GEOGRAPHIC INFORMATION SYSTEM NEEDS ASSESSMENT

Preliminary Report to GIS Committee

TOWN OF SAUGUS, MASSACHUSETTS

EDWARD J. COLLINS, JR. CENTER FOR PUBLIC MANAGEMENT
GOVERNMENT ANALYTICS PROGRAM

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SUMMARY

This preliminary report is designed to guide the conversation within the Saugus GIS Committee ("the Committee") around how to proceed with GIS implementation. The Collins Center's Government Analytics Program (GAP) has researched how GIS can best serve Saugus ("the Town"), learning best practices from other municipalities and assessing potential needs of Town departments. This report is a draft based on those findings, the results of surveys and interviews with department heads, and should be used to facilitate the Committee's work in crafting the best possible plan for the Town.

The first section provides context as to the development of the Committee, including the impetus for the Committee and why it is important. The report then visits several measured impacts that a GIS system has had in other municipalities, which demonstrates that GIS investment will bring tremendous value to the Town. There is then an overview of the Collins Center's initial scope, which we include as a guide to the Committee's likely process going forward. This section concludes with a brief explanation of what GIS is, and what the key components of the system would be.

The "GIS in Saugus" section is a summary of the survey and interview process. We provide the self-assessment GIS needs of Department Heads as well as Collins Center suggestions for GIS project prioritization for Saugus. We note potential barriers to GIS. **Note that while this report points out the areas that appear to be of greatest urgency for GIS, we will leave it to the GIS Committee to either confirm or reject that judgement, and then to prioritize the projects accordingly.**

The Department Profile section gets into greater detail from the survey and interviews. We encourage department heads to read through all the profiles, paying special attention to their section in particular, to ensure that the Collins Center adequately captured departmental interests and priorities for GIS.

The report concludes with Appendices, including the original survey document and a sample list of GIS projects by department.

From the reading and discussion of this preliminary report will come a determination of the next steps for the GIS Committee. That will include a prioritization of potential projects, assigning members to assist in the software evaluation and demonstration process, and a discussion of other considerations for the Committee going forward. The Committee should also determine what milestones members want to have met prior to the next Committee meeting.

REPORT OVERVIEW

Town of Saugus Context

Hundreds of cities and towns in Massachusetts — and thousands across the country — are using GIS to benefit municipal services. The Town of Saugus ("the Town") can take advantage of the opportunities that GIS provides so many other communities. Many cities and towns have been using GIS for over a decade. In Saugus, it is in limited use in Police, Fire and Treasury Departments, and just recently in the Department of Public Works. There are tremendous opportunities available for the Town to improve effectiveness and efficiency while saving money in the long run, with a relatively modest investment.

In late 2015, MassGIS approached the town with the opportunity to invest the time in learning a GIS software package they created called OLIVER. While OLIVER provides the very bare necessities for an Assessing Department, it is not a particularly substantive software platform. Around this time the Department of Public Works was implementing a GIS-based Computerized Maintenance and Management System (CMMS) — a work order and asset management system. Several town officials, including the Directors of the Departments of Economic Development and Assessing, approached the CMMS vendor to gain a better understanding of the tools they offered for GIS needs in other departments. The Directors came away impressed with the opportunities GIS offered their departments for time and cost savings. A conversation was initiated around expanding Saugus's GIS plans to incorporate a town-wide approach.

At around this time, the Director of Economic Development submitted grant proposals with the state's Community Compact program. The grants were available to be used implementing best practices for municipal technology needs. Saugus submitted a grant request for the assessment and planning of a GIS system, and was awarded $10,000 to hire a consultant to run an assessment process. With the recommendation of MassIT, the Town asked the UMass-Boston Collins Center's Government Analytics Program (GAP) to submit a scope to meet the criteria of the award. (The proposed scope provided by GAP to The Town can be found on page 4.)

Once the Town and MassIT accepted the project scope, the Collins Center conducted research as to potential time and money savings that GIS could generate. Here are a few examples of potential GIS savings already realized in Massachusetts:

- Cambridge Assessor reported walk-in visits down 20% after GIS implementation, and the preparation of abutter mailing labels reduced from 2 hours to 15 minutes.
- Fitchburg Assessor reported that parcel area corrections measured by GIS increased $225,000 in assessed value in just the first ten corrections
- Hingham saved $5,000-$10,000 in developing RFP for mowing town-own fields by calculating area of fields by GIS rather than physical measurements

- Newton resolved a property dispute with GIS that resulted in $61,800 additional tax revenue, and currently generates $4000 in annual revenue in map sales.
- The Marshfield Assessor had parcels redrawn for revised valuations using a single employee in 45 days. The Assessor had estimated it would require one FTE a full year to complete the work without GIS.

A few examples outside of Massachusetts:

- In 1995, the city of Philadelphia used GIS to optimize their garbage truck routes, saving over $1 million in overtime.
- The city of Ontario generated $190,000 per year in lost business license fees by using GIS to audit their billing files.
- In 1996, the city of Scottsdale had only 3 weeks in which to respond and challenge the numbers provided by the Census Bureau's mid-decade census. Due to the city's GIS database the challenge was approved, resulting in increased per capita revenues to the city of $1.8 million per year for the next five years — a total of $9 million.
- The Metropolitan Sewer District of Cincinnati used GIS to find parcels with unbilled sewer connections. The District generated thousands of dollars of missing revenue.

The Collins Center researched some of the best practices and best uses for municipal GIS. The creation of the Saugus GIS Committee came out of that process, followed by the department survey and interviews.

The Collins Center began the process of looking into municipal GIS software options, ranging from the free MassGIS offering to installations costing tens of thousands of dollars. Cloud-based GIS systems are strongly recommended to eliminate the need for future software and hardware upgrade costs. Because GIS data is often dynamic, having those updates done at the vendor level are faster, more accurate, and the most cost-effective for Saugus. The Saugus GIS Committee will solicit cost estimates and conduct demos for several of these products in the near future.

There was concern around the true cost of GIS, above the software fees. In order to get the most accurate GIS data, many municipalities hire a GIS flyover at the cost of around $100,000. While such a flyer would provide valuable information for the highest quality GIS system, a quality GIS system can be attained with currently-available public GIS information. MassGIS has already compiled excellent data on municipalities around the Commonwealth, and that information is more than good enough to get GIS off the ground. In the opinion of the Collins Center authors of this report, the expansion, management and sustainability of GIS will likely require a full time employee to manage all the various GIS needs of The Town.

With that as context, the GIS Committee is moving forward with this draft report to continue the next phases of GIS planning, assessment, and eventually implementation.

Project Overview

The Town requested that the Collins Center's Government Analytics Program (GAP) conduct a GIS Needs Assessment. The scope for this assessment, as approved by the Saugus Town Manager and MassIT, includes the following:

No.	Task	Staff Involved
1	Create and facilitate a town GIS Committee, consisting principally of key department heads, the Town Manager or a member of their staff, and the IT Director. This committee will discuss GIS needs, possibilities, ambitions and requests.	GAP, Town Manager, ITD, Most Departments
2	Create, disseminate, assist in completion, and analyze a GIS needs survey to be filled out by each town department.	GAP, Departments
3	In conjunction with the survey, initiate interviews with department heads and key staff to get an understanding of GIS needs, identifying what new resources are available (GIS data, systems, and current software).	GAP, Departments
4	Conduct an inventory of any current software, licenses, and hardware, networks that would be relevant for GIS. This inventory will identify what resources exist, where they are housed, for what they are being used, and any existing duplication. The inventory will ultimately identify any software and data that will need to be synced to a GIS.	GAP, IT Director
5	Conduct a review of applicable best practices and established standards relative to GIS implementation and data formats, including initiating a dialogue with MassGIS and other relevant agencies within the Commonwealth.	GAP
6	Write a report of town GIS needs, with a recommended prioritization for software needs and implementation prioritization. Present report to GIS Committee for feedback and edits.	GAP
7	Set up GIS vendor demonstrations and quotes for the GIS Committee, calling of vendor references, and other assistance in selection of GIS vendor.	GAP and GIS Committee
8	Working with selected GIS vendor to communicate a plan for prioritization, connect to right people in each department, and initiate implementation based on agreed-upon plan.	GAP, GIS vendor, GIS Committee
9	Create a plan for the long-term sustainability of the GIS system	GAP, GIS vendor, GIS Committee

GIS at a glance

Geographic Information Systems (GIS) are a set of interfaces, software, hardware and devices that handle spatial data. In addition to map creation, these systems are used to capture, store, manipulate, analyze, and manage these data.

GIS components at a glance:

- *Interfaces:* Typical GIS deployments are packaged as a software suite, with a number of related modules that work together in handling and generating data. However, the increase in online offerings is increasing the amount of fully integrated GIS interfaces.
- *Software*: The industry-leading commercial software is ESRI's ArcGIS, with much of its competition driven by open-source rivals, such as QGIS and Grass.
- *Hardware*: Typical GIS deployments are done through desktop and server configurations. More and more, however, GIS is being brought online into the cloud.
- *Devices*: Data capture is essential to many GIS applications. In addition to growing number of GPS device applications, organizations have long relied on remote sensing as well as aerial-imagery as part of their capture processes.

For business, GIS is used in a variety of applications to increase efficiency and manage performance. Some examples include: market research, supply chain management, crop-yield prediction in farming, planning for expanded operations, and resource management for extractive activities.

For municipalities, GIS has long been used in certain departments to provide essential functions. In Public Works, GIS has been used to manage both the resources above and below the ground. In Planning/Zoning, GIS has been used to investigate zoning, view aerial imagery, and manage land-use. In Assessing, GIS-based representations of the town serve as the basis for parcel management, with the technology further used as an analysis tool.

Increasingly, municipalities are bringing GIS town wide. Implementing GIS means can mean cost-savings and greater efficiency. It can be added to assist in day-to-day operations, with applications for fleet management, generating abutter's lists, and traffic enforcement. It is also used for longer-term study and analysis, such as environmental impact, zoning ordinance changes, economic development, and crime analysis.

(For a sample list of GIS projects and processes, please see Appendix II.)

GIS IN SAUGUS

Selected Survey Results

The GAP team conducted an online GIS needs assessment survey to serve as base inventory of needs for each department participating in the committee. The survey is divided into three sections: *Basic Information*—department and contact information; *Departmental GIS Capacity*—an assessment of the department's technical needs capacity; and, *GIS Needs*—an assessment of potential GIS projects, their priority and benefit level, and potential barriers to GIS implementation. (Please see Appendix 1 for a print version of the survey instrument.)

Easily identifiable among the results is the lack of GIS use among the departments. Only four departments (30.8%) are currently using GIS in any form. One of these (Public Works) has a complete GIS system in place (PeopleGIS). Two of these (Police and Fire) have mapping functions within existing software. Similarly, only two departments (Police and Assessing; 15.4%) have shapefiles, or GIS files, that are officially maintained by the department or outside consultants. Also, only five departments (Police, Fire, Health, IT and DPW; 38.5%) have noted employees with any prior GIS experience. This data suggests that education and

training as well as technical support will be key drivers of a successful implementation in town.
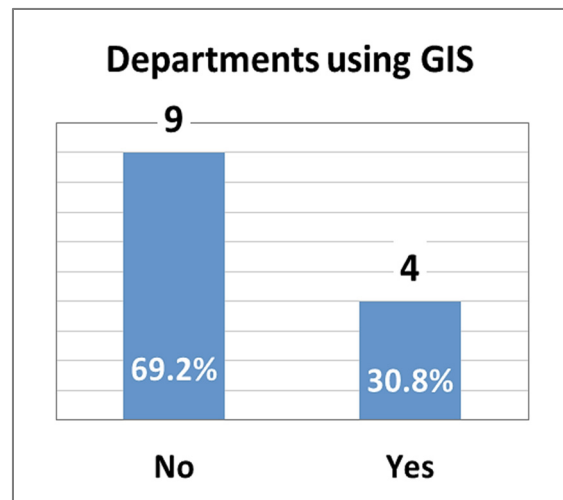
Despite the lack of GIS use and awareness in town, there is clear need. Eight departments (61.5%) have functions that explicitly use maps and/or mapping. Compare this with number currently using GIS. Given the interest this project has garnered, we expect that there is considerable desire and need for GIS. However, there are also barriers to a potential implementation. When asked, the top three barriers cited by department heads were "budget" (80%), "out of date equipment" (40%), and "staff availability" (33.3%). This suggests that the committees focus should not solely be narrowed to system choice for implementation to be successful.

Potential Projects

Based on department head interviews and survey data, the project team has identified the following potential GIS projects. We have noted which projects the Department Heads consider high priority, and to help guide the discussion of the Committee, the authors have added a column with a slightly revised suggestion of priority for some of these projects.

Department	Project	Description	Benefit	Dep't Priority	Collins Sugg. Priority	Frequency
Animal Control	Mobile Capture	Geographic referencing and documentation of incidents.	Strong	High	Low	Ongoing
	Data Sharing	Increase reporting capability.	Strong	Med.	Low	Ongoing
Assessing	Abutter's List	Auto-generation of abutter's list for staff and/or public.	Strong	High	High	Ongoing
	Analysis	Increase reporting capability.	Strong	High	High	Ongoing
Clerk	Redistricting	Visual and analytical support for department's precinct and ward planning.	Strong	High	Med.	Ongoing
	Poll Locations	After redistricting, analyzing whether poll locations are best located for voters.	Moderate	Med.	Med.	Occasional
Collector/ Treasurer	Well and septic system mapping	In conjunction with Health, will map for water/sewer billing purposes.	Moderate	Med.	Med.	Ongoing
	Sync building permit requests and Treasury	Synchronization would allow Treasury to put hold on building permit requests when taxes are delinquent, and would ensure ISD is aware of those holds.	Moderate	Med.	Med.	Ongoing
Fire	Shapefile Update	Update of hydrant and hazardous material locations.	Strong	Med.	Med.	One Time
	Permitting	Cataloguing of fire inspection permits.	Strong	High	Med.	Ongoing
	Trend Analysis	Analysis of incidents and calls for service patterns.	Strong	Med.	Med.	Ongoing
	Public Information	Dissemination of information for public safety education and promotion of activities.	Strong	Med.	Low	Ongoing

Department	Project	Description	Benefit	Dep't Priority	Collins Sugg. Priority	Frequency
Health	Well and septic system mapping	In conjunction with Treasury, will map for water/sewer billing purposes.	Moderate	Med.	Med.	Ongoing
	Tenant-landlord issues	Managing tenant complaints and follow-ups.	Moderate	Med.	Low	Ongoing
	Code enforcement inspections	Creating a system to managing all Health Department code-related inspections, such as rodent and trash complaints.	Strong	Med.	Med.	Ongoing
	Food establishment inspections	Tracking all food establishments and any inspections happening here. Might connect with the grease trap system.	Moderate	Med.	Med.	Ongoing
	Work order system for other permits and inspections	Tanning salons, tattoo parlors, pools, camps, pets, etc.	Moderate	Med.	Med.	Ongoing
	Disease and illness tracking	Using GIS to identify potential location-sourced health issues.	Moderate	Low	Low	Ongoing
	Posting of health-related info	Where flu shots can be accessed, or locations to go during certain types of emergencies.	Moderate	Low	Low	Ongoing
Inspectional Services	Map zoning codes	Publicly-available map of zoning code updates.	Strong	High	High	Ongoing
	Map building permits	Mapping building permits (current and historic) in real-time.	Moderate	Med.	Med.	Ongoing
	GIS-based Document Management System	Electronic storage of and access to parcel maps, building permits, zoning decisions and historical info.	Strong	High	Med.	Ongoing

Department	Project	Description	Benefit	Dep't Priority	Collins Sugg. Priority	Frequency
Inspectional Services (Continued)	Sync building permit requests and assessor database	Allows easier sync of permits and potential valuations based on those permits over time.	Strong	Med.	Med.	Ongoing
	Sync building permit requests and Treasury	Synchronization would allow Treasury to put hold on building permit requests when taxes are delinquent, and would ensure ISD would be aware of those holds.	Moderate	Med.	Med.	Ongoing
Library	Town Data Portal	Increasing public access to community data, including historical sources.	Strong	High	Low	Ongoing
Police	Crime Mapping	Analysis of crime trends and hot spots.	Strong	High	Med.	Ongoing
	Accident monitoring	Analysis of accident clusters.	Strong	High	Med.	Ongoing
	Citations	Analysis of high citation zones for enforcement.	Strong	High	Med.	Ongoing
	Traffic Monitoring	Analysis of traffic speed patterns for strategic planning.	Strong	High	Med.	Ongoing
	Redistricting	Reshaping outdated police sectors to assign manpower more effectively	Strong	Med.	Med.	One Time
School	Elementary School Redistricting	School imbalances and demographic changes may require redistricting of school boundaries.	Strong	High	Med.	On Time
	GIS Access to Saugus Public School students	Creating a comprehensive and publicly-available GIS system to students.	Moderate	Low	Low	Ongoing
	Facilities work order system	School using SchoolDude now, and it is working. There is no specific reason to consider replacing this.	Moderate	Low	Low	Ongoing

Department	Project	Description	Benefit	Dep't Priority	Collins Sugg. Priority	Frequency
Waste/ Recycling	Daily Trash and Recycling Routes	Mapping and dissemination of current daily routes for internal and public use.	Strong	High	High	Ongoing
	Compliance Checks	Compliance of applicable regulations and statutes.	Strong	Med.	Med.	Ongoing
	"Set-out" Rates	Tracking of town-wide recycling rates.	Moderate	Med.	Med.	Ongoing

Potential Barriers

Based on department head interviews and survey data, the project team has identified the following potential barriers to implementing GIS:

Department	Budget	Staff Availability	Technical abilities	Out of Date equipment	Lack of GIS need	No barriers
Accounting	X				X	
Animal Control	X	X	X	X		
Assessing						X
Clerk						X
Fire	X					
Health	X	X		X		
Inspectional Services	X		X	X		
Library	X					
Police	X		X			
Public Works	X	X	X	X		
Schools	X					
Waste/ Recycling	X	X		X		

DEPARTMENT PROFILES

1. Accounting				
Key Contact			**FTEs**	
Joanne Gayron, Town Accountant			4	
Top Five Services/Functions Provided by the Department				
Budgeting	Financial Reporting	Accounts Payable	Payroll	
Current GIS use		**Department-maintained shapefiles**		
No		No		

Overview

Accounting was not interviewed as part of this report. However, the department did complete a GIS needs survey. Their responses indicate that the department does not currently perceive a need for GIS within the department. They do not currently have functions that use maps and/or mapping, nor do they receive related requests for data from the public.

Potential Projects

None cited or identified.

Potential Barriers

Barrier	Notes
Budget	--

2. Animal Control

Key Contact			FTEs	
Harold Young, Animal Control Officer (ACO)			1	
Top Five Services/Functions Provided by the Department				
Handle animal complaints	Animal bite investigations	Wildlife issues	Coordination with Police, Fire and Inspectional Services	Animal contagious diseases
Current GIS use		**Department-maintained shapefiles**		
No		No		

Overview

The project team has noted ways GIS could offer support and efficiency to current processes for Animal control. As the ACO is who is charged with enforcing state statutes and local ordinances and by-laws regulating domestic animals, there is considerable documentation necessary regarding incidents, citations, quarantines, etc. Current paper-based record keeping could be moved to geographic-based records and analysis. GIS—with the assistance of mobile technology—could also allow the ACO to capture and access data in the field. As the department coordinates with a number of departments (Police, Fire, Inspectional Services, Board of Health), GIS could increase data sharing capabilities. There are a number of barriers to bringing in GIS. In particular, the department lacks internet or town network connection, and the computer is considerably out of date.

Potential Projects

Project	Description	Benefit	Priority	Frequency
Mobile Capture	Geographic referencing and documentation of incidents.	Strong	High	Ongoing
Data Sharing	Increase reporting capability.	Strong	Medium	Ongoing

Potential Barriers

Barrier	Notes
Budget	With low staffing and poor infrastructure, it is presumed that the budget is kept at a minimum.
Staff Availability	The department has one employee.
Technical Abilities	Implementation would require training in new software and hardware.
Out of date equipment	No current internet connection or network infrastructure; computer is out of date; mobile technology would be of great importance.

3. Assessing

Key Contact				FTEs
Tracey Mingolelli, Principle Clerk				3
Top Five Services/Functions Provided by the Department				
Revenue Generation	Appeals	Mailing lists	Exemptions	Review Permits and Assessed Values
Current GIS use		**Department-maintained shapefiles**		
No		Yes		

Overview

The department does not currently use GIS, instead using the state's Computer-Aided Mass Appraisal (CAMA) system. Through the standard CAMA statewide, increasingly municipalities have begun to move to a more updated system. Saugus has recently procured Patriot Properties' AssessPro and implementation is underway. Though this software contains some similar functions as typical GIS software, there are a many functions it does not. In particular, GIS allows for custom analysis which is typically limited in "out-of-the-box" software. GIS could also allow for custom queries (such as generating an abutter's list) that could save staff time and benefit the public (the department cites considerable amount of public requests for data for new buildings and additions). Therefore, despite their current software, the department may still benefit from a town wide GIS.

Potential Projects

Project	Description	Benefit	Priority	Frequency
Abutter's List	Auto-generation of abutter's list for staff and/or public.	Strong	High	Ongoing
Analysis	Increase reporting capability.	Strong	High	Ongoing

Potential Barriers

Barrier	Notes
Out of date equipment	The department cites speed of current hardware/software mix.

4. Clerk	
Key Contact	**FTEs**
Ellen Schena, Town Clerk	3
Current GIS use	**Department-maintained shapefiles**
None	No

Overview

As the town election official, a key concern for the Town Clerk is the shape and composition of voting precincts and wards. Currently, the department's main support for this effort is the state Voter Registration Information System (VRIS), a statewide computerized database that contains the name and address of every registered voter. Despite the VRIS, a significant portion of the redistricting work is paper-based, with review, editing, and submission conducted by mail. For a process containing maps with high-levels of details, redistricting is now needlessly cumbersome. The project team recommends using GIS to increase the speed and efficiency of the project. (GIS may also offer some additional opportunities for the department. Please see Appendix II for a sample list of other GIS projects.)

Potential Projects

Project	Description	Benefit	Priority	Frequency
Redistricting	Visual and analytical support for department's precinct and ward planning.	Strong	High	Ongoing
Poll Locations	After redistricting, analyzing whether poll locations are best located for voters.	Moderate	Medium	Occasional

Potential Barriers

Barrier	Notes
None noted	--

5. Collector/Treasurer				
Key Contact			**FTEs**	
Wendy Hatch, Finance Director and Collector/Treasurer			6	
Top Five Services/Functions Provided by the Department				
Revenue Collection	Revenue Reporting	Account Reconciliation	Budget Preparation and Management	--
Current GIS use		**Department-maintained shapefiles**		
Yes		No		

Overview

The department currently use GIS in its MVRS water meter software. The software allows the department to have a staffer collect and log water readings over the course of three weeks. GIS doesn't appear to be a high priority for the Department, but there are a few areas where benefits could be found, especially in managing those properties off the water and sewer systems, and in syncing water billing and tax lien data. Another potential project might be adding maps to capital planning proposals outline the implications of land acquisitions, infrastructure projects, etc.

Potential Projects

| Project	Description	Benefit	Priority	Frequency
Well and septic system mapping and tracking	In conjunction with Health, will map for water/sewer billing purposes.	Moderate	Medium	Ongoing
Sync building permit requests and Treasury	Synchronization would allow Treasury to put hold on building permit requests when taxes are delinquent, and would ensure ISD is aware of those holds.	Moderate	Medium	Ongoing

Potential Barriers

Barrier	Notes
None Noted	--

Key Contact			FTEs	
Chris Vinard, Captain			52	
Top Five Services/Functions Provided by the Department				
Fire Suppression	Emergency Medical Service	Rescue	Fire Prevention	Education
Current GIS use		**Department-maintained shapefiles**		
Yes		No		

Overview

The department is one of the few that currently uses GIS. Their current records management system (RMS; Tritech's IMC) contains internal mapping functions. It allows mapping of calls for service and incidents, route planning and directions, and has automatic vehicle location (AVL) capabilities. The department also has laptops ("tough books") available in each apparatus that gives them access to not only maps, but AVL for own and neighboring town' apparatus

while responding to incidents, and an inventory of town fire hydrants and hazardous materials locations. These tough books were obtained as part of a federal program that gave them a number of these laptops as well as the open-source GIS software (ERGIS).
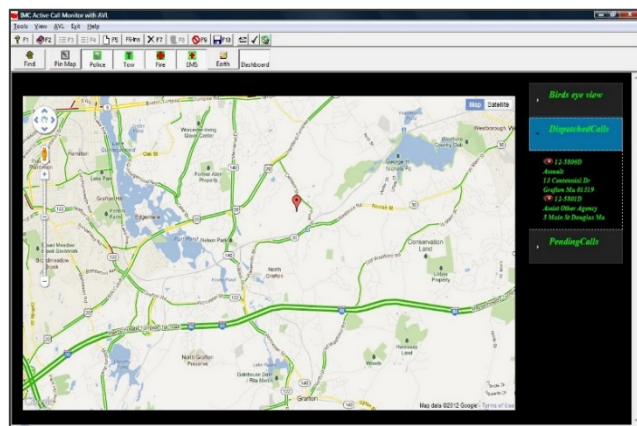
Despite their current use of some GIS functions, the department's use of GIS is minimal. Though every staff member has access to the technologies mentioned above, they are typically only used for analysis by upper management. In addition, the department is limited in its capacity to engage in longer term analysis projects.

Potential Projects

Project	Description	Benefit	Priority	Frequency
Shapefile Update	Update of hydrant and hazardous material locations.	Strong	Medium	One Time
Permitting	Cataloguing of fire inspection permits.	Strong	High	Ongoing

Project	Description	Benefit	Priority	Frequency
Trend Analysis	Analysis of incidents and calls for service patterns.	Strong	Medium	Ongoing
Public Information	Dissemination of information for public safety education and promotion of activities.	Strong	Medium	Ongoing

Potential Barriers

Barrier	Notes
Budget	--
Technical Abilities	Five FTEs with strong computer and technical skills.

Comment	*Town does not have an engineering department. So initial data entry of infrastructure are a key foundation.*

7. Health				

Key Contact			FTEs	
David Greenbaum, Director of Public Health			2	
Top Five Services/Functions Provided by the Department				
Food Establishment Inspections	Disease Follow-up	General Inspections	Grease Traps	Landfill Management
Current GIS use		Department-maintained shapefiles		
No		No		

Overview

The Health Department has a number of areas where GIS could be a benefit. It is currently in the process of having a Grease Trap Tracking system set up through PeopleGIS, which will connect with the DPW system. This was part of the original PeopleGIS contract, designed to meet the new Health Regulations passed last year. This is a good start, but only meets a fraction of the departments overall GIS needs. Though the potential projects for the Health Department wouldn't necessarily be considered high priority for the Town, they don't look to be particularly complex, and have the benefit of creating an improved tracking system of all the various types of inspections and permits that the department oversees. The Director has used these types of systems in the past in other municipalities, and is definitely interested in bringing something similar to the Saugus Board of Health.

Potential Projects

Project	Description	Benefit	Priority	Frequency
Well and septic system mapping and tracking	In conjunction with Treasury, will map for water/sewer billing purposes.	Moderate	Medium	Ongoing
Tenant-landlord issues	Managing tenant complaints and follow-ups.	Moderate	Medium	Ongoing
Code enforcement inspections	Creating a system to managing all Health Department code-related inspections, such as rodent and trash complaints.	Strong	Medium	Ongoing

Project	Description	Benefit	Priority	Frequency
Food establishment inspections	Tracking all food establishments and any inspections happening here. Might connect with the grease trap system.	Moderate	Medium	Ongoing
Work order system for other permits and inspections	Tanning salons, tattoo parlors, pools, camps, pets, etc.	Moderate	Medium	Ongoing
Disease and illness tracking	Using GIS to identify potential location-sourced health issues.	Moderate	Low	Ongoing
Posting of health-related info	Where flu shots can be accessed, or locations to go during certain types of emergencies.	Moderate	Low	Ongoing

Potential Barriers

Barrier	Notes
Budget	Budget is limited. As projects appear to be low lifts, this shouldn't be a major concern.
Other	There are a lot of potential inspections available here. The setup might be big, but there's a lot that could be done if it's set up right.

8. Inspectional Services		

Key Contact	FTEs
Fred Varone, ISD Director; Deborah Nickolas, Senior Clerk	5

Top Five Services/Functions Provided by the Department				
Building Permits	Building Inspections	Zoning By-Laws	Zoning Information	Communication and Customer Service

Current GIS use	Department-maintained shapefiles
No	No

Overview

The Inspectional Services Department has a high need for GIS. Many of its most important functions are related to mapping, yet there is no GIS map in use. Maps that are in use are 80 years old, and marked up by hand to varying degrees of accuracy. There is no way of tracking things like changes of building values or construction by neighborhood. In addition, 80 years of zoning code changes are not mapped in any easy-to-understand way, and there are huge opportunities on this front as well. The need and the opportunities are high.

Potential Projects

Project	Description	Benefit	Priority	Frequency
Map zoning codes	Publicly-available map of zoning code updates.	Strong	High	Ongoing
Map building permits	Mapping building permits (current and historic) in real-time.	Moderate	Medium	Ongoing
GIS-based Document Management System	Storage of parcel maps, building permits, zoning decisions and historical info, and making information more easily availableto the public.	Strong	Medium	Ongoing
Sync building permit requests and assessor database	Allows easier sync of permits and potential valuations based on those permits over time.	Strong	Medium	Ongoing

Project	Description	Benefit	Priority	Frequency
Sync building permit requests and Treasury	Synchronization would allow Treasury to put hold on building permit requests when taxes are delinquent, and would ensure ISD would be aware of those holds.	Moderate	Medium	Ongoing

Potential Barriers

Barrier	Notes
Technical Abilities	Clerical staff has good technical ability, but GIS will be a very new function for them. This will be a challenge.
Capacity	Projects listed are time-consuming, and will take extensive time for outside consultants and/or staff to accomplish. The ultimate benefits will be high, but it may be a substantial investment. Staff capacity to manage ongoing GIS will need to be considered.
Complexity	This is a series of some of the most complex and detailed projects the Town might undertake, yet also some of the most important.

9. Library	

Key Contact	FTEs
Brian Hodgdon, Director	4

Top Five Services/Functions Provided by the Department				
Provide access to informational, educational and recreational materials	Provide a safe, open and comfortable space for all citizen pursuits.	Encourage traditional and information literacy and lifelong learning.	Promote the appreciation of local community heritage.	--

Current GIS use	Department-maintained shapefiles
No	No

Overview

The Library is currently in transition, with a new director recently in place. The library did note potential interest in a number of the project team's sample projects but, as of this report, was only able to identify one project it would pursue. (Please see Appendix II for a sample list of GIS projects.)

Potential Projects

Project	Description	Benefit	Priority	Frequency
Town Data Portal	Increasing public access to community data, including historical sources.	Strong	High	Ongoing

Potential Barriers

| Barrier	Notes
None Noted	--
Comments	*The Library could be the public's primary point of access for the informational results of this GIS project. We're happy to do what we can to help our patrons leverage the products of this effort.*

10. Police

Key Contact			FTEs	
Ron Giorgetti, Assistant Chief			76	
Top Five Services/Functions Provided by the Department				
Protect and Serve the Community	Crime Investigation	Traffic Investigations	Preservation of Evidence	Court Proceedings
Current GIS use		**Department-maintained shapefiles**		
No		Yes		

Overview

The department is one of the few that currently uses GIS. As with Fire, the department's RMS (Tritech's IMC) possesses a number of internal mapping functions. It allows for mapping of calls for service and incidents, route planning and directions, and has automatic vehicle location (AVL) capabilities. In addition to IMC, the department also use two other software, each with some GIS function. GetCrashReports.com is a portal for accident reporting with a public and organization-facing access. The department also uses DataVis, a crime analysis and reporting platform that provides the department with mobile access to reports as well as real-time alerts for critical incidents. This serves as the department's main analysis tool.
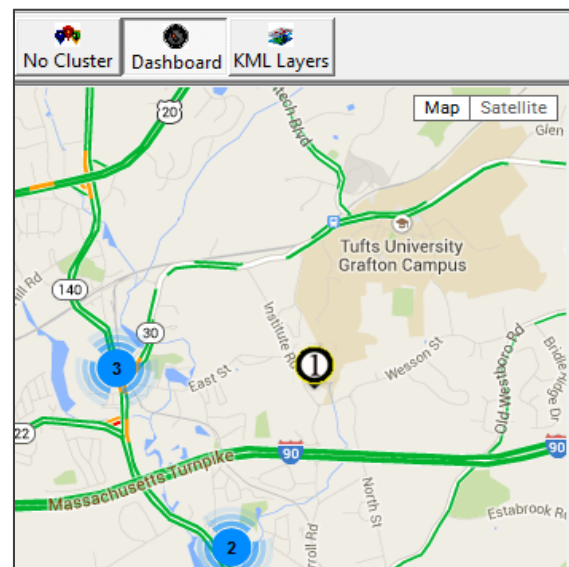
Clearly, the department possesses a number of helpful technologies and already enjoys a number of GIS benefits. However, the project team noted that long range analysis is typically conducted by the sole crime analyst. Though it is encouraging that the department has an analyst (many in the Commonwealth do not), the analyst is also responsible for budgeting and maintaining the department's technical infrastructure (hardware, software, website, etc.). This means that they must split their time between duties, rather than being dedicated to analysis. With only five employees with strong computer and technical skills (survey data), this suggests that capacity could be a concern for GIS implementation in Police.

Potential Projects

Project	Description	Benefit	Priority	Frequency
Crime Mapping	Analysis of crime trends and hot spots.	Strong	High	Ongoing
Accident monitoring	Analysis of accident clusters.	Strong	High	Ongoing
Citations	Analysis of high citation zones for enforcement.	Strong	High	Ongoing
Traffic Monitoring	Analysis of traffic speed patterns for strategic planning.	Strong	High	Ongoing
Redistricting	Reshaping outdated police sectors to assign manpower more effectively	Strong	Medium	One-time

Potential Barriers

Barrier	Notes
None Noted	--

Comments	*Town does not have an engineering department. So infrastructure [and] initial data entry are a key foundation.*

11. Public Works

Key Contact	FTEs
Brendan O'Regan, Director	17

Top Five Services/Functions Provided by the Department				
Customer Service	Highway Related Tasks	Water and Sewer	Vehicle Maintenance	Parks

Current GIS use	Department-maintained shapefiles
Yes	No

Overview

The DPW has implemented a GIS-based public works work order system, also known as a Computered Maintenance Management System (CMMS). Implementation has been going well, and the department is using it to good effect. There continues to be potential for expansion and improvement going forward, but there is good momentum within this system, and the foreman are using tablets in the field to update information in real time.

Potential Projects

Project	Description
None	There are no new GIS projects that the DPW needs to work on. The biggest project need will be the updating of DPW Asset information when a new Town Engineer is in place.

Potential Barriers

Barrier	Notes
None listed	--

12. School				
Key Contact			**FTEs**	
Amy Guider, Executive Assistant			447	
Top Five Services/Functions Provided by the Department				
Student Education	Student Safety	Student Development	Budget Management	Quality Staffing
Current GIS use		**Department-maintained shapefiles**		
No		No		

Overview

The Saugus School Department has minimal ongoing need for GIS capacity, but there is one potential project — redistricting — where the department could benefit. The larger potential for GIS is in the impact it could have on student learning about Saugus. Providing GIS capabilities to the Town, and GIS access and training for Saugus Public Schools, could encourage its use by students, creating both learning opportunities and interesting project opportunities that may benefit the Town. This also may provide any GIS Director access to student interns and projects that he or she may want to accomplish but might not otherwise have the capacity for. Or projects the Town might never have even thought of.

Potential Projects

Project	Description	Benefit	Priority	Frequency
Elementary School Redistricting	School imbalances and demographic changes may require redistricting of school boundaries.	Strong	High	One Time
GIS Access to Saugus Public School students	Creating a comprehensive and publicly-available GIS system to students.	Moderate	Low	Ongoing
Facilities work order system	School using SchoolDude now, and it is working. There is no specific reason to consider replacing this.	Moderate	Low	Ongoing

Potential Barriers

Barrier	Notes
None Noted	--
Other	Need is low, though fringe benefits might be worth considering. Especially intrigued by potential of students getting trained, involved, and doing projects for the Town.

13. Waste/Recycling				
Key Contact			**FTEs**	
Lorna Cerbone, Solid Waste/Recycling Coordinator			1	
Top Five Services/Functions Provided by the Department				
Trash/Recycling Collection Oversight	Handling Resident Complaints	Enforcement	Oversight of recycling center	Coordination of one-day events
Current GIS use		**Department-maintained shapefiles**		
No		No		

Overview

The department does not currently use GIS or digital mapping in any form. Yet, the project team believes they can greatly benefit from its use. In particular, much of the department's current work uses mapping, but in all-paper processes. The department is responsible for managing trash and recycling collection for the Town, but must manually plan and review route changes on large paper maps. Due to this process, they are also unable to disseminate these plans to the public in a map-based form online. The department is also often reliant on data from other departments but has no efficient way to access these data. This includes problem properties data from the Health Department and other property data, through the Assessor's street file, when handling resident complaints or special instructions. Further, we have identified a number of potential GIS projects that may benefit the department.

Potential Projects

Project	Description	Benefit	Priority	Frequency
Daily Trash and Recycling Routes	Mapping and dissemination of current daily routes for internal and public use.	Strong	High	Ongoing
Compliance Checks	Compliance of applicable regulations and statutes.	Strong	Medium	Ongoing
"Set-out" Rates	Tracking of town-wide recycling rates.	Moderate	Medium	Ongoing

Potential Barriers

Barrier	Notes
Staff Availability	Department currently receives additional part-time help.
Out of Date	Department has noted need for update hardware and software, lack of adequate technical support, and little use of technology.

APPENDICES

I. GIS NEEDS ASSESSMENT SURVEY INSTRUMENT

UMASS BOSTON

EDWARD J. COLLINS, JR. CENTER FOR PUBLIC MANAGEMENT
JOHN W. McCORMACK GRADUATE SCHOOL OF POLICY AND GLOBAL STUDIES
UNIVERSITY OF MASSACHUSETTS BOSTON

100 Morrissey Boulevard
Boston, MA 02125-3393
P: 617.287.4824
F: 617.287.5566
mccormack.umb.edu/centers/cpm
collins.center@umb.edu

No._____

Town of Saugus GIS Survey

The purpose of this survey is to gather the information from Saugus's Department Heads on GIS needs, wants and capacity. The information gathered here will provide an important resource for the Saugus GIS Committee to help with prioritization and understanding of needs and technical issues. Your responses are extremely helpful to this effort.

There are four ways to deliver this survey.

➢ You can do the survey entirely online at
https://www.surveymonkey.com/r/SQ6LRDR
➢ You can fill out this survey in Microsoft Word and email it to
reuben.kantor@umb.edu
➢ You can fill out this survey by hand, and scan it and email it to
reuben.kantor@umb.edu
➢ You can fill out this survey by hand, and let Reuben Kantor know you've completed it and he can pick it up.
Contact Reuben at reuben.kantor@umb.edu, or at 617-372-2936 to let him know it's ready to be picked up, and where he can get it.

If you have any questions, please contact Reuben Kantor at:

Reuben.Kantor@umb.edu or 617-372-2936

Thank you for your participation!

Basic Information

1. Identifying Information

   Your Name: _____

   Your Department: _____

   Your Title: _____

   Best Phone(s): _____

   Email: _____

   If you have an assistant or other person you want us to contact on GIS-related issues, put their name, title and contact info here:

   _____

   _____

2. How many employees (including yourself) work in this department?

   Please write in the number full-time employees or equivalents (FTE): _____

3. Please list up to five of the most important functions of your department:

   #1: _____

   #2: _____

   #3: _____

   #4: _____

   #5: _____

Departmental GIS Capacity

4. Is GIS currently in use in any manner in your department?   ☐ Yes   ☐ No

   a. If "Yes," please list them:

   #1: _____   #2: _____

   #3: _____   #4: _____

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5. Do you know of any GIS shapefiles maintained by your department or department consultants?

☐ Yes ☐ No

    a. If "Yes," please describe:

_____

_____

_____

6. Do you know of any employees in your department who have worked with GIS?

☐ Yes ☐ No

    a. If "Yes," please tell us their names and titles:

_____

_____

_____

7. Does your department have any functions that currently use maps and/or mapping?

☐ Yes ☐ No

    a. If "Yes," please describe:

_____

_____

_____

_____

_____

_____

_____

8. How many employees in your department do you think have strong computer and technical skills?

Please write in both the total number and the FTE: *Employees_____ / FTE _____*

9. How do you feel about your department's current software and hardware. , and the support available for technical needs?

_____

_____

_____

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10. Do you feel you receive adequate technical support for your department's software and hardware needs?

☐ Yes ☐ No

a. Please describe. _____

_____

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GIS Needs

</div>

11. List any departmental functions you can think of that could benefit from GIS, and how much benefit GIS could provide? Only list functions where you can imagine any GIS advantages. Basically, this is anything geographic, involving an address or other mapping function.

(Please write in function.)	Strong benefit	Mild benefit	Prioritize
1. _____	☐	☐	____
2. _____	☐	☐	____
3. _____	☐	☐	____
4. _____	☐	☐	____
5. _____	☐	☐	____
6. _____	☐	☐	____
7. _____	☐	☐	____
8. _____	☐	☐	____

12. Has your department received requests for GIS data or related services?   ☐ Yes   ☐ No

. If "Yes," from whom do you receive?

_____

_____

13. What do you see at the biggest barriers for bringing GIS into your department?

☐ Budget   ☐ Lack of GIS need
☐ Staff availability   ☐ Other
☐ Technical abilities   ☐ No barriers
☐ Out of date equipment

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</div>

a. Please elaborate on any of the barriers above, or any other that you'd like to share.

_____

_____

_____

Thank you for participating in the survey. In the space below, please feel free to add any additional comments or thoughts regarding services, your department or the survey.

_____

_____

_____

_____

_____

_____

_____

Thank you for completing the survey!

No._____

II.   SAMPLE GIS PROJECTS AND PROCESSES

Department	Potential Use
Animal Control	Mapping of animal control incidents to help target areas of higher need.
Assessing	Parcels, wetlands, topography, water supplies, inspection routes, sales maps, neighborhood maps, land class maps, zoning maps, vacant parcels, sync to building plans, and eliminating discrepancies between parcel IDs.
Board of Health	Sync to parcel maps, number of bedrooms on a parcel, private wells and septic, grease traps, geology and soils, fire hydrants, rodent incidents, and dumpsters.
Cemetery Department	Cemetery database.
Economic Development	Pictometry, assessor database sync, abutter's list, overlay district, permit tracking, and liquor licenses.
Fire Department	Permits, hydrants, fire alarms, fire boxes, updated street maps, and utility poles.
Housing Authority	Tracking locations of off-site Section 8 voucher tenants.
Inspectional Services	Permitting system synced to parcels, wetlands, flood plains, historic districts, zone overlays, inspection routes, scans of building plans, grease traps, camps, food establishments, tanning salons, etc.
Library	Inventories/databases of historic homes, demographic mapping, walks, trails, and monuments.
Police Department	Crime mapping and hot-spotting, accidents, citations, updated street maps, sectors, and speed-limit maps.
Public Works	Topography, pavement management, historic lands, signs, sidewalks, mowing routes, recreation facilities, town facilities.
School Administration	Demographics and mapping of current and incoming students, bus routes, student distributions, and school abutters.
Senior Center	Maps of senior pickup routes.
Solid Waste / Recycling	Mapping of trash pickup routes and incidents of missed pickups.
Town Clerk	Polling locations, 150 foot buffers.

Department	Potential Use
Town Manager's Office	Entering and tracking service requests, and viewing data as needed.
Veterans Information	Mapping of pickup locations for veteran's events.
Water Department	Water and sewer system and grease traps.
Youth & Recreation	Tracking maintenance and availability of fields and yards.