# GIS Project ROI and Benefits Report

**Project Name: Wildland Urban Interface (WUI) Project Geodatabase Compilation**

**Department or Division: Division of Forestry, Fire, and State Lands**

**Project Manager/Sponsor: Buck Ehler, GIS Manager and Tracy Dunford, State Fire Management Officer**

**Project Completion Date: Sept. 9, 2014**

**Executive Summary:** (Concisely state the problem and its impact on the organization then describe the solution and its impact on the organization)

Problem: Could not use or analyze past WUI project information without time---consuming effort.
Impact of Problem: Difficult to measure and communicate results, repeated a poor information workflow which led to wasted time. Could not leverage all relevant information for future planning and operational logistics. There existed a serious lack of standards which ensured future data problems.
Solution: Consolidate project data into one location/geospatial file and establish a standard operating procedure for data maintenance.
Impact of Solution: Better WUI project decision-making, timely delivery of project information, structure for continued, high-quality data, report project results to a broad audience, enhance future funding opportunities and increased accountability through visibility.

**Describe current workflow or limitation:** (Be as detailed as needed)

Anytime a project manager/coordinator wanted to compile any WUI project information (shapefiles) they would have to go through multiple folders and subfolders to simply add the data to ArcMap. To achieve this, they would have to browse the M: Drive and navigate to the correct area office folder and then work their way down levels to project site and possibly the multiple projects within a project site. If there was a need to add projects from multiple areas, you would have to back out two to five folder levels and enter the new area's GIS folders and repeat the process. All told, it can be a very time-consuming process to do the simplest of tasks. Now imagine the manager/coordinator is tasked with pulling together all data from 2007-2011 without a list of specific project names. This process becomes much more time consuming due to the fact the projects are located as individual shapefiles in segregated file folders, and even more so because of the lack of supporting metadata for the project shapefiles. Most of the shapefiles have an associated data standards spreadsheet with 24 different attributes to describe the project (only about 3/4 of those attributes are required for all projects) and most will have little beyond what, where, by whom and fiscal year. So that would take navigating to the specific folders, opening the data standards spreadsheet, and then choosing whether or not to add the shapefile to the ArcMap. This process could take the better part of a day when you consider that we began this process with 1927 points, 286 line and 613 polygon shapefiles. This is a very poor workflow and needed to be enhanced.

**Describe proposed enhancement:** (Be as detailed as needed)

The enhancement was to bring all of this data together in one geodatabase feature dataset. Through GeoMapper the entire GIS WUI folder was easily accessed and then exported to ArcGIS. Once in ArcMap, the data was exhaustively looked at and analyzed. Duplicate layers were found and deleted, small multipart polygons and polylines were merged (when the year and project information supported it) and the data standards Excel tables were mined for information to populate the attribute fields of the feature classes. The layers we began with were whittled down from 1927 points, 286 lines and 613 polys to 1067 points, 51 lines and 171 polys (a large number of files were posted in the GIS folders and then backed-up in their area folders which account for the large decrease in project files). The newly reduced number of shapefiles were compiled in a geodatabase feature dataset and populated with specific location, year associated, type of work done, size (acreage for polygons and miles for lines) and a name which links it to its location and work accomplished. Moving forward the division has a sortable and searchable database of WUI projects and also a benchmark for what project managers and coordinators are expected to include in their project deliverables. Though not yet perfected, it is a step above what the division previously had and it is a good place to stand today as we move forward into the future.

**Current Workflow Costs:** (Enter values for hours, wage - see note below, and occurrence. Dollar values are calculated, no need to enter these values)

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| Hours to complete current workflow | 10.0 | Current workflow cost | $250.00 |
| Hourly wage rate* | 25.00 | Current annual cost | $3,750 |
| Annual occurrence of workflow | 15 | | |
| Other workflow costs (consumables/travel exp., etc.) | | | |
| **Enhanced Workflow Costs** | | | |
| Hours to complete workflow after enhancement | 0.2 | Enhanced workflow cost | $5.00 |
| Hourly wage rate* | 25.00 | Enhanced annual cost | $75 |
| Annual occurrence of workflow | 15 | | |
| Other workflow costs (consumables/travel exp., etc.) | | | |
| **Enhancement Production Costs and Savings** | | | |
| Hours to complete enhancement | 60.0 | Enhancement cost | $1,500.00 |
| Hourly wage rate* | 25.00 | Initial Annual Savings | $2,175 |
| Annual maintenance costs of enhancement, if any | $0.00 | Future Annual Savings | $3,675 |
| **Projected ROI** | | | |
| ROI=Savings minus Enhancement Cost divided by Enhancement Cost plus Enhanced Annual Cost | | Initial Year ROI | 43% |
| | | Future Annual ROI | 233% |

**Tangible Benefits to the Organization:** (i.e., quality or quantity improvements, effects to throughput, cost avoidance, better decisions, etc.)

Benefit 1: A better foundation for old data will breed better data standards for new, incoming data. As the process is drilled into everybody who is a part of it, the standards become set. Also, as new staff becomes involved, there is now an expectation for our data.

Benefit 2: As managers and coordinators in the WUI program begin to see the products and statistics that can be generated through their data, the benefit will be more apparent for increasing timely, accurate data. This will create a positive feedback loop.

Benefit 3: When a comprehensive WUI project dataset is displayed with a fire threat/risk layer, the division will be able to better gauge if projects are occurring in high risk/threat areas. In this way we can better plan future projects in areas that haven't previously had work done or need to have more.

**Tangible Benefits to Others Outside the Organization:** (i.e., other divisions, state agencies, stakeholders, public, etc.)

Benefit 1: Partners (BLM, Forest Service, etc.) will see well documented descriptions of the projects that their grant money has funded. GIS is one facet of record keeping, and being able to provide this geographic link of all projects will meet their guidelines and increase the division's likelihood of receiving future funding opportunities.

Benefit 2: The ability to accurately provide our information on WUI projects throughout the state, or specific geographic areas, to lawmakers or at public meetings is a huge benefit to the division. The public can then see that we are putting funding to good use and when displayed with any fire threat index, they can see that we are working in areas that will accomplish good for the public. can see that we are working in areas that will accomplish good for the public.

Benefit 3:

**Meaningful Measures of Success:** (Describe how can/will the project be measured - what is needed to implement regular measurement?)

Success can be measured by taking records each time that the data is called upon and accessed. To test the workflow costs associated with this improvement the analyst will have to account for their time spent working with the database and keep track of how often this occurs.

**Measurement Observations:** (Interval varies depending on project, typical may be 3-6 months, 1 yr., 2 yrs., and 3 yrs. after completion date. The purpose of these observations is to record measurements, validate ROI projections, and adjust workflows as necessary for continued improvement)

Date: 3/21/2016 Annual Observation: After 1 year with the current improvements, our measurements suggest that the enhanced workflow is actually better than our initial assumptions. We believe that the workflow now takes .2 hours compared to .5 hours estimated initially. Additionally, the improved data workflow and accessibility of the data results in the data being accessed and leveraged more frequently than before the enhancement.

Date:

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| **Submitted by: Sean Edwards** | **Date: Dec. 3, 2014** |
| **Project Sponsor/Manager Confirmation by: Tracy Dunford, FMO** | **Date: Dec. 3, 2014** |

*Generalized wage rates are used for simplicity and consistency: Intern $15/hr., General Clerical $20/hr., GIS Analyst $25/hr., GIS Manager $30/hr., Division Professional $35/hr.