

ArcIMS Solutions for Harris County Residents' Flood Risk Look-up

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Idea Integration

Abstract

After the devastation of Tropical Storm Allison, the Federal Emergency Management Agency and the Harris County Flood Control District joined forces to develop new Flood Insurance Rate Maps for Harris County, Texas. These maps will be released to the public via the internet on an easy-to-use, web-based ESRI ArcIMS platform with several custom functions, which allows the public to view the new floodplains and their current flood risk by locating properties by street address, zip code, or select by area. The site uses the ESRI ArcMap server to take advantage of the ArcGIS ArcMap advanced cartographic capabilities and it uses an image cataloging technique to manage the 3,500 aerial photographs that cover

Harris County. The application was customized using JavaScript, DHTML, ArcXML, and ASP.Net. The Web server uses Microsoft's IIS with the Tomcat servlet/JSP container and JRE to support the ArcIMS image server.

Introduction

These DFIRM (Digital Flood Insurance Rate Map) maps depict Special Flood Hazard Areas (SFHA) or floodplains showing areas inundated from rising waters from a riverine source such as a stream or bayou during the occurrence of the 1% (100-year) event. Originally these were developed in the 1980's as paper, hard copy maps. Currently, these maps are derived from various combinations of ESRI products and extensions, namely ArcHydro, Geo-RAS, Geo-HMS, and third party proprietary software that utilizes project data acquired Digital Elevation Models. The current maps are being delivered for publication, not only as hard copy paper maps, but also as digital GIS data files.

Data Delivery System

The public has a strong desire to know their specific flood risk and make comparisons to previous versions of these Special Flood Hazard Areas on the Flood Insurance Rate Maps (FIRM). In order to provide the data to the public in a timely and widely accessible manner, the maps were published via the internet on an easy-to-use web-based ESRI ArcIMS platform.

This web-based ESRI ArcIMS platform has several custom functions, which allow the public to view the new floodplains and their current flood risk by locating properties by street address, zip code, or by selecting an area (Fig 1). The addressing was accomplished by using a previously geocoded addressing coverage called the STARMap created by H-GAC (Houston Galveston Area Council).

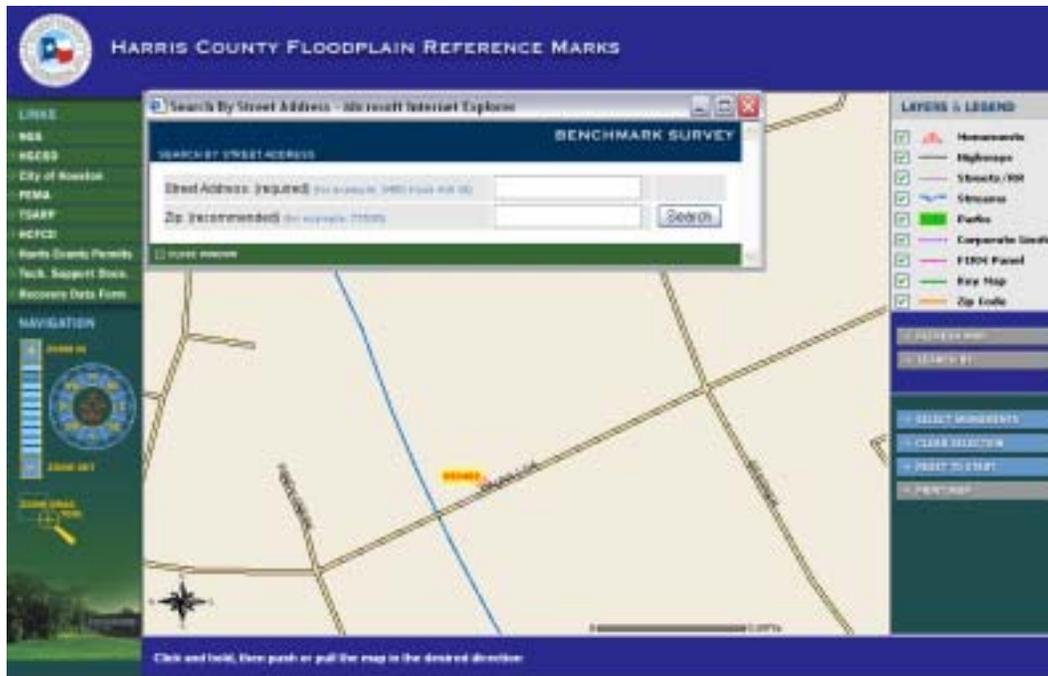


Fig 1.- Address Look-up

ArcIMS Solutions

The intelligence behind this ArcIMS solution is the ArcMap Server. This application differs from the standard ArcXML product by serving up advanced

cartographic capabilities through the internet. The ArcMap Server allows the client to set parameters including what layers will be accessed during the request, and at what pre-determined scale the map output will be delivered. These layers include the new floodplains, effective floodplains, roads, streams, corporate boundaries, parks, contours, and aerials (Fig 2). For instance using the image cataloging ability in the ArcMap server, clients can manage the 3,500 aerial photographs that cover Harris County. The client has the ability to toggle the display of the aerials from a scale of 1:12000 to 1:1200. For larger scales, the display of the aerials actually decreased the usefulness of the site because streets and major roadways allowed for better visual site location and map navigation. The minimum scale was set at the standard scale of the paper maps (1"=200'). Furthermore this application was customized using JavaScript which allowed for advanced location analysis and selective inputs. Using Java based scripting also allowed for dynamic HTML retrievals that have intuitive and appealing navigational interfaces. Other software solutions used include the Microsoft IIS with Tomcat servlet /JSP container, and JRE to support the ArcIMS image server.



Fig 2.- Adding Thematic Layers

Conclusion

Using the ArcIMS ArcMap Server produced advanced cartographics and quality PDF outputs allowing the public easy access to information so that they could determine their flood risk.

References

Guidelines and Specifications for Flood Hazard Mapping Partners; Appendix L,

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