

# IDeX BIOFUEL MAPPING SUMMARY

## **INTRODUCTION**

This week the IDeX Clearwater Basin Biofuels Group focused on developing maps of attributes within the Clearwater Basin. Transportation, vegetation, and zoning were noted as the three main topics of interest as information on these topics can be directly useful when planning the harvest of vegetation for biofuels.

## **TRANSPORTATION MAPPING**

Four maps depicting multiple types of transportation were created in ArcGIS. It is important to know where main roads, highways, and logging roads lie within the state of Idaho when considering using the Clearwater Basin for biofuel generation. Because the biomass will need to be transported to a processing facility, it is imperative that all feasible transportation routes are identified and considered. All four transportation maps will be described below:

### **Annual Average Daily Traffic Counts**

Source: The 2010 Annual Average Daily Traffic count was collected from The Idaho Department of Transportation via [insideidaho.org](http://insideidaho.org). This information contained many of the major roads in Idaho and the associated daily traffic count rounded to the nearest 10 vehicles. The data downloaded was considered to be complete and accurate as of May 18, 2011 and will be updated annually.

GIS Manipulation: The roads were then added to the ArcMAP as polyline shapefiles. Within *properties* and then *symbolology*, the attribute table was utilized to weight the roads in graduating colors to represent differences in traffic flow volumes. The resulting image is a map of the Clearwater Basin overlaid with the major roads in Idaho. Roads colored red represent high average daily traffic volumes, the color then graduates slowly to yellow which represents lower average daily traffic volumes. Numeric values for the accompanying color can be viewed in the legend.

### **Existing Railroads**

Source: Complete data on existing railways in Idaho was collected from the Federal Railroad Administration (FRA) and the Research and Innovative Technology Administration's Bureau Transportation Statistics (RITA/BTS) National Transportation Atlas Databases (NTAD) 2005 via [insideidaho.org](http://insideidaho.org). The information contained every existing railway in Idaho and an attribute table deciphering owner, previous owner, current condition and more. This data is considered, by the Idaho Department of Transportation, to be complete and is updated annually.

GIS Manipulation: The railways were added to the ArcMAP as a polyline shapfile. Within the *properties* and then *symbolology*, the attribute table was utilized to highlight the column of abandoned railroads. The maintained railroads were assigned a yellow color and the abandoned roads were assigned orange. The line weight and shape was also changed to a more standard railroad symbol.

### **Idaho Roads**

Source: A compilation map showing roads from many sources was created to show as many of the Idaho roads as possible. Information for this map was found from many sources from [www.idwr.idaho.gov](http://www.idwr.idaho.gov) and [insideidaho.org](http://insideidaho.org).

GIS Manipulation: US National Highways, forest highways, city roads, farming roads, miscellaneous roads, and rest stops are shown in this map. A large file with all roads in Idaho was found and placed as the bottom layer of the map. All other roads were placed on top of this layer. Rest stops were also added to this layer. Each type of road was assigned a different color for ease of viewing.

### **Trails**

Source: The trails were found at [insideidaho.org](http://insideidaho.org).

GIS Manipulation: Although not very relevant to logging, a map of trails was created to complete the sources of transportation in Idaho. This map was created in a similar manner to the Idaho Roads map.

## **VEGETATION MAPPING**

The production of biofuels relies on an adequate source of biomass for harvesting. A detailed analysis of vegetation types, locations, and heights is a useful tool in determining the feasibility of biomass production in a region of interest. Currently, the Clearwater Basin is an area of interest regarding biomass production and processing, thus a detailed analysis of the current biomass was conducted. As an outcome, two maps were created and are discussed below:

### **Existing Vegetation Types**

The existing vegetation types map visually represents the five most dominant vegetation types residing in the Clearwater Basin. The map also displays the vegetation locations across the basin and their respective percent coverage. Furthermore, this map clearly displays the transition of vegetation types as the topography changes from East to West across the state.

The vegetation data was originally collected by the USDA Forest Service in 2006 and input into the LANDFIRE GIS vegetation project. We obtained the LANDFIRE vegetation data from the U.S. Bureau of Land Management, Idaho State Office via their website. Metadata was used from the original LANDFIRE vegetation dataset to determine percent coverage for the Clearwater basin.

### **Existing Vegetation Height**

The existing vegetation height map visually represents the five most dominant vegetation heights found in the Clearwater Basin. It also defines what type of vegetation is associated with the corresponding vegetation heights. This map may be used to further expand on vegetation details from the existing vegetation types map.

The vegetation data was originally collected by the USDA Forest Service in 2006 and input into the LANDFIRE GIS vegetation project. We obtained the LANDFIRE vegetation data from the U.S. Bureau of Land Management, Idaho State Office via their website. Metadata was used from the original LANDFIRE vegetation dataset to determine percent coverage for the Clearwater basin.

## **Reference**

The National Map LANDFIRE: LANDFIRE National Existing Vegetation Type layer. (2006, September - last update). U.S. Department of Interior, Geological Survey. [Online]. Available: <http://gisdata.usgs.net/website/landfire/> [2011, November 11].

## **ZONING MAPPING**

Land ownership was investigated and broken down into 5 main categories that are shown on one accumulative map or many individual maps. The 5 main types of zoning are; private, bureau of land management, national forest, state and federal, and historic water lands. This data was collected from [insideidaho.org](http://insideidaho.org).

## **TEMPLATE**

An outline of Idaho with an overlay of the Clearwater Basin, legend, North arrow, and scale have been added to every map to help orient the reader.