Gulf Coast Network I&M
Lafayette, LA

National Park Service
U.S. Department of the Interior

Reporting on Land Use Change for GULN Parks

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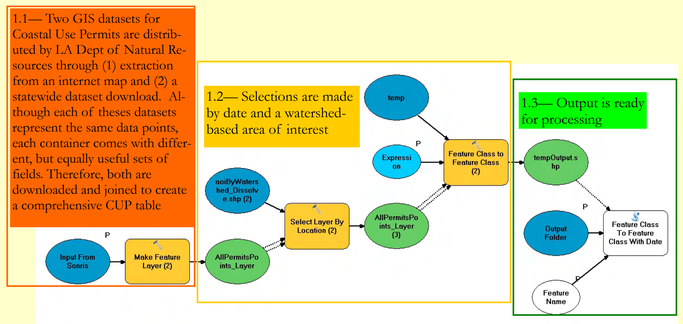
Land use changes adjacent to park boundaries can impact park resources in a variety of ways. Consequently, many approaches have been taken to record and measure land use change on a variety of scales. The Gulf Coast Network has developed rapid-fire GIS-based systems to assess land-use change based on publicly available GIS data. Largely centered on municipal parcel, zoning, and permitting information, the system highlights changes in attribution or geometry near park units. The system has variable outcomes for each park unit due to variations in data quality and data availability. This poster outlines systems for processing and presenting local-level land use data, discusses the utility of these base data as stand-alone products, and explores the use of municipal GIS data in focusing park management activities.

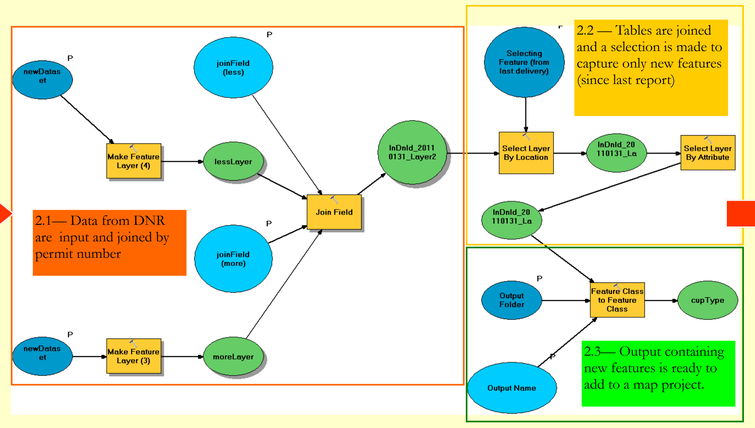
Preprocessing Steps →

Primary inputs for land use reports (LURE) include geospatial data related to parcels, zoning and permits. These data are sourced from individual local entities; accordingly, update frequency, quality, and availability vary greatly. Although some recent efforts have been made toward statewide reposition of geospatial parcel and zoning data—currently, these data are maintained and distributed by county-level governments. Available datasets range from sophisticated geodatabases to hardcopy maps hanging on a wall. As variable as data type, is the willingness to share it. Some entities have put forth great effort to update and distribute parcel and zoning data via the web or ftp, while some other local datasets are closely guarded. Based on varying states of data quality, update frequency and availability the GULN has strived to create systems for collecting, managing and presenting these data in a way that is flexible and adaptive.

Preprocessing steps for permit type and parcel/zoning type data are presented to demonstrate how local data are prepared, primarily through selection processes, for report data.

Permit Type



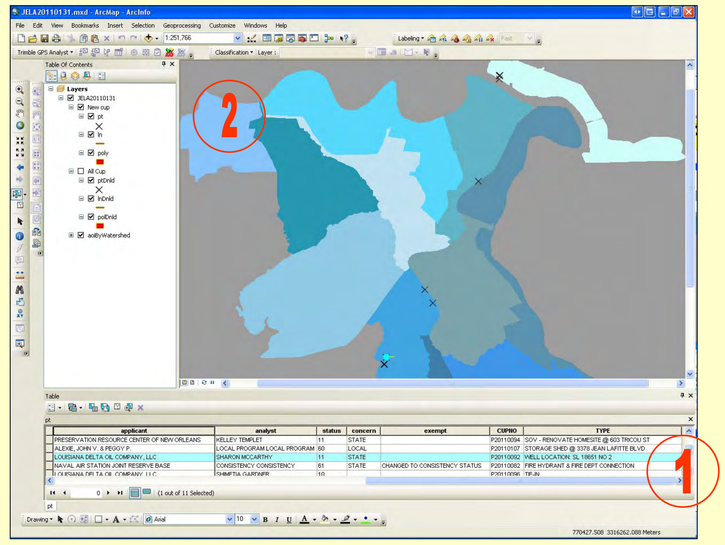


Processing Steps →

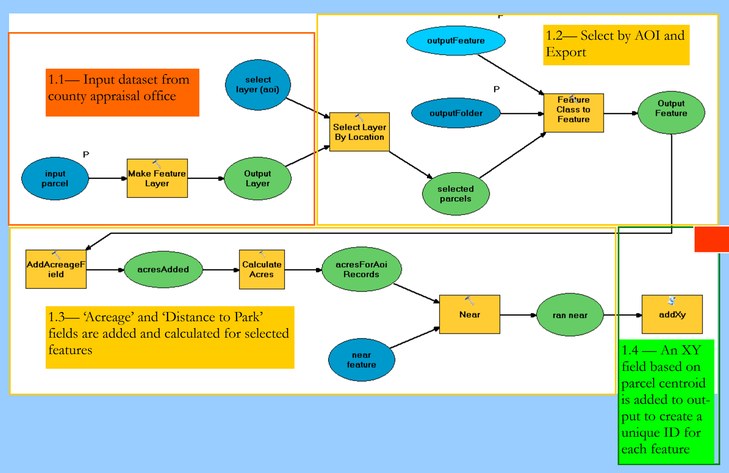
In processing steps, "changed" or new features are selected to create new GIS feature classes. Initially, changed/new features were either simply selected to create a feature layer (which only persisted in the map document), or a new field in the dataset was classified as changed or new. Primarily due to differences in software versions, it was ultimately decided that changed/new features should stand alone as new feature classes —this workflow simplified and clarified results.

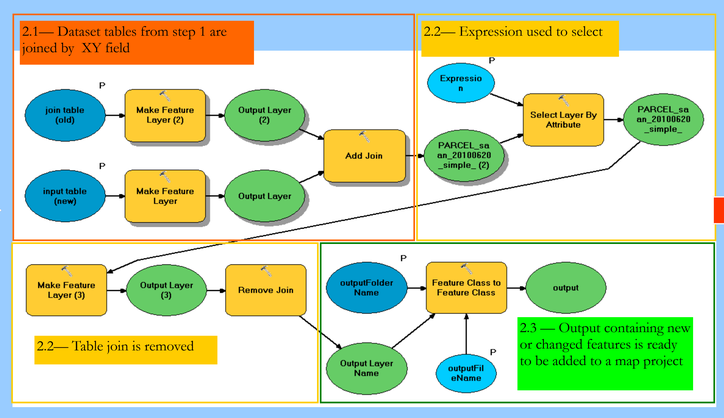
Product

After initially packaging GIS reports for Adobe Reader and free GIS software, we found it best to deliver land use updates as ArcGis projects or Layer Packages (compressed GIS file). This platform allows the user to explore data as tabular info (1), or as geoSpatial info on a map (2), jumping from map to table, or vice versa. **In image below, new Coastal Use Permit Pts are represented with "x", while blue background shapes represent watersheds that intersect Jean Lafitte National Park and Preserve, Barataria Unit.**

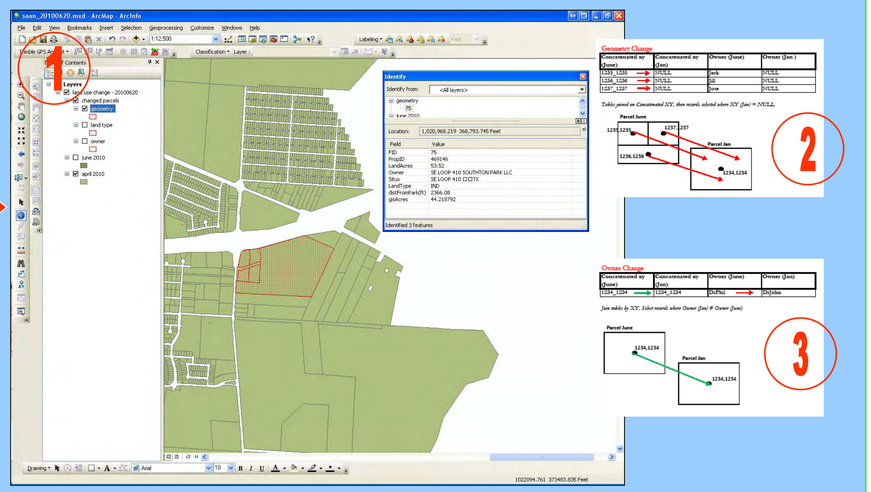


Parcel Type





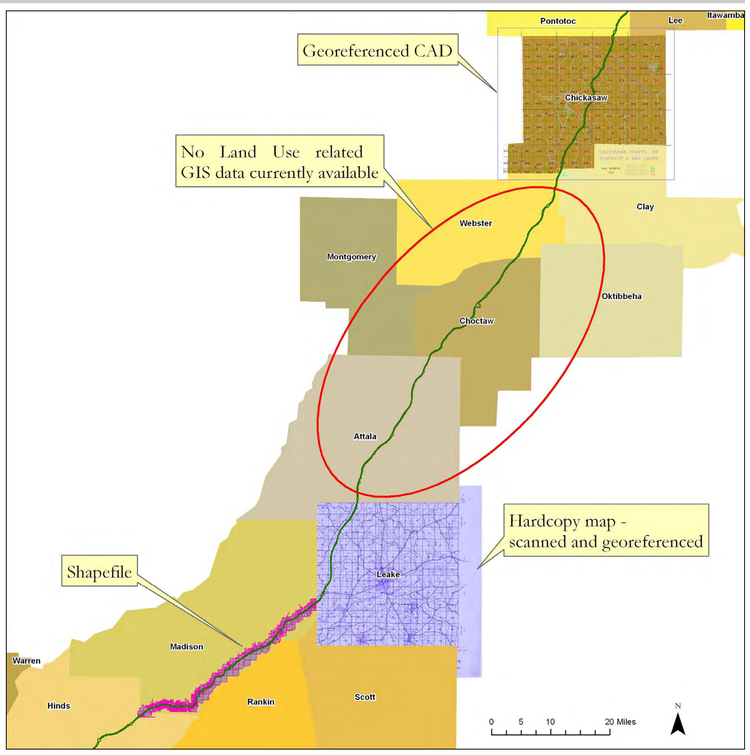
In the map product below, a parcel subdivision has occurred (figure 1). In this example, changed parcels have been indicated by comparing parcel centroids over time (conceptual framework figure 2). The same general approach can be used to compare other parcel attributes like ownership or land type over time (figure 3).



Alternative Products

Because some parks intersect many local entities, resulting in a wide variety of data types and update frequencies, high frequency LURE updates aren't always feasible; consequently, some parks receive annual land use revisions that focus less on reporting change and more on tracking data availability and data contacts. Such is the case at Natchez Trace Parkway, which intersects 26 counties across 3 states. Natchez Trace gets an updated local contacts spreadsheet and updated GIS data once per year. These data are consolidated in a GIS database and presented in map products. **The LURE map image (right) demonstrates common variation in data type and availability**.

With these datasets, parks are better prepared to contact adjacent landowners, and to answer simple questions like, How many parcels and potential landowners are adjacent to my park? Also, an unexpected benefit of gathering parcel/zoning data, is that other valuable local datasets are often discovered (e.g. road centerlines, aerial photography).

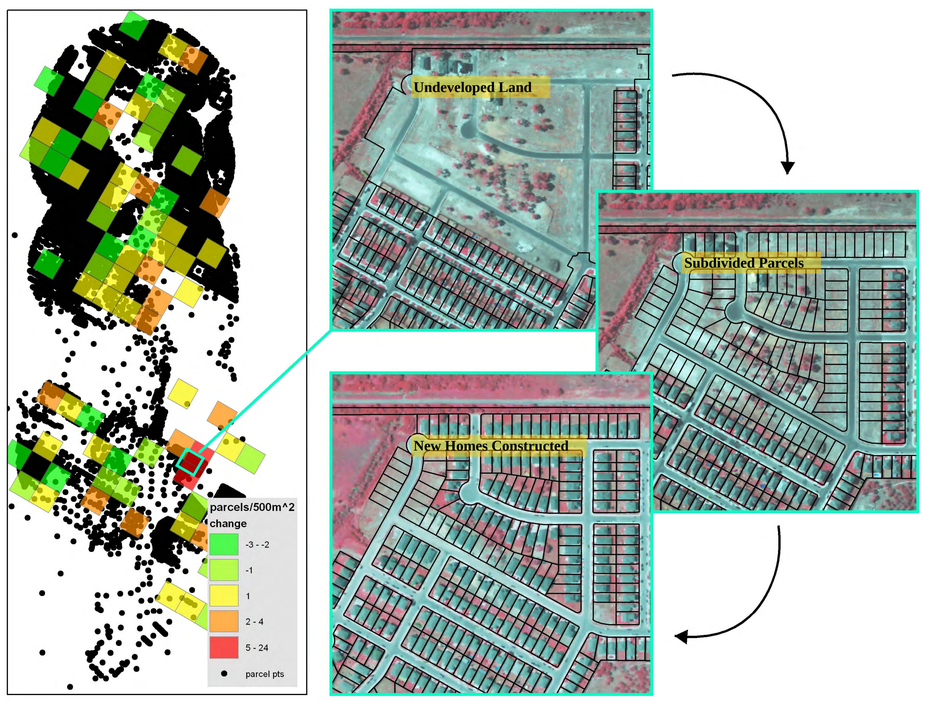


Application

Beyond simply looking at what's new or changed, LURE can be paired with other products like NPScape to suggest patterns within coarser units. These patterns might help substantiate and focus management activities that are driven by changes in adjacent land use (e.g. invasive species mitigation). Simple analyses, conducted on parcel level data, are depicted in the following graphic. Here, parcel centroids (represented by black dots) have been summed per unit, then parcels/unit can be compared over time for change.

For more information about this project contact jeff_bracewell@nps.gov

Images below compare 2008 ---> 2010 parcel datasets. Parcel data indicate a legal subdivision, while corresponding aerial photography confirms subsequent development.



File: landUsePoster_gws2011.pub, Feb 2011