \$814.80																	
Areas for Improvement:																	
<ul style="list-style-type: none"> • None determined. 																	
New Opportunities:																	
<ul style="list-style-type: none"> • A Chesapeake Bay Critical Area feature class could be developed (by DEPRM) that could be used during the permit approval process. This could save time and money spent looking at these features on hardcopy maps. 																	
Benefits of Pursuing New Opportunities:																	
<ul style="list-style-type: none"> • Time and money could be saved spent researching cultural geographic features. 																	



4.3 Park Development Planning

Activity: Park Development Planning		
Primary Point of Contact:		
Pat McDougall		
Overview:		
Use of geographic data to produce maps for park development planning.		
Interviewee(s) Providing Information:		
Pat McDougall		
Data (Enterprise Layers are Listed in Bold):		
<ul style="list-style-type: none"> • Buildings • Bulkheads • Conservation Easements • Contours • Easement • Geology • Government Lands • Hydrologic Facilities • Hydrology • Impervious Polygons • Orthophoto (2002) • Orthophoto (2005) 	<ul style="list-style-type: none"> • Pipelines • Railroads • Recreation and Parks Council Boundaries • Roads • Sewer • Soil Type • Soils • Spot Elevations • Storm Water Management Facilities • Stormwater (Geodatabase) 	<ul style="list-style-type: none"> • Streams and Ponds • Street Centerlines • Street Centerlines (View) • Tax Parcel • Trails • Trails - Walkways • Transmission Lines • Tree Cover • Tree Rows • Wetlands • Zip Codes • Zoning
Process with GIS:		
The project site is displayed and geographic features that impact where facilities may be developed are shown. 3-4 concept plans are developed for each site plan. GIS data is used to produce a map for simple concept plans, but more complex plans are designed within CADD, with GIS data used to support the locations of the existing structures and landscape.		
Process without GIS:		
Geographic features would have to be created within CADD for each project by digitizing features from hardcopy maps. Easier projects would have to be done in CADD.		
Benefits Assessment: (H, M, L) Identify confidence level		
<ul style="list-style-type: none"> • High 		
Benefits to Using GIS for this Activity:		
<ul style="list-style-type: none"> • GIS saves time and money spent creating geographic data. • GIS saves time and money spent importing geographic data. 		



Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on \$33.95/hr)
14	2	12	12	144	\$4,888.80
Annual Benefit: \$4,888.80					
Areas for Improvement:					
<ul style="list-style-type: none"> • None determined. 					
New Opportunities:					
<ul style="list-style-type: none"> • A hiking/ biking trail feature class could help the agency understand where existing trails are, in order to plan how to connect trails and lay new trails to link parks together. This could save time and money spent researching the location of these features. • A easement layer showing the location of greenway and other easements could be used to plan for the location of trails. This would save time and money spent researching land acquisition hardcopy maps during the planning phase. 					
Benefits of Pursuing New Opportunities:					
<ul style="list-style-type: none"> • GIS would save time and money spent researching geographic features. 					



4.4 Park Maintenance

Activity: Park Maintenance					
Primary Point of Contact:					
Pat McDougall					
Overview:					
<p>This activity oversees the maintenance activities of all DRP assets. Each asset is contained within the MaintStar application as a site or piece of equipment. Work orders are created within this application and database for each maintenance activity, which are assigned to maintenance personnel.</p> <p>GIS was used to determine where grassy areas are that need to be mowed, how much area they cover, what type of slope the area has, obstacles that exist. This allows for estimates of the amount of effort required, and also allows for the land to be better managed and resources to be better allocated. Other maintenance efforts include, trash collection, repairing picnic tables, signs, out buildings, etc.</p>					
Interviewee(s) Providing Information:					
Pat McDougall					
Data:					
N/A					
Process with GIS:					
GIS is used to create maps of new maintenance sites and sites added to the maintenance contract.					
Process without GIS:					
Hardcopy maps would have to be compiled for the area of interest. These maps would have to be copied and pasted together to cover the entire area. The maintenance areas would need to be drawn over these maps and annotated as necessary.					
Benefits Assessment: (H, M, L) Identify confidence level					
<ul style="list-style-type: none"> • High 					
Benefits to Using GIS for this Activity:					
<ul style="list-style-type: none"> • GIS saves time and money spent creating maps. 					
Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on \$33.95/hr)
3	0.5	2.5	20	50	\$ 1,697.50
Annual Benefit: \$ 1,697.50					



Areas for Improvement:
<ul style="list-style-type: none">• None determined.
New Opportunities:
<ul style="list-style-type: none">• GPS and orthophotography could be used to map assets within each park in order to manage these assets more effectively. Assets can be mapped as points, which can have attributes pertaining to its maintenance history. Complaints can also be associated with these mapped assets. Each of these can help distribute maintenance work among teams and plan the best routes for completing maintenance activities. This could help save time and money in the field traveling to maintain assets, as well as in allocating resources for maintenance purposes.• The MainStar software could be linked to GIS data and mapping software, in order to provide a spatial component to maintenance data. This would allow for the maintenance software to be used in a spatial manner, supporting the asset management and maintenance activities.
Benefits of Pursuing New Opportunities:
<ul style="list-style-type: none">• GIS would help save time and money spent in the field• GIS would save time and money spent managing field maintenance operations.



4.5 Parkland and Open Space Acquisition Site Analysis

Activity: Parkland and Open Space Acquisition Site Analysis		
Primary Point of Contact:		
Pat McDougall		
Overview:		
Sites being considered for potential acquisition as parklands are analyzed to determine their viability for park construction and/or general land conservation. GIS also provided more up to date topography information. This activity also supports the Neighbor Space Program, which acquires individual vacant lots. GIS helps determine if lots are suitable for their needs.		
Interviewee(s) Providing Information:		
Pat McDougall		
Data (Enterprise Layers are Listed in Bold):		
<ul style="list-style-type: none"> • Contours • Easement • Geology • Government Lands • Hydrologic Facilities • Hydrology • Impervious Polygons • Orthophoto (2002) • Orthophoto (2005) • Pipelines 	<ul style="list-style-type: none"> • Railroads • Roads • Sewer • Soil Type • Soils • Spot Elevations • Storm Water Management Facilities • Stormwater (Geodatabase) • Streams and Ponds 	<ul style="list-style-type: none"> • Street Centerlines • Street Centerlines (View) • Tax Parcel • Trails • Trails - Walkways • Transmission Lines • Tree Cover • Tree Rows • Wetlands • Zoning
Process with GIS:		
Cadastral, orthophotography, topography, hydrography, etc., are used within GIS to get an understanding of areas that could be acquired for parkland. These locations are viewed onscreen within the GIS. Properties that are deemed suitable for acquisition are followed up with a letter inquiring whether the owner is interested in selling the property.		
Process without GIS:		
More site visits would be necessary and hardcopy maps would have to be compiled, and copied and pasted to get information.		
Benefits Assessment: (H, M, L) Identify confidence level		
<ul style="list-style-type: none"> • High 		
Benefits to Using GIS for this Activity:		
<ul style="list-style-type: none"> • Without GIS, this analysis would not be as accurate, since the hydrography is more accurate, allowing for better hydro buffers. • Site visits are reduced, since GIS can be used to determine site suitability without traveling to the field. 		



Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on \$33.95/hr)
14	3.5	10.5	40	420	\$14,259.00
Annual Benefit: \$14,259.00					
Areas for Improvement:					
<ul style="list-style-type: none"> • A slope dataset could be created from topographic data, which would make it easier to determine how the topography would affect developments and allow for more complex analysis. 					
New Opportunities:					
<ul style="list-style-type: none"> • An application could be developed to determine the accessibility that residents have to various types of park facilities, which could be used to determine what areas are in greater need of certain types of park services. This could save time spent conducting needs assessments for park use and could provide a more accurate evaluation of where additional park services need to be supplied. • An application could be developed that determines a best set of routes for a new trail to be located. This application could find optimal path options for trails that would be used to link two parks together, taking into account prohibitive landscape constraints, as well as the cost of land acquisition. This could save the county time and money spent researching potential locations of these trails. This could also save the county money spent on acquiring land for trails. 					
Benefits of Pursuing New Opportunities:					
<ul style="list-style-type: none"> • GIS could save time and money spent researching potential locations of park services. 					



4.6 Parkland and Open Space Complaint Research

Activity: Parkland and Open Space Complaint Research		
Primary Point of Contact:		
Pat McDougall		
Overview:		
Research of complaints and inquiries that could pertain to County-owned parklands and open space. Complaints can be about encroachments into park land or areas that require maintenance. Complaints can come from agency staff or the public.		
Interviewee(s) Providing Information:		
Pat McDougall		
Data (Enterprise Layers are Listed in Bold):		
<ul style="list-style-type: none"> • Buildings • Bulkheads • Contours • Easement • Government Lands • Hydrologic Facilities • Hydrology • Orthophoto (2002) • Orthophoto (2005) 	<ul style="list-style-type: none"> • Park Points • Railroads • Recreation and Parks Council Boundaries • Roads • Storm Water Management Facilities • Stormwater (Geodatabase) • Streams and Ponds 	<ul style="list-style-type: none"> • Street Centerlines • Street Centerlines (View) • Tax Parcel • Trails • Trails - Walkways • Transmission Lines • Tree Cover • Tree Rows • Wetlands
Process with GIS:		
GIS is used to research complaint location, verify ownership of land at complaint location, evaluate the condition of the complaint property, and to determine if problem or issue should be resolved by the County. GIS is also used to determine if there are any relevant easements near the complaint location. GIS maps are emailed to personnel when field visits are necessary, in order to give a preliminary idea of the property details.		
Process without GIS:		
GIS helps save field visits approximately 50% of the time, which are performed to evaluate issues associated with a complaint. Without GIS, maps would have to be gathered for private and county-owned property, which would need to be joined together.		
Benefits Assessment: (H, M, L) Identify confidence level		
<ul style="list-style-type: none"> • High 		
Benefits to Using GIS for this Activity:		
<ul style="list-style-type: none"> • GIS saves time and money on field visits. • GIS saves time and money spent compiling maps. 		



Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on \$33.95/hr)
2	.33	1.67	260	433.33	\$14,711.67
Annual Benefit: \$14,711.67					
Areas for Improvement:					
<ul style="list-style-type: none"> • None determined. 					
New Opportunities:					
<ul style="list-style-type: none"> • Addresses or other locations of complaints could be stored as points and related to information stored about the complaint. These points could be used to track complaints spatially over time so that any spatial correlation between points could be understood. They could also be transmitted to the maintenance staff when field visits are made, in order to communicate the location of the complaint better. • A county-owned property dataset, including all properties that are owned by the county and the responsible agency, would allow for complaint researchers to find out if a complaint should be handled by the agency or transferred to another agency. This would save time and money spent researching land acquisition hardcopy files located in the PDM office. This would also increase communication between agencies, since PDM does not currently notify DRP when new land is acquired. • A county easement dataset would allow for complaint researchers to find out if a complaint should be handled by the agency. This would save time and money spent researching land acquisition hardcopy files located in the PDM office. This would also increase communication between agencies, since PDM does not currently notify DRP when new land is acquired. 					
Benefits of Pursuing New Opportunities:					
<ul style="list-style-type: none"> • GIS could save time and money spent communicating the location of complaints. • GIS could increase communication between agency personnel and agencies. 					



4.7 Parkland Needs Analysis

Activity: Parkland Needs Analysis		
Primary Point of Contact:		
Pat McDougall		
Overview:		
Analysis of existing parkland and open space networks on a geographic basis, typically at the neighborhood level or higher.		
Interviewee(s) Providing Information:		
Pat McDougall		
Data (Enterprise Layers are Listed in Bold):		
<ul style="list-style-type: none"> • Agricultural Preservation • Census Block Groups (1990) • Census Block Groups (2000) • Census Blocks (1990) • Census Blocks (2000) • Census Tracts (1990) • Census Tracts (2000) • Community Plans • Conservation Easements • Councilmanic Districts (2002) • County Boundary • Easement • Election Districts • Government Lands 	<ul style="list-style-type: none"> • Greenways • Hydrologic Facilities • Hydrology • Legislative Districts (2002) • Orthophoto (2002) • Orthophoto (2005) • Park Points • Priority Funding Areas • Railroads • Recreation and Parks Council Boundaries • Regional Planning Districts • Reservoir • Roads • Rural Legacy 	<ul style="list-style-type: none"> • State Legislative District • Storm Water Management Facilities • Stormwater (Geodatabase) • Streams and Ponds • Street Centerlines • Street Centerlines (View) • Tax Parcel • Traffic Analysis Zones • Trails • Trails - Walkways • Urban Rural Demarcation Line (URDL) • Zip Codes • Zoning
Process with GIS:		
GIS data and applications are used to understand where park services are needed by visually interpreting the availability of land in relation to development. This includes such functions as identification of parcels needed to connect existing parklands, analyzing whether prospective acquisitions are needed, and evaluating overall supply and spread of parklands within specific areas.		
Process without GIS:		
Hardcopy maps would need to be gathered for the area of interest. Maps would have to be copied and pasted to cover entire areas. Multiple maps would need to be used to present all of the needed information.		



Benefits Assessment: (H, M, L) Identify confidence level					
<ul style="list-style-type: none"> High 					
Benefits to Using GIS for this Activity:					
<ul style="list-style-type: none"> 					
Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on \$33.95/hr)
21	5	16	9	144	\$ 4,888.80
Annual Benefit: \$ 4,888.80					
Areas for Improvement:					
<ul style="list-style-type: none"> None determined. 					
New Opportunities:					
<ul style="list-style-type: none"> A registration system could be set in place in each park, recording each visitors name and address. This could be geocoded to give a geographic location, which could be used to determine where people are coming from to use available services or programs. The agency could analyze the distribution of users for each service in order to better understand where additional park services are needed. This would require more staff at parks than are currently available. Each type of park and recreation service could be mapped as a geographic feature. This would allow for personnel to visually understand the availability of services to citizens. More complex analysis could also be performed, such as measuring average distances to each park service. A population density layer might be beneficial to the agency, in order to understand where the demand for park services is coming from. Census data could be disaggregated and assigned to individual buildings to give an idea of the distribution of population. This could be compared to park services that are available, in order to ensure that the amount of services matches the population demand. This could give a better idea of the needs of the citizens for park services. 					
Benefits of Pursuing New Opportunities:					
<ul style="list-style-type: none"> GIS could help better understand the needs for park services. GIS could save time and money spend researching the needs of park and recreation services. 					



4.8 Presentation and Publication Mapping

Activity: Presentation and Publication Mapping
Primary Point of Contact:
Pat McDougall
Overview:
<p>A wide variety of maps are prepared for use at public meetings and events, or to be used within an assortment of publications. Community meetings are held to solicit input on the use of properties determined as viable for parkland during the Parkland and Open Space Acquisition Site Analysis activity. Community meetings are also held to get consensus on a preferred plan for a potential park. Site maps are made for these meetings that include orthophotography, property boundaries, topography, hydrography, and stream buffers (for environmental concerns), which are used as a valuable public relations tool to communicate potential uses of a property.</p> <p>The GIS park point data is used to procure funding from the Open Space state program (Maryland DNR), which requires that the X, Y coordinates of each park be submitted as part of the grant application process. GIS maps and plans are also submitted as part of the application process. These grants are supplied from collected real estate taxes for county acquisition of open space and parklands. In 2005, this grant totaled \$18 million.</p>
Interviewee(s) Providing Information:
Pat McDougall



Data (Enterprise Layers are Listed in Bold):					
<ul style="list-style-type: none"> • Agricultural Preservation • Buildings • Capital Projects • Community Plans • Congressional Districts (2002) • Conservation Easements • Contours • Councilmanic Districts (2002) • County Boundary • Easement • Election Districts • Geology • Government Lands • Greenways • Hydrologic Facilities • Hydrology • Impervious Polygons 	<ul style="list-style-type: none"> • Legislative Districts (2002) • Orthophoto (2002) • Orthophoto (2005) • Park Points • Pipelines • Priority Funding Areas • Railroads • Recreation and Parks Council Boundaries • Reservoir • Roads • Rural Legacy • Sewer • Soil Type • Soils • Spot Elevations • State Legislative District • Storm Water Management 	<ul style="list-style-type: none"> • Facilities • Stormwater (Geodatabase) • Streams and Ponds • Street Centerlines • Street Centerlines (View) • Tax Parcel • Traffic Analysis Zones • Trails • Trails - Walkways • Transmission Lines • Tree Cover • Tree Rows • Urban Rural Demarcation Line (URDL) • Wetlands • Zip Codes • Zoning 			
Process with GIS:					
ArcMap is used to compile GIS data and symbolize data. Maps are created from scratch and using existing templates.					
Process without GIS:					
Information would have to be gathered from hardcopy maps and aerial photography. This information would need to be copied and pasted into a new map and manually symbolized.					
Benefits Assessment: (H, M, L) Identify confidence level					
<ul style="list-style-type: none"> • High 					
Benefits to Using GIS for this Activity:					
<ul style="list-style-type: none"> • GIS saves time and money spend creating maps. • GIS data is used to procure money in grants from the Open Space program. 					
Staff Hours w/o GIS (Manual)	Staff Hours with GIS	Difference	Annual # Iterations Per Year	Total Hours Saved Using GIS	Annual Time Savings Benefit (Based on \$33.95/hr)
21	3	18	24	432	\$14,666.40
Annual Benefit: \$14,666.40					



Areas for Improvement:
<ul style="list-style-type: none">• None noted
New Opportunities:
<ul style="list-style-type: none">• Maps could be displayed on an internet site to the public, increasing awareness of plans to create parks and potentially increasing the amount of feedback received from citizens. This could improve the agency's understanding of the needs of individual communities.• A dataset representing all of the leased properties would benefit the agency, providing an easier method for making maps for bids that are put out for leasing. This would save time and money spent creating maps, since these features would not have to be drawn or extracted from other datasets.• A hiking/ biking trail feature class could help the agency understand where existing trails are, in order to map these trails for use by the public. This would benefit the public by giving them an additional piece of information to see where hiking and biking services are provided within the county.• A park and recreation services layer could benefit this activity by allowing for these services to be mapped for citizens to understand where they are within a park. This could save time spent mapping these features and give a better public understanding of the distribution of services.
Benefits of Pursuing New Opportunities:
<ul style="list-style-type: none">• GIS could improve the agency's understanding of the needs of a community.• GIS could save time and money spent mapping geographic features.• GIS could give the public a better understanding of the park and recreation services available.



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5 Short-form Online Questionnaires

Agency Recreation and Parks

Name Bruce Gill

Job Title Engineering Associate 1

Briefly, what activity(s) do you perform within your department?

Local Open Space review plans and meetings

Approximately what percentage of your work week do you spend for each activity identified in question #9?

99

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

No

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

No

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

No

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

No

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

No

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

View a Park or Local Open Space

What activities do you think could benefit from use of (or increased use of) GIS?

It will save field visit time.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.



Agency Recreation and Parks

Name Francis Chrismer

Job Title MA III

Briefly, what activity(s) do you perform within your department?

As pertains to GIS, Property Management and park inventory

Approximately what percentage of your work week do you spend for each activity identified in question #9?

15

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

no - closer to weekly

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

no - closer to weekly

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

no - closer to weekly

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

no - closer to weekly

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Lease boundaries within a park

Do you perform any GIS data maintenance activities? If yes, please provide an example.

no

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

Park boundaries for lease purposes, possible encroachments

What activities do you think could benefit from use of (or increased use of) GIS?

Positive property lines

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.



Agency Recreation and Parks

Name Jan M. Cook

Job Title Engineering Associate III

Briefly, what activity(s) do you perform within your department?

I am responsible for the review and approval of Residential and Commercial Development plans and site inspections % in respect to the Local Open Space and Master Plan Designated Greenway regulations. In addition, I keep the files of existing Local Open Space throughout the County for maintenance, property identification and for public inquiries.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

100% All of my duties are Local Open Space related, with the exception of occasionally assisting coworkers with permits or intra-agency questions.

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

I mostly use aerial photos to look at properties where Local Open Space or Greenways are proposed for evaluation of proposed uses and practicality.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

I mostly use MyNeighborhood to look at aerial photos of specific addresses.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

No.

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Only aerial photos from MyNeighborhood. I do not create maps or alter existing photos and maps.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

No.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No.

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

I only look at existing items such as property identification, topo, stream locations and aerial photos.

What activities do you think could benefit from use of (or increased use of) GIS?

Property Identification - It would be helpful to have a brief history of PDM #, name changes, owners, etc, when clicking on the property. Easements - It would also be helpful to have County easements identified and private or utility easements on County owned property

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

For the agencies that review development, it would be helpful to have a layer with the developments (existing, proposed and under construction) labeled with their Permits and Development Management (PDM) numbers, especially since names of developments can change several times during the process. The PDM number remains the same. There is a physical map in room 123 with numbers and corresponding cards for each election district, which corresponds to the file. A GIS map could have most of the information in one step. I believe Planning has a layer with some of this information.



Agency Recreation and Parks

Name Jean Tansey

Job Title Chief, Capital Planning and Development

Briefly, what activity(s) do you perform within your department?

Oversee and supervise project managers in the acquisition of properties, their development into parks, the renovation of older parks and their facilities; develop programs for and systems for the renovation of existing facilities; prepare capital budget for acquisition and development of park properties; prepare standards and procure on-call consultants and contractors.

Approximately what percentage of your work week do you spend for each activity identified in question #9?

Supervision: 55% Program development: 20% Capital Budget: 20% Procurement: 5%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes, constantly. Not me personally, but I request it through others in the section. It is used to review properties under consideration for acquisition, to look up properties for which we get questions/complaints from citizenry, to evaluate development potential and prepare conceptual plans for development.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

I personally do not, but others in the Section do to provide information I request.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

Do not know what this is

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Yes, see #11.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Yes. Forestry Board, for example, gets copies of our GIS to prepare their planting plans at our park sites. Also give them to our consultants who are preparing design drawings for park development.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

Not me personally, but others in the section do. We have updated GIS information on Local Open Spaces owned by Recreation and Parks.

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

Create maps for use in-house in determining development potential, locate addresses for mailings for community meetings, create maps for consultants preparing design drawings for RP use, create maps for master plan documents such as Land Preservation Parks and Recreation Plan, determine acreages of parcels, determine ownership of parcels, determine whether encroachments are occurring on parkland.

What activities do you think could benefit from use of (or increased use of) GIS?

All activities mentioned.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.



Agency Recreation and Parks

Name John Markley

Job Title Deputy Director

Briefly, what activity(s) do you perform within your department?

Overall management and direction for the entire department

Approximately what percentage of your work week do you spend for each activity identified in question #9?

100

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

I use these items frequently

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

No

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

No

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

No

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

No

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

I frequently use information stored in or produced by GIS to help make judgments and management decisions

What activities do you think could benefit from use of (or increased use of) GIS?

Park and facility maintenance Trail mapping Asset inventory Acreage data Owned property identification

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

GIS has become an indispensable management tool for Recreation and Parks. Its capabilities should be maximized given the high cost of obtaining the start-up data, cost of infrastructure and hardware as well as training.



Agency Recreation and Parks

Name Michael Grossman

Job Title Management Analyst II

Briefly, what activity(s) do you perform within your department?

Oversight of contractual agreements, budget, coordination of building services, electronics services, verification of county property ownership

Approximately what percentage of your work week do you spend for each activity identified in question #9?

110% on each facet

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes, in the verification of property in Recreation and Parks inventory. Many questions regarding trees on county property that are posing a threat to homes from adjacent properties.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

DataQuery.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

No

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Yes, after researching, I print out a copy of the data for the area shop and may save as a pdf file to send them as an email attachment.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

No

Do you perform any GIS data maintenance activities? If yes, please provide an example.

No

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

Create maps of county property in Rec & Parks inventory when requests come in (generally as a result of a complaint).

What activities do you think could benefit from use of (or increased use of) GIS?

With increased proficiency, I will be able to better provide information for our maintenance staff.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.



Agency Recreation and Parks

Name Patrick McDougall

Job Title Planner II (also agency GIS mgr)

Briefly, what activity(s) do you perform within your department?

Serve as agency's planner, and am responsible for a wide range of duties including assisting with park acquisition process, analysis of need for parks and rec facilities, acting as agency GIS specialist (and providing associated services), coordinating assorted State funding requests and grants, capital project coordination, performing other planning tasks such as authoring plans and participating in community and other assorted plans.

Approximately what percentage of your work week do you spend for each activity identified in question #8?

Acquisition work: 15%, needs analysis: 5%, GIS work: 35%, State funding and grants work: 15%, capital projects work: 10%, misc. planning-related work: 20%. These percentages fluctuate

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

Yes. GIS is used for nearly all of my job activities. Example: Using GIS data to analyze prospective park acquisition sites.

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

To a minor extent at present. In lieu of using DataQuery, I have created a re-usable mxd project that we regularly use in-house for a large number of GIS purposes. This project has many of the same data layers as DataQuery, but uses an existing point layer of parks and open space sites for navigation. Upcoming DataQuery training will determine how frequently that application will be put to use in the future.

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

No. No truly automated spatial analysis processes are presently utilized. My expertise level isn't as high as 'full fledged' GIS specialists, so I'm not as familiar with all GIS uses and tools.

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

Yes. On most days numerous hardcopy maps are prepared and sent to printer or plotter. An example would be project site maps that are included with State grant funding applications.

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Yes, but on a limited basis. In most cases data requests are sent to the GIS Office for their attention. On occasion some in-house data is shared with other agencies. An example would be a shapefile showing parks and recreation sites within a given community plan's boundaries.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

Yes. Example: Point file of 1400+ parks, open space, and recreation sites throughout the County.

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

Analysis of prospective park acquisition sites. Analysis of site development potential and limitations in preparation for park construction or improvement projects. Complaint and issue research (e.g., looking into maintenance complaint called in by a citizen). Creation of maps for use at meetings; within plans, publications and documents; for County web site; to accompany permit requests and project funding applications, etc. Providing GIS-based data to in-house staff and consultants for use in park design processes. Use of GIS to analyze networks of public lands and perform associated strategic analysis. Preparation of maps to be exported to pdf and other formats for use of agency staff and the public. A wide range of special as-needed projects.



What activities do you think could benefit from use of (or increased use of) GIS?

One immense shortcoming of the County's GIS is the lack of a comprehensive, regularly maintained data layer that shows all lands and easements held by the County. Such a data layer, organized by owning/managing agency, would be very helpful for an endless range of GIS activities that take place within many agencies. This layer should be created and maintained by the GIS Office as a countywide data layer, or by the Land Acquisition Bureau of Permits and Development Management. The County has extensive land holdings, and an authoritative, well organized data layer is needed and should be a priority.

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

The use of GIS within the Department of Recreation and Parks could very well greatly expand, but is somewhat limited by existing staff workloads and other duties. There is no-one presently employed within the agency that would have the time to become a true GIS 'specialist.'



Agency Recreation and Parks

Name Patrick McGregor

Job Title MA II

Briefly, what activity(s) do you perform within your department?

As pertains to GIS: Park inventory and property management

Approximately what percentage of your work week do you spend for each activity identified in question #9?

15%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

No - weekly. Property bounds, locations, mapping

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

No

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

No

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

No - weekly. Property boundary line maps

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

Yes. - PDF maps on the web.

Do you perform any GIS data maintenance activities? If yes, please provide an example.

NO

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

Property bounds for leases, maps for brochures and the web.

What activities do you think could benefit from use of (or increased use of) GIS?

no suggestion

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.

It would be beneficial to have an actual up-to-date/accurate Baltimore County Property data layer.



Agency Recreation and Parks

Name Tim

Job Title Winters

Briefly, what activity(s) do you perform within your department?

Oversee the daily operations of the maintenance division

Approximately what percentage of your work week do you spend for each activity identified in question #9?

99%

Do you use GIS data or databases (e.g., orthophotos, topography, property maps) to perform your daily job? If yes, please provide an example.

no

Do you use GIS applications (e.g., DataQuery, MyNeighborhood websites) to perform your daily job? If yes, please provide an example.

no

Do you use spatial analysis (e.g. geocoding, routing) to perform your daily job? If yes, please provide an example.

no

Do you use or produce hardcopy or digital maps to perform your daily job? If yes, please provide an example.

no

Do you provide data products or services to other agencies or the public? If yes, please provide an example.

no

Do you perform any GIS data maintenance activities? If yes, please provide an example.

no

Briefly list the activities that you perform using GIS? (create maps for master plan, locate water customer addresses for work orders, etc.)

n/a

What activities do you think could benefit from use of (or increased use of) GIS?

Identifying boundaries and locating sites

Please provide any additional comments you have regarding the use of GIS technology by your department, agency or the County as a whole.