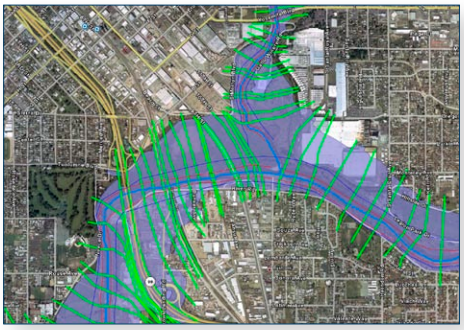
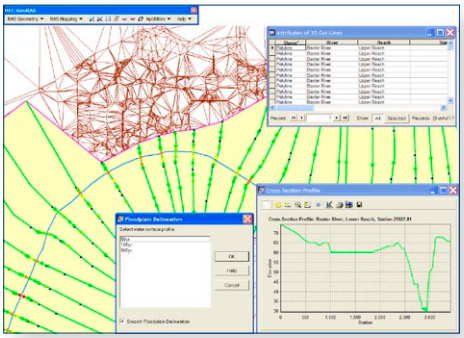
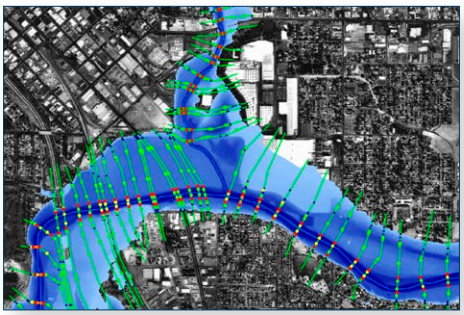
HEC-GeoRAS and ArcGIS



Floodplain inundation showing public assets such as streets, buildings, and bridges



River and cross-section features lay over a terrain TIN.



An overview of floodplain inundation in ArcMap™ showing flood depths and extent

HEC-GeoRAS is a geographic river analysis system developed using ArcGIS® Desktop and ArcGIS Spatial Analyst and 3D Analyst™ extensions. The geodatabase design supports analysis of spatial data for hydraulic modeling and floodplain mapping.

Besides floodplain mapping, you can use the results of a GeoRAS analysis for flood damage computations, ecosystem restoration, and flood warning response and preparedness.

How Can It Help Me?

With GeoRAS, engineers can develop geographic data for import into an HEC-RAS hydraulic model and view model results in a geospatial context. The GeoRAS interface provides specific and logical access to geographic information systems (GIS), enabling engineers to concentrate on hydraulic principles during model development and analysis.

How Does It Work?

GeoRAS uses ArcGIS Desktop to develop spatial data input for HEC-RAS models from digital terrain models and other GIS datasets. After the model results are calculated in HEC-RAS, they can be postprocessed in GeoRAS, then the floodplain depths and extents can be mapped together with other relevant spatial results such as modeled velocity distribution, ice depths, and sediment transport. It employs the divide-and-conquer approach to mapping extremely large terrain datasets. GeoRAS can decompose large terrains into smaller tiles, conduct analyses on each tile, and synthesize results from each tile to create maps of HEC-RAS modeling results for the larger area. The geographic framework for hydraulic analysis, combined with public assets such as roads, freeways, shelter locations, and evacuation routes, aides in protecting lives and properties in the event of flooding.

With HEC-GeoRAS, you can

- Expedite HEC-RAS model development and updates.
- Visualize floodplains and assets of interest.
- Visualize velocity and ice and sediment depths for analyzing the health of a river ecology.
- Perform real-time situational analysis based on varying HEC-RAS analysis results.
- Perform scenario-based modeling that aids in disaster anticipation, preparation, and mitigation.

How to Get Started

For a free download of HEC-GeoRAS, visit
www.esri.com/waterresources.

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