

**USGS-NPS Vegetation Characterization Program**

**Final Product Guidelines**  
**Guidelines for Creating Final Products**

**June 2012**

## **CHECKLIST FOR FINAL PRODUCTS**

**Here are the required products and minimum standards for the Vegetation Characterization Program:**

- **Digital Aerial Photo Data, Flight Index, Graphic & Metadata**
- **Technical Report (report appendix should include the Vegetation Key)**
- **Plots Database and Field Photos**
- **Final Vegetation Map Graphic/Poster using NPS Map Standards**
- **Vegetation Plots (point data) Spatial Data, Graphic & Metadata**
- **Vegetation Map (polygon data) Spatial Data, Graphic, and Metadata**
- **Park Boundary Spatial Data & Metadata**
- **Accuracy Assessment Spatial Data, Graphic, Contingency Table and Metadata**

### **Final Map Specification**

**Maps are produced in Universal Transverse Mercator (UTM), NAD83 datum with a 1:24,000 scale and a minimum mapping unit of 0.5 hectares. The vegetation maps must meet the National Map Accuracy Standards for positional accuracy and the minimum class accuracy goal across all vegetation and land cover classes of 80%.**

## INTRODUCTION

The attached guidelines are designed to standardize and thus facilitate the rapid turn-around of Vegetation Inventory Program (VIP) final products and get them online as quickly and efficiently as possible. They reflect the USGS's assistance and decade-long experience on best practices of how to group and parse the NPS VIP digital products for the current online environment maintained at the USGS Center for Biological Informatics in Denver, CO.

While it is recognized that there will always be exceptions that will have to be dealt with on a case by case basis, the NPS and USGS management teams have discovered that adherence to this model of data organization and formatting of final products accelerates the turn-around for project data web posting and as such, makes the data available to NPS staff, natural resource scientists, federal agencies and the public in a timely manner.

We understand the degree of effort that is required to generate a high-quality, standardized vegetation map under the USGS-NPS Vegetation Inventory Program. We recommend you allow sufficient time and effort to produce final products adhering to the product specification in this document.

To develop final reports for vegetation mapping projects, investigators should consult with project key officials and follow the appropriate NPS guidelines. The final report will address vegetation classification and description, vegetation mapping, and accuracy assessment. It will include a full description of project methods, results and a summary discussion. The reports should be published in the NPS NRTR series or another technical report series.

After the report, maps, databases, and other digital products have been reviewed and accepted as final by the project key official, they will be reviewed by the USGS/NPS National Vegetation Inventory Program (NVIP) and placed on the joint USGS-NPS website. In order to facilitate this effort, please follow the file format and naming convention guidelines provided below. Many projects were initiated prior to the issuance of these guidelines by NVIP. In those cases, investigators should consult with park, network, and/or NVIP staff to determine how best to meet the new guidelines.

Any questions, or request for clarification should be addressed to Ms Theresa Singh, VIP data content manager ([tsingh@usgs.gov](mailto:tsingh@usgs.gov)) at USGS CBI or Tammy Cook, VIP biologist ([Tammy\\_Cook@nps.gov](mailto:Tammy_Cook@nps.gov)).

We thank Mrs. Tammy Cook, VIP biologist ([Tammy\\_Cook@nps.gov](mailto:Tammy_Cook@nps.gov)) at NPS, for her ongoing assistance with the development of this guide and for collaboration with the NPS & USGS partnership.

**OUTLINE**  
**GUIDELINES TO CREATING FINAL PRODUCTS**  
**FOR THE NPS VEGETATION INVENTORY PROGRAM**

- I. Aerial Photography
  - a. Orthophoto Mosaic Graphic
  - b. Spatial Orthophoto Data (.zip)
  - c. Flight Line Index – if applicable
- II. Vegetation Information - {one link}
  - a. Vegetation Report, containing the following items:
    - i. Photo Interpretation Key
    - ii. Vegetation Descriptions
    - iii. Vegetation Key
    - iv. Photos of Map Classes
    - v. Accuracy Assessment Methods and Results
- III. Field Data
  - a. Field Plots Points Graphic
  - b. Spatial Field Plots Data (.zip)
  - c. Plots Database (MDB)
  - d. MS Excel format of Physical Descriptive Data for Plots
  - e. MS Excel format of Species List Data for Plots
  - f. Field Photos collected during PLOTS and AA (.zip)
- IV. Geospatial Vegetation Information
  - a. Vegetation Graphic
  - b. Spatial Veg Data (.zip)
  - c. Spatial Boundary Data (.zip)
- V. Accuracy Assessment Information
  - a. AA Points Graphic
  - b. Spatial AA Data (.zip)
  - c. MS Excel Contingency Table
- VI. Project Metadata
  - a. Aerial Orthophoto
  - b. Field Plots
  - c. Spatial Veg Data
  - d. Boundary
  - e. Accuracy Assessment
  - f. Others - as appropriate
- VII. Other Helpful Information for File Creation
- VIII. File Naming Standards
- IX. Appendix A: Creating Data Visualizations and Symbology (.mdx, .lyr files)
- X. Appendix B: Creating High Resolution Maps

## I. Aerial Photography

- a. Graphic File: The pdf file name is the *parkname* and the type of geospatial data being shown, such as Orthophoto. Example: grteortho.pdf. Example: <http://www1.usgs.gov/vip/fobu/fobuortho.pdf>
- b. Spatial Data (.zip): This is a digital file of the land cover (aerial) imagery data used in this project. All geospatial data must be in UTM NAD 83. In most cases this is a CIR mosaic or an orthophoto. Example: <http://www1.usgs.gov/vip/fobu/fobuortho.zip>.
- c. Aerial Photo Flightline Index – *parkname*photos.pdf. A PDF file of a flightline index linking the flightline numbers to the aerial photos and listing the aerial photos by numbers. Not all of the aerial photos are shown, just every other one on each flightline. Example: <http://www1.usgs.gov/vip/care/carephotos.pdf>.
- d. Graphic File: This is a PDF file for each aerial photograph, using a unique photo number on each photo. Example: 2-3.pdf, 6-11.pdf, 18-20.pdf, and 301-108.pdf. Examples: <http://www1.usgs.gov/vip/alpo/aerials/1-4.pdf>, <http://www1.usgs.gov/vip/care/aerials/201-104.pdf>, <http://www1.usgs.gov/vip/piro/aerials/17-15.pdf> and <http://www1.usgs.gov/vip/zion/aerials/4-17.pdf>.
  - 1) IMPORTANT – If the original roll film for the imagery flight mission can be obtained, the VIP can arrange to have the roll film transferred to the USGS EROS Data Center where a permanent archive record will be created. This will remove the need for PDF's for each image.
  - 2) If a hard copy photos are the only data available and the park coverage contains too many photos to reasonably scan to PDF, please contact the NVIP to discuss options.

## II. Vegetation Information

- a. Vegetation Report – ONE REPORT: Create a PDF full report (*parkname*rpt.pdf).
  - 1) Example: <http://www1.usgs.gov/vip/piro/piorpt.pdf>.
  - 2) Report MUST contain: Vegetation Description, Vegetation Key, Map Class Descriptions, Photos of Map Classes, Photo-interpretation Key, Accuracy Assessment Methods and Results.
  - 3) Use the NPS Natural Resource Publication Management for report formatting. There are 5 series. Most NVIP reports fall under the Natural Resources Technical Report Series (NRTR), though some may qualify for Natural Resource Report (NRR).  
<http://www.nature.nps.gov/publications/NRPM/index.cfm>

## III. Field Data

- a. Graphic File: The pdf file name is the *parkname* and the type of geospatial data being shown, such as Plot locations. Example: cebrplots.pdf. Example: <http://www1.usgs.gov/vip/cebr/cebrplots.pdf>.
- b. Spatial PLOTS Data: The zip files should contain the geospatial shapefile of the PLOTS data. All data must be in UTM NAD83. Example: <http://www1.usgs.gov/vip/sahi/sahipplot.zip>.
- c. Microsoft Access PLOTS Database: Field Data for Plots, Accuracy Assessment, Physical Descriptive and Species Listing Data - *parkname*data.mdb. This is a Microsoft Access Database of the park field data, such as accuracy assessment,

accuracy assessment species, observation points, plots, plot-species, geology classes, locations, jurisdictions and any other park field data. Example:

<http://www1.usgs.gov/vip/liri/liridata.mdb>.

- d. Physical Descriptive Data for Plots - The *parknameplots* file is extracted from the *parknamedata.mdb* database. The file name is *parknameplots.xls*. Example: <http://www1.usgs.gov/vip/morr/morrplots.xls>.
- e. Species Listing Data for Plots - The *parkname\_spcov* file is extracted from the *parknamedata.mdb* database. The file name is *parkname\_spcov*. Example: [http://www1.usgs.gov/vip/stri/stir\\_spcov.xls](http://www1.usgs.gov/vip/stri/stir_spcov.xls).
- f. Field Photographs collected during PLOTS and AA: Contained within the PLOTS database are references to field photos collected as part of the project. We would like a .zip file called "*parkname\_fieldphotos*". The files within the .zip usually contain jpeg, gif, or pdf format. Please do not exceed 500MB on each file. If so then create more than one .zip file and call it *field\_photos1.zip*, *field\_photos2.zip* and etc. \* Please make sure that the field photo files are identified to link to a ground location in PLOTs.

#### IV. Geospatial Vegetation Information

- a. Final Map Graphics: Map layouts need to follow NPS standards. For NPS standard map templates, see: [http://science.nature.nps.gov/im/inventory/veg/Best\\_Examples.cfm](http://science.nature.nps.gov/im/inventory/veg/Best_Examples.cfm). These are graphic files (.pdf). The pdf file name is the *parkname*. We would like a low resolution for viewing and a high resolution PDF for reprinting maps. Examples: <http://www1.usgs.gov/vip/blca/blcavegmap.pdf>, [http://www1.usgs.gov/vip/blca/blcavegmap\\_poster.pdf](http://www1.usgs.gov/vip/blca/blcavegmap_poster.pdf). For High Resolution PDF, see Appendix B for additional assistance.
- b. Spatial Vegetation Data: The ZIP files should contain the following: GEODATABASE of the vegetation point and polygon feature classes, Boundary feature class, and associated attribute data. All data must be in UTM NAD83.  
Example: <http://www1.usgs.gov/vip/meve/meve.zip>.  
Geodatabase Template and Map Symbolology Guidance are available here: [http://science.nature.nps.gov/im/inventory/veg/Best\\_Examples.cfm](http://science.nature.nps.gov/im/inventory/veg/Best_Examples.cfm)

#### V. Accuracy Assessment (AA) Information

- a. Graphic files (.pdf). The pdf file name is the *parknameaa*. Example: *apisaa.pdf*, <http://www1.usgs.gov/vip/carl/carlaa.pdf>.
- b. Spatial AA Data: The ZIP file which contains the shapefile or geodatabase of the Accuracy Assessment geospatial data. All data must be in NAD83. Examples: <http://www1.usgs.gov/vip/gate/gateaa.zip>.
- c. Accuracy Assessment Contingency Table – This accuracy assessment matrix (*parkname\_aamatrix.xls*) should include the code description below the matrix. Example: [http://www1.usgs.gov/vip/brca/brca\\_aamatrix.xls](http://www1.usgs.gov/vip/brca/brca_aamatrix.xls).

#### VI. Project Metadata

- a. Aerial PhotoMosaic Metadata – *metaparknameortho.txt*. Metadata for aerial orthophoto mosaic (Text format only). Example: *metabeolortho.txt*.
- b. Field Plots Metadata – *metaparknamefield.txt* – Metadata for the PLOT shapefile(s) (PLOTS, OBSERVATION POINTS) from the Microsoft Access Database (Text format only). Example: *metasahifield.txt*.

- c. Geospatial Metadata - *metaparknamespatial.txt* – Metadata for Geospatial Vegetation Information (Text format only). Example: *metaticaspatial.txt*.
- d. Park Boundary Metadata - *metaparknamebdy.txt* – Metadata for Park Boundary (Text format only). Example: *metaazrubdy.txt*.
- e. AA Metadata - *metaparknameaa.txt* – Metadata for Accuracy Assessment Information (Text format only). Example: *metapefoaa.txt*.
- f. Other metadata, as appropriate

**VII. Other Helpful Information for File Creation – by Theresa Singh**

- a. **Instructions for PDF Conversion of Vegetation Characterization Reports: (Instructions refer to MS Word 2007 / Acrobat 8.0 / Reader 9.0)**

*Hint: PDF conversion is much easier if the Word document you are trying to convert is as small as possible. Most graphics are unnecessarily large. To reduce them, left click on them, cut, then choose “Picture (JPEG)” from the “Paste Special” dropdown under the Edit menu. The graphic/photo should go from having little dark handles to having green or white circles for handles. Sometimes all you get is a black square, in which case you have to trick Word by choosing something else from the Paste Special menu until you get a format that will, when pasted as a JPEG, look like your original graphic/photo. Depending on the number of photographs and graphics in your document, you can reduce the size by an order of magnitude.*

1. In creating the *parknamerpt.pdf* file, you will generally have to break it into sections no bigger than 40-50MB in order for the machine not to hang up while converting/tagging. Creating the tagged document takes quite a while (at least 10 minutes per chunk) and it is not a good idea to be doing anything else on the computer while the conversion is going on.
  - a. When all the sections have been converted successfully, run through each section and make sure there are no gross errors like extra or missing pages, or errors in formatting or page breaks, or strange colors invading the figures.
  - b. Once all these have been fixed, either in Word and reconverting, or in Acrobat, rejoin the sections using the “Insert Pages” command under the Document menu.
  - c. Once you have a single document, check through the entire thing and make sure there are no missing or extra or blank pages, the formatting looks good, etc.
  - d. Rebuild the TOC at the front of the document to repair the reference errors created when you broke it into sections.
  - e. Go through the document page by page with the TouchUp Toolbar open (Tools -> Advanced Editing -> Show TouchUp Toolbar)
  - f. Activate the TouchUp Reading Order button and on the menu that opens, make sure all of the options are checked. Each page will then appear as a series of numbered, Xed or grayed-out boxes.
  - g. On each page, make sure of the following:

- i. All text, including titles, figure captions and table headings, is in gray text boxes
  - ii. Figures are in figure boxes
  - iii. Tables are in Table boxes
  - iv. The numbers in the boxes make sense as to their reading order
- h. If not, and especially if the formatting is a mess with extraneous structures and numbered boxes, use the “Clear Page Structure” button on the Reading Order TouchUp menu to start over.
- i. Activate the TouchUp Reading Order tool, highlight the text or table or figure (all of it, trying not to overlap adjacent structures much or at all) and select “Text” or “Table” or “Figure” buttons as appropriate from the Reading Order TouchUp menu. Don’t bother with any of the other choices. They just complicate things.
- j. You can fix the order of things by clicking on the “Show Order Panel” button on the Reading Order TouchUp menu, scrolling to the right page number, and using your mouse to drag the various elements around (grab the little colored boxes on the left; the text doesn’t drag!)
- k. Tables and Text boxes do not need tags. Figures (photos and graphics) do. To create tags for these:
  - i. Select the TouchUp Object Tool from the TouchUp Toolbar.
  - ii. Right click in the figure you want to tag.
  - iii. Select “Properties” from the bottom of the menu
  - iv. Select the “Tag” Tab from the properties menu and enter your tag text in the “Alternate Text” box.
  - v. Select “English US” from the Language dropdown menu below the Alternate Text box.
  - vi. Use these standards for tagging figures:
    - 1. For scenic photos, enter a 1 to 4-word description of what the photo illustrates: “Yampa River Canyon”
    - 2. For graphics, enter “Figure XX map” or “Figure XX graphic” or “Figure XX chart” – as appropriate
    - 3. For photographs with captions, enter “Figure XX photo”
    - 4. For photographs without captions, as in the appendices, enter a descriptor, like “Acer negundo Woodland photo” or “Riparian Shrubland Complex aerial photo example”
    - 5. If there are several photos for a figure, enter the text as recommended above, then a number that reflects the reading order number: “Bromus tectorum Herbaceous Vegetation photo 1”
- 2. When all of this is done and you have checked back through the document to make sure nothing was forgotten, \*then\* fix the bookmarks and links as stipulated in the guidelines and finally, run the accessibility check.



3. Finally, for both PDF reports, while the document is open, click on the “Reduce File Size” option under the Document menu. You’ll be amazed at how much your document shrinks.
- b. **DELIVERING A GEODATABASE -VERSUS -SHAPEFILES**
  - The Vegetation Inventory Program would prefer that all spatial data (e.g. PLOTS point data, AA point data, Vegetation polygons, photographs) are delivered in one GEODATABASE with the appropriate relationships retained.
  - Guidance and templates are provided. See “MAPPING” at:  
Example:  
[http://www.usgs.gov/core\\_science\\_systems/csas/vip/parks/nabr.html](http://www.usgs.gov/core_science_systems/csas/vip/parks/nabr.html)
  - ArcGIS File Geodatabases are recommended.
  - Only one Geodatabases is needed, containing all the spatial data.
  - Include a Geodatabase Diagram for each geodatabase.

#### VIII: FILE NAMING STANDARDS:

- NO capital letters used in naming each file.
- The following is a list of standard naming conventions:
  - Aerial Photography
    - *parknameortho.pdf*
    - *parknameortho.zip*
    - *parknamephotos.pdf*
    - 1-02.pdf or 11-13.pdf or 4-5.pdf depending on the unique photo number.
  - Vegetation Information
    - *parknamerpt.pdf*
    - *parkname\_classmatrix.xls* (OPTIONAL)
  - Field Data
    - *parknameplots.pdf*
    - *parknameplot.zip*
    - *parknamedata.mdb*
    - *parknamedata.accdb*
    - *parknameplots.xls*
    - *parkname\_spcov.xls*
    - *parkname\_fieldphotos.zip* – containing photos referenced in the PLOTS DB.
  - Geospatial Vegetation Information
    - *parknamevegmap.pdf*
    - *parknamevegmap\_poster.pdf*
    - *parkname.zip*
    - *parknamebdy.zip*
    - *parknamegeodata.zip*
  - Accuracy Assessment Information
    - *parknameaa.pdf*
    - *parknameaa.zip*
    - *parkname\_aamatrix.xls*
  - Project Metadata

- *metaparknameortho.txt*
- *metaparknamefield.txt*
- *metaparknamespatial.txt*
- *metaparknamebdy.txt*
- *metaparknameaa.txt*

## **APPENDIX A**

### **DATA VISUALIZATION**

#### **CREATING .MXD and .LYR FILES**

# USGS-NPS Vegetation Characterization Program Final Product Guidelines

National Park Service  
U.S. Department of the Interior



Natural Resource Stewardship and Science  
Inventory and Monitoring Division

## Guidance for Vegetation Inventory Data Visualization Deliverables

Version: 20110906

The screenshots illustrate the NPS/NMMapViews v1.01 web application interface. The top-left screenshot shows the 'Intermountain Region Vegetation Inventory' map with a search bar and a list of datasets. The top-right screenshot shows a zoomed-in view of the map with a 'Dataset Details' pop-up window. The bottom-left screenshot shows a zoomed-in view of the map with a 'Dataset Details' pop-up window. The bottom-right screenshot shows a zoomed-in view of the map with a 'Dataset Details' pop-up window.

**Dataset Details**

**Vegetation for Arches National Park**

About this dataset

Northern Colorado Plateau Network, Inventory and Monitoring Program. 2009. Geospatial Vegetation Information for Arches National Park Vegetation Inventory. Geospatial Dataset-2166166.

**Source information**

[Download dataset](#)

[View metadata](#)

[ArcGIS map service](#)

[View dataset in...](#)

[Google Earth](#)

[ArcMap](#)

**Dataset bundle**

**Report**

Coles J and Others. 2009. Vegetation Classification and Mapping Project Report, Arches National Park. Natural Resource Program Center. Fort Collins, CO. Natural Resource Technical Report. NPS/NCPN/NRTR—2009/253. Published Report 663073.

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## 1. Overview

This guidance documents the process of visualizing the vegetation data produced by the National Park Service Biological Resource Management Division Vegetation Inventory Project using ArcGIS map documents (MXD) and layer (LYR) files. The goal is to categorize and map distinct vegetation classes (communities) within NPS units for GIS display by applying to geospatial datasets common symbology. Ideally, the same symbology will be used for the MXD, LYR file(s), and PDF documents generated from the maps.

Deliverables should include the ArcMap MXD(s), the ArcMap layer file(s), and PDF maps generated using the layer files.

The data sources and tools used are assumed to be compatible with at least ESRI ArcGIS™ format, version 9.3.1 Service Pack 1 or version 10 Service Pack 1. ArcGIS version 10 is used in examples and specific processing directions apply to this version. However, the process will be nearly identical in version 9.3.1.

Arches National Park (Unit Code = ARCH) will be used as the example in many steps.

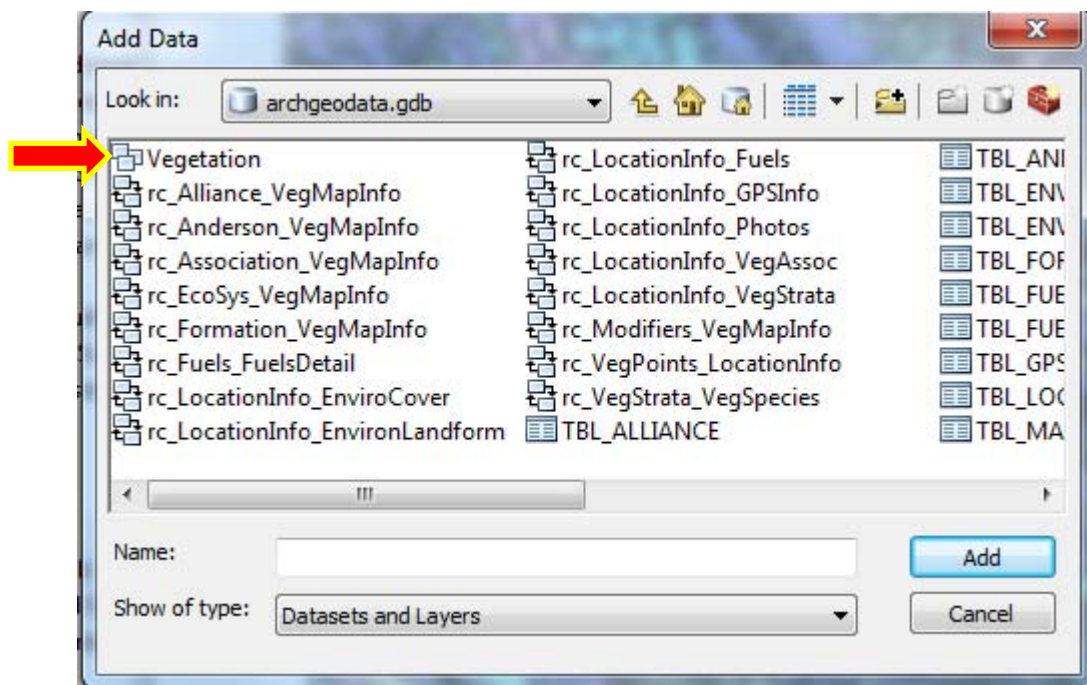
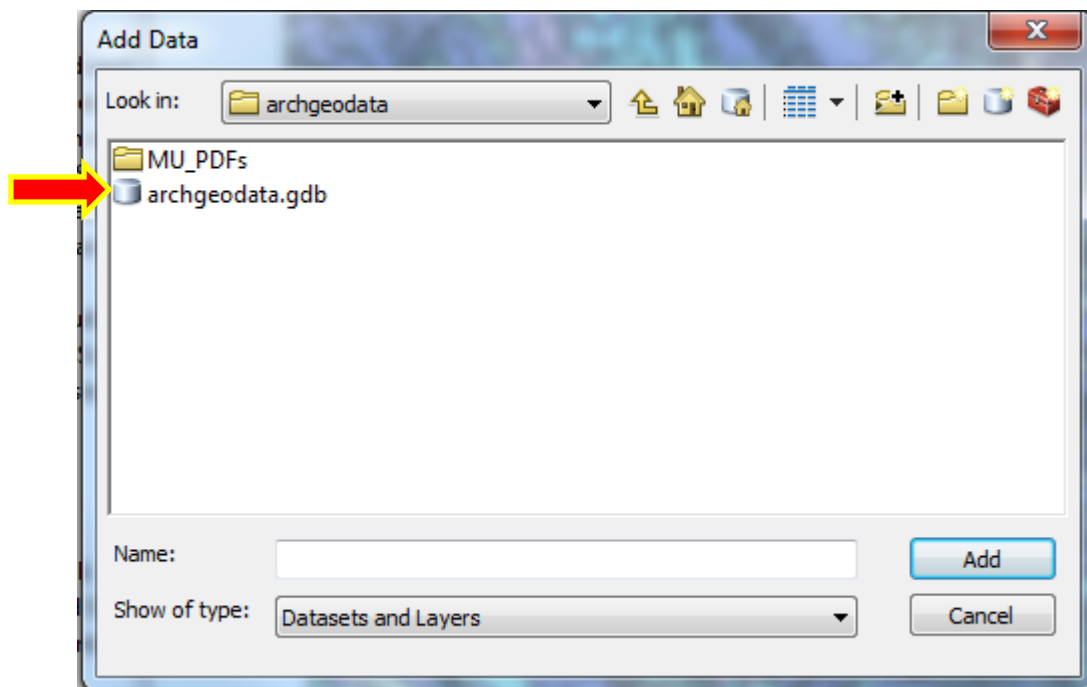
## 2. Create an ArcMap Document and Symbolize Vegetation Polygon Data

To aid visualization in GIS packages, the vegetation inventory polygon feature class needs to have symbology applied. This may involve table joins and/or manually applying those color values to the map classes in ArcMap.

The optimal situation is to use MAP UNIT CLASSES to define map symbology.

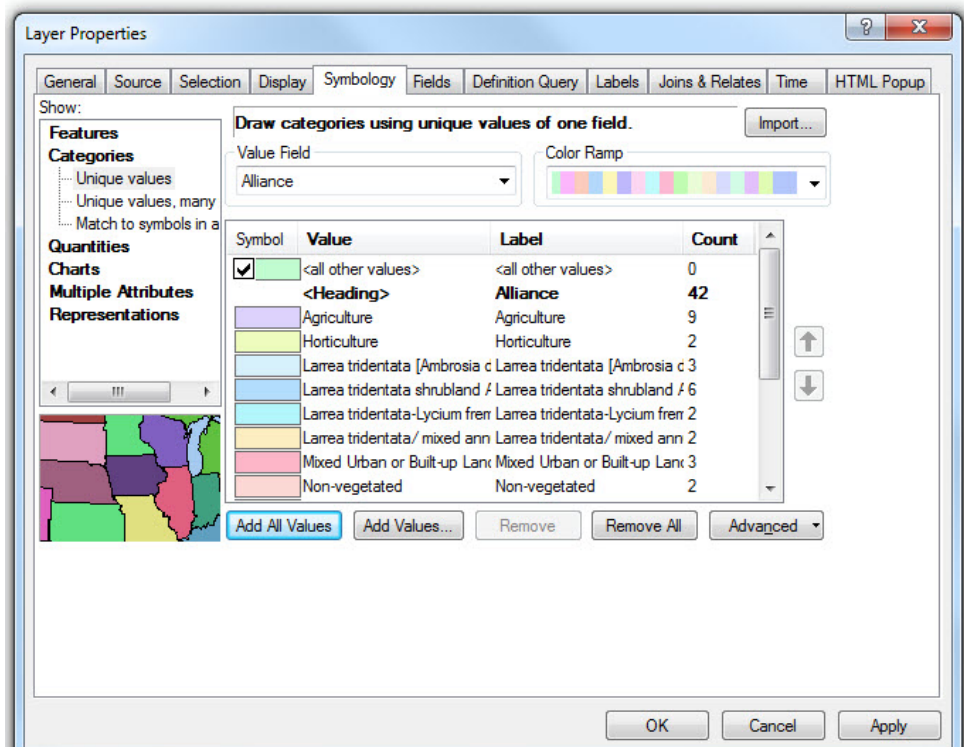
1. Open ArcMap. Click the Add Data button  to add the vegetation polygon feature class.

In the ArcMap toolbar, navigate to the directory where the data is saved and add the Vegetation Polygons (fcl\_VegPolys) feature class from the geodatabase to the ArcMap document.



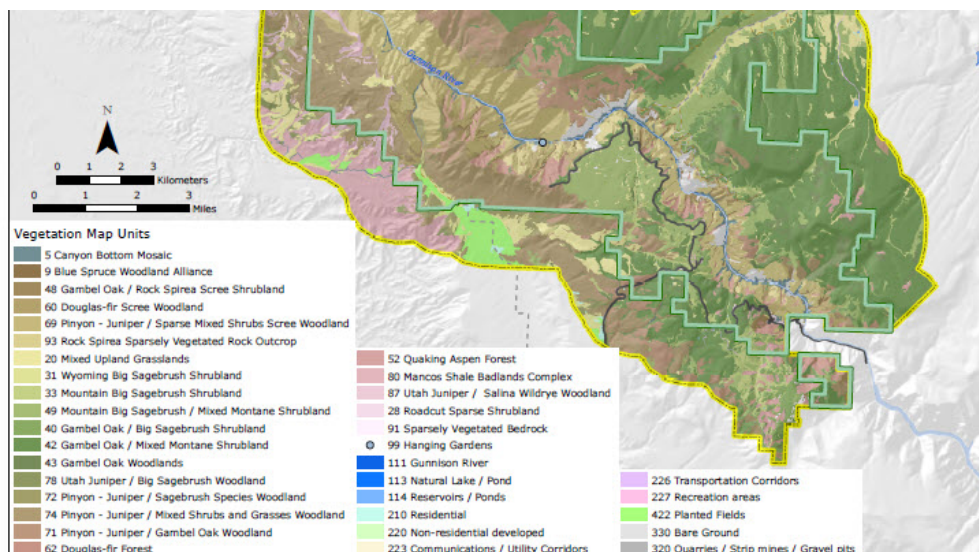
2. Find a field on which to base symbology: Open the attribute table for the fcl\_Veg\_Polys feature class: right-click on fcl\_Veg\_Polys → Open Attribute Table. Look for a field that contains text values for the map classes. This will usually be a field called something like “Map\_Unit\_ID”, “Map\_Unit\_Common\_Name” or “Map\_Class”.
3. Change the symbology source to the selected field: Right click on fcl\_Veg\_Polys → Properties → Symbology tab

- a. In the left hand column choose Categories → Unique Values
- b. In the Value Field box at the top, scroll down and choose the field that you found in step 2 above
- c. Click the Add All Values button near the bottom, a dialogue box will pop up as ArcMap populates the field
- d. Click OK.

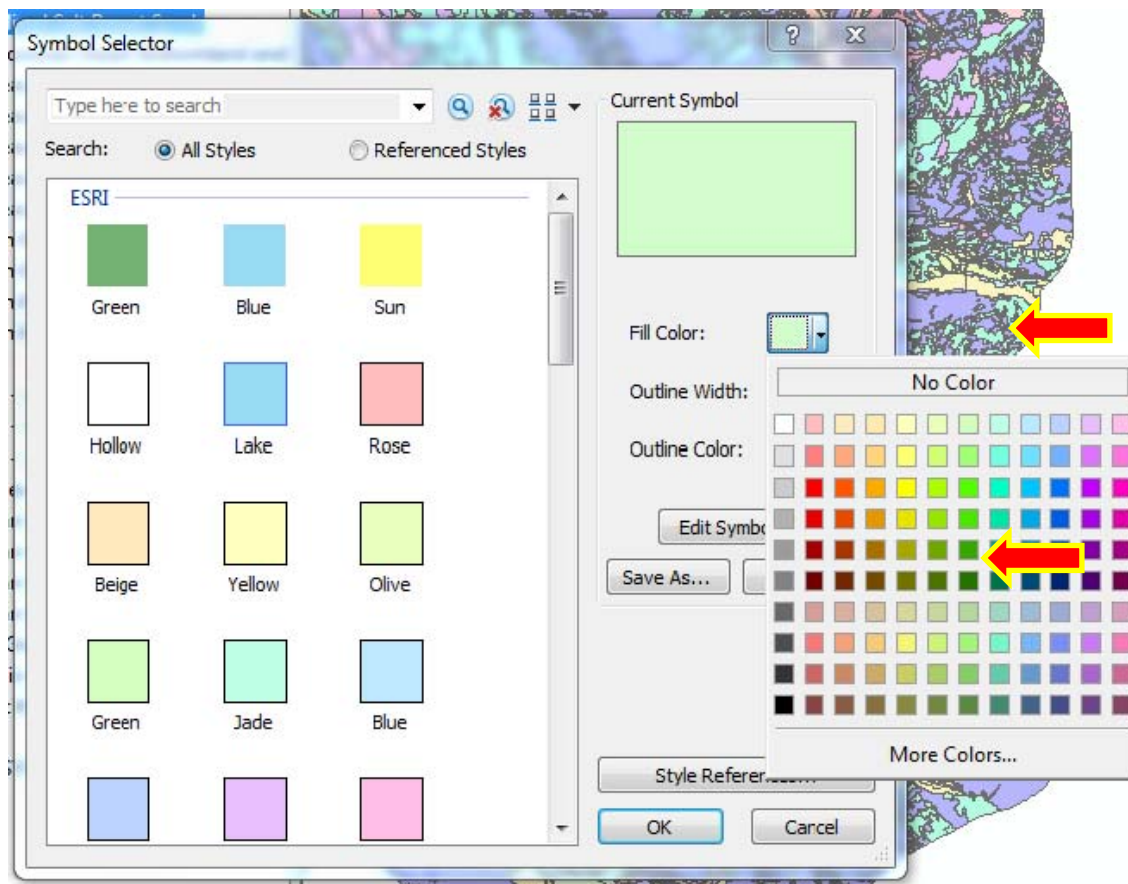




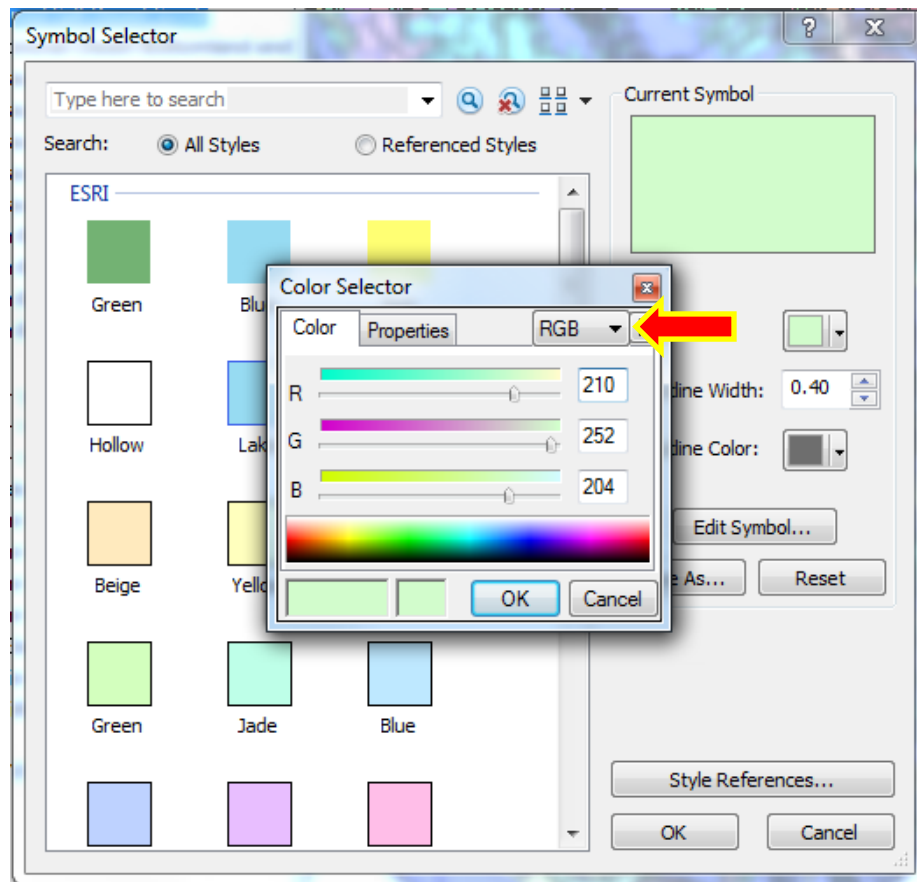
4. Change colors to better reflect the information content of the vegetation polygons.



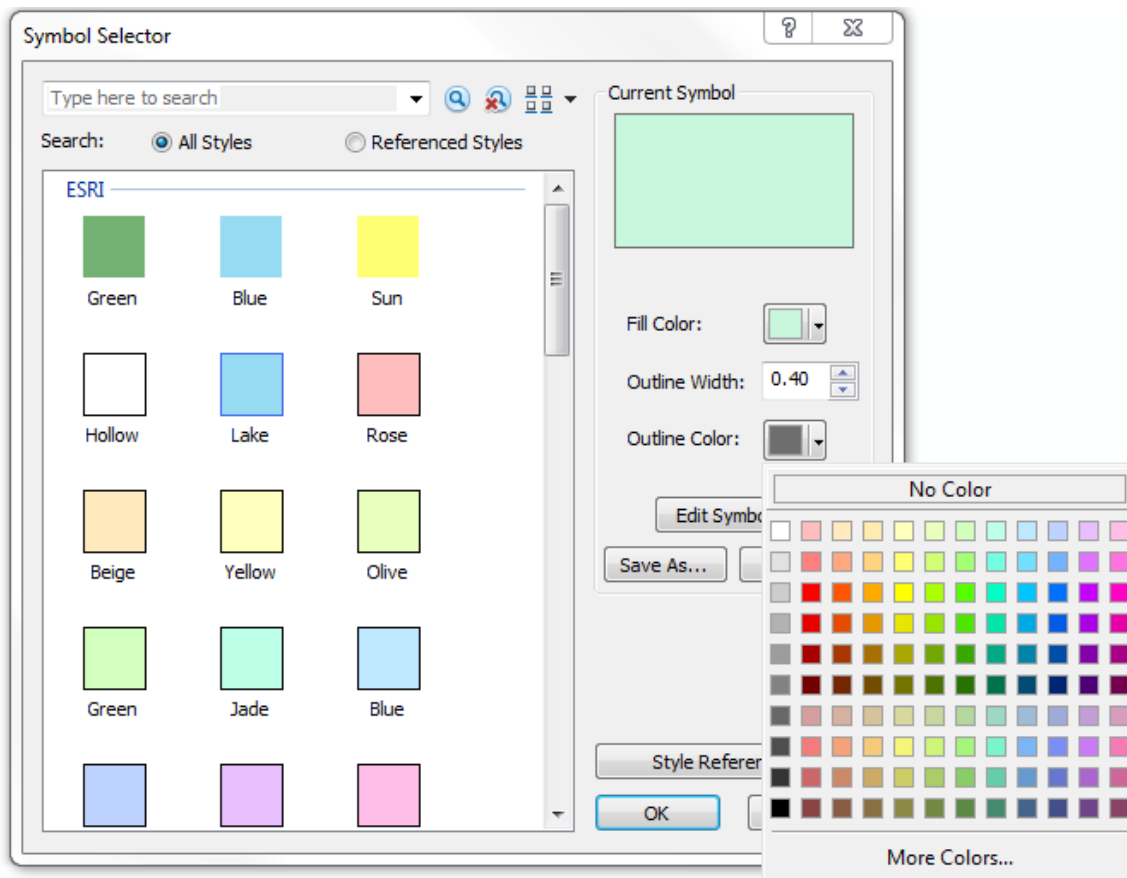
- a. In the ArcMap Symbolology viewer, right-click on the color patch for the class you are working on under fcl\_Veg\_Polys. A window allowing you to change the symbology appears.
- b. Find the box on the right called Fill Color and click it; a window of colors appears, on the bottom of this window select More Colors, a second window appears on top of the first.



- c. In the upper right corner of the Color Selector window choose RGB (not HSV or CMYK) from the drop down box.



- d. Select an appropriate color. Note down the respective red (R), green (G) and blue (B) values. Click OK.
- e. Under the Fill Color box is the Outline Color box, click on it and choose No Color at the top to remove outline from the polygons.



- f. Done! The map class in ArcMap should now have an appropriate color symbol.
- g. Repeat these steps for each class in the fcl\_Veg\_Polys feature layer.
- h. Once all classes are symbolized, export the symbology as a Layer file so that it can be preserved and this process won't need to be repeated. Right click on Veg\_Polys → Save as Layer File. Save the layer in your working directory. A recommended naming convention is:

<UNIT\_CODE>\_veg\_polys.lyr

(ex. ARCH\_veg\_polys.lyr)

- i. Save the ArcMap document. A recommended naming convention is:

<UNIT\_CODE>\_vegetation.mxd

### 3. Symbolize Vegetation Point Data

The point data is more straightforward to symbolize than the polygon data. The first step is to investigate what kind of point data is contained in the source. Most parks will have two point feature classes in the Vegetation dataset; fcl\_Veg\_Points and fcl\_Veg\_Specials. The fcl\_Veg\_Points feature class can contain four different kinds of points: Accuracy assessment points (AA\_Point), Fuels assessment points (Fuels\_Point), Observation points and Plot points. The Veg\_Specials feature class contains only one type of point.

1. Look at the source data to determine what kind of point data is present for the park. Most parks will have Veg\_Points and Veg\_Specials but it is not uncommon for the Veg\_Specials to be missing.
2. Copy the layer files into the directory with the geospatial data
3. Add the layers into Arc Map and change the data source to reflect the park being processed.
4. Change the layer names in the table of contents from fcl\_Veg\_Points and fcl\_Veg\_Specials to Vegetation Points for \*Park Name\* and Special Vegetation Points for \*Park Name\* respectively.
5. Save the layer file with the following naming convention:

<UNIT\_CODE>\_veg\_points.lyr

6. Repeat with the Veg\_Specials feature class, if it exists.

<UNIT\_CODE>\_veg\_specials.lyr

7. Save the ArcMap document.

### 4. Export PDF Documents Using Layer Files

PDF documents should be generated using the layer files defined in steps 3 and 4 above. Additional instructions are provided in the Final Product Guidelines.

1. Open the ArcMap document. Switch to layout view and format the map layout as desired, using the layer files defined in steps 3 and 4.
2. Export a PDF of the map using 300dpi as the default setting.

## 5. Quality Control

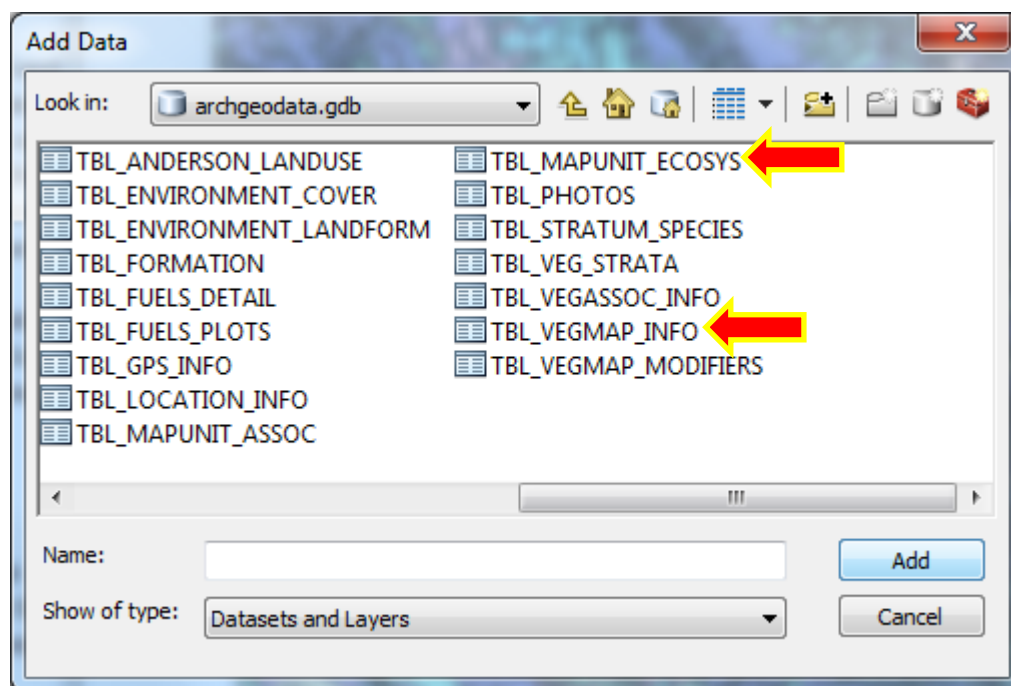
### 5.1. *Verify Visual Continuity*

1. Open a new ArcMap document and add the newly created layer files using the Add Data button.
2. Check that all class names in the map legend visible in the ArcMap table of contents.
3. Visually check that the colors of classes, looking for visual distinction and continuity.
4. Include the ArcMap document(s), layer files, and PDF file(s) as deliverables for the vegetation map.

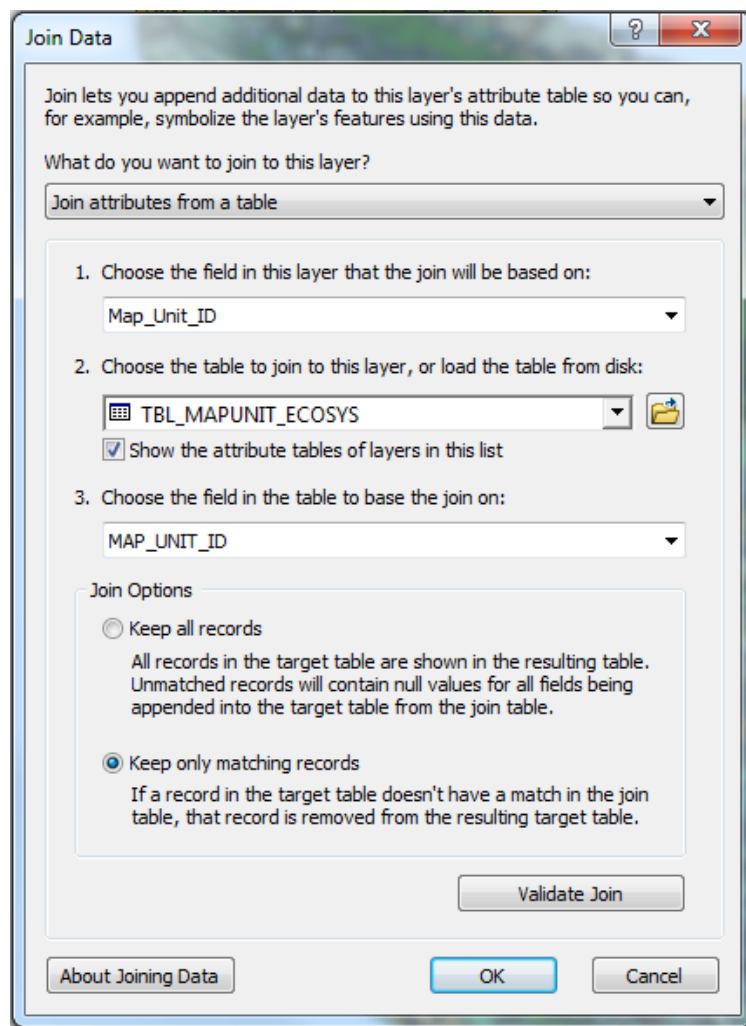
## 6. Appendices

### 6.1. *Using Joined Tables as a Symbology Choice*

1. Add table data: Click the Add Data button in the toolbar, navigate to the directory where the data is saved and add two tables from the geodatabase into the document. TBL\_VEGMAP\_INFO and TBL\_MAPUNIT\_ECOSYS. Hold down the control key to select multiple items and then click the add button



2. Join tables to Vegetation feature class: In order to crosswalk from the native classes in the data to the ecological system classes used in the map, joins must be made to the two tables added in the previous step:
  - a. Right click on TBL\_VEGMAP\_INFO → Joins and Relates → Join
  - b. In the dialogue box that opens leave the top box as “Join attributes from a table”. In the box labeled 1 choose Map\_Unit\_ID as the field to base the join on. In the box labeled 2 choose TBL\_MAPUNIT\_ECOSYS as the table to join to. In the box labeled 3 choose Map\_Unit\_ID as the field to base the join on. Under Join Options select the bottom radio button “Keep only matching records”. Click OK to perform the join.



- c. Join to Veg\_Polys: Right click on Veg\_Polys → Joins and Relates → Join
    - d. In the dialogue box that opens leave the top box as “Join attributes from a table”. In the box labeled 1 choose Map\_Unit\_ID as the field to base the join on. In the

box labeled 2 choose TBL\_VEGMAP\_INFO\_TBL\_MAPUNIT\_ECOSYS as the table to join to. In the box labeled 3 choose Map\_Unit\_ID (second from top) as the field to base the join on. Under Join Options select the bottom radio button “Keep only matching records”. Click ok to perform the join

- e. Pick up processing steps from Section 4.1 step a.



## APPENDIX B

### Guidelines for Creating a High Resolution Vegetation Map Graphic for Posting on the USGS-NPS Vegetation Characterization Program Web Site – by *Tammy Cook*

February 2009

**IMPORTANT:** If you have two versions of the final vegetation map, be sure to use the version designed for public distribution, that is, the version that conceals locations of rare species.

1. In ArcMap, use the final vegetation map shapefile to create a layout using one of the NPS Graphic Identity Program standard map templates. You can download the templates at: [http://science.nature.nps.gov/im/inventory/veg/Best\\_Examples.cfm](http://science.nature.nps.gov/im/inventory/veg/Best_Examples.cfm). Each download file contains directions on how to load and use the templates.
2. Use either the D or E size, landscape or portrait template (.mxt), as appropriate. (Size D = 22 x 34 inches; Size E = 34 x 44 inches)
3. Please be sure that the black NPS banner is displayed at the top of the page. Follow general map creation rules, for example, be sure to include a scale bar, north arrow, projection information, map author, map creation date, etc.
4. In ArcGIS, EXPORT the layout to a PDF using the following settings:

File name: xxxxmap\_large.pdf (where xxxx = 4-letter park acronym)

Save as type: PDF

/Options

General Tab:

Resolution: 600 dpi (or less if file size is too large using 600 dpi)

Output Image Quality (Resample Ratio): Normal - Best

Ratio: 1:1

Format Tab:

Destination Colorspace: RGB

Check box for: Compress Vector Graphics

Image Compression: Deflate

Picture symbol: Rasterize layers with bitmap markers/fills

Check box for: Convert Marker Symbols to Polygons

Check box for: Embed All Document Fonts

Check box for: Clip Output to Graphics Extent

For maps with large extents or that use a DEM backdrop, you may need to lower the DPI and/or output image quality settings to obtain a manageable file size.

A PDF file is requested so that it can be reproduced and printed at various sizes without running into issues with resizing and loss of resolution that could be encountered with JPEG or other image formats.

5. The goal of the high resolution map is to create a printable layout that can be displayed as a poster. To see some good examples, view the “Large Graphic of Vegetation Map...” from the following web sites:

[http://www1.usgs.gov/vip/cure/curevegmap\\_poster.pdf](http://www1.usgs.gov/vip/cure/curevegmap_poster.pdf)

[http://www1.usgs.gov/vip/dino/dinovegmap\\_poster.pdf](http://www1.usgs.gov/vip/dino/dinovegmap_poster.pdf)

[http://www1.usgs.gov/vip/nabr/nabrvegmap\\_poster.pdf](http://www1.usgs.gov/vip/nabr/nabrvegmap_poster.pdf)

[http://www1.usgs.gov/vip/hutr/hutrvegmap\\_poster.pdf](http://www1.usgs.gov/vip/hutr/hutrvegmap_poster.pdf)

6. Questions or requests for clarification should be addressed to:

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