Spring 2005 Department Spotlight: Dakota County's All-Hazard Mitigation Plan

by Tom Berry & Mary Jackson
Dakota County Office of Planning

Natural and man-made disasters impose heavy costs on Americans each year, through loss of life, property damage, and economic disruption. In response to increasing and repetitive losses, Congress passed the requirement that all states and counties prepare comprehensive All-Hazard Mitigation plans to identify risks and develop strategies to reduce losses, which will also reduce costs for federal disaster response. The Dakota County Office of Planning, along with the Dakota County Office of GIS and many other partners across the county, worked together in preparing the plan, which ultimately will be submitted to the Federal Emergency Management Agency (FEMA).

The All-Hazard Mitigation plan is based on prioritizing the likelihood of damage to life and property from natural or technological disasters, then laying out steps to minimize those risks.

Hazards targeted in the plan:

Floods
Dam / Levee Failures
Severe Winter Storms
Severe Summer Storms
Extreme Temperatures (heat or cold)
Infectious Disease Outbreaks
Wildfires
Droughts
Hazardous Material Incidents
Airliner Crashes
Nuclear Releases
Structural Fires
Water Supply Contaminations
Waste Water Plant Failures
Acts of Terrorism

Cities, townships, school districts, businesses and others already do some mitigation planning, so Dakota County's plan inventoried, coordinated, and built on those efforts. The All-Hazard Mitigation plan incorporates information and strategies from existing emergency response plans and other public documents, such as public health plans for infectious disease outbreaks.

F5 Tornado - West St. Paul

Tornado Path
- F1 - 10% Avg. Loss
- F2 - 60% Avg. Loss
- F3 - 90% Avg. Loss
- F4 - 100% Avg. Loss
- F5 - 100% Avg. Loss

The Office of GIS directly contributed to the plan by producing several sets of graphics and maps that provided a basic community profile of Dakota County. In addition, GIS played a significant role in the analysis that went into identifying potential hazards that could affect the County.

The image on the left shows an example of the type of analysis that was done using GIS that was used to identify hazards in the County. In this example, an F5 tornado was simulated going through portions of West Saint Paul. Land, building and overall property values from parcel data were used to calculate the potential cost of the damage that could be caused by such a scenario.

Many maps were created for the "Community Profile" section of the plan using GIS. These maps were used to show some of the basic demographics of the County, as well as the facilities that are contained within its boundaries.

Major Bridges

Quaternary Geology

Major Roads

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Spring 2005 Desktop GIS: Dakota County Real Estate Inquiry Comparable Sales Information

by Kent Tupper

In 1998 Dakota County, Minnesota was the first county in the region to provide county property and tax information to the public via a GIS web application when the department now known as the Office of GIS put the Dakota County Real Estate Inquiry onto the County's website.
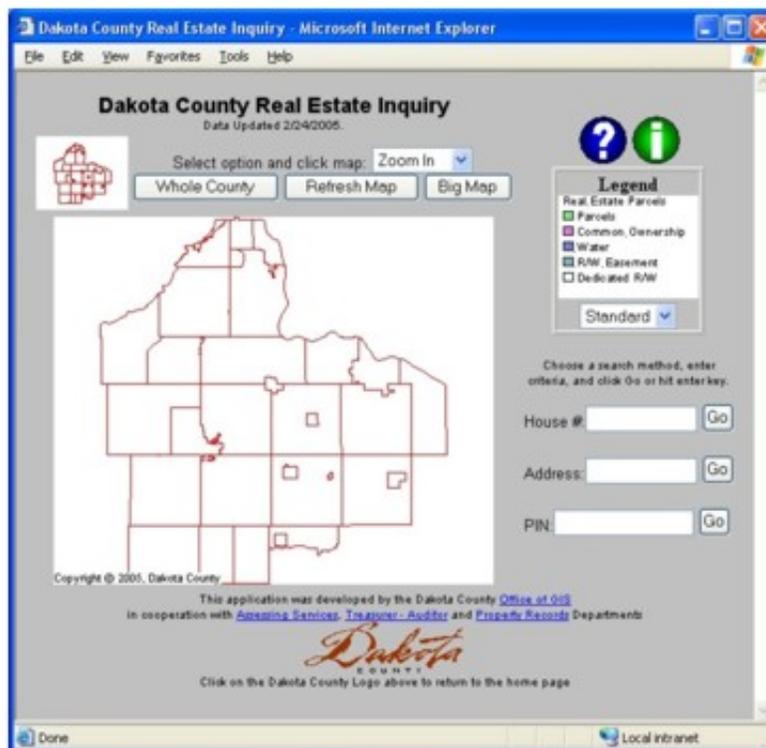
Dakota County Real Estate Inquiry

Since that time, use of the Real Estate Inquiry application has steadily increased to over 2 million hits a month, and additional information and features have been added. The latest feature to be added is a Comparative Sales listing. The Dakota County Assessing Services Department requested the ability for the public to more easily find Comparable Sales information through the Real Estate Inquiry. The Office of GIS worked closely with the Assessing Services Department to help provide this information.

In order to produce comparable sales information, a query was developed to find properties that have sold on the open market that are similar to and lie within a certain radius distance to a particular subject property. The radius from the selected parcel is automatically incremented to a distance where an adequate number of comparables are found. (Note that the criteria for this query are subject to change at any time and are determined by the Assessing Services Department.)

When a tax parcel is selected, a new button labeled "Comp Sale" will appear on the main Real Estate Inquiry page.

New Comp Sales Button
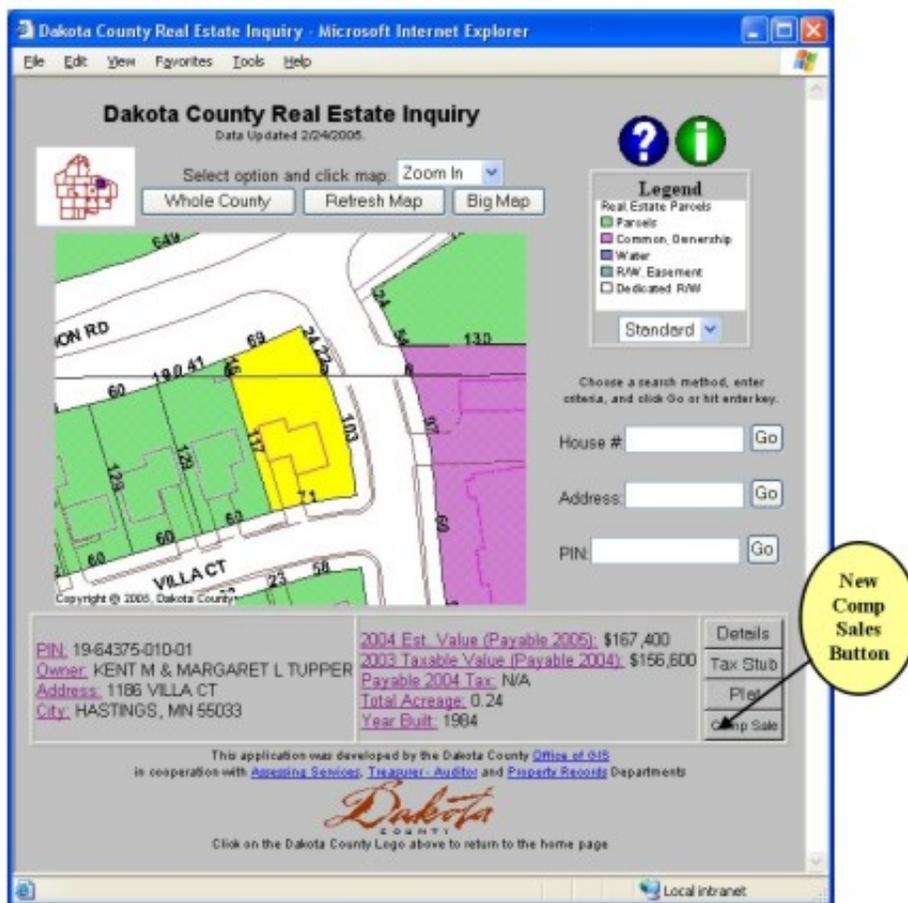
Location of the New Comp Sale Button

The "Comp Sale" button only appears if the selected parcel is a qualified type. When the user clicks the "Comp Sale" button a new window opens up.

Dakota County Comparable Sales Search

IMPORTANT – PLEASE NOTE:

- Comparable sales apply only to single family, twin home, townhome, duplex and triplex properties.
- This application attempts to find properties recently sold on the open market that are similar to the subject property.
- NO GUARANTEE is being made that properties identified by this application are the most comparable.
- A trained real estate appraiser would make adjustments to account for the differences between properties before making an estimate of market value.

Note: PIN numbers are links to Dakota County Real Estate Inquiry.
Use the BACK BUTTON on your browser to return to Dakota County Comparable Sales Search.

Show Vicinity Map

SUBJECT PROPERTY: SPLIT LEVL / S.FAM.RES

PIN	PROPERTY ADDRESS	SALE DATE	SALE AMOUNT	YEAR BUILT	BED-ROOMS	BATHS	FINISHED SQ FT	LOT SIZE
19-64375-010-01	1196 VILLA CT , HASTINGS	N/A	N/A	1984	3	1.75	1732	0.24 acres

Search Radius in Miles: 1 [Go]

12 COMPARABLES FOUND WITHIN 1 MILE

Label	PIN	PROPERTY ADDRESS	SALE DATE	SALE AMOUNT	YEAR BUILT	BED-ROOMS	BATHS	FINISHED SQ FT	LOT SIZE	DIST. FROM
1	19-64376-130-01	1193 UNION CT, HASTINGS	6/2004	$216,500	1984	4	1.75	1722	0.19 acres	0.1 miles
2	19-64379-150-01	1190 WINTER CT, HASTINGS	10/2004	$244,000	1993	4	2.5	1936	0.29 acres	0.2 miles
3	19-64380-010-01	3480 VISTA CT, HASTINGS	7/2004	$283,900	1994	2	2.5	1794	0.24 acres	0.2 miles
4	19-75100-030-01	930 SOUTHVIEW DR, HASTINGS	11/2004	$212,400	1977	4	1.75	1892	0.21 acres	0.6 miles
5	19-18300-010-04	1902 RIDGE LANE, HASTINGS	7/2004	$214,900	1976	4	1.75	1950	0.25 acres	0.7 miles
6	19-68102-160-01	620 31ST ST W, HASTINGS	12/2004	$244,000	1994	4	1.75	2074	0.15 acres	0.7 miles

Dakota County Comparative Sales List

This new window displays the results of the "Comparative Sales" query. Selected information about the "Subject" property and the "Comparables" properties are shown in table form. Information in the comparables table can be sorted to help the user organize the results. The PIN numbers in the Table are hyper-linked to Real Estate Inquiry for the selected PIN. The user can then see all available information for that tax parcel (i.e. detailed parcel information, the record plat document, tax payment information and a photo, if one is available). The user can then use the back button on their browser to return to the Comparative Sales List. A new search using a larger or smaller radius can be performed if the user wishes.

If the user likes, a vicinity map showing the "Subject" and "Comparables" properties can also be displayed.

Comparative Sales Vicinity Map

The vicinity map displays the locations against a backdrop of street centerlines and labels the "Comparables" based on the present sort order. When first displayed the sort order is base on Comparable distance from the Subject. When the "Comparables" are re-sorted the map and labeling are updated to reflect the change.

Note that the sales found using this application by no means guarantees the best comparable properties are found! Different results might be obtained by a trained real estate appraiser, who would make adjustments to account for the differences between properties before making an estimate of their market values.

This new feature should be available in early March 2005. Stay tuned for other new features and changes.

Spring 2005 GIS 101: Process Improvement and GIS

by Joe Sapletal

People don't always think of GIS as a tool to use in Process Improvement. GIS can be used to do everything from making a simple street map in order to get your clients to your location or get you to your clients, to geographically represent a filing cabinet full of documents.

Have you ever had to dig through a filing cabinet for five or ten minutes looking to find a particular piece of information? Perhaps it wasn't filed correctly, or was on someone else's desk the whole time. In some cases just having the document in a digital form would help you get your answer quicker and alleviate filing errors. Did that piece of information pertain to a road, a house, a client, or some other object or structure? What if that information pertained to a specific segment of a road, such as its speed limit? Once you found the document you would have to visualize its real world location or look at a street map and figure out the extents of that speed limit declaration.
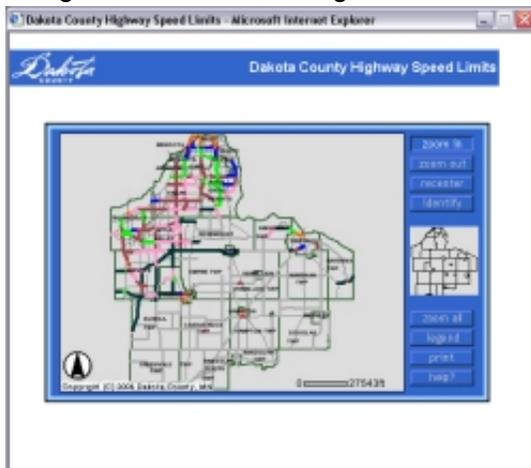
If, on the other hand, that information was in a GIS, you could access it much more quickly and easily. The Dakota County Transportation Department worked with the Office of GIS to do exactly that. Together the two departments created a web map where County employees, city engineers and consultants could quickly look up speed limit information for any given county road in Dakota County. Users open up the web map, zoom to the location in question, and check in the legend what the speed limit is. Users can even identify the line and see the speed limit declaration from the Minnesota Department of Transportation in order to verify the information. To read more about this project, read the Spring 2004 Department Spotlight - Dakota County Highway Speed Limits.

Do you ever send out a public notice to a select group of residents? Do you want to weed through an Access database of 140,000 parcel addresses and pick out the streets that you think are in your area of notification? Wouldn't it be better to open up one of the variety of GIS tools available to you, such as the Dakota County Parcel Query application? In these types of programs, the user simply zooms in, selects a number of parcels by drawing a box, clicks on the Make Labels button and is presented with a document formatted for a particular type of mailing labels. If you are a Dakota County employee, contact the Office of GIS for more information about the tools available to you and check out these two articles, MetroGIS DataFinder Mailing Label Application and Creating Mailing Labels Using Dakota County Parcel Query.

The Office of GIS can also help you create mailing labels for a targeted mailing that is based on something other than simple location. We can using property information such as the age of the house, the year built, property values and more to create a targeted mailing. Other GIS datasets can be brought in to either narrow or broaden your target audience. Examples include Census data or adjacency to a park or future government building.

Yes, it takes some time up front to get any process improvement project started. But the payoff comes over time, with use, as the efficiency with which you can complete some tasks improves and your customers get satisfaction from knowing how quickly you were able to provide them with the correct information and services. GIS can help you improve your efficiency, too. Contact an Office of GIS employee to get started.

Office of Geographic Information Systems

Spring 2005 Tech Talk: ArcGIS 9.0 - "Certification" and Implementation
by Matt McGuire

What GIS Software are you using? As you may or may not know, ESRI released ArcGIS version 9.0 last year. Officially, GIS users in the county are still using ArcGIS 8.2. The Office of GIS has fielded questions on this subject ranging from "Why haven't we gotten ArcGIS 9.0 yet?" to comments like "ArcView 3.2 was so much easier for [insert GIS task here]". This article is to update you on where we are and where we are going with the GIS software.

First, how do we decide when to upgrade GIS software? In the past, we have generally adopted new desktop GIS software from ESRI relatively soon after it was released. We feel that it is important to make new software that contains improved functionality available quickly. However, this needs to be balanced with an assurance that new software will work within the context of our existing GIS investments. The diversity and number of applications and users we support has grown, and in order to ensure that we are making a smart investment we need to evaluate and approve new software prior to installing it. To do this the Dakota County Office of GIS has instituted a certification process for upgrading GIS Software.

There are several steps to the certification process:

1. Tracking future software plans from ESRI
2. Installing new software releases on a test machine
3. Testing existing applications on the new software
4. Evaluating the new functionality of the new software
5. Installing the new software for all users
6. Educating users on the new software

If the testing goes poorly or the new functionality of the software doesn't warrant upgrading and educating everybody, we may decide to hold off purchasing it until the next version. Of course, we welcome anyone's input on any part of this process.

We are in the process of evaluating ArcGIS 9.0, and if everything goes smoothly we should begin installing it on Dakota County GIS users' machines within the next few months. Overall, ArcGIS 9.0 should look very familiar to users of ArcGIS 8.x. Both ArcMap and ArcCatalog retain the same 'Office' look and feel, as well as most of the same menus, toolbars and icons. There are three important improvements that will affect most users. Here is a little preview of these new features in ArcGIS 9.0.
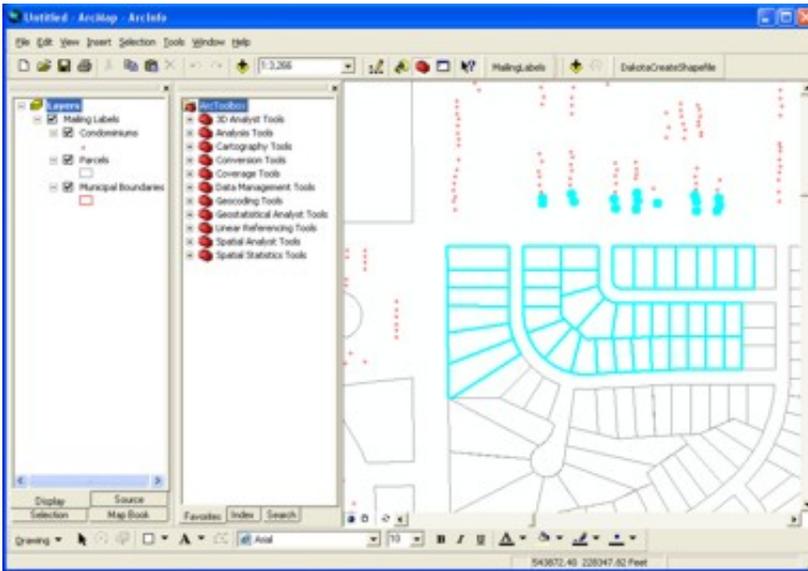
The biggest change from ArcGIS 8.2 to 9.0 is in ArcToolbox. While in 8.2 ArcToolbox was the black sheep of the ArcGIS family, it has now been incorporated into ArcCatalog and ArcMap. It has also been outfitted with a whole set of new geoprocessing tools and environments. One of the biggest improvements is the full range of geoprocessing tools that work on geodatabases instead of just coverages. There is also a new Model Builder, that lets users build entire geoprocessing sequences visually – without knowing a lick of programming.

The second change is in labeling and annotation, which are easier to create and manipulate in the new software. It should be much easier for users to manage text on maps with these improvements. Annotation will act more like a feature layer and will allow more intuitive access to the annotation properties. Also a new label manager lets users manage all the labels in a map globally, so you don't have to visit each layer's label properties separately.

Finally, users will have access to raster data inside of personal geodatabases. Not only does this enable raster feature classes in personal geodatabases, but you can also store photos of features in the attribute tables themselves, for easier data management.

Users will notice many more changes not listed here as they become more familiar with the new software. Hopefully, we can share these changes with each other so we all can have the best experience transitioning to ArcGIS 9.0. Don't be afraid to let people know when you find improvements others might not know about.