

Spatial Data Viewer (SDV) Training

Instructor – Cathy Cole, GISP
ccole@ncdot.gov

Welcome & Introductions

- Greeting
- Introductions
- Incidentals
- Ground rules

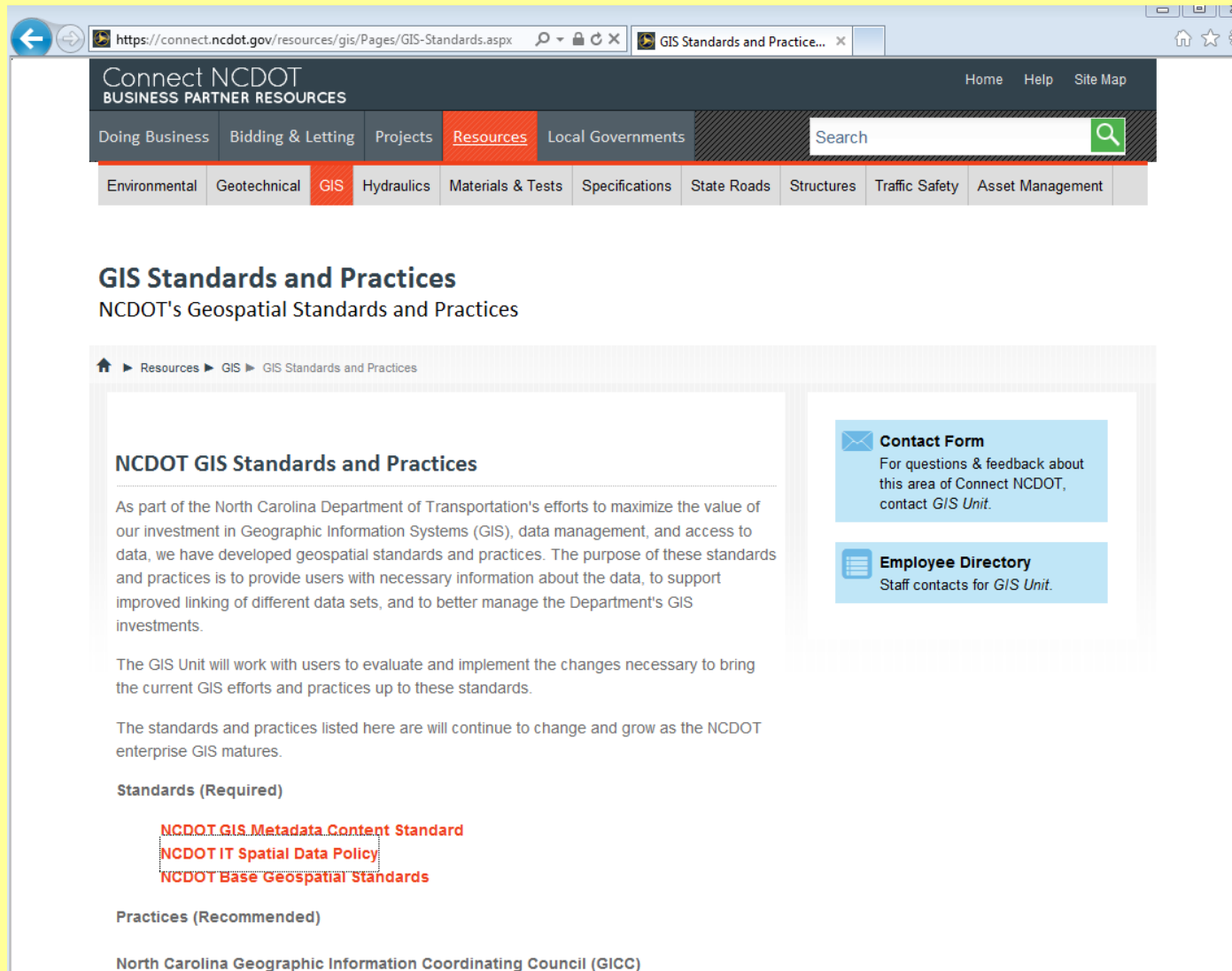
SDV Training Schedule

- Objectives
 - Provide Hands-on training for SDV
- Estimated Time
 - Approximately 4 hours
- Method of Instruction
 - Show & Tell
 - FAQ
- Materials
 - PowerPoint
 - SDV Tool

Training Expectations

- Learn about SDV development
- Geographic Information Systems standards
<https://connect.ncdot.gov/resources/gis/Pages/GIS-Standards.aspx>
- Workshop demonstration of SDV
- SDV “hands-on” Training workshop
- Become SDV spokesperson
- Network

SDV Training



The screenshot shows a web browser window displaying the "Connect NCDOT BUSINESS PARTNER RESOURCES" page. The URL is <https://connect.ncdot.gov/resources/gis/Pages/GIS-Standards.aspx>. The page features a navigation menu with categories like "Doing Business", "Bidding & Letting", "Projects", "Resources" (highlighted), and "Local Governments". Below this is a search bar and a list of resource categories including "Environmental", "Geotechnical", "GIS" (highlighted), "Hydraulics", "Materials & Tests", "Specifications", "State Roads", "Structures", "Traffic Safety", and "Asset Management".

GIS Standards and Practices

NCDOT's Geospatial Standards and Practices

Home Help Site Map

Doing Business Bidding & Letting Projects **Resources** Local Governments

Environmental Geotechnical **GIS** Hydraulics Materials & Tests Specifications State Roads Structures Traffic Safety Asset Management

GIS Standards and Practices
NCDOT's Geospatial Standards and Practices

Resources > GIS > GIS Standards and Practices

NCDOT GIS Standards and Practices

As part of the North Carolina Department of Transportation's efforts to maximize the value of our investment in Geographic Information Systems (GIS), data management, and access to data, we have developed geospatial standards and practices. The purpose of these standards and practices is to provide users with necessary information about the data, to support improved linking of different data sets, and to better manage the Department's GIS investments.

The GIS Unit will work with users to evaluate and implement the changes necessary to bring the current GIS efforts and practices up to these standards.

The standards and practices listed here are will continue to change and grow as the NCDOT enterprise GIS matures.

Standards (Required)

- [NCDOT GIS Metadata Content Standard](#)
- [NCDOT IT Spatial Data Policy](#)
- [NCDOT Base Geospatial Standards](#)

Practices (Recommended)

North Carolina Geographic Information Coordinating Council (GICC)

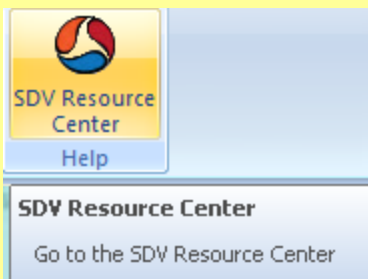
Contact Form
For questions & feedback about this area of Connect NCDOT, contact *GIS Unit*.

Employee Directory
Staff contacts for *GIS Unit*.

SDV Resource Center

SDV Help

- Hover over tool for description



NCDOT INTRANET
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

NCDOT Portal



*Providing access to North Carolina
transportation-related geospatial information*

[Home](#) [Services and Data](#) [Help](#) [Support](#) [Contact Us](#)

Welcome to the SDV Resource Center

The Spatial Data Viewer (SDV) is the NCDOT GIS Unit's unique solution to providing GIS-oriented maps, data, and tools to organizations interested in transportation-related geospatial information.

SDV is a lightweight desktop application utilizing Esri's free ArcGIS Explorer software supported by internal and external maps and data. SDV's purpose is to serve as a viewer for the most current 2D datasets published by the NCDOT Enterprise, providing access to the data and maps important to the business of NCDOT.

Coming Soon

More [training opportunities](#) available in your area.

Announcements


August 30, 2011
Hurricane Irene damage aerial
imagery services are
now available

August 26, 2011
Updated SDV Layers are
now available

June 3, 2011
SDV Training opportunities
expanded


May 23, 2011
The SDV Training class is
granted 3 PDH credits

February 28, 2011
NCDOT GIS
launches SDV V1.0!

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

NCDOT Portal

NCDOT Portal Link

**SDV**
SPATIAL DATA VIEWER

Providing access to North Carolina
transportation-related geospatial information

Home Services and Data ▼ Help Support ▼ Contact Us

Support

- System Requirements
- FAQs
- Known Issues
- Training**

Training

The GIS Unit offers training for SDV statewide. SDV training is approved for three credits toward Professional Development Hours.

Register for SDV Training Classes

Contact your individual Training Coordinator to register for SDV Training classes. To identify your coordinator, go to the [GIS Unit's portal](#) and click the link "Training Coordinator" located at the bottom left of the page.

SDV Training Schedule

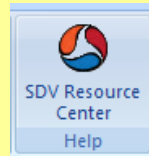
To access the SDV Training Schedule, go to the [GIS Unit's portal](#) and click the link "GIS Training Calendar" located at the bottom left of the page.

SDV Training Material

[SDV Class Training Slides](#)

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SDV Resource Center



Map Services


Map / GIS Service


Layer type served out to users via ArcGIS Server; based on potentially several different layers containing specific feature symbology, labeling, and scaled views that cannot be changed by the user.

and

Data Layers

- Map Service layers
- Shapefiles
- Geodatabase feature class
- ArcGIS layers
- ect..


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 Providing access to North Carolina transportation-related geospatial information

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Services and Data
Map Services
 Data Layers
 Tool Data
 Basemaps

Map Services

The following is a list of map services available in SDV.

Refer to the [SDV Services and Data Updates](#) for changes to data, maps, and tools.

****Click on link to view data layer metadata.**

Map Service	Description	Data Layers**
AADT Linear Segments	Statewide AADT Volume Groups segments	ROAD_AADT_EST_ARC
AADT Count Stations	Statewide average daily traffic count stations	ROAD_AADT_CNT_STATION_POINT
Airports	Statewide airport locations	AIRPORT_POINT
Bare Pavement (Snow Removal)	Represents priority routes for road treatment and snow removal	ROAD_BARE_PVMNT_ARC
Bike Routes	Statewide bicycle routes and Local suitability/routes	ROAD_BICYCLE_ROUTE_ARC
Boundaries - City	Statewide municipal boundaries	BOUNDARY_MUNICIPAL_POLYGON
Boundaries - County Filled	Statewide county polygon boundaries	BOUNDARY_COUNTY_POLYGON
Boundaries - County Outlined	Statewide county line boundaries	BOUNDARY_COUNTY_ARC
Boundaries - County Shoreline	Statewide county polygon boundaries, with shoreline	BOUNDARY_COUNTY_SHRLN_POLYGON
Boundaries - District	Statewide NCDOT District boundaries	BOUNDARY_DOT_DISTRICT_POLYGON

SDV Resource Center



Services and Data
 Map Services
 Data Layers hyperlink
 Metadata

BOUNDARY_DOT_DIVISION_POLYGON



Data format: File Geodatabase Feature Class

File or table name: BOUNDARY_DOT_DIVISION_POLYGON

Coordinate system: Lambert Conformal Conic

Theme keywords: Boundary

Abstract: DOT Divisions (North Carolina)

FGDC and ESRI Metadata:

- [Identification Information](#)
- [Data Quality Information](#)
- [Spatial Data Organization Information](#)
- [Spatial Reference Information](#)
- [Entity and Attribute Information](#)
- [Distribution Information](#)
- [Metadata Reference Information](#)
- [Geoprocessing History](#)
- [Binary Enclosures](#)

Metadata elements shown with blue text are defined in the Federal Geographic Data Committee's (FGDC) *Content Standard for Digital Geospatial Metadata (CSDGM)*. Elements shown with green text are defined in the *ESRI Profile of the CSDGM*. Elements shown with a green asterisk (*) will be automatically updated by ArcCatalog. ArcCatalog adds hints indicating which FGDC elements are mandatory; these are shown with gray text.

Identification Information:

Citation:

Citation information:

Originators: The North Carolina Department of Transportation Geographic Information Systems Unit

*Title:

BOUNDARY_DOT_DIVISION_POLYGON

***File or table name:** BOUNDARY_DOT_DIVISION_POLYGON

Publication date: Unknown

Publication time: Unknown

***Geospatial data presentation form:** vector digital data

Publication information:

Publication place: Raleigh, North Carolina

Publisher: The North Carolina Department of Transportation Geographic Information Systems Unit

***Online linkage:** Service=sde:oracle11g:/LOCAL=TCCDQ26; User=sdv_public; Version=SDE.DEFAULT

Description:

Abstract:

DOT Divisions (North Carolina)

SDV Training Outline

Terminology



The screenshot shows the NCDOT INTRANET interface for the SDV Spatial Data Viewer. The header includes the NCDOT logo and the text "NCDOT INTRANET" and "NORTH CAROLINA DEPARTMENT OF TRANSPORTATION". The main content area features the SDV logo and the tagline "Providing access to North Carolina transportation-related geospatial information". A navigation bar contains links for Home, Services and Data, Help, Support, and Contact Us. A sidebar on the left lists various SDV components and tools, with the Glossary link highlighted. The main content area displays the title "Glossary" and a brief description: "This Glossary provides definitions for many of the terms that have a specialized meaning for the Spatial Data Viewer (SDV)." The footer contains copyright information and links to NCDOT Home, NC.gov, Accessibility, and Privacy Statement.

NCDOT INTRANET
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

NCDOT
SDV
SPATIAL DATA VIEWER

Providing access to North Carolina
transportation-related geospatial information

Home Services and Data Help Support Contact Us

Spatial Data Viewer (SDV)
Welcome to SDV
SDV Components
Tools
Managing Layers/Data
Working with a Map
Glossary

Glossary

This Glossary provides definitions for many of the terms that have a specialized meaning for the Spatial Data Viewer (SDV).

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SDV Training

Introduction to SDV

SDV Training Outline

Introduction to SDV

- Display Window
- Contents Window
- Ribbons
- ArcGIS Explorer button
- Map Groups
- Tools
- SDV Resource Center
- ESRI help

SDV Components

ArcGIS Explorer

Tabs

Ribbon

SDV Resource Center

ESRI help

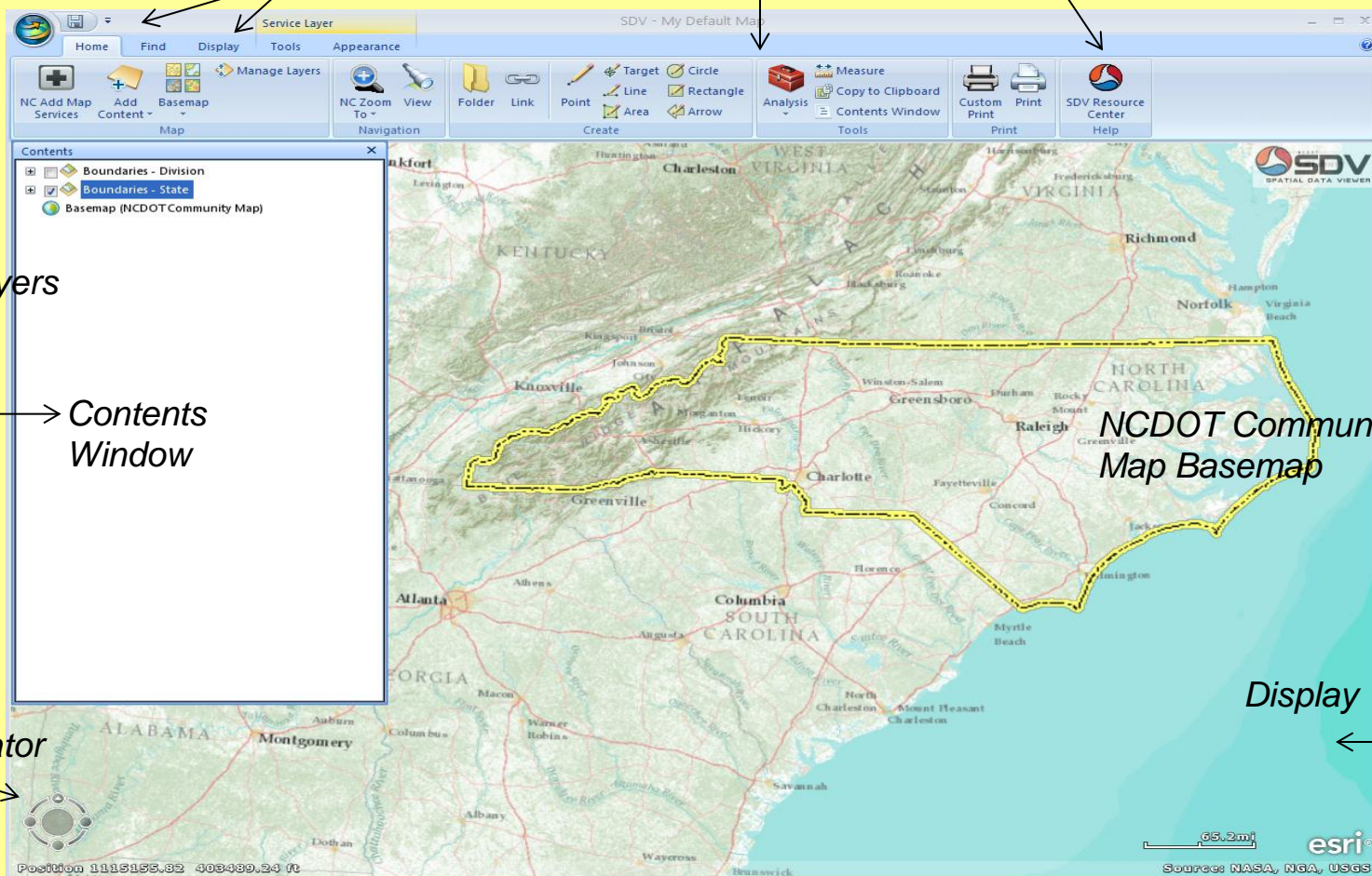
*Preloaded
Service Layers*

*Contents
Window*

Navigator

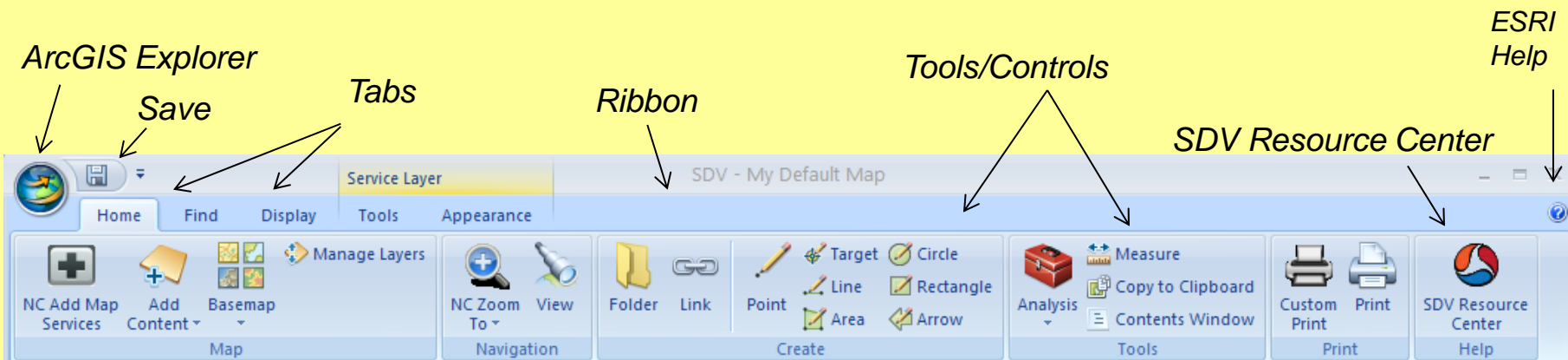
*NCDOT Community
Map Basemap*

Display Window

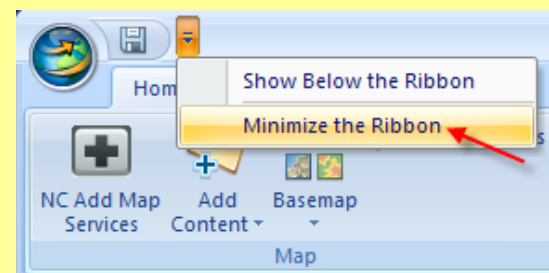


SDV Training

SDV Ribbon

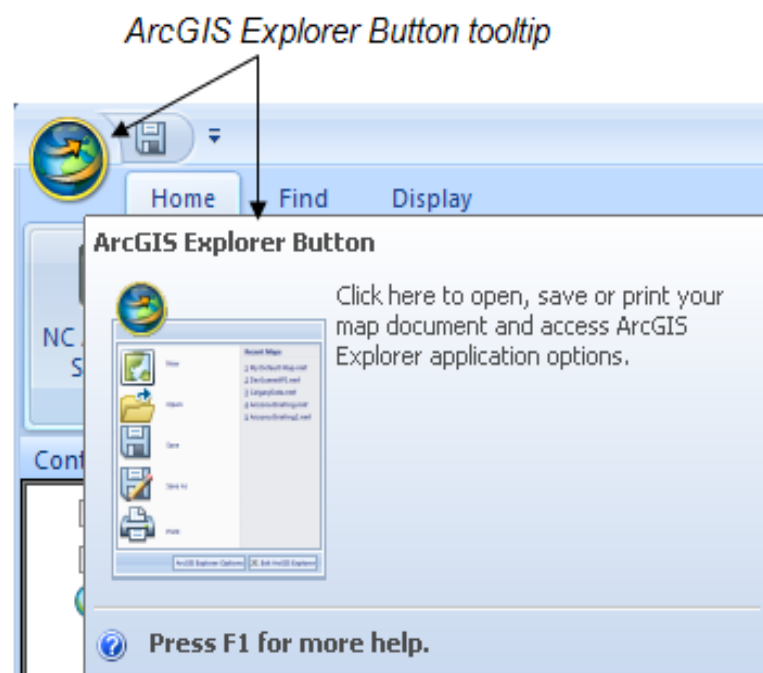
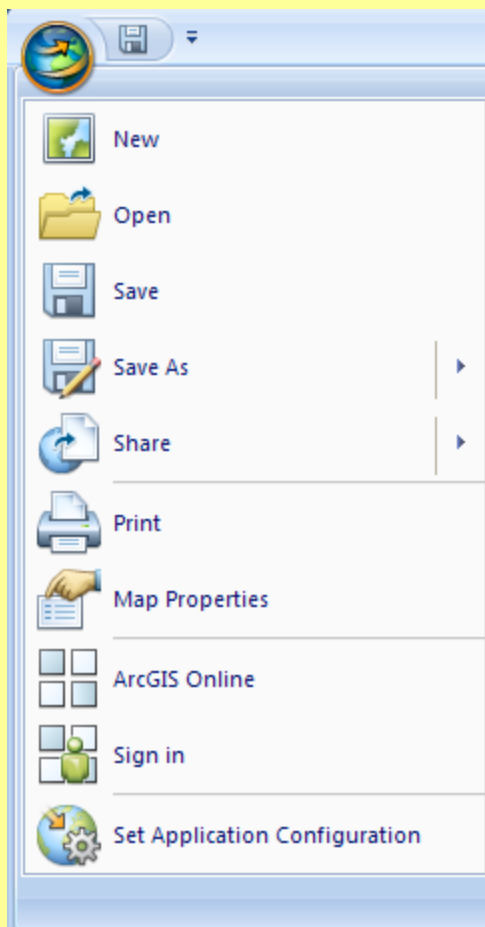


- To minimize The Ribbon right-clicking on it and select "Minimize the Ribbon," or select the "Minimize the Ribbon" option in the dropdown list to the right of the [ArcGIS Explorer button](#) and the save icon



SDV Training

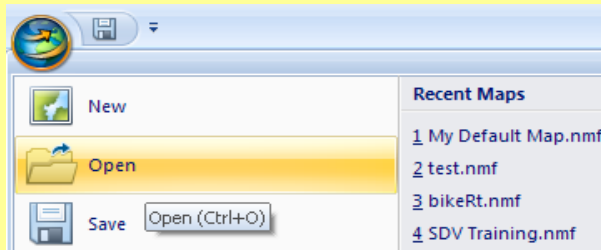
ArcGIS Explorer Icon



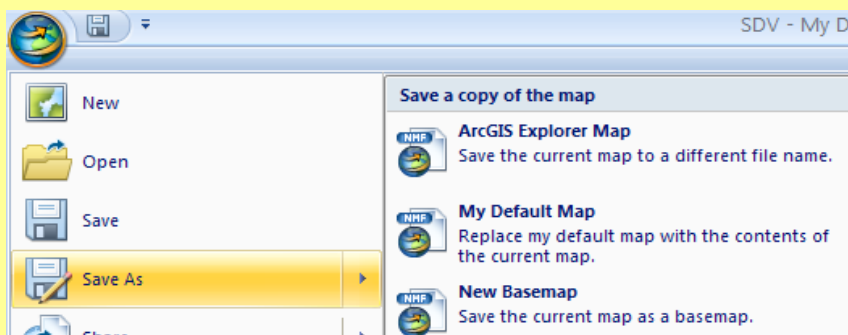
SDV Training

ArcGIS Explorer Icon

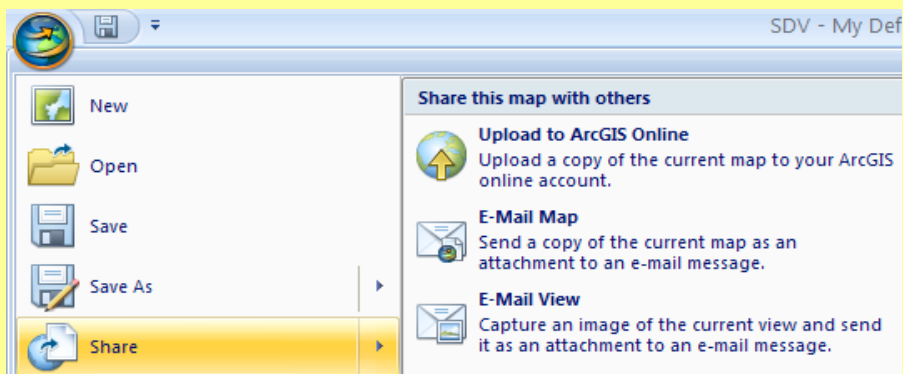
- Open



- Save As



- Share



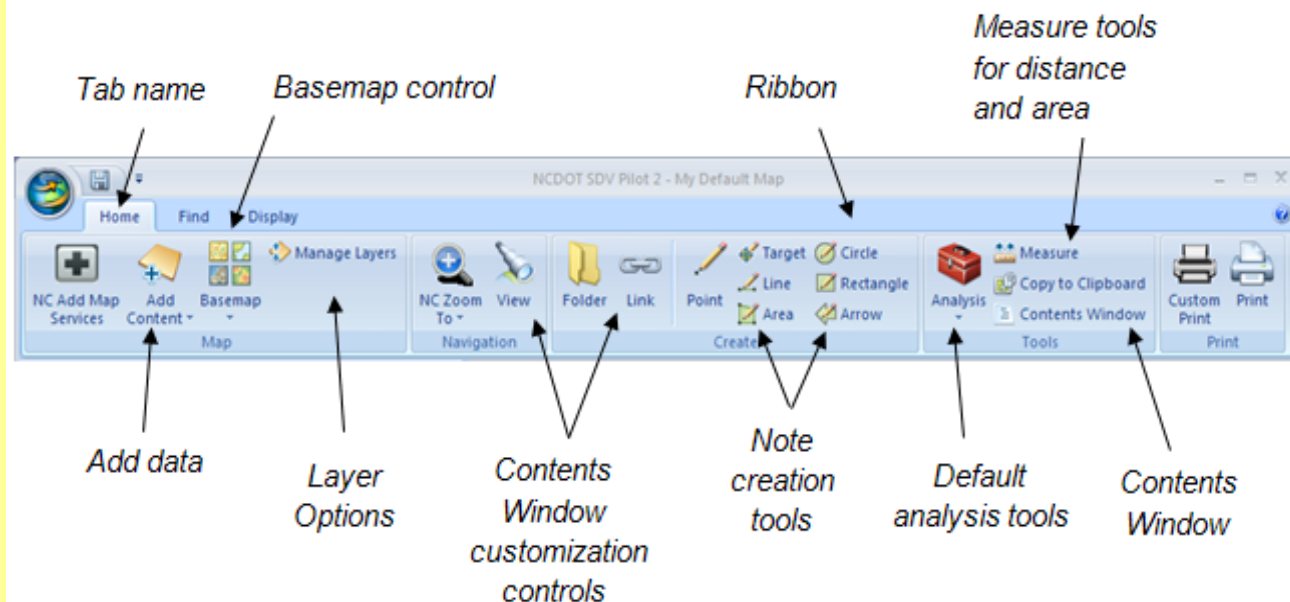
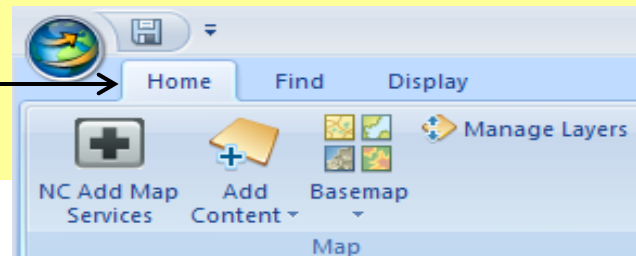
SDV Training

SDV Tabs

Home Tab

There are 3 initial tabs on the Ribbon:

Home tab, which carries tools and functions common to all datasets:



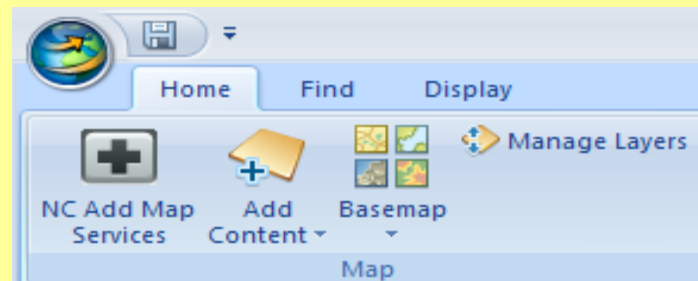
SDV Training

SDV Tabs

Home Tab

Map Group

- NC Add Map Services
 - Add SDV map services to the Contents Window
- Add Content
 - ArcGIS online, layers, Map Content files, KML files, GIS Services, shapefiles, raster data, Geodatabase, text files, GPS data, Image overlays
- Basemap
 - NCDOT, ESRI's World Topo, Bing, My Basemap
- Manage Layers
 - Change layer position, remove, clear cache



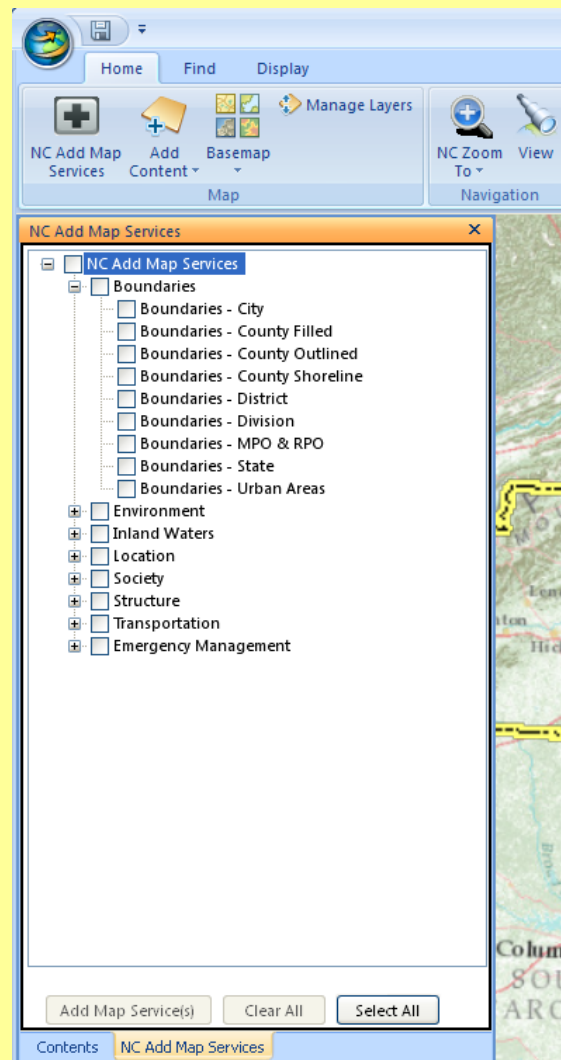
SDV Training

Home Tab

NC Add Map Services

- Over 40 map services
- Organized by type
- New ones under development
- Guided by Business Unit
- SDV Resource Center announcements
- Send suggestions to:

gishelp@ncdot.gov

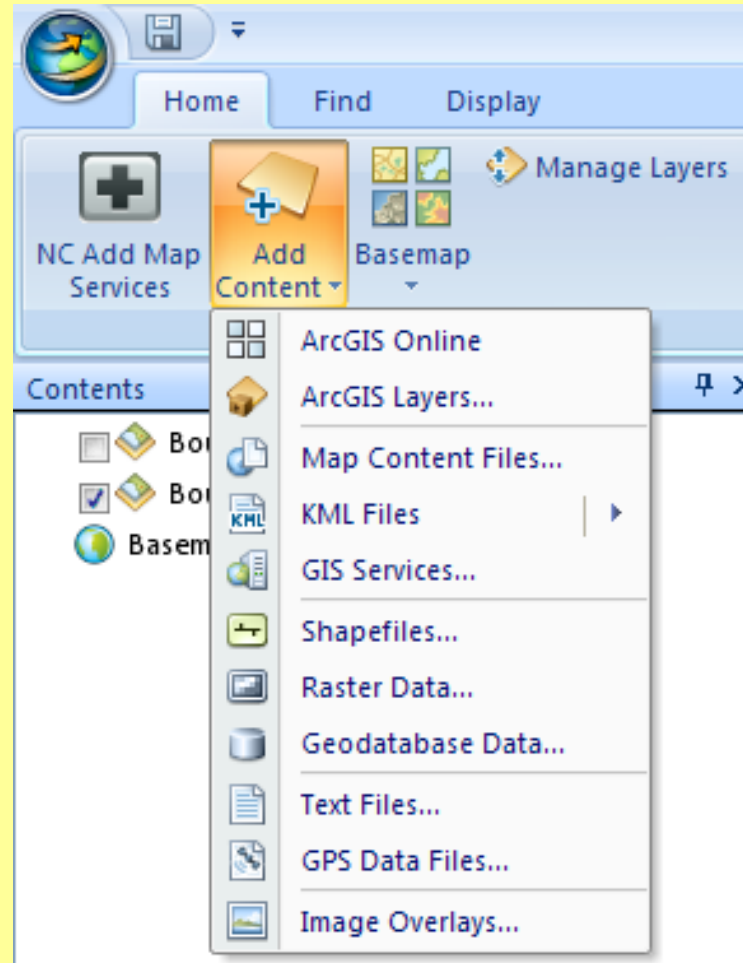


SDV Training

Home Tab

Add Content

- ArcGIS layers
- KML Files
- Shapefiles
- Geodatabase
- Rasters
- Text
- GPS data
- Image Overlays

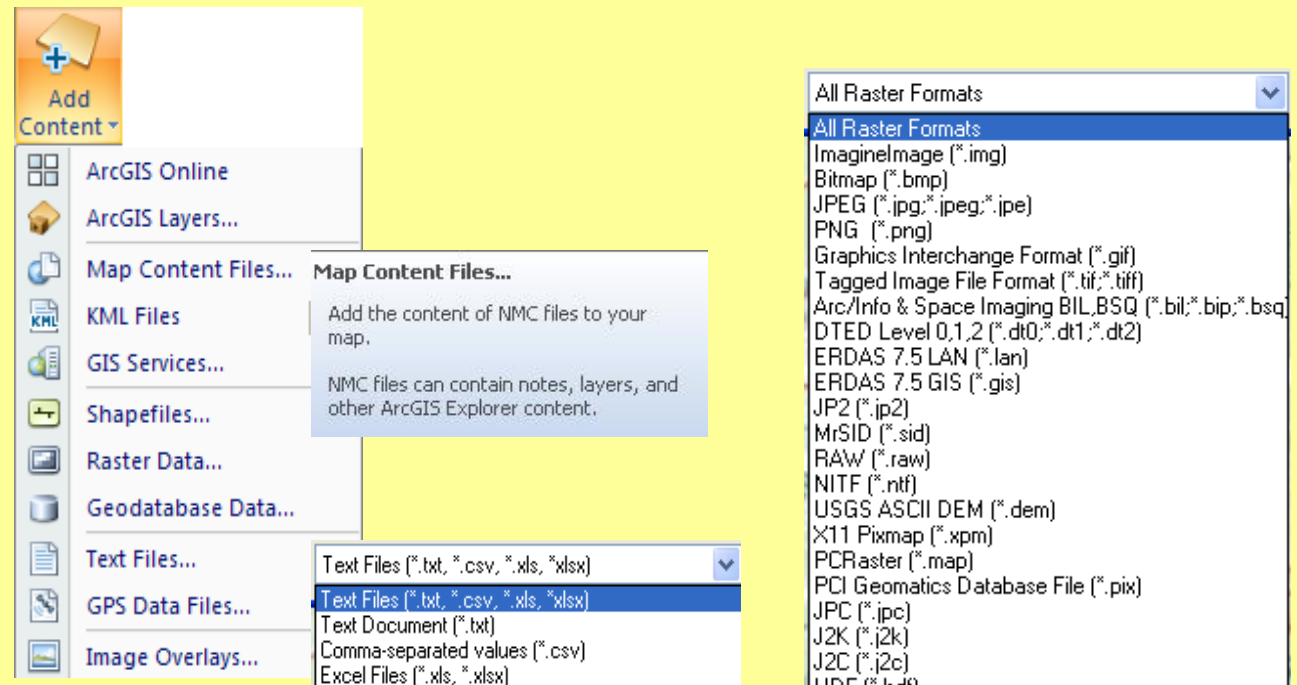


SDV Training

Home Tab

Add Content

- ArcGIS layers
- KML Files
- Shapefiles
- Geodatabase
- Rasters
- Text
- GPS data
- Overlays

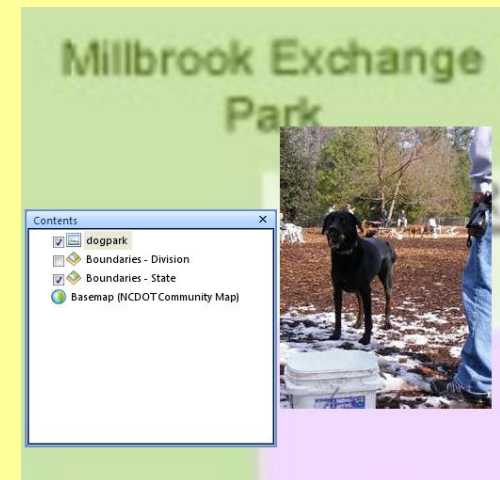
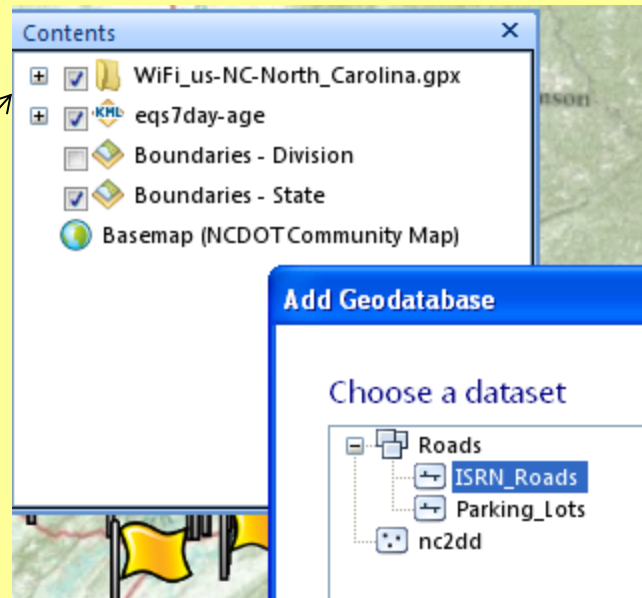


SDV Training

Home Tab

Add Content

- ArcGIS layers
- KML Files (<http://earthquake.usgs.gov/earthquakes/shakemap/>)
- Shapefiles
- Geodatabase
- Rasters
- Text
- GPS data
- Overlays

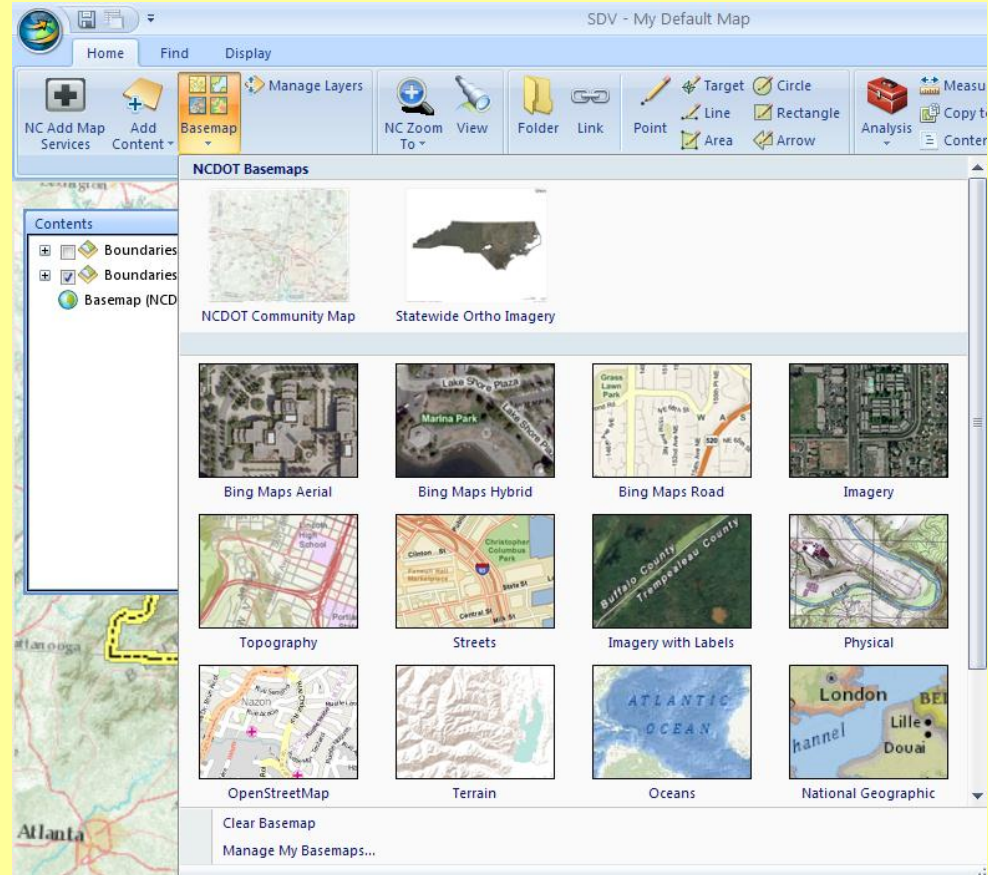


SDV Training

Home Tab

Basemap

- Reference data
- Displays under GIS data

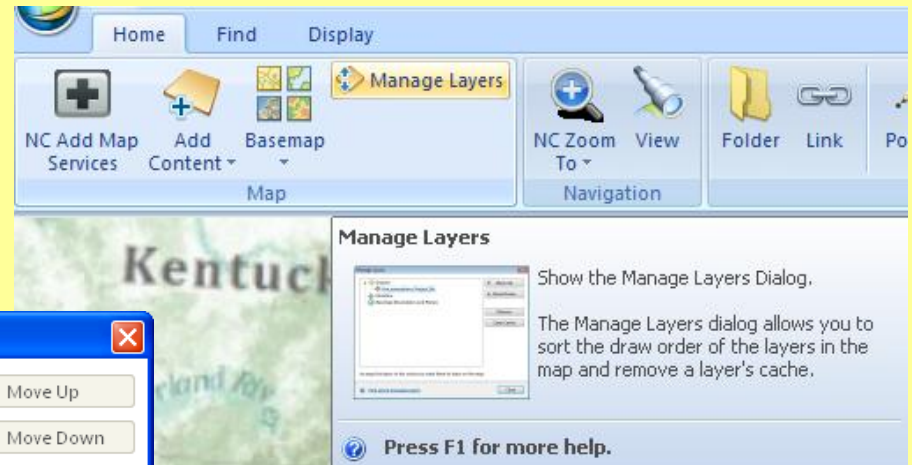
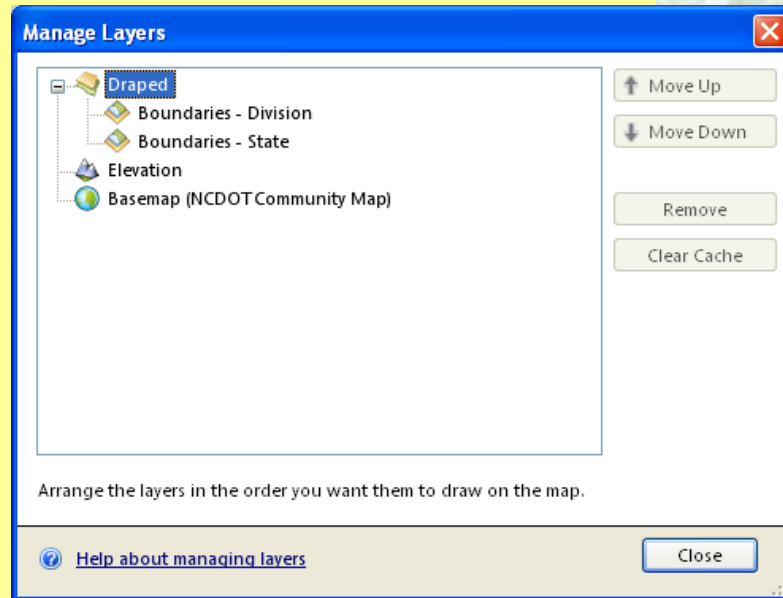


SDV Training

Home Tab

Manage Layers

- Change draw order
- Remove cache

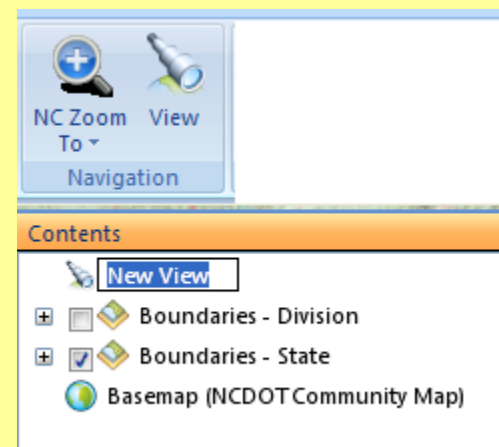
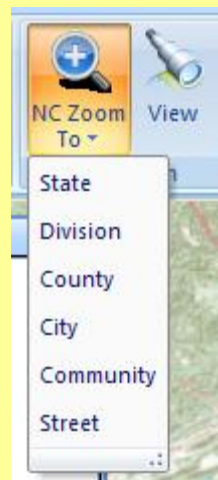
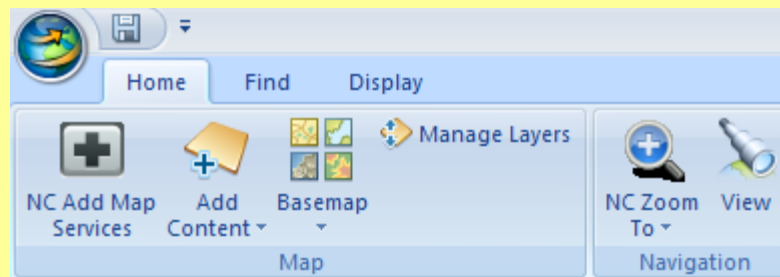


SDV Training

Home Tab

Navigation Group

- NC Zoom To
 - State, Division, County, City, Community, Street
- View
 - Create a view of map to return to

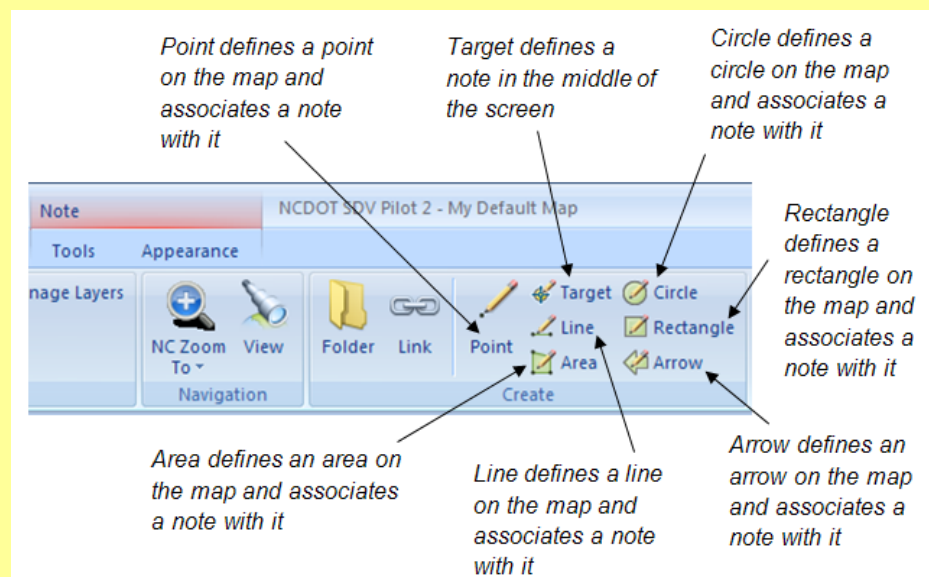
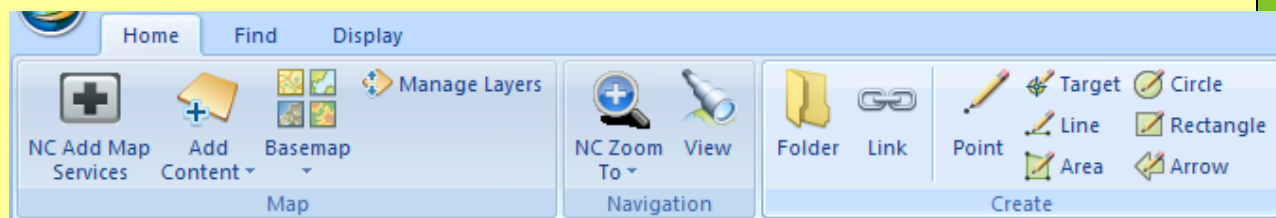


SDV Training

Home Tab

Create Group

- Folder
- Link
- Point
- Target
- Line
- Circle
- Rectangle
- Area

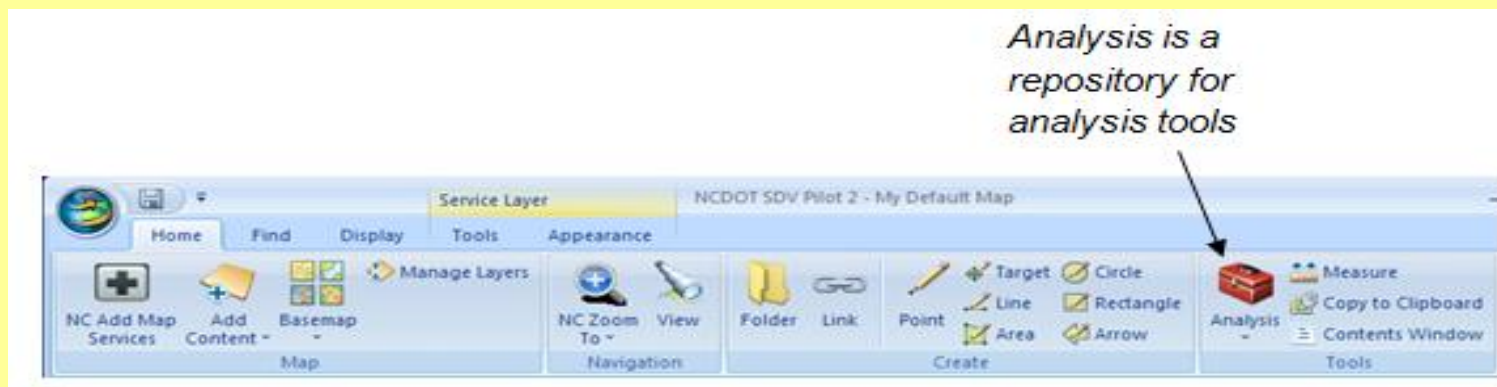
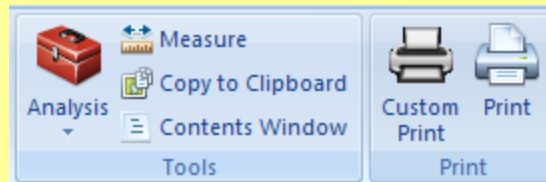


SDV Training

Home Tab

Tools Group

- Analysis
- Measure
- Copy to Clipboard
- Contents Window

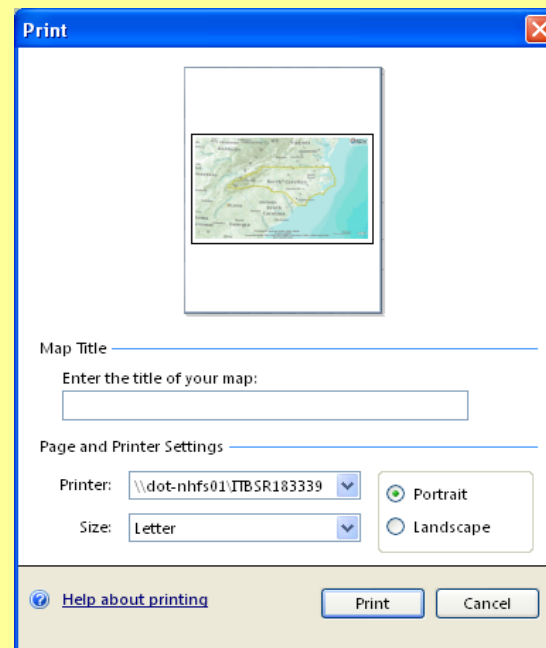
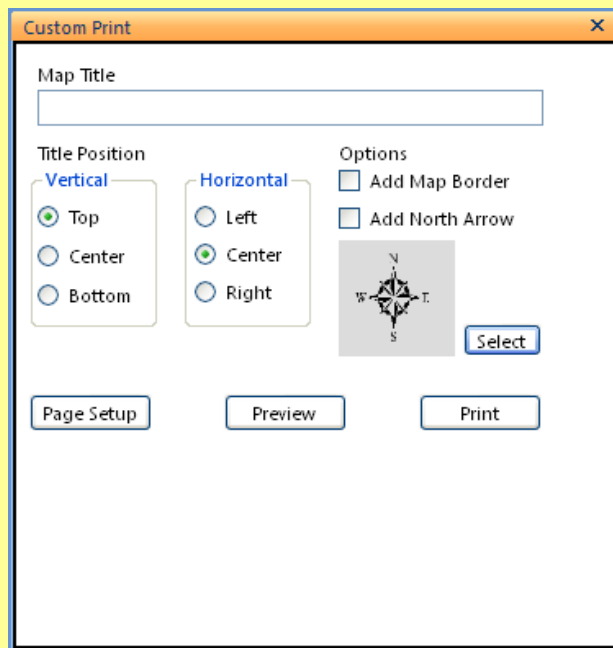
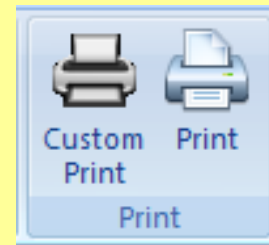


SDV Training

Home Tab

Print Group

- Custom Print - Map title, border, North Arrow
- Print - Map title, printer, size, orientation

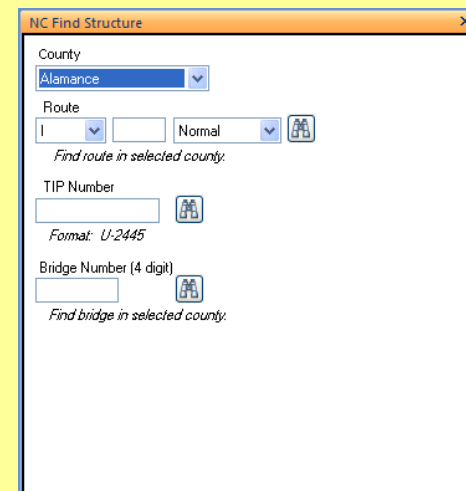
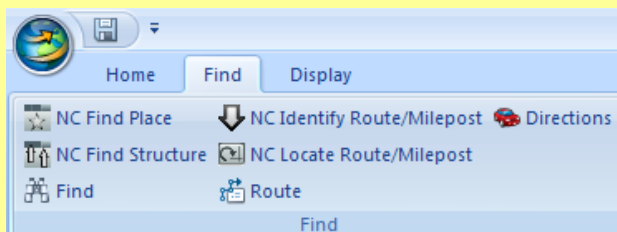
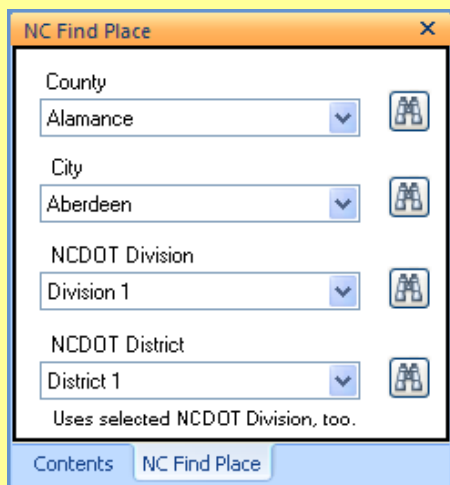
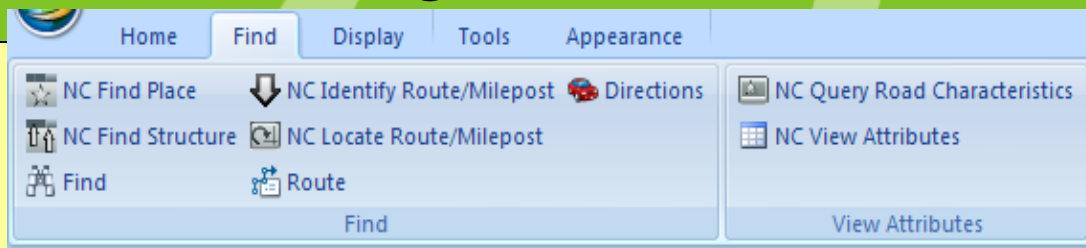


SDV Training

Find Tab

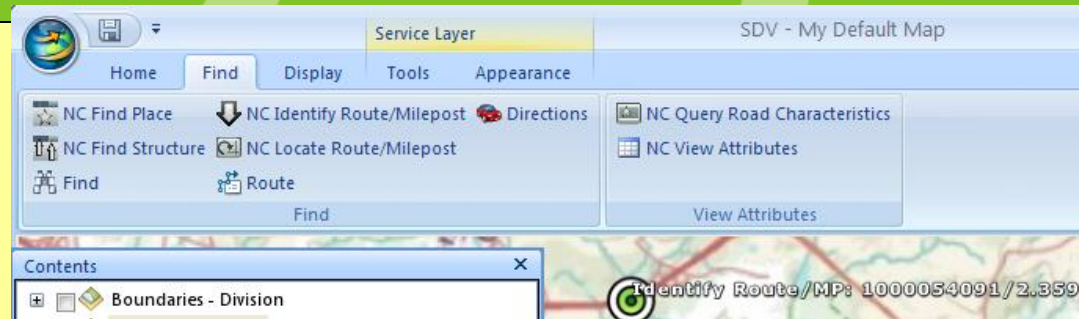
Find Group

- NC Find Place
 - County, City, NCDOT Division, NCDOT District
- NC Find Structure
 - County, Route, TIP Number, Bridge Number

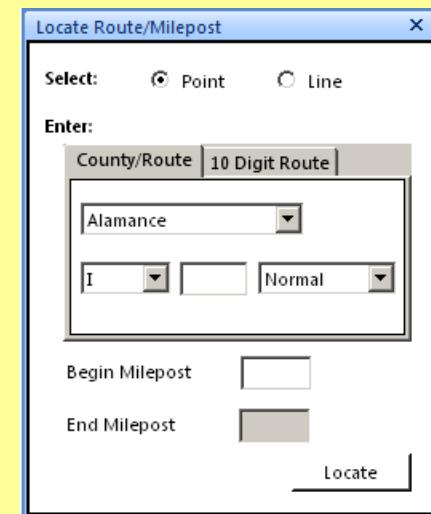
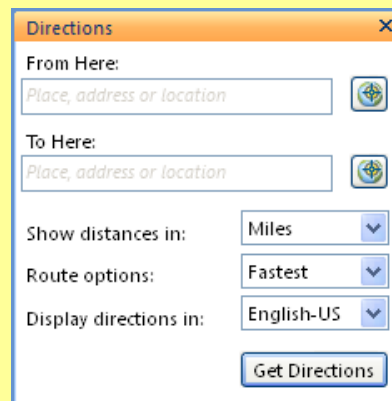


Find Tab

Find Group - continued



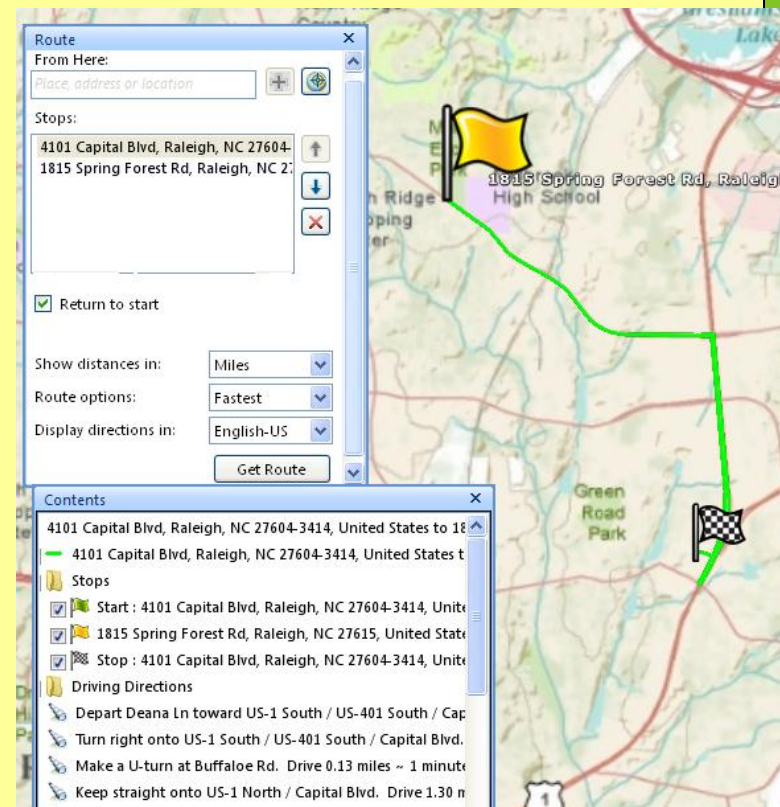
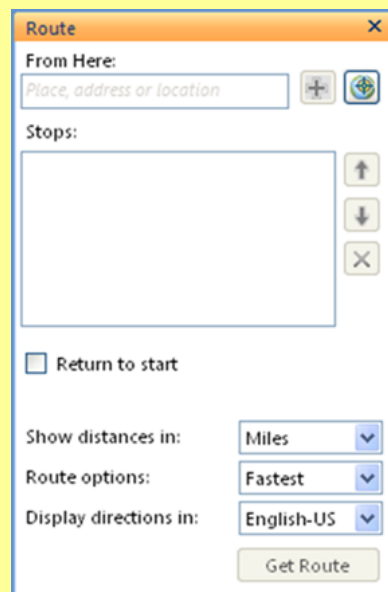
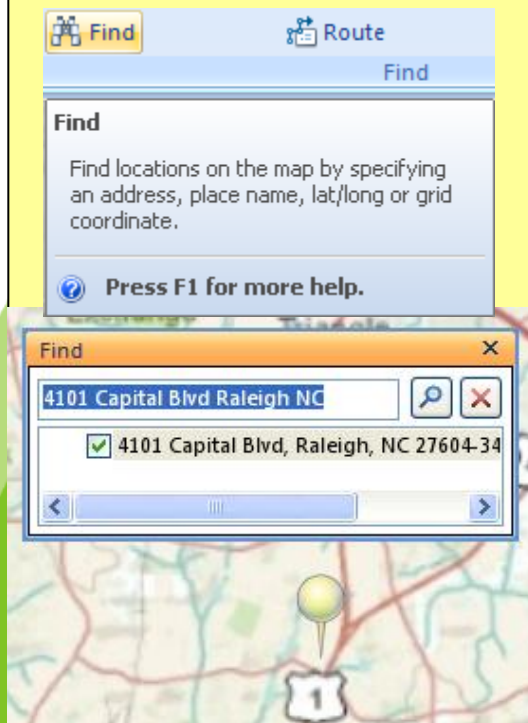
- NC Identify Route/Milepost
provides a mechanism to identify a route and its milepost information at a specified point
- NC Locate Route/Milepost
- Directions



Find Tab

Find Group - continued

- Find
- Find Route

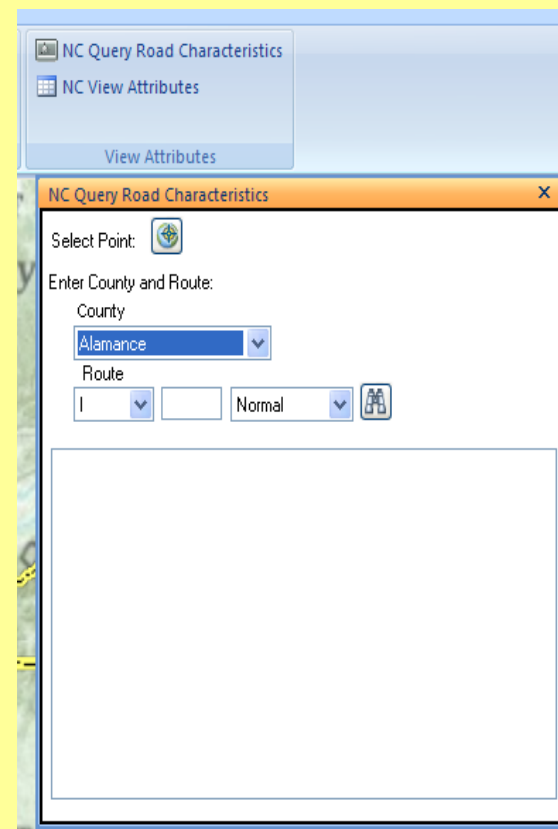
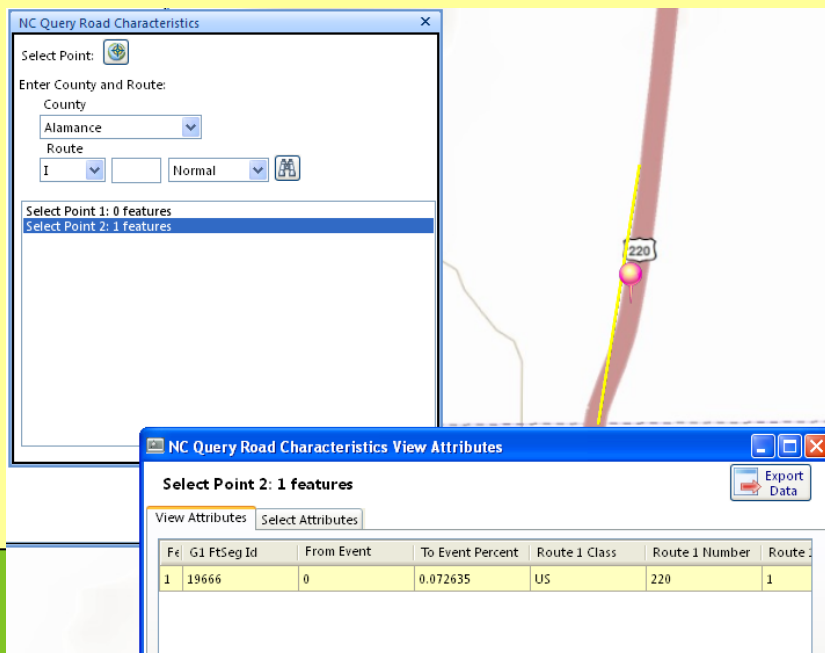


SDV Training

Find Tab

View Attributes Group

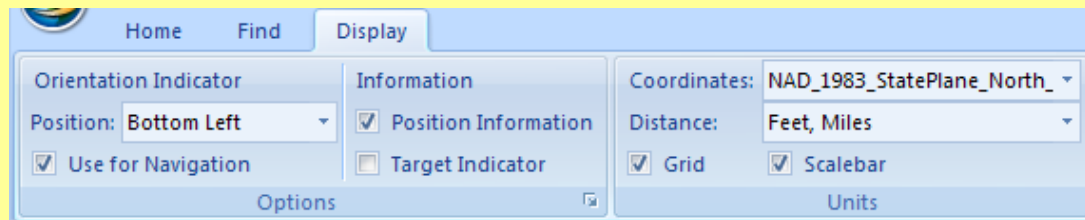
- NC Query Road Characteristics
 - Retrieve road characteristics
- NC View Attributes
 - View feature layer attributes



Display Tab

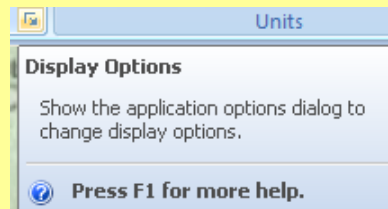
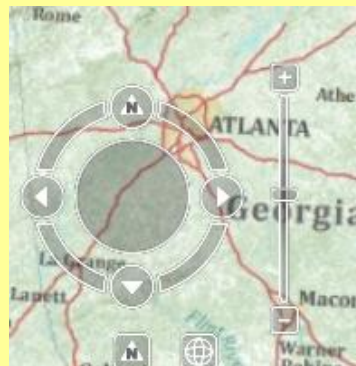
Options Group

- Orients the zoom/pan tool to move around the Display Window



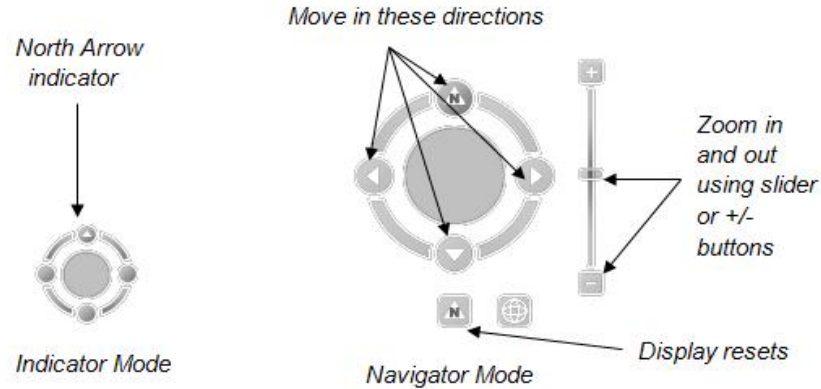
Units Group

- Select coordinate system, units of measurement
 - Select Grid, Scalebar

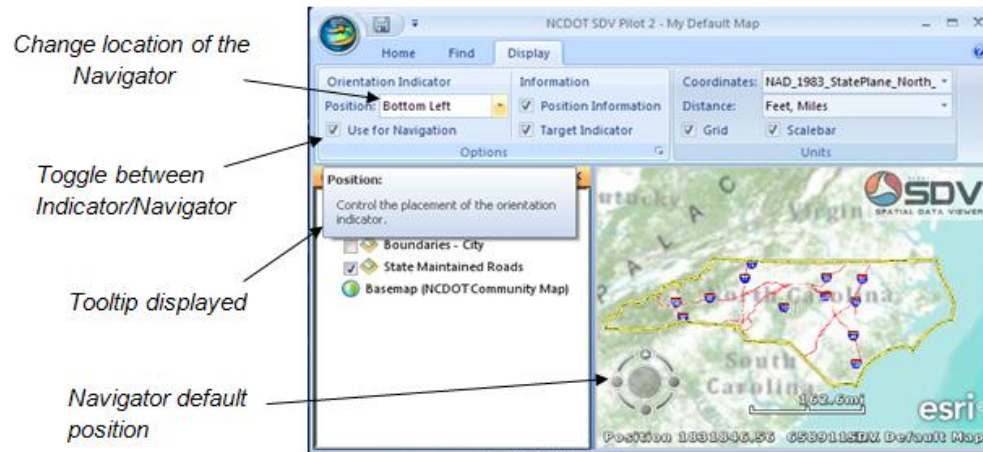


SDV Training

Display Tab Navigator



The Navigator can be repositioned and turned on or off using controls under the Display tab.



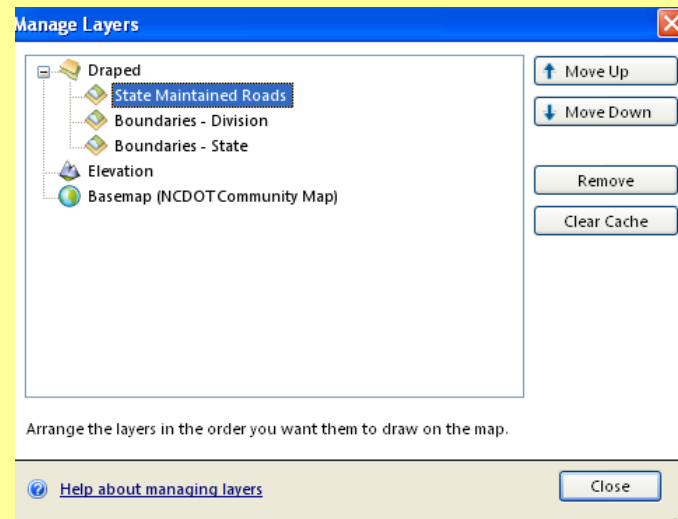
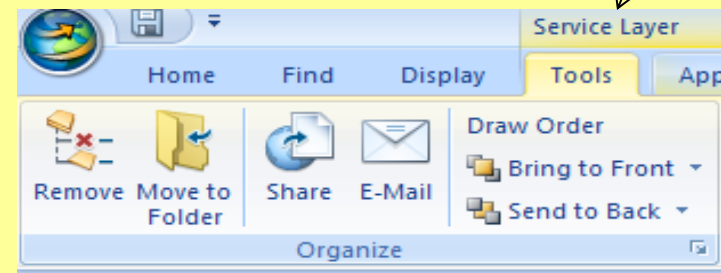
SDV Training

Tools Tab

Visible when Layers or Notes are selected in Contents Window

Organize Group

- Remove
- Move to Folder
- Share
- E-Mail
- Draw Order
 - Bring to Front
 - Send to Back

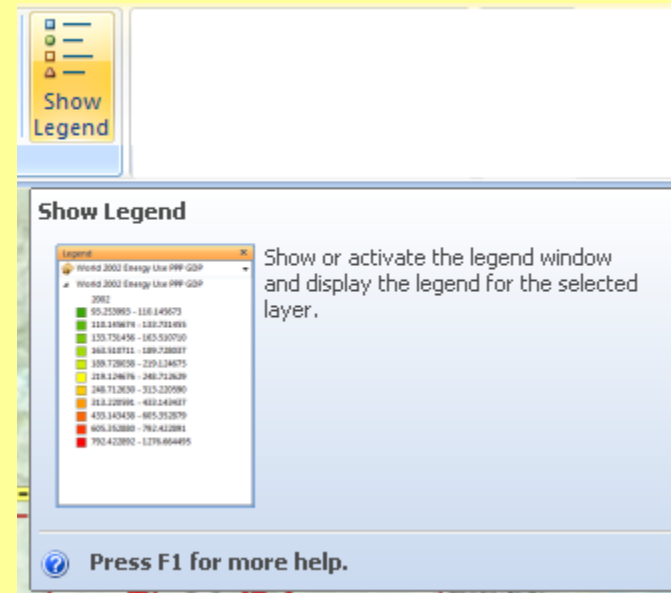


SDV Training

Tools Tab

View Group

- Go To
 - Zooms to selected content layer
- Set Default View
 - Bookmarks the map
- Show Legend
 - Shows features of selected content layer



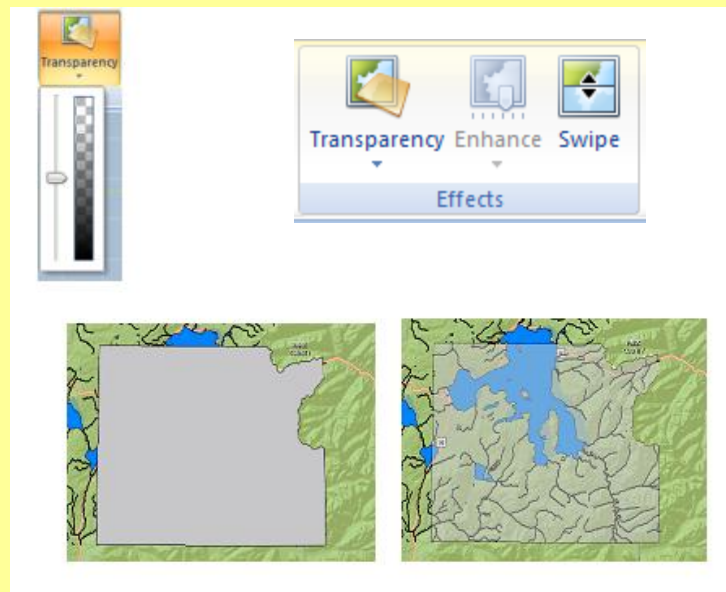
SDV Training

Tools Tab

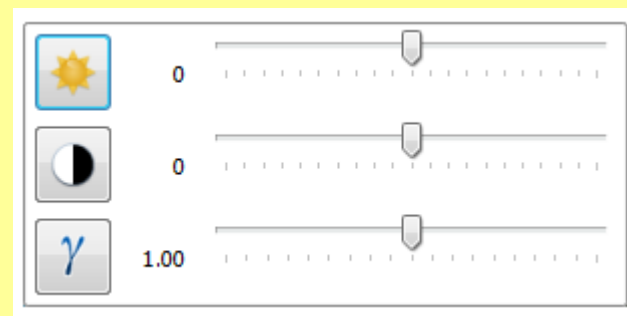
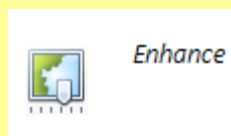
Effects Group

- Transparency
- For selected layer

(Also accessed from Appearance tab)



- Enhance
- For image



SDV Training

Tools Tab

Effects Group

- Swipe
- For selected layer



Swipe

Use Swipe to reveal layers beneath the layer you chose to swipe and, depending on how you've set the [Layers options](#), the layers above it. This button makes it easy to quickly see what is underneath a particular layer without having to turn it off in the *Contents* window or reorder layers.

To reveal layers beneath the layer you've selected

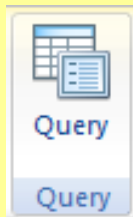
Choose the layer or group layer you want to swipe from the *Contents* window, then move the cursor over the map. You'll notice that the cursor changes based on whether you are resting the mouse pointer on the top, bottom, left, or right of the map. This lets you choose the direction in which you want to swipe the layer. Hold down the left mouse button and drag in the direction indicated by the mouse pointer.

SDV Training

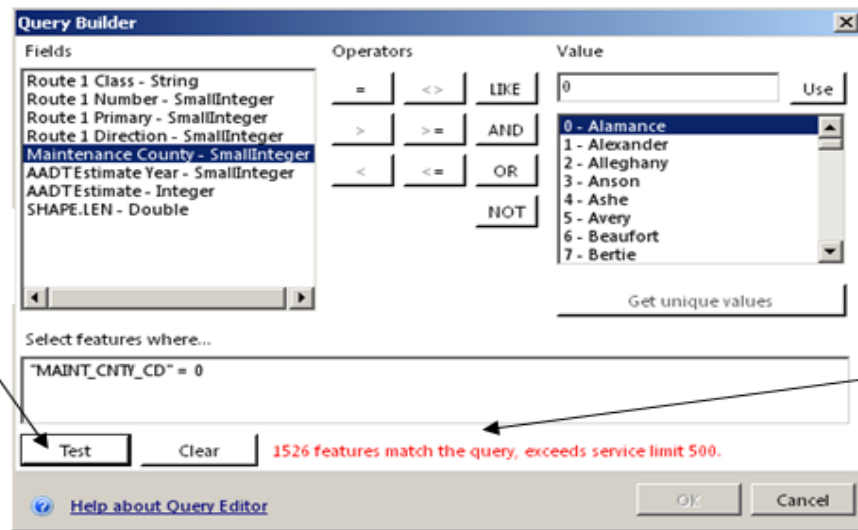
Tools Tab

Query Group

- To query a selected layer from the Contents Window
- Access SDV Resource Center for Help



Click
"Test"...

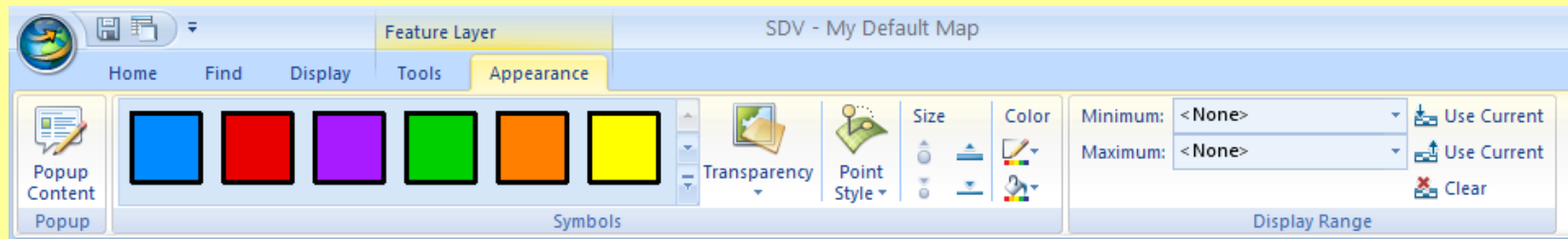


...to
get
this
result.

Queries are limited
to 500 records!

SDV Training

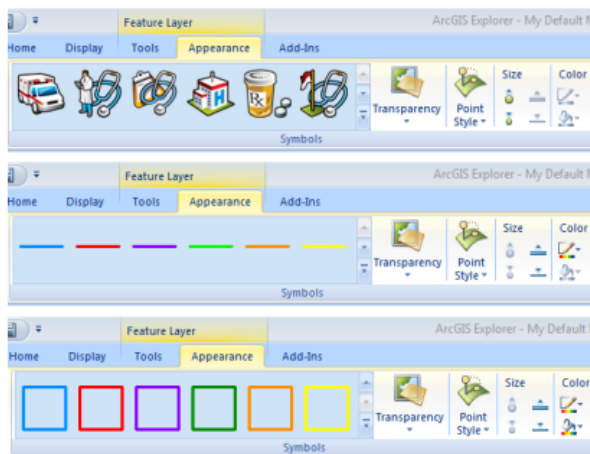
Appearance Tab



Symbols Group

- Change the display options
- Notes
- Symbols
- Labels

The *Appearance* tab includes a *Symbol* group that contains various controls for selecting symbols to draw the GIS data with and controls for modifying properties of the symbol. Notice the different galleries for points, line, and areas (polygons):

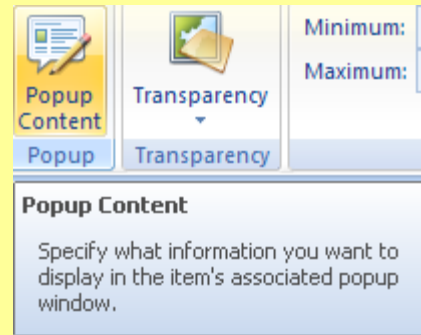


SDV Training

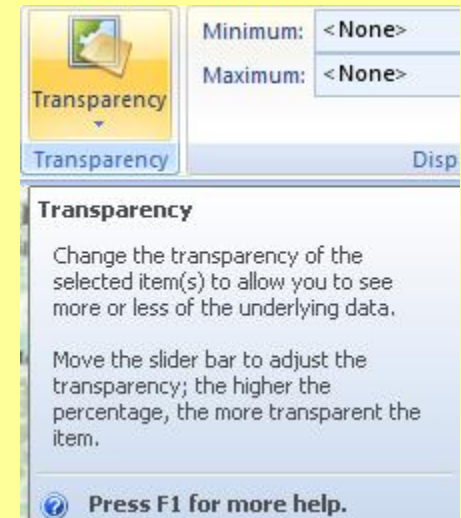
Appearance Tab

Popup Group

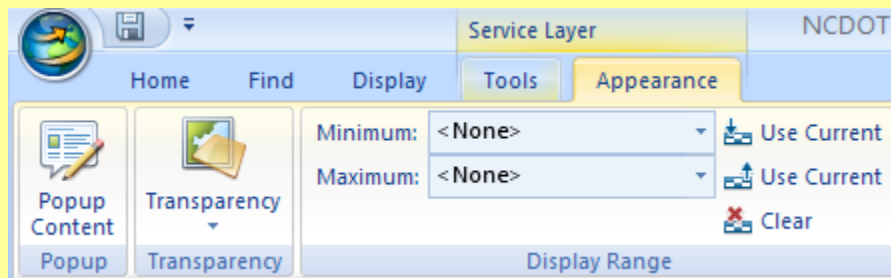
- Provides information about item selected



Transparency Group



Display Range Group



Use Current

Use the current map display to set the maximum zoom level.

SDV Training

FACILITATE

- Access NC and NCDOT data
- Share information

FUNCTIONALITY

- More NC map services, tools
- Flexibility
- SDV Resource Center -
<http://gisi01.dot.nc.net/SDVResourceCenter/>

FUTURE

- Suggestions/Help emails go to gishelp@ncdot.gov

TRAINING

- Contact your Training Coordinator to sign up for training or
- Cathy Cole – ccole@ncdot.gov 919-707-2110

SDV Training

Collapsed Bridge Scenario



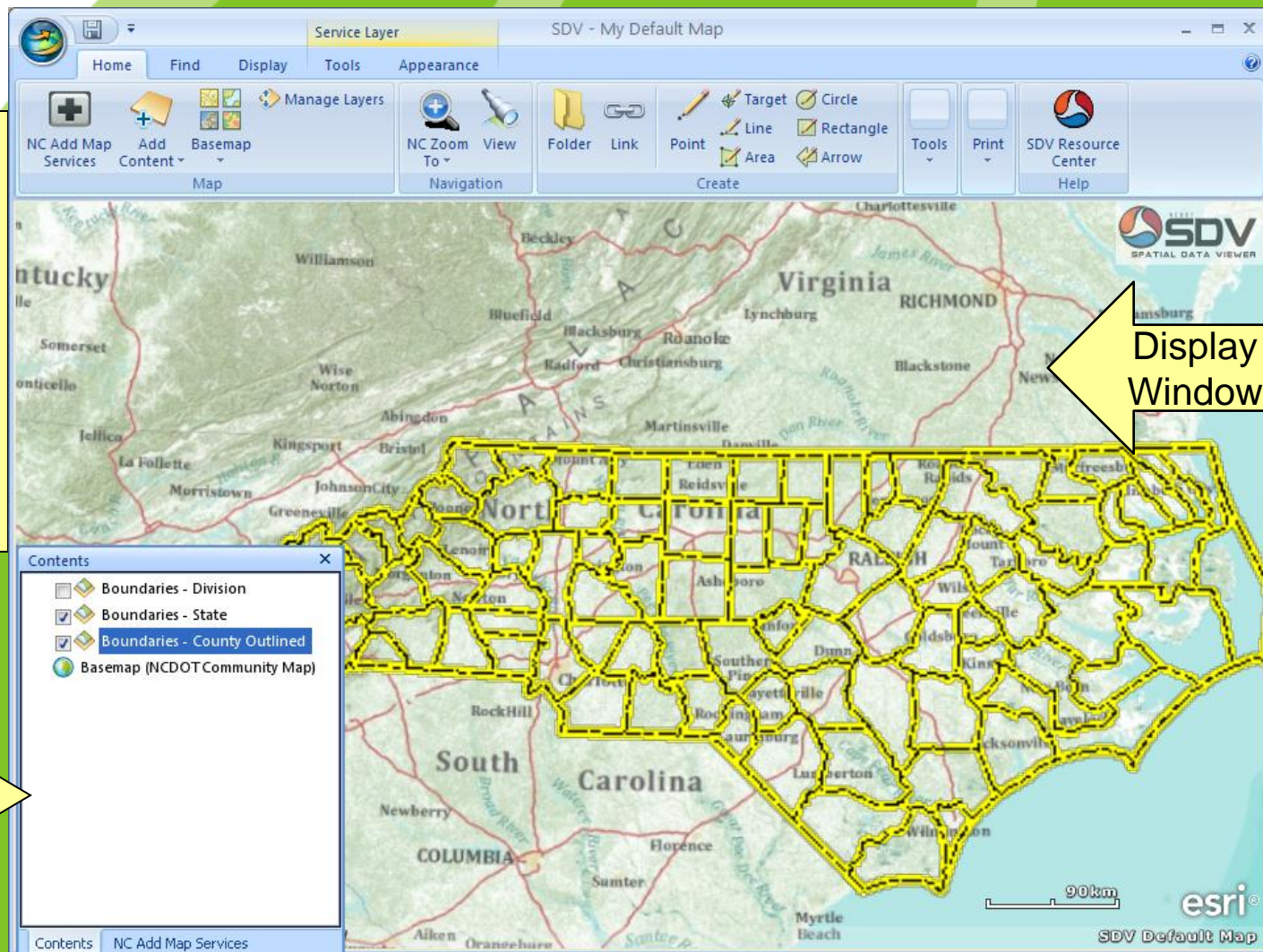
SDV Training

- **Collapsed Bridge Scenario**
 - Add Map Services
 - SDV Resource Center
 - NC Find Tools
 - Query Tools
 - Zoom to incident area (mouse, NC Zoom, navigation tool)
 - Change Basemap
 - Find road characteristics, bridge, pavement, & fatal accident data
 - View attributes of collapsed section
 - Create note for area in question
 - Email the map
 - Add external data to the map
 - Measure area around collapsed bridge, distance to alternate route
 - Add North Arrow, Print preview Map, save as PDF

SDV Training



- Open SDV
- Add NC Map Service
- Select layer

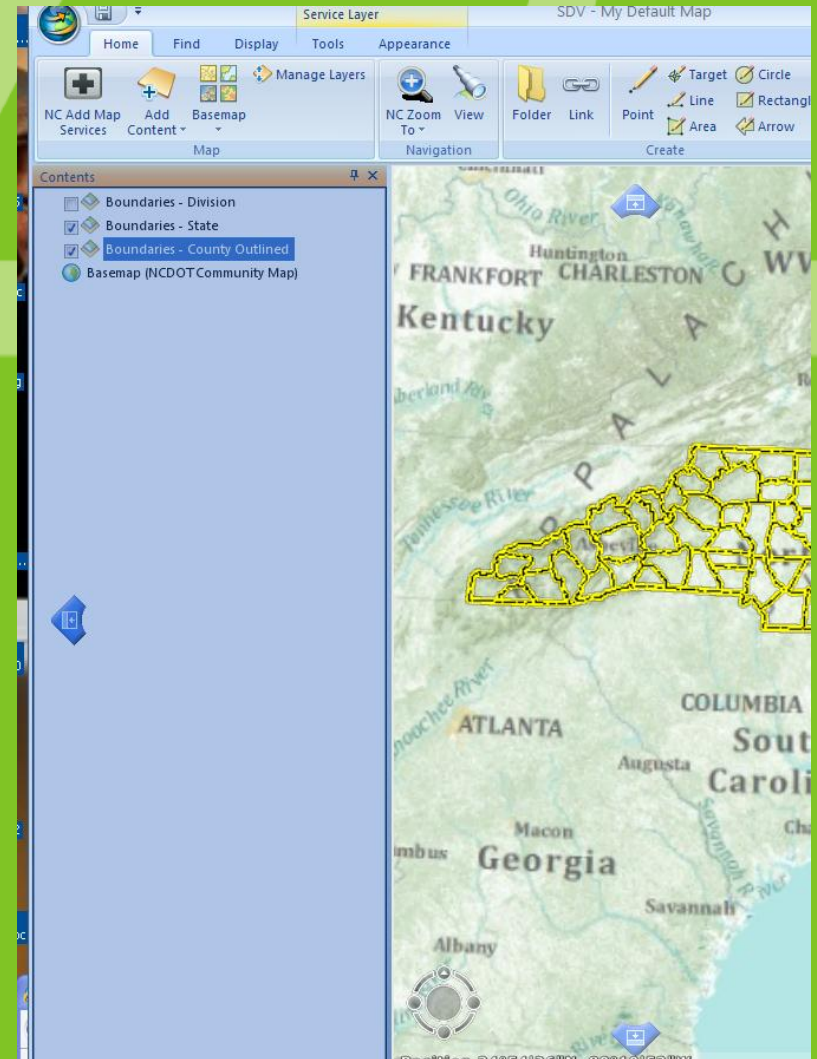
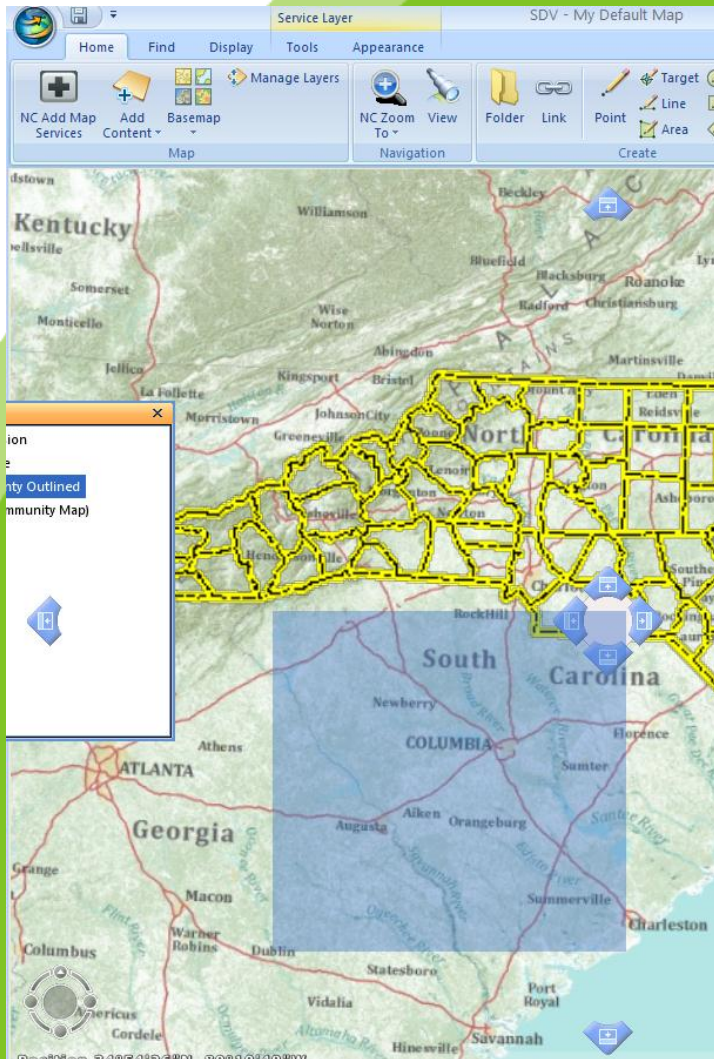


Contents Window
(docking)

Display
Window

SDV Training

Docking



SDV Training

Coordinate Systems

[Feedback](#)[E-mail this topic](#)[Print this topic](#)

About Coordinate Systems

A coordinate system is a fixed reference framework superimposed onto the surface of an area to designate the location of features within it. The positions of objects on the earth's spherical surface are measured in geographic coordinates. While latitude and longitude can locate exact positions on the surface of the earth, they are not uniform units of measure; only along the equator does the distance represented by one degree of longitude approximate the distance represented by one degree of latitude. To overcome measurement difficulties, data is often transformed from three-dimensional geographic coordinates to two-dimensional projected coordinates.

[Learn more about Map Projections](#)


Coordinate systems (either geographic or projected) provide a framework for defining real-world locations. In ArcGIS Explorer, the coordinate system is used as the method to automatically integrate the geographic locations from different datasets into a common coordinate framework for display and analysis.

To work with coordinate systems in ArcGIS Explorer

ArcGIS Explorer provides two property sheets that allow you to work with coordinate systems and geographic transformations, one for 2D Coordinate Systems and the other for 3D Coordinate Systems.

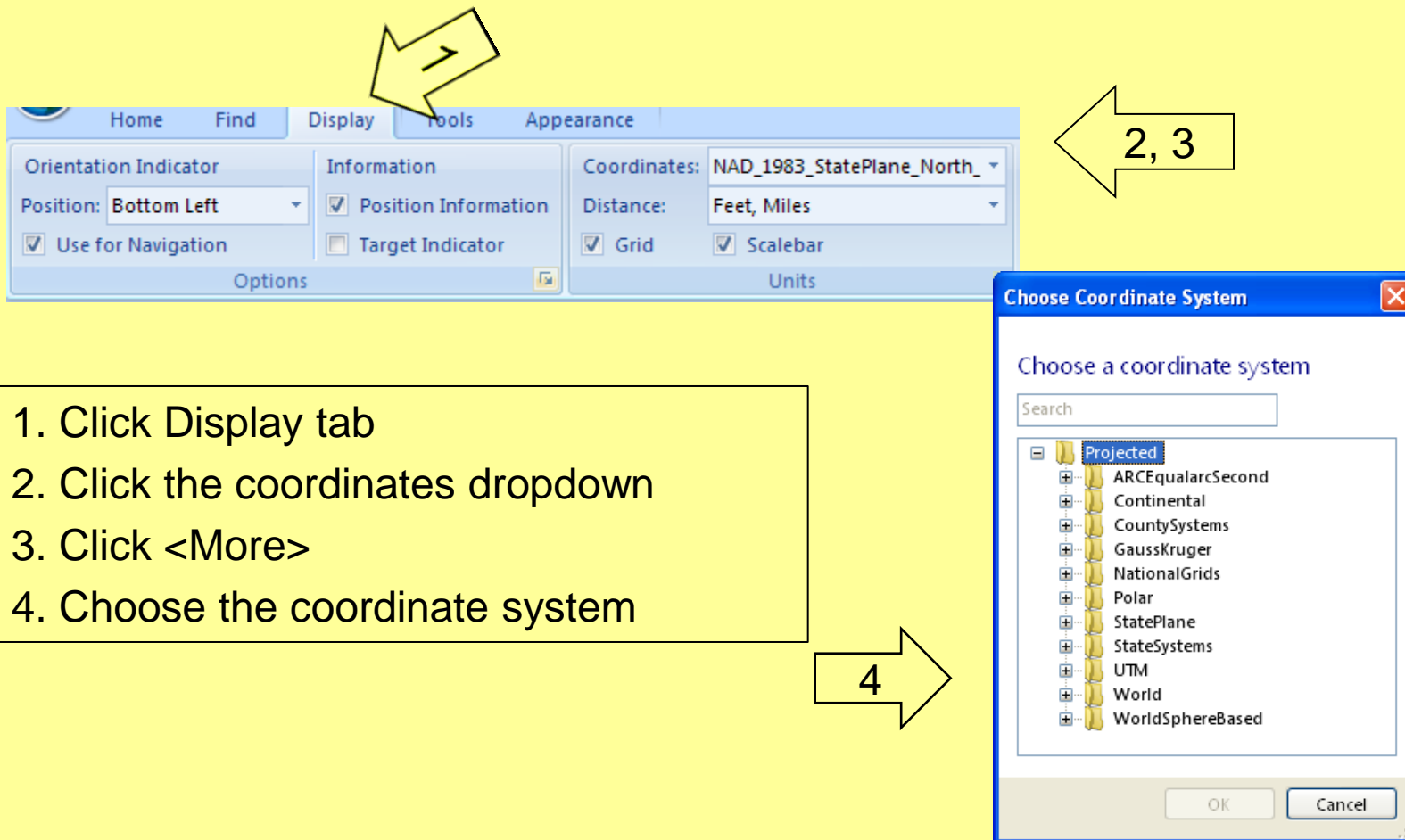
In the 2D Coordinate System property sheet you can choose the coordinate system as well as the geographic transformation(s) to use when projecting layers to the map coordinate system when your map is in 2D Display mode. In the 3D Coordinate System property sheet you can select the geographic transformation(s) to use when projecting layers to the map coordinate system when your map is in 3D Display mode.

To display the Coordinate System properties

1. Click the *ArcGIS Explorer Button* .
2. Click *Map Properties*.
3. Choose *3D Coordinate System* or *2D Coordinate System*.

SDV Training

To change the map coordinate system:



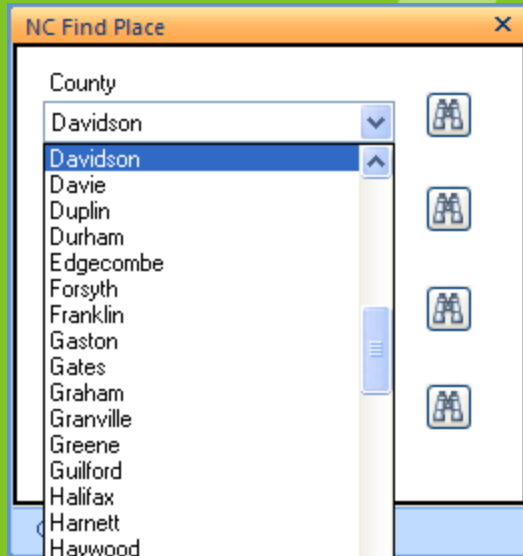
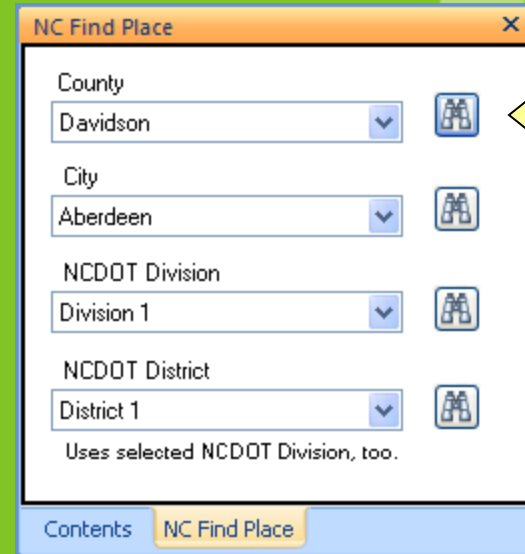
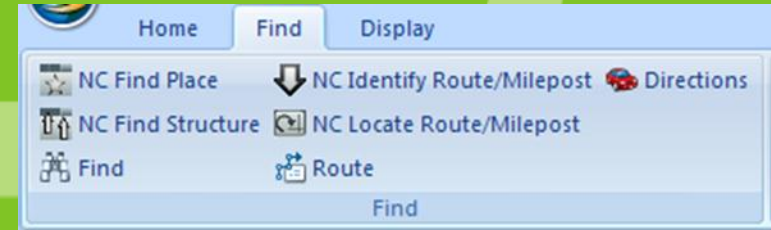
The screenshot shows the SDV software interface with the 'Display' tab selected. The 'Coordinates' dropdown is set to 'NAD_1983_StatePlane_North_'. A yellow box highlights the 'Display' tab and the 'Coordinates' dropdown. A yellow box labeled '2, 3' points to the 'Coordinates' dropdown. A yellow box labeled '4' points to the 'Choose Coordinate System' dialog box. The dialog box shows a list of coordinate systems under the 'Projected' category, including ARCEqualarcSecond, Continental, CountySystems, GaussKruger, NationalGrids, Polar, StatePlane, StateSystems, UTM, World, and WorldSphereBased. The 'StatePlane' system is selected.

1. Click Display tab
2. Click the coordinates dropdown
3. Click <More>
4. Choose the coordinate system

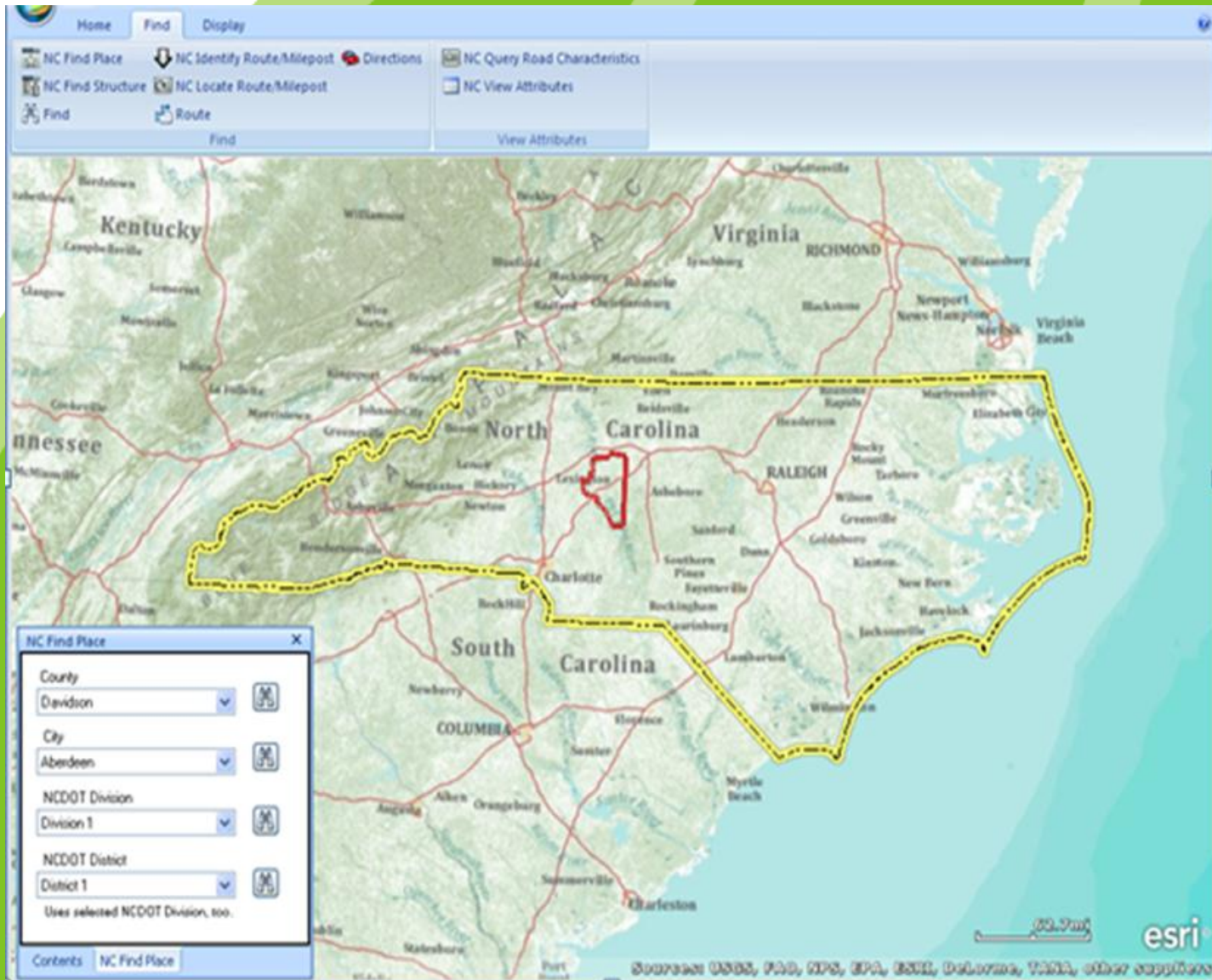
SDV Training

Find Davidson County

1. Click Find tab
2. Click NC Find Place
3. From the County drop down list choose Davidson County
4. Click the search button



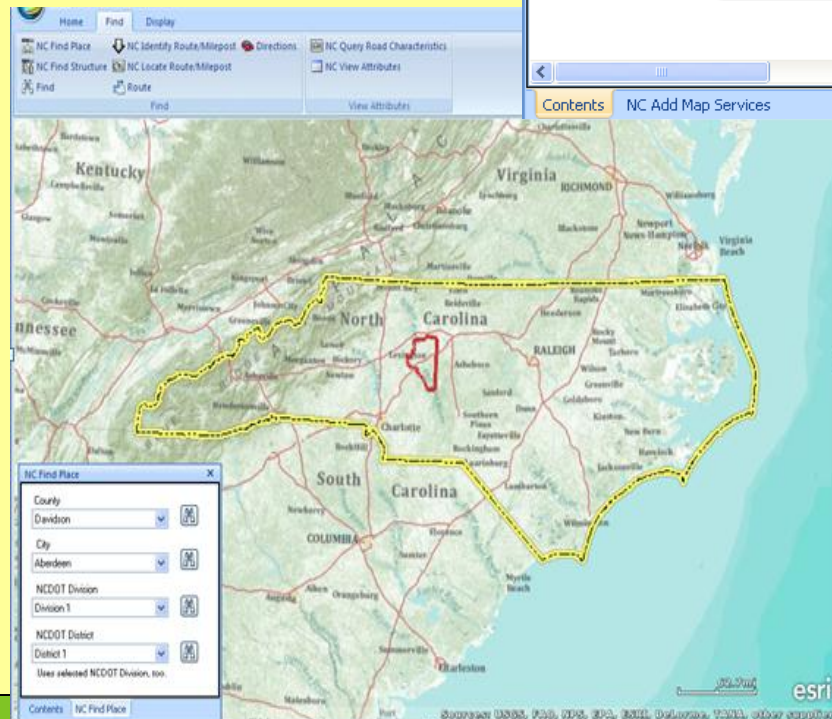
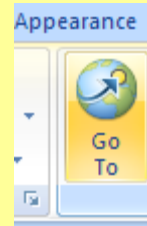
SDV Training



SDV Training

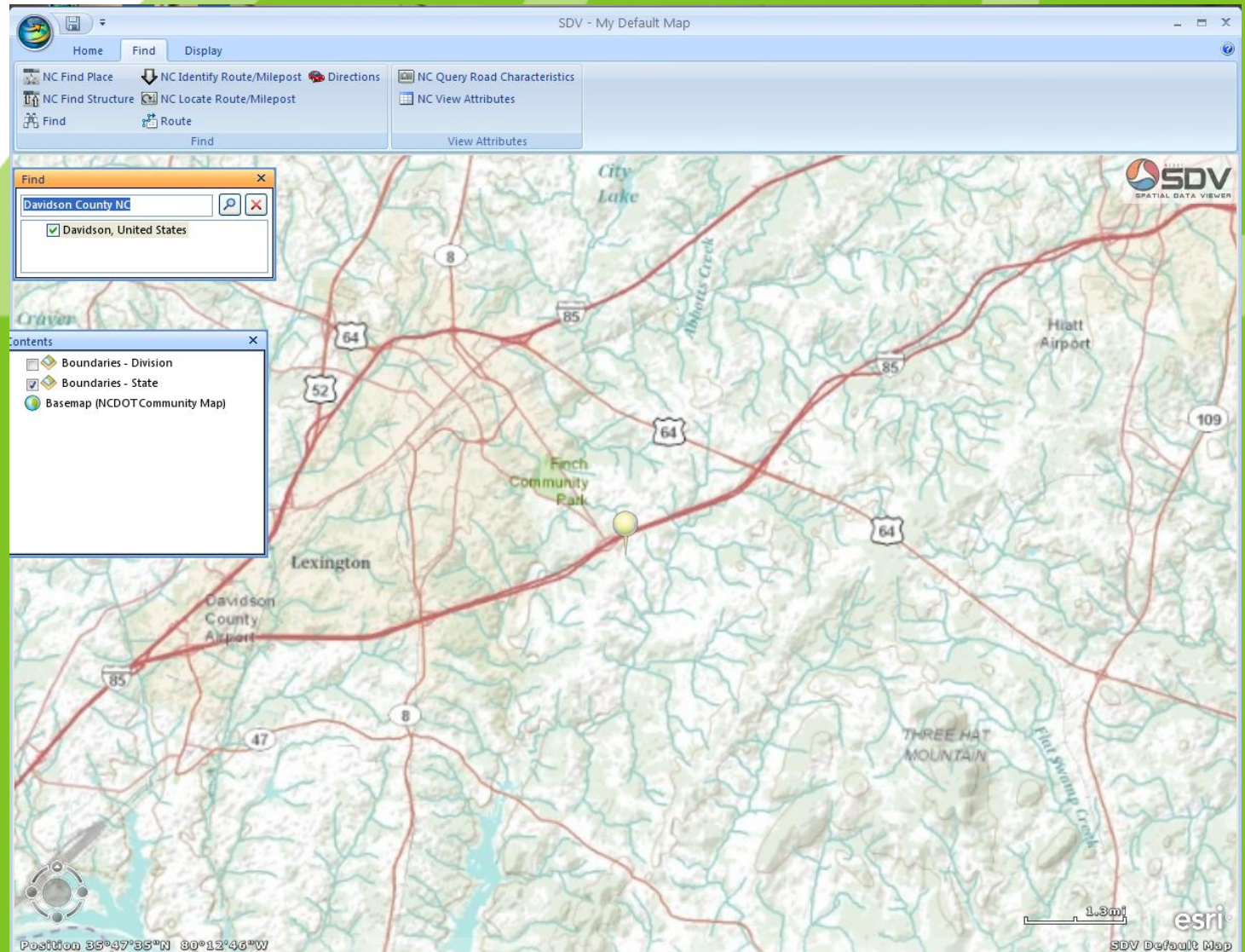


- County is located, Zoom in by
 - Right Click, Go To
 - Scroll button on mouse
 - Using Navigator zoom
 - Double Click item in Contents Window
 - Go To Icon under Appearance tab

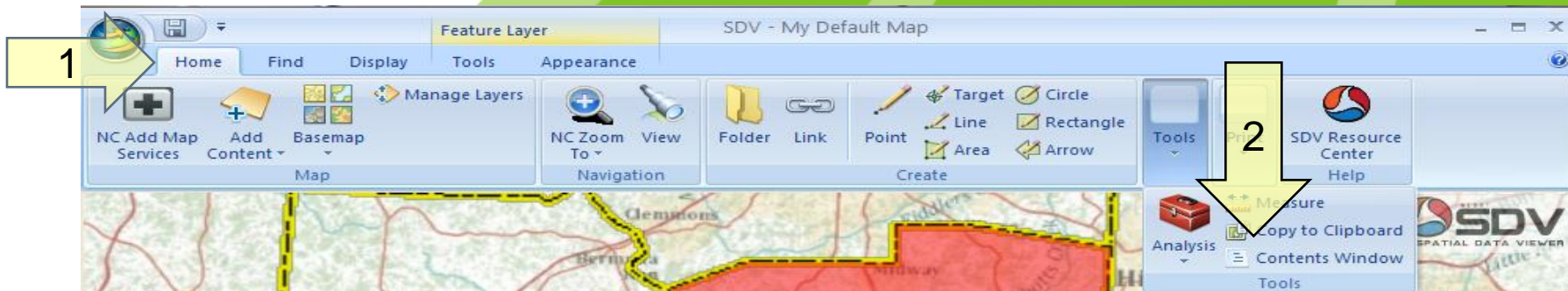


SDV Training

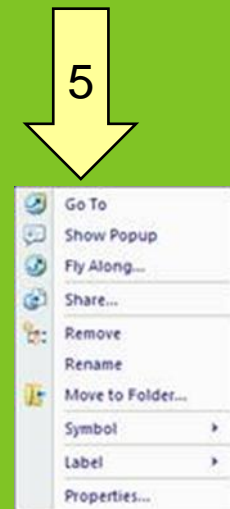
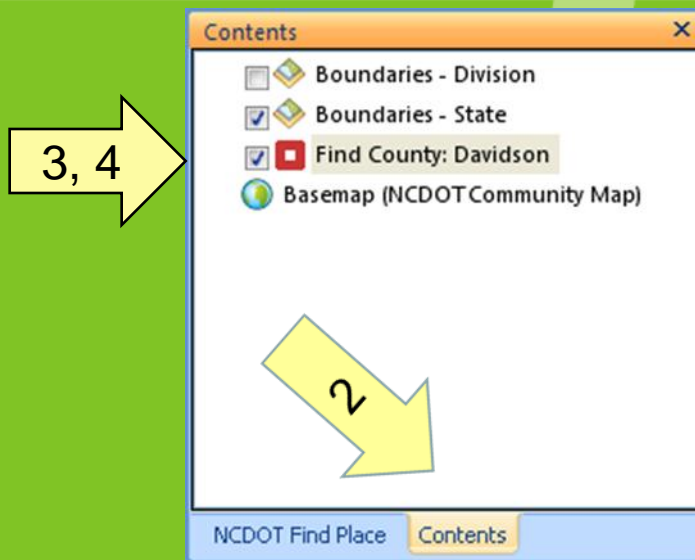
You can also use the FIND option to get to general area



SDV Training



1. Click Home tab
2. Click Contents Window (there are 2 ways to get there)
3. Check the Find County: Davidson option box
4. Right click on Find County: Davidson
5. Click "Go to"
6. Or Double Click Find County: Davidson
7. SDV zooms in to county

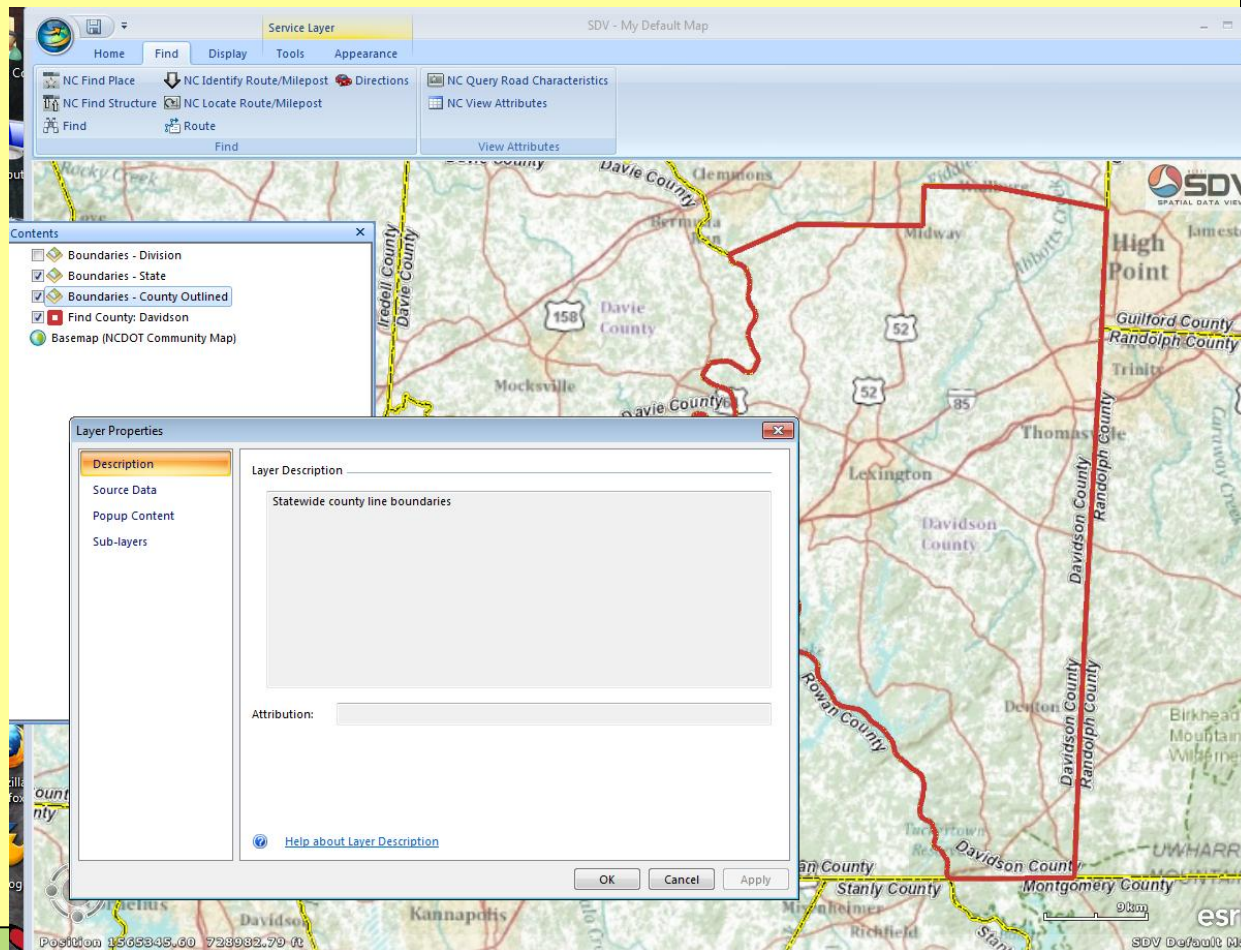


SDV Training

- To view Layer Properties
 - Right Click Layer

Layer Properties

- Description
- Source Data
- Popup Content



SDV Training

- To view Layer Properties
 - Right Click Layer

Layer Properties

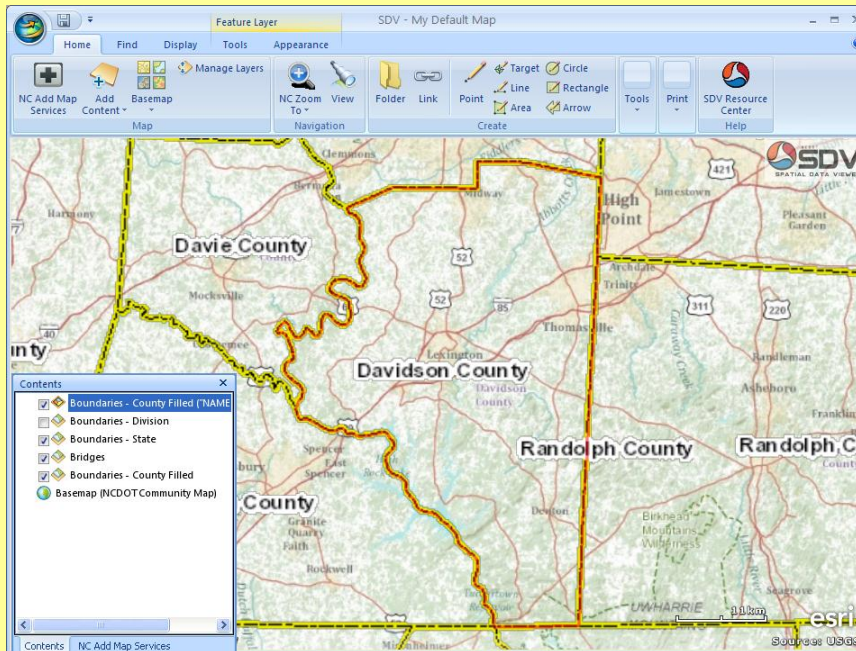
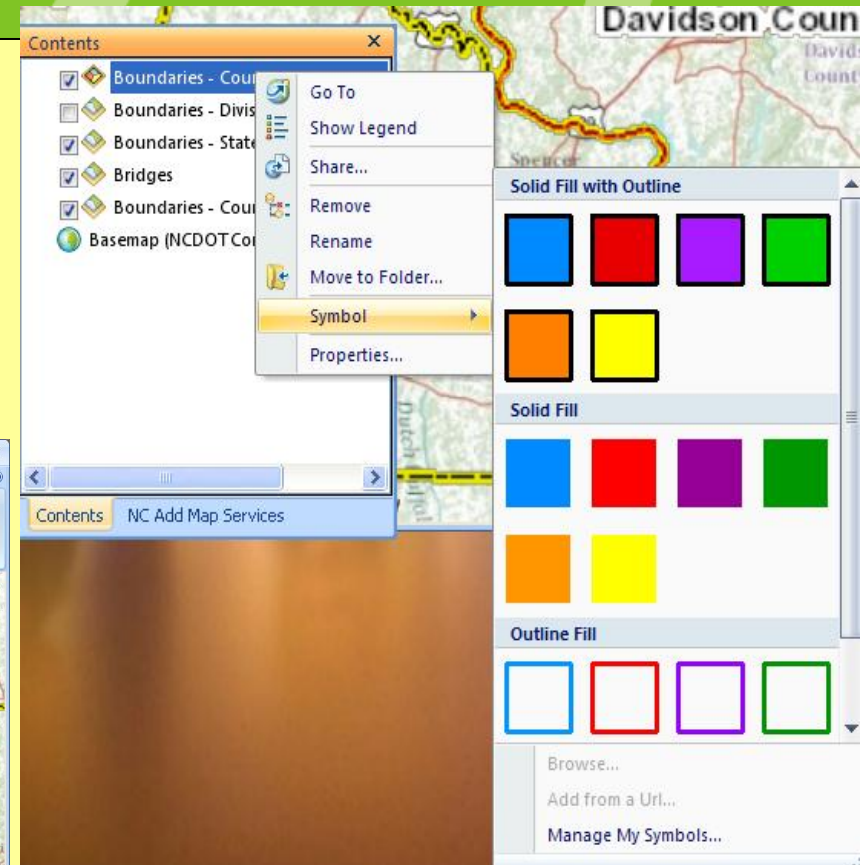
- Description
- Source Data
- Popup Content

The screenshot shows the SDV - My Default Map application. The map displays several counties in North Carolina, with Davidson County highlighted in red. The 'Contents' panel on the left lists various layers, including 'Boundaries - County Filled', 'Boundaries - Division', 'Boundaries - State', 'Bridges', and 'Basemap (NCDOT Community Map)'. The 'Layer Properties' dialog box is open for the 'Davidson County' layer. The 'Popup Content' tab is selected, showing options to display a popup window and a table of field values. The table lists fields such as 'County Name', 'DOT County Number', 'SAP County Number', 'SHAPE_Length', and 'SHAPE_Area' with their corresponding values. The 'Title and Parameter Field' section is also visible, showing 'County Name' selected as the title field.

Field Name	Field Value
County Name	Davidson
DOT County Number	28
SAP County Number	29
SHAPE_Length	642647.243258296
SHAPE_Area	15821643566.3606

SDV Training

- To Change appearance of layer
 - Right Click Layer
 - Scroll to Symbol
 - Select from options



SDV Training

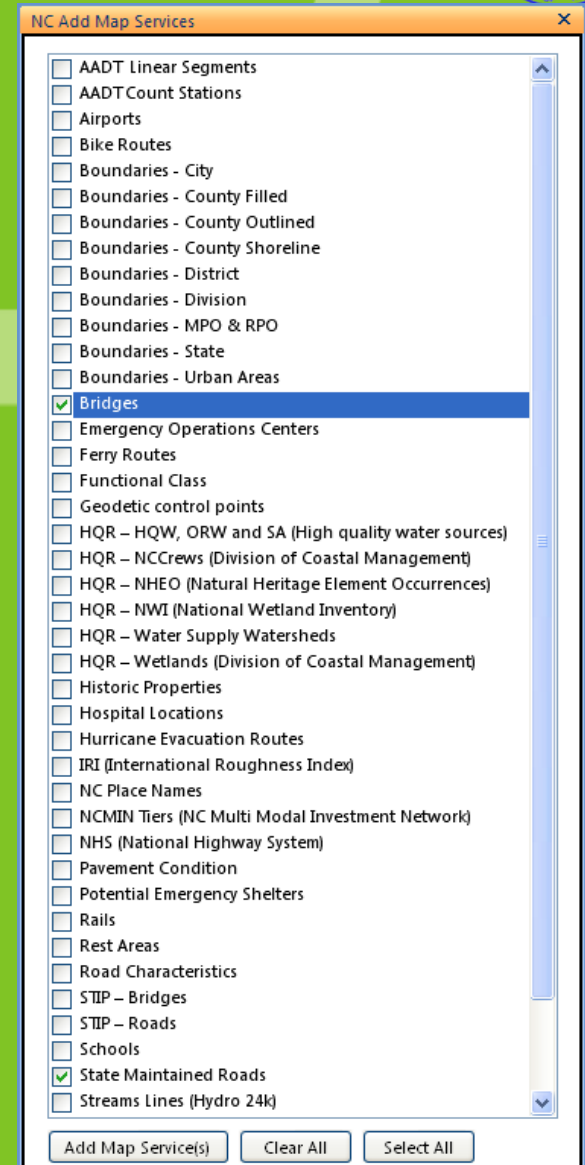
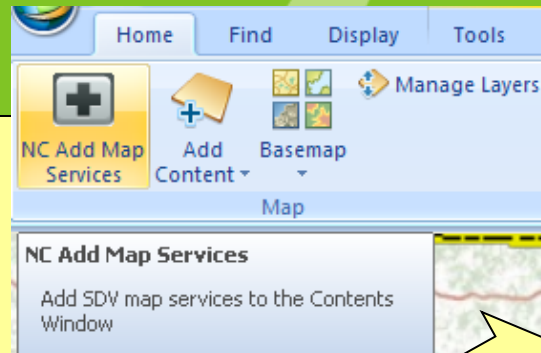


1. NC Add Map Services

2. Click box for layers of interest

3. Click Add Map Service(s) button

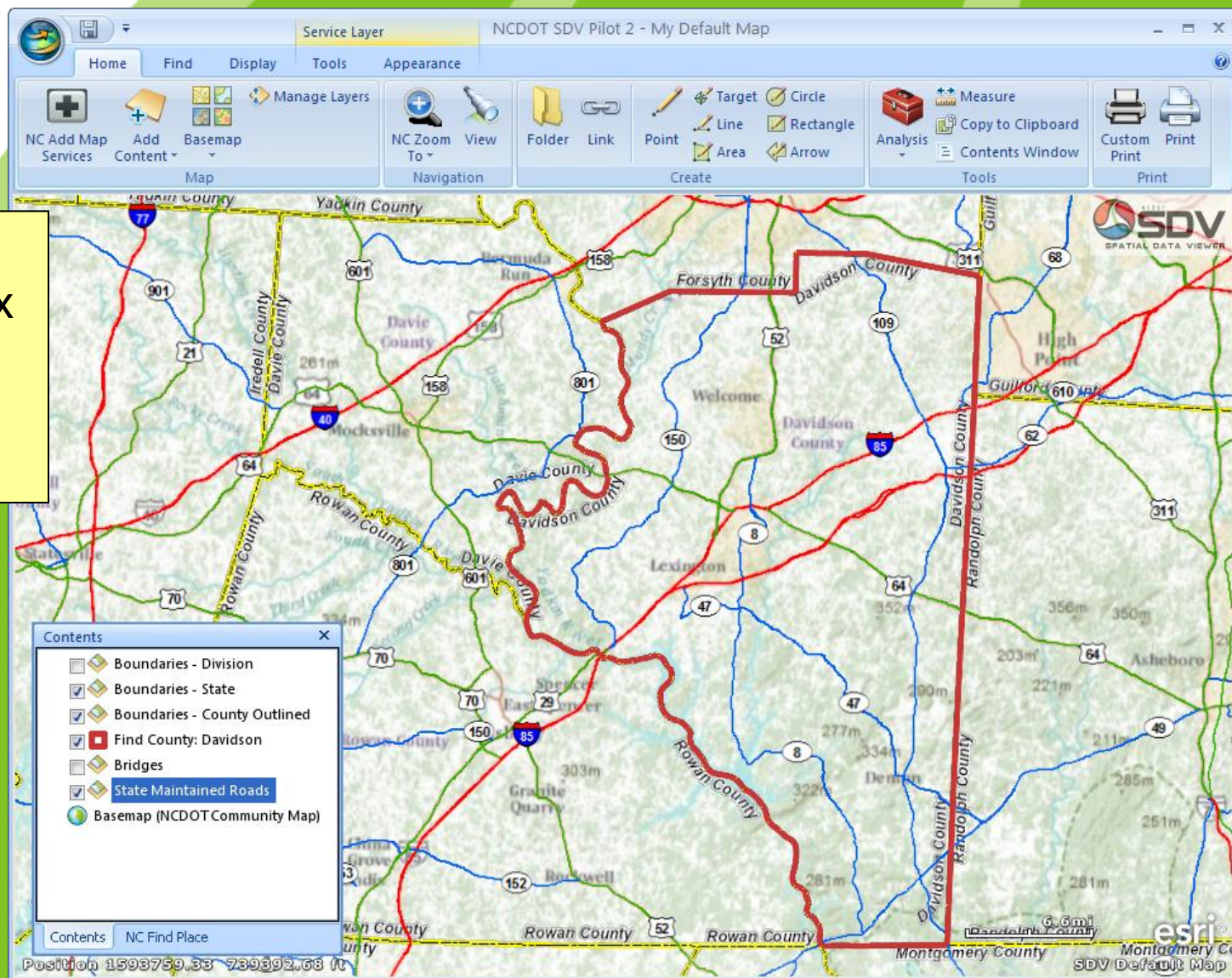
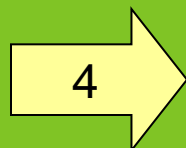
4. Click the map service checkbox in the Contents Window (con't on next slide)



SDV Training



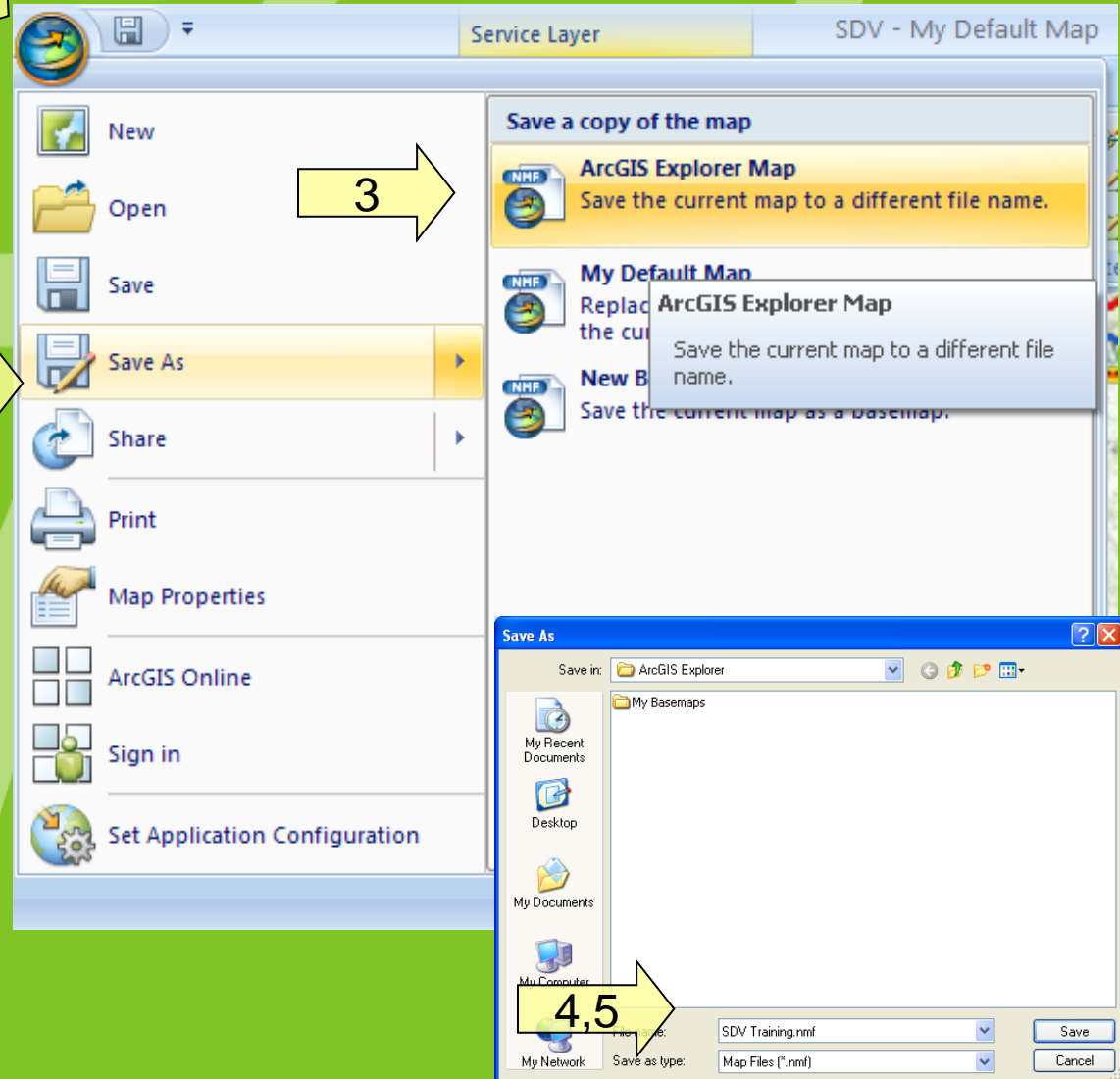
4. Click the map service checkbox in the Contents Window to turn layer on



SDV Training

Save Map

1. Click ArcGIS Explorer Icon
2. Click Save As
3. Click ArcGIS Explorer Map
4. Navigate to folder
5. Name map
6. SDV map name changes




SDV Training

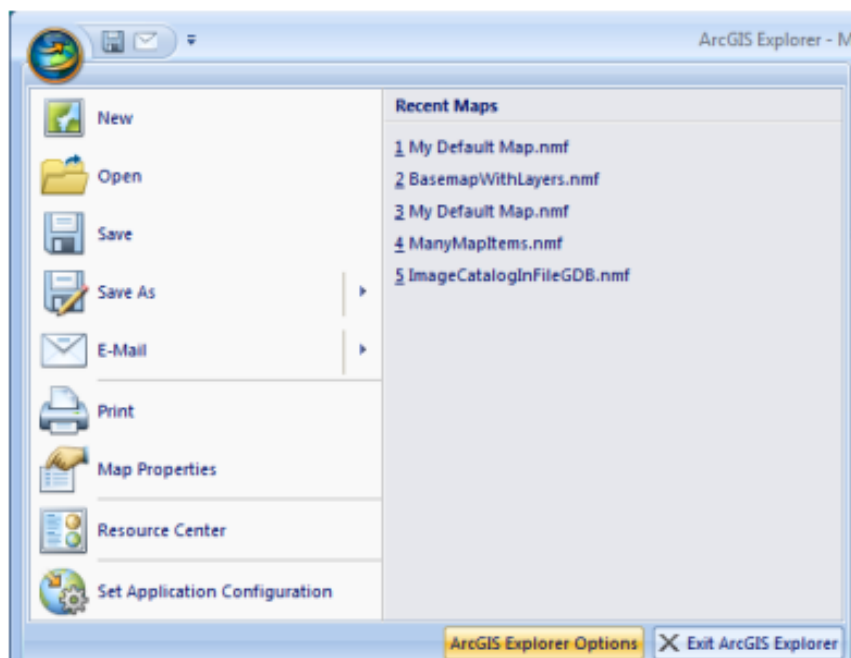


About ArcGIS Explorer Options

[Feedback](#)
[E-mail this topic](#)
[Print this topic](#)

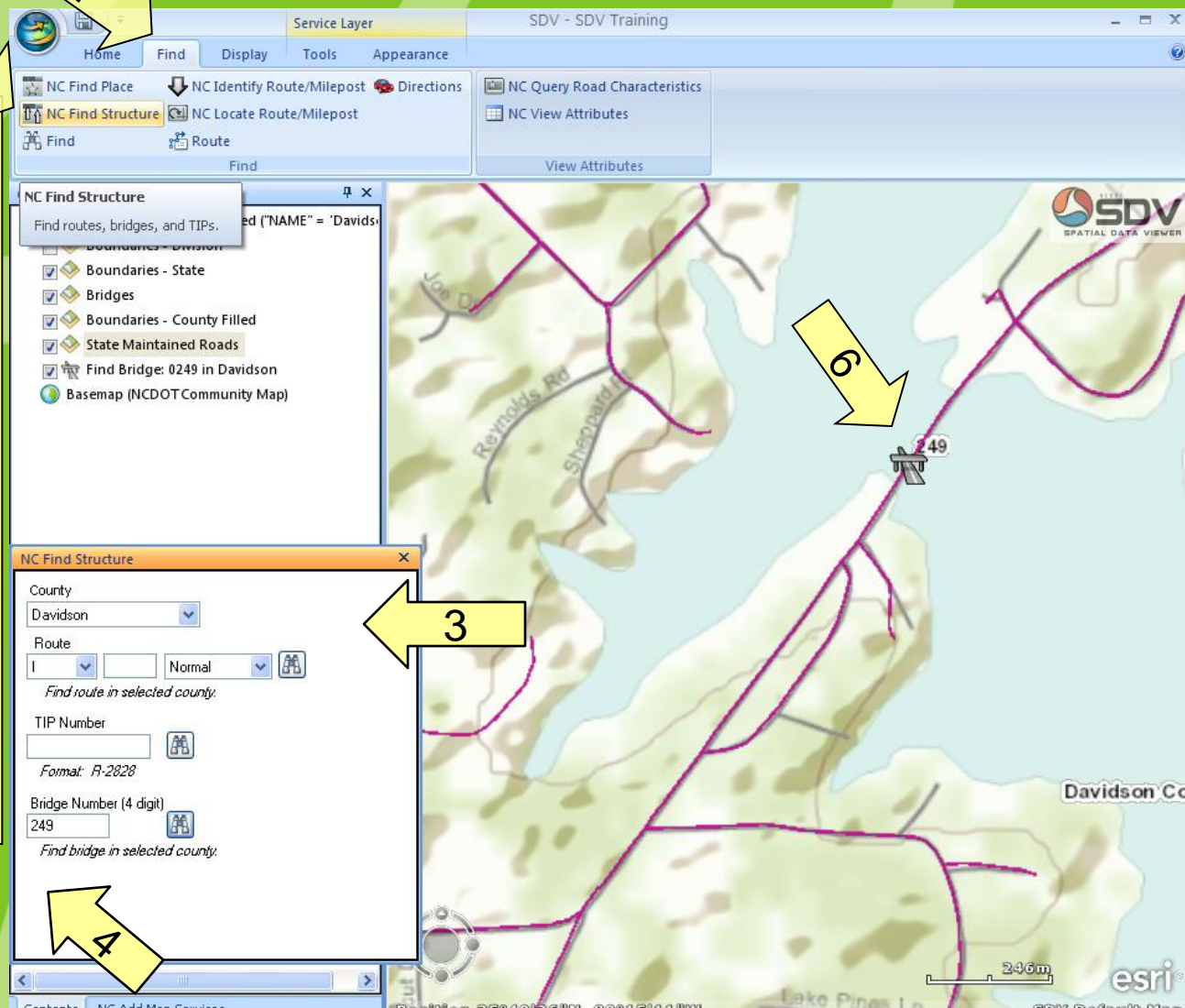
You can set options that apply to the application and are retained from session to session.

To display the *ArcGIS Explorer Options* dialog, click the *ArcGIS Explorer Button* , then click the *ArcGIS Explorer Options* button:



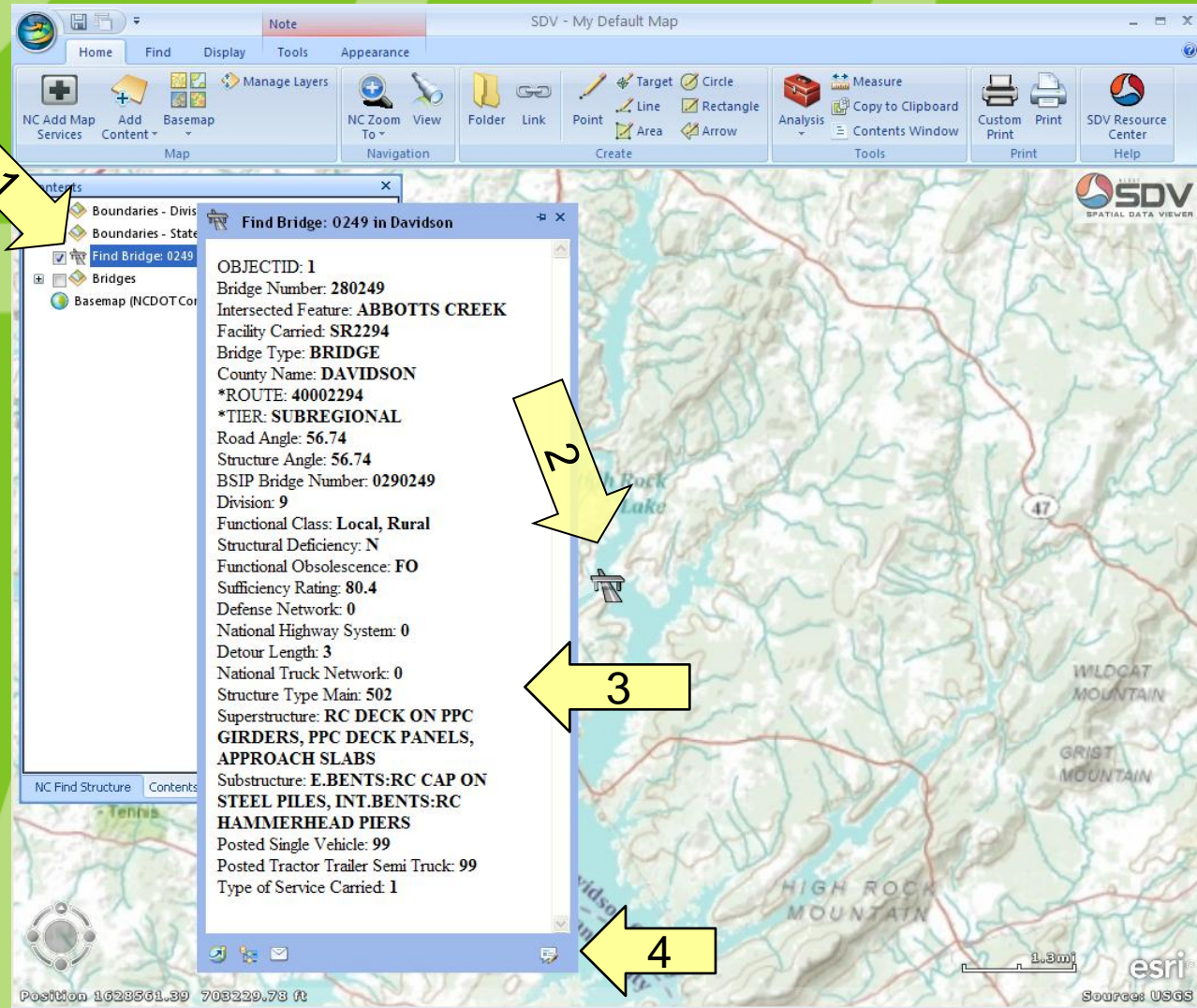
SDV Training

1. Click Find Tab
2. NC Find Structure
3. Enter County
4. Enter Bridge Number
5. Click Find symbol
6. Point is symbolized on map
7. Double Click to zoom to result



SDV Training

1. Double Click Bridge info in Contents Window
2. Double click bridge symbol
3. Bridge Attributes pop up
4. Edit results by clicking edit icon



SDV Training

To Query Bridge Attributes

1. Click plus sign beside layer in Contents Window

2. Click layer from Contents Window

3. Click Query icon

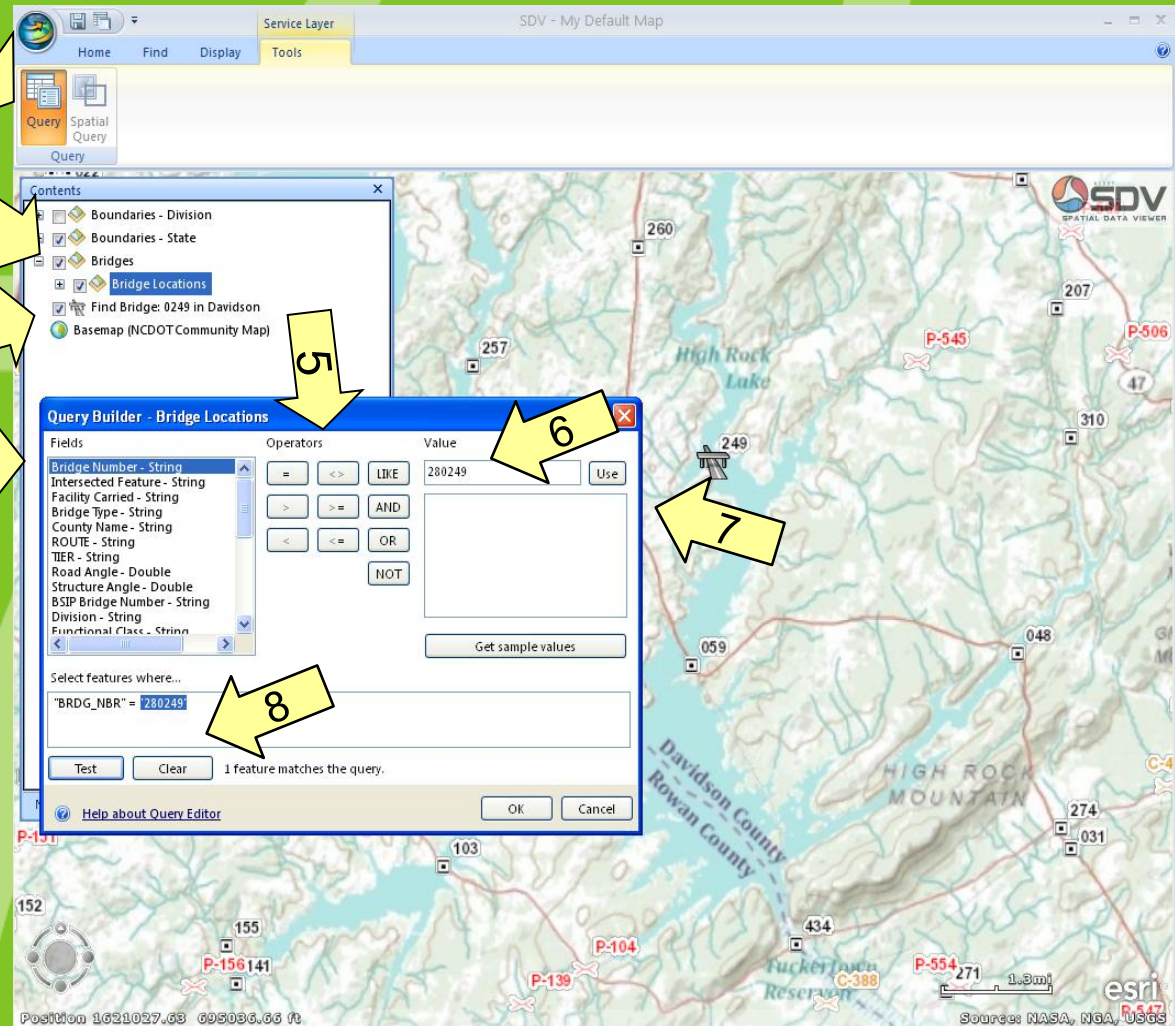
4. Click field

5. Click operator

6. Type in Value

7. Click Use

8. Click Test

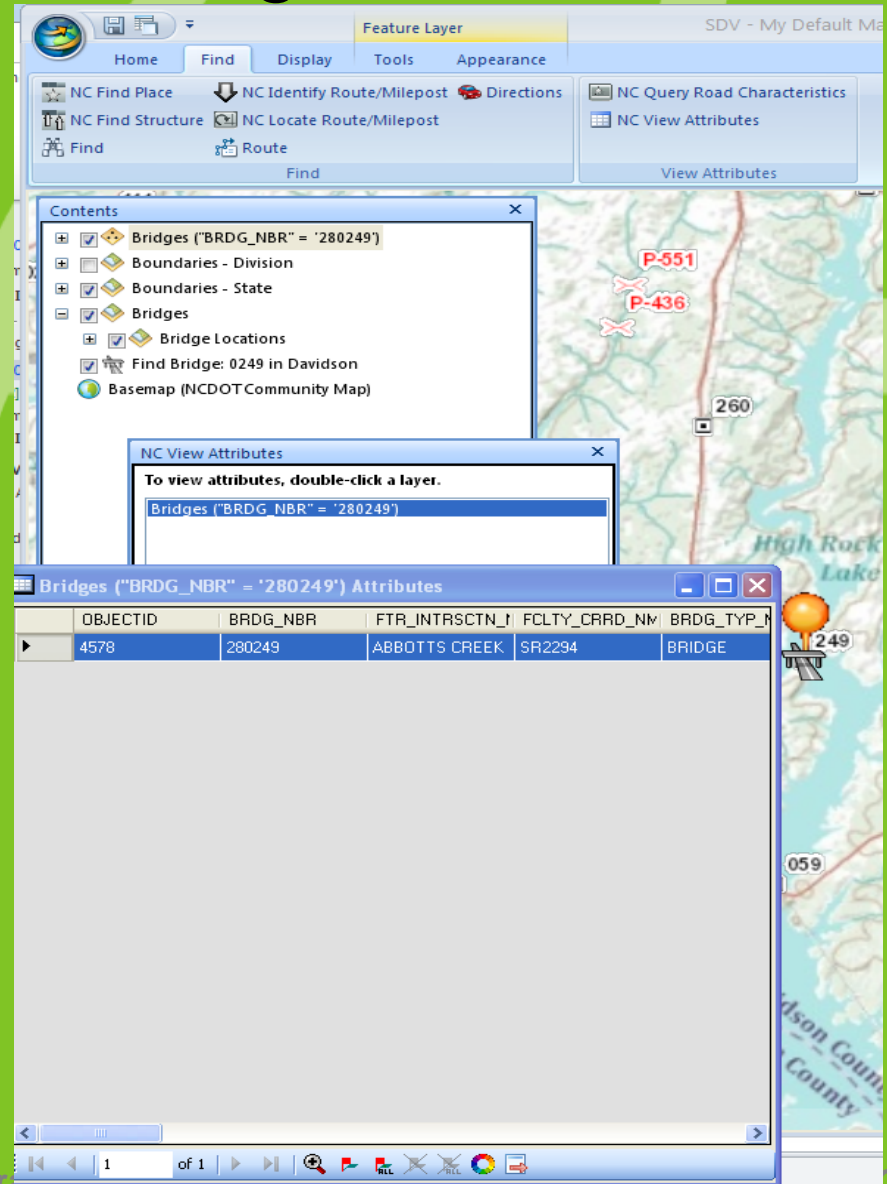


SDV Training



View Bridge Attributes

1. Click query results in Contents Window
2. Double Click NC View Attributes
3. Scroll through Attributes

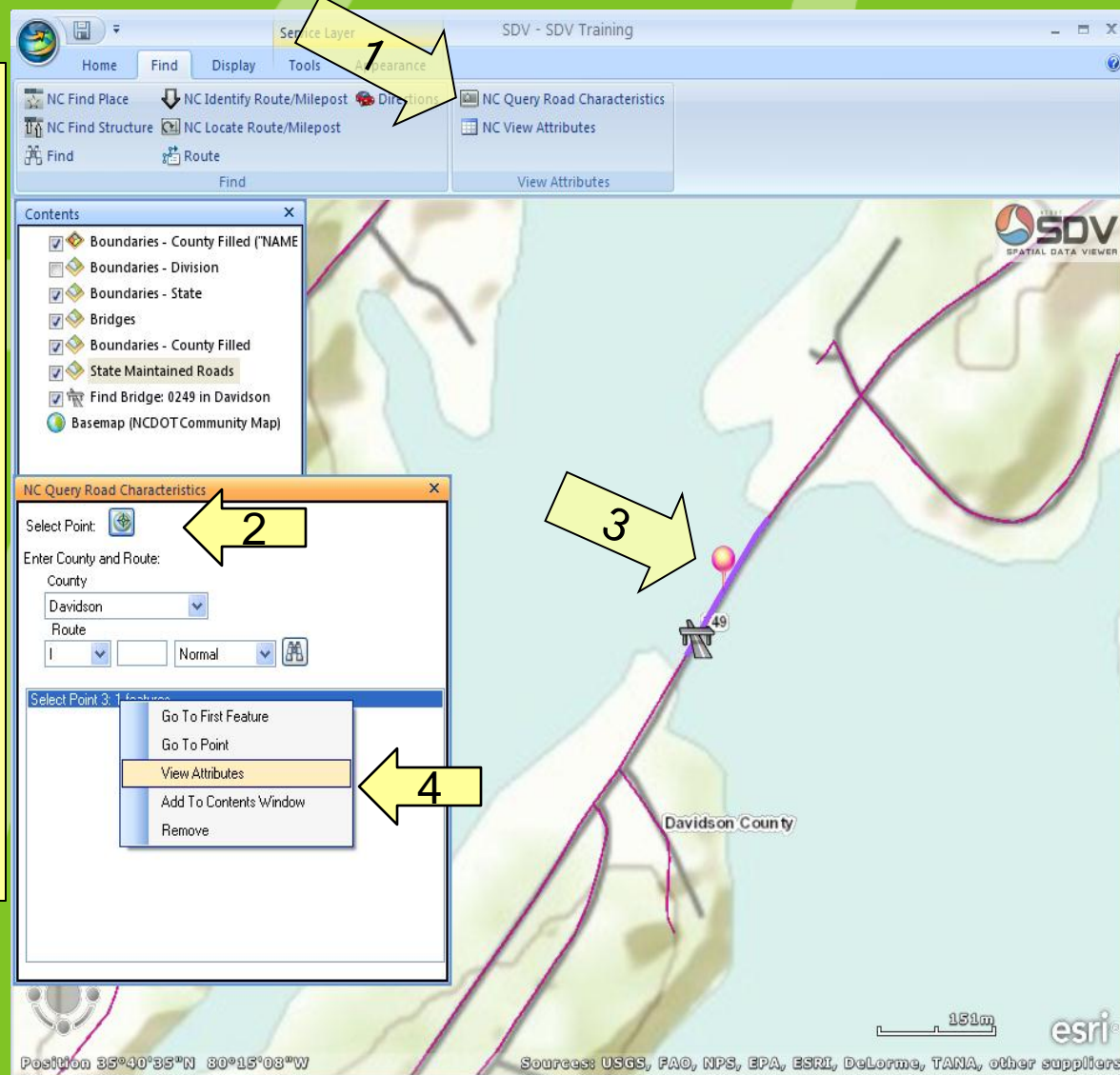


SDV Training



NC Query Road Attributes

1. Click NC Query Road Characteristics
2. Select Point
3. Click on Road where bridge collapsed
4. When feature is selected, right click feature, View Attributes

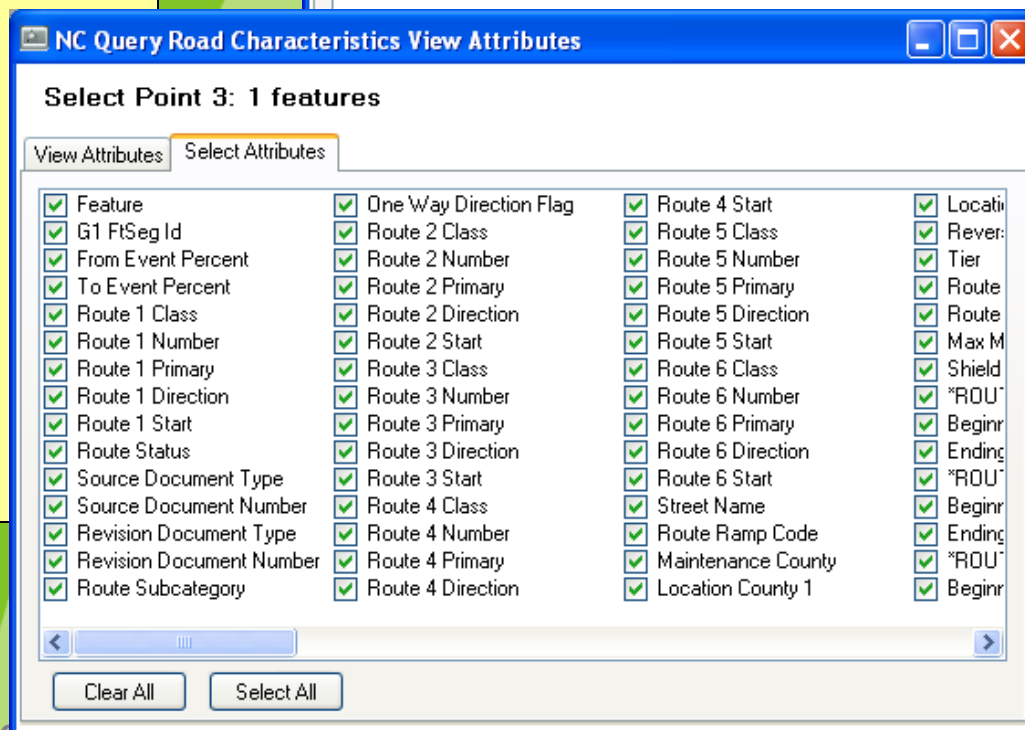
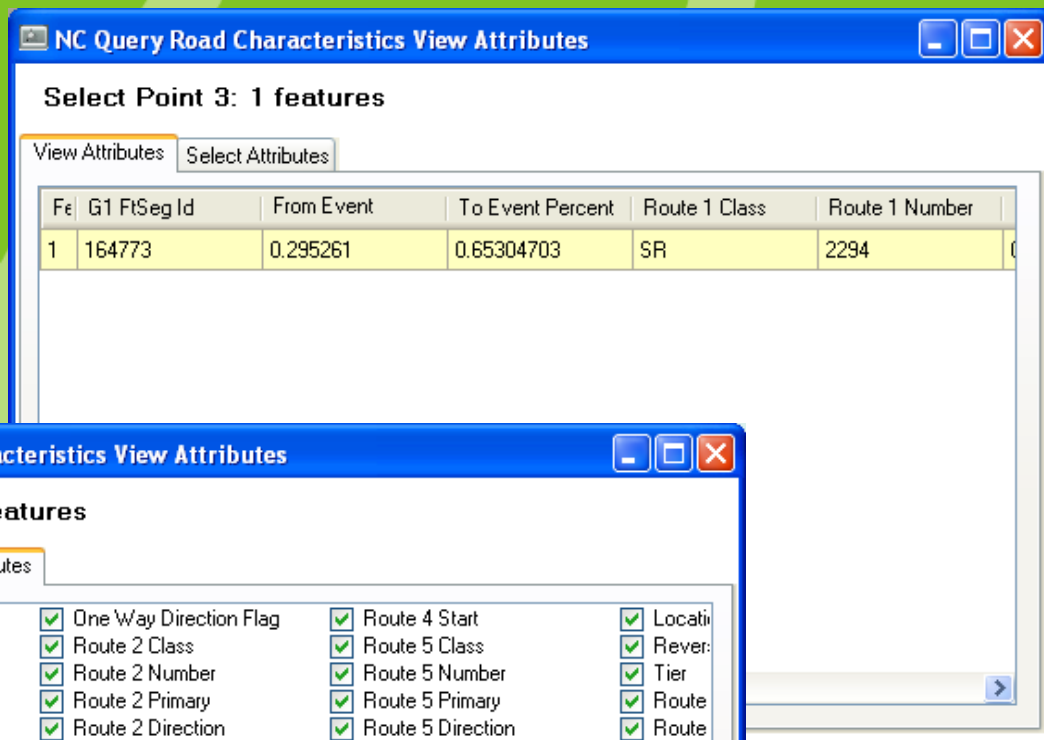


SDV Training



View Attributes

- Feature Selected
- Or, Select Attributes from the database and view only fields needed

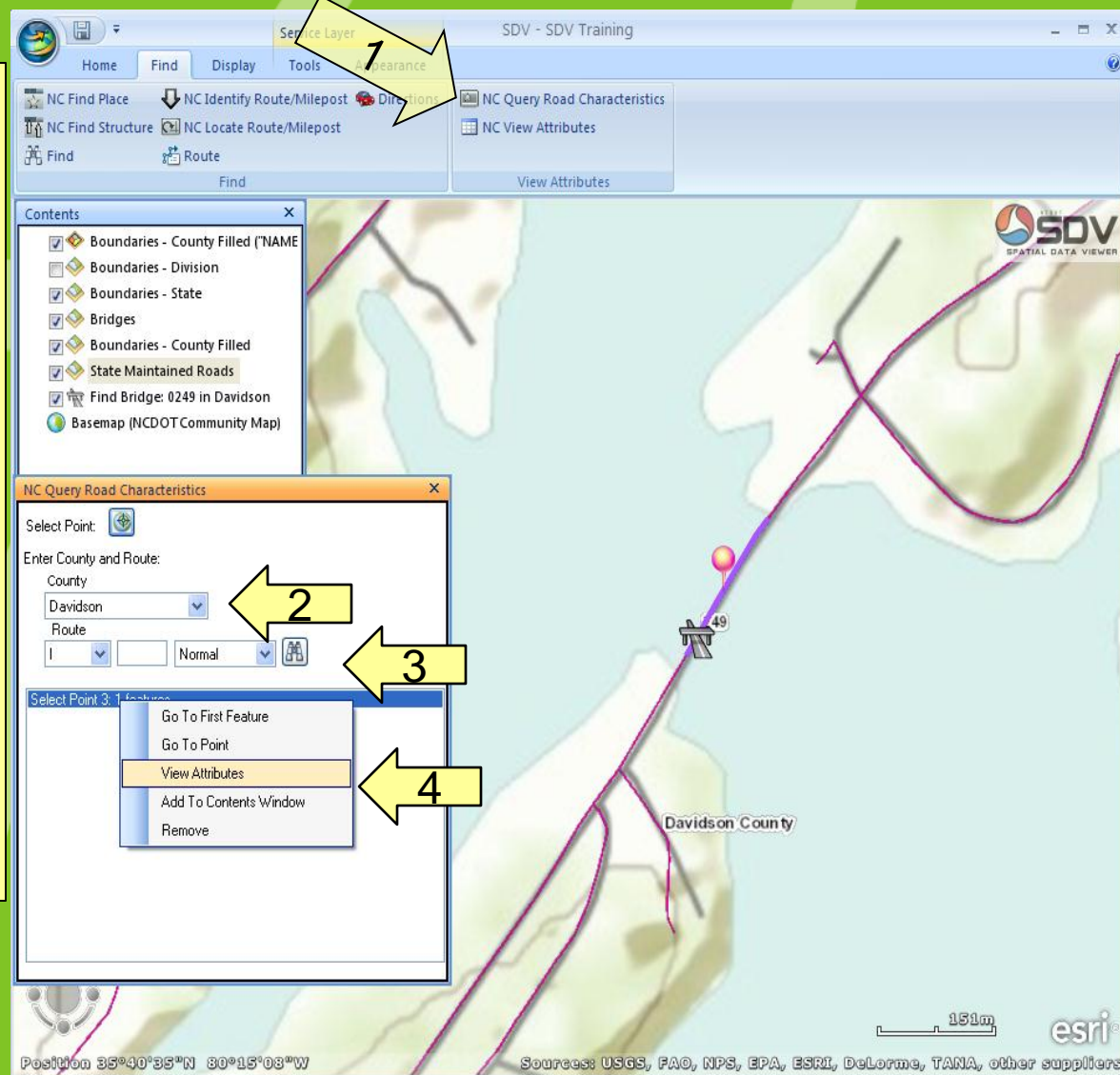


SDV Training



NC Query Road Attributes


1. Click NC Query Road Characteristics
2. Select County from drop down menu
3. Select road information from drop down menus
4. When feature is selected, right click feature, View Attributes



SDV Training

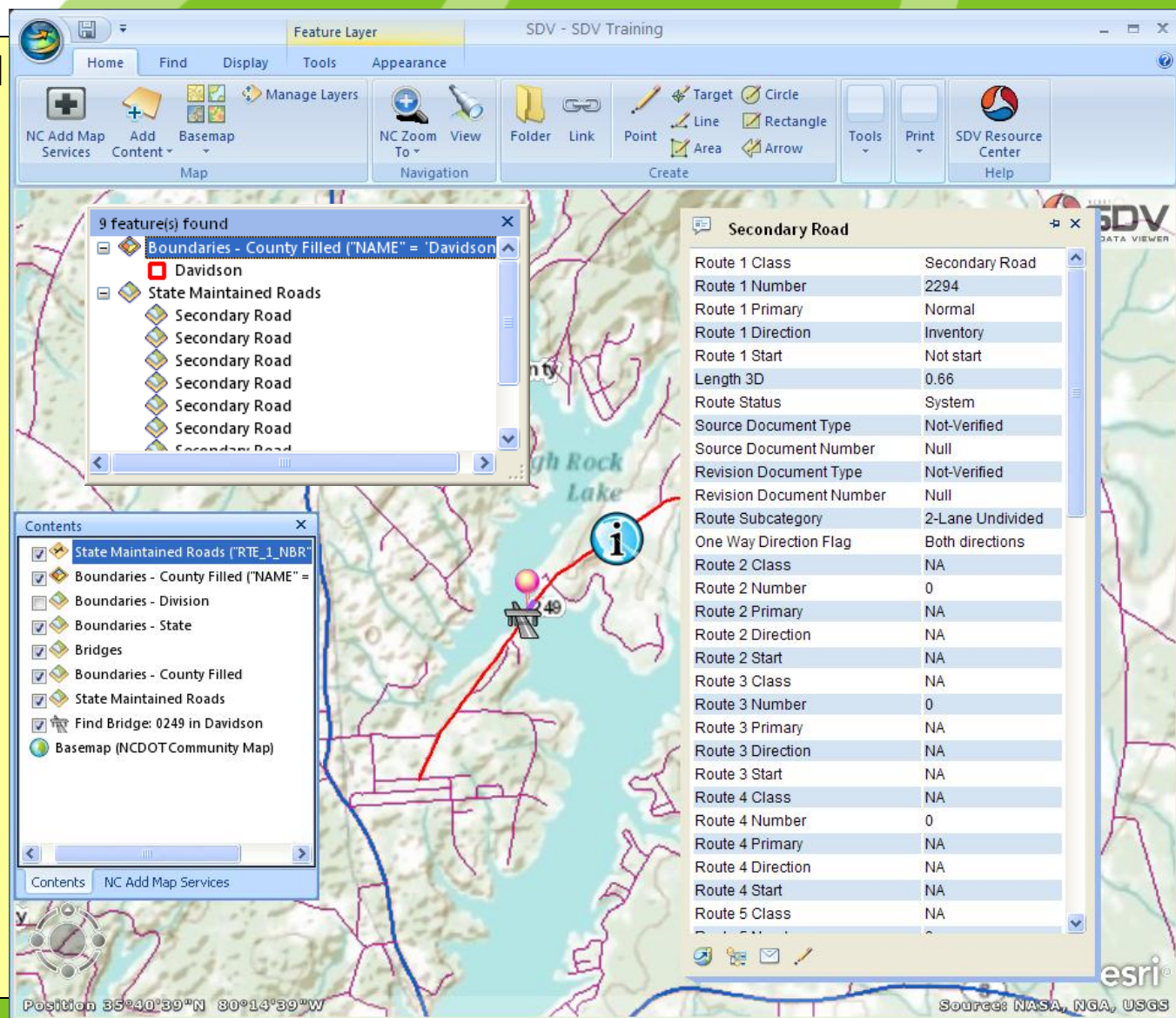


Click Selected Road

 icon pops up

Select SR option

View Attributes



9 feature(s) found

- Boundaries - County Filled ("NAME" = "Davidson")
 - Davidson
- State Maintained Roads
 - Secondary Road
 - Secondary Road
 - Secondary Road
 - Secondary Road
 - Secondary Road
 - Secondary Road
 - Secondary Road

Contents

- ☒ State Maintained Roads ("RTE_1_NBR")
- ☒ Boundaries - County Filled ("NAME" = "Davidson")
- ☐ Boundaries - Division
- ☒ Boundaries - State
- ☒ Bridges
- ☒ Boundaries - County Filled
- ☒ State Maintained Roads
- ☒ Find Bridge: 0249 in Davidson
- ☒ Basemap (NCDOT Community Map)

Secondary Road

Route 1 Class	Secondary Road
Route 1 Number	2294
Route 1 Primary	Normal
Route 1 Direction	Inventory
Route 1 Start	Not start
Length 3D	0.66
Route Status	System
Source Document Type	Not-Verified
Source Document Number	Null
Revision Document Type	Not-Verified
Revision Document Number	Null
Route Subcategory	2-Lane Undivided
One Way Direction Flag	Both directions
Route 2 Class	NA
Route 2 Number	0
Route 2 Primary	NA
Route 2 Direction	NA
Route 2 Start	NA
Route 3 Class	NA
Route 3 Number	0
Route 3 Primary	NA
Route 3 Direction	NA
Route 3 Start	NA
Route 4 Class	NA
Route 4 Number	0
Route 4 Primary	NA
Route 4 Direction	NA
Route 4 Start	NA
Route 5 Class	NA

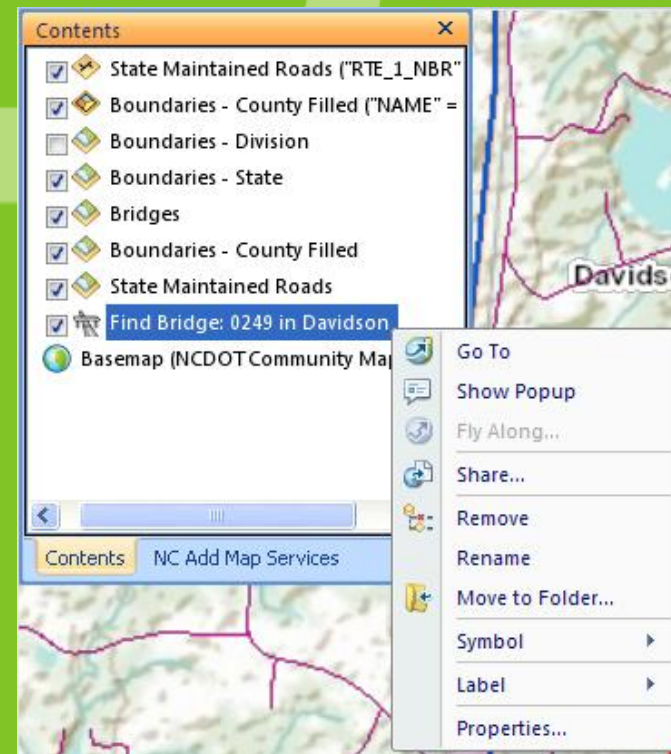
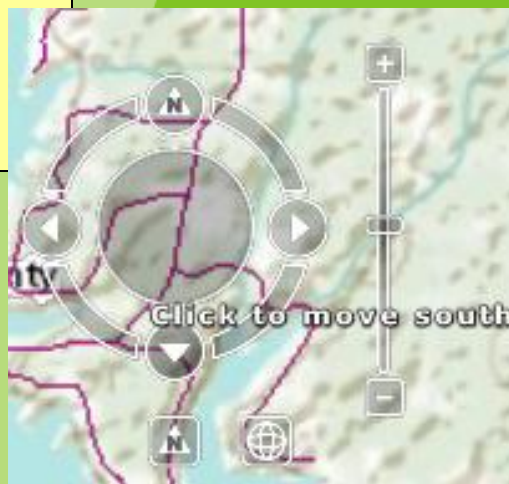
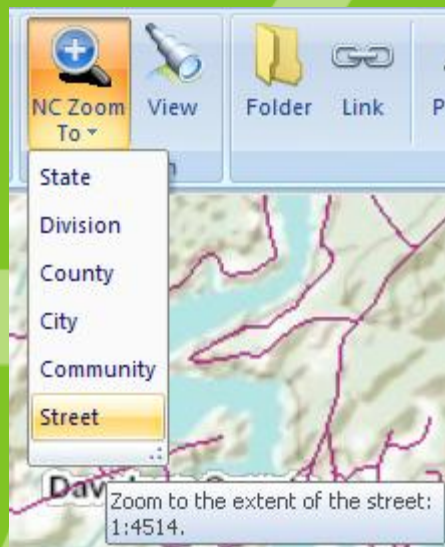
Position 35°40'39"N 80°14'39"W

Source: NASA, NGA, USGS

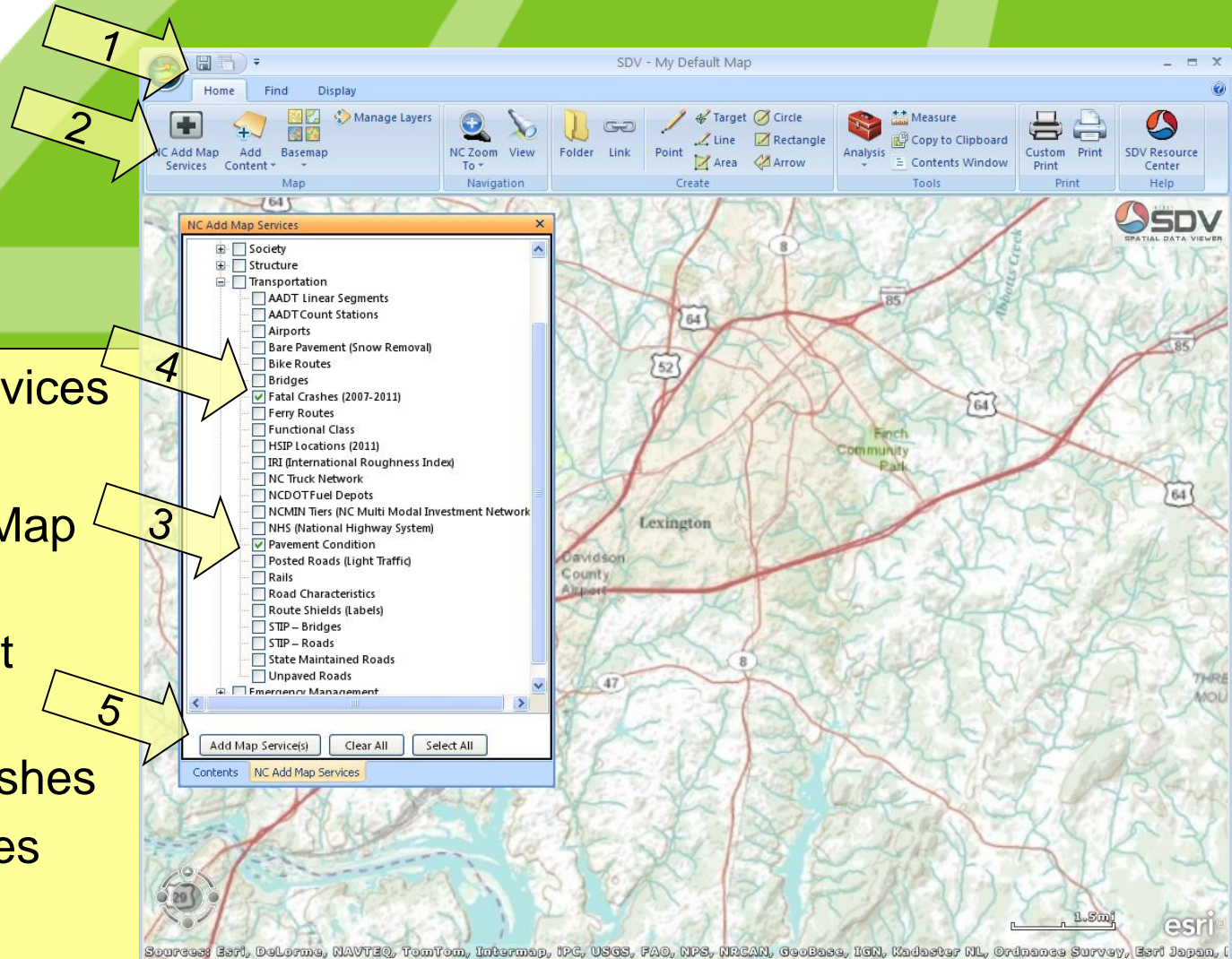
SDV Training

Zoom Tools

1. NC Zoom To Street
2. Mouse -Scroll
3. Go To option
4. Orientation Indicator
5. Double click layer in Contents Window



SDV Training



Add more Map Services

1. Home tab

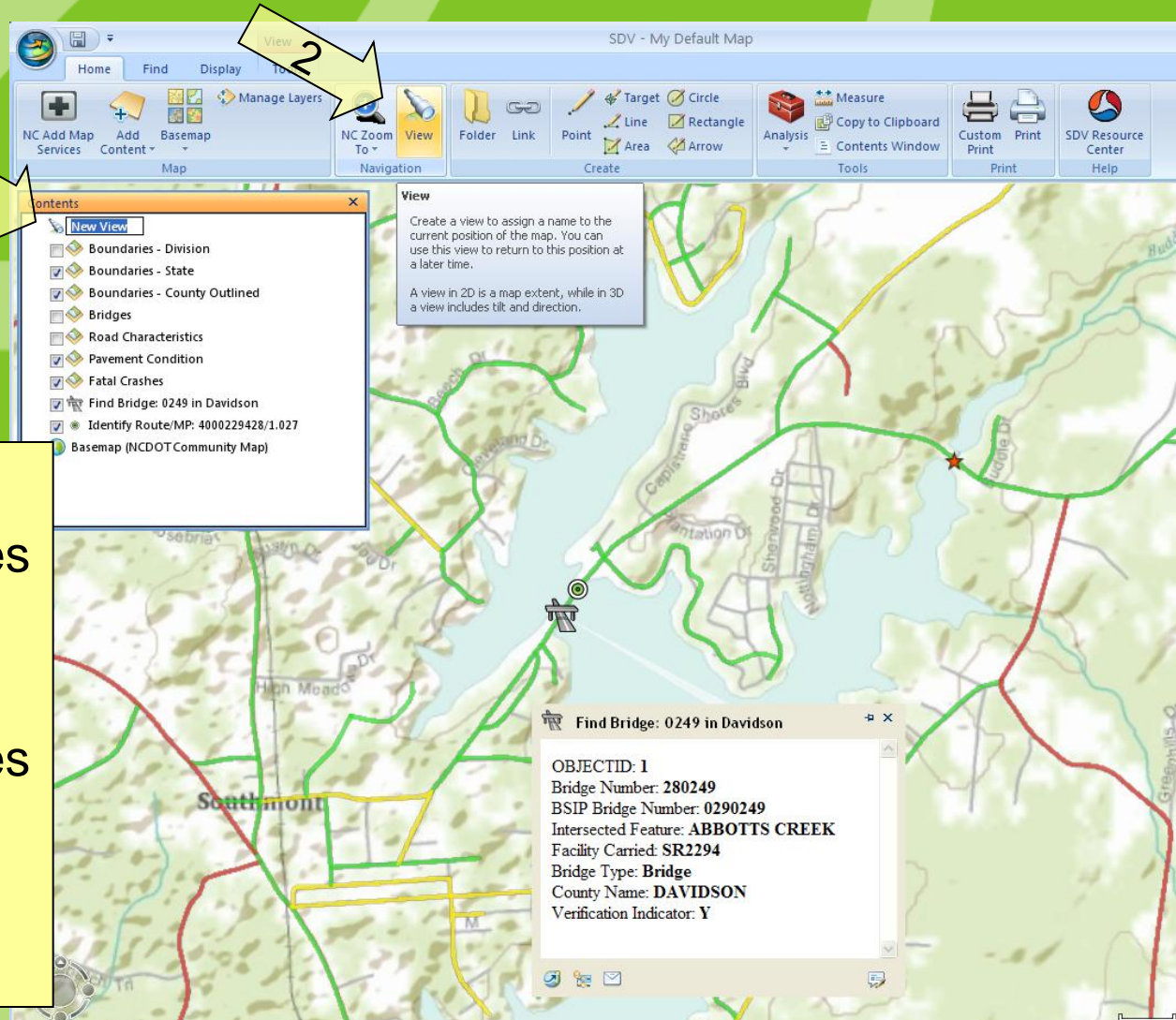
2. Click NC Add Map Services

3. Select Pavement Condition

4. Select Fatal Crashes

5. Add Map Services

SDV Training



Perform more analysis

1. Click on Fatal Crashes
2. Select View in Navigation Group
3. Save View as Crashes

SDV Training



Perform more analysis

1. Click on Fatal Crashes sub-location

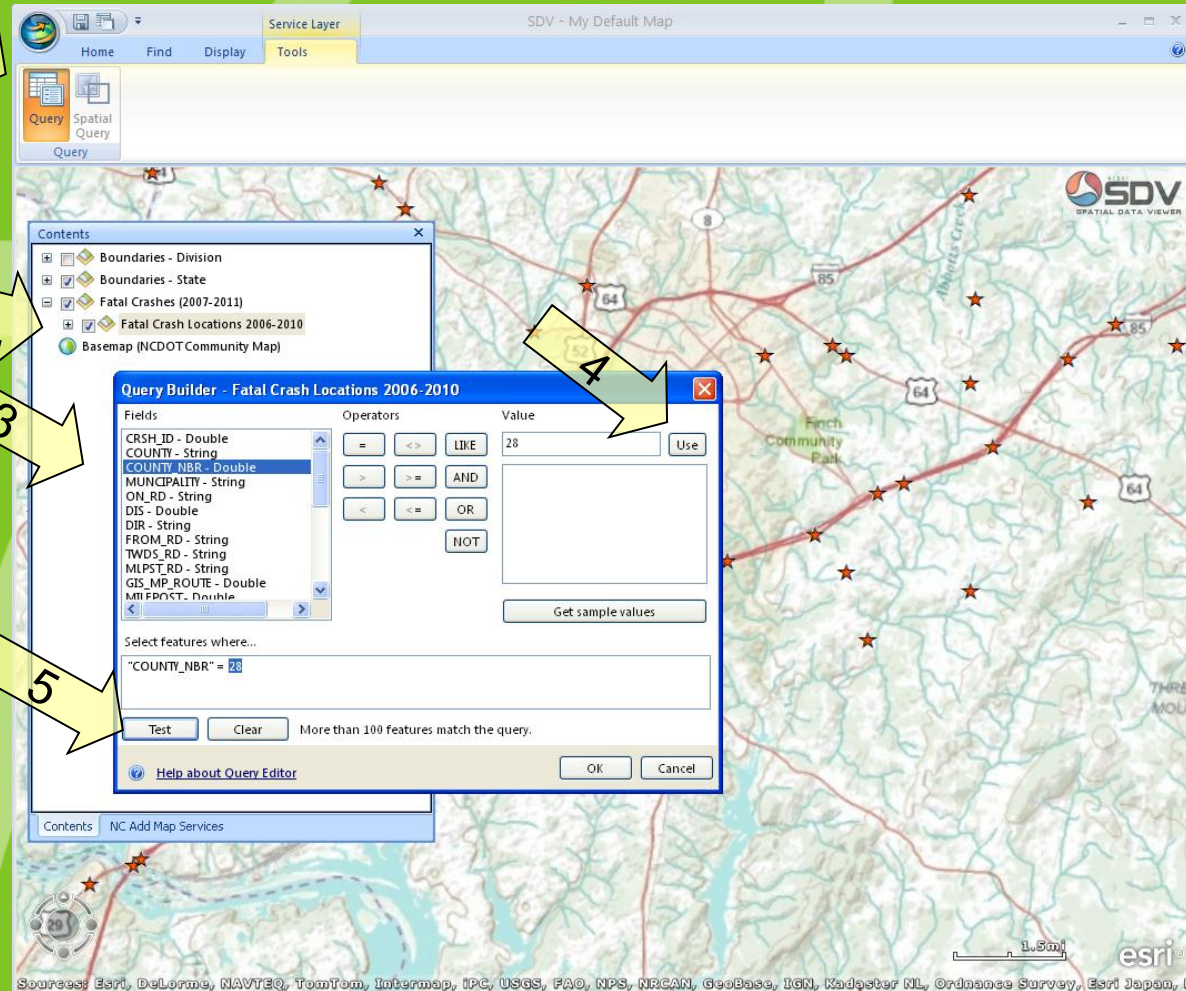
2. Click Query in Tools tab

3. Double click field, click operator, write value (or search unique values)

4. Click Use

5. Click Test

6. Click OK



SDV Training

Review Attributes

1. Click Find tab
2. Double-click the results from the query
3. Attributes table becomes available
4. Check fatal crashes on SR-2294

The screenshot shows the SDV software interface with the 'Find' tab selected. The 'Contents' pane on the left lists various layers, including 'Fatal Crashes ("COUNTY_NBR" = 28)'. The 'NC View Attributes' pane on the right shows the results of the query. The 'Fatal Crashes ("COUNTY_NBR" = 28) Attributes' table is displayed at the bottom, showing a list of fatal crashes with columns for OBJECTID, CRSH_ID, COUNTY, COUNTY_NBR, MUNICIPALITY, and ON_RD.

OBJECTID	CRSH_ID	COUNTY	COUNTY_NBR	MUNICIPALITY	ON_RD
3	101378789	DAVIDSON	28	LEXINGTON	NC 150
40	101416846	DAVIDSON	28	WINSTON-SALEM	NC 150
57	101377688	DAVIDSON	28	DENTON	SR 2351
80	101391810	DAVIDSON	28	THOMASVILLE	UNITY
136	101395229	DAVIDSON	28	LEXINGTON	NC 150
176	101393219	DAVIDSON	28	LEXINGTON	I 85
259	101426205	DAVIDSON	28	LEXINGTON	US 64
272	101456548	DAVIDSON	28	LEXINGTON	SR 2256
297	101484136	DAVIDSON	28	THOMASVILLE	SR 2019
308	101451111	DAVIDSON	28	THOMASVILLE	NC 68
423	101578873	DAVIDSON	28	LEXINGTON	SR 1165
600	101512768	DAVIDSON	28	LEXINGTON	SR 1508
708	101555157	DAVIDSON	28	LEXINGTON	SR 1147
752	101548493	DAVIDSON	28	LEXINGTON	SR 3010
771	101608146	DAVIDSON	28	LEXINGTON	SR 1396
781	101624695	DAVIDSON	28	LEXINGTON	LINWOOD
828	101597795	DAVIDSON	28	LEXINGTON	NC 47
839	101596386	DAVIDSON	28	THOMASVILLE	NC 109

SDV Training

Review Attributes

1. Zoom in to bridge # 249
2. Double-click the closest fatal accident symbol
3. Attributes table becomes available
4. Review crash data

Contents

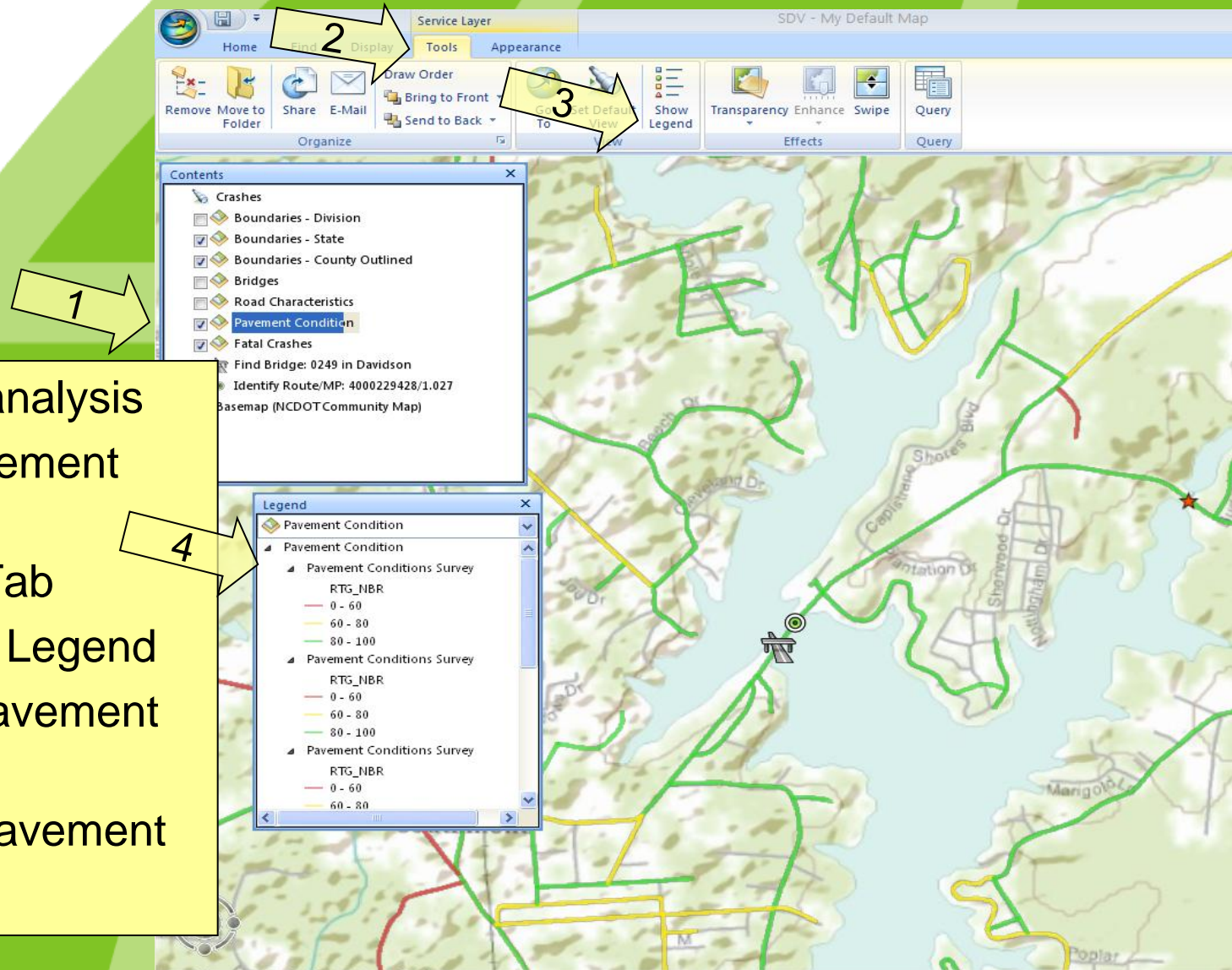
- ☒ Fatal Crashes ("COUNTY_NBR" = 28)
- ☐ Crashes
- ☐ Boundaries - Division
- ☒ Boundaries - State
- ☒ Boundaries - County Outlined
- ☐ Bridges
- ☒ Road Characteristics
- ☒ Pavement Condition
- ☒ Fatal Crashes
- ☒ Find Bridge: 0249 in Davidson
- ☒ Identify Route/MP: 4000229428/1.027
- ☐ Basemap (NCDOT Community Map)

SR 2294

Crash id	102475483
County	DAVIDSON
County number	28
Municipality	LEXINGTON
On road	SR 2294
DIS	0.1
Direction	W
From road	SR 3302
Towards road	SR 2295
Milepost road	SR 2294
GIS_MP_ROUTE	4000229428
MILEPOST	2.4
Highest order route name	SR 2294
Highest order route class	SR
Severity of the crash	K
Crash date	12/8/2008 12:00:00 AM
Day	MONDAY
Time	12/30/1899 12:10:00 AM
Light condition	DARK - ROADWAY NOT LIGHTED
Road surface condition	DRY
Alcohol flag	N
Motorcycle flag	N
Heavy truck flag	N
Speed related flag	Y
Older driver flag	N
Teen driver flag	N
Crash type category	LANE_DEPARTURE
Location error	NO ERROR

Position 35°41'01"N 80°13'45"W

Sources: USGS, FAO, NPS, EPA, ESRI, DeLorme, TANA, et



Perform more analysis

1. Click on Pavement Condition
2. Click Tools Tab
3. Select Show Legend (or right click pavement condition)
4. Determine Pavement Condition

Perform more analysis

1. Click on Pavement Condition

2. Click Tools Tab

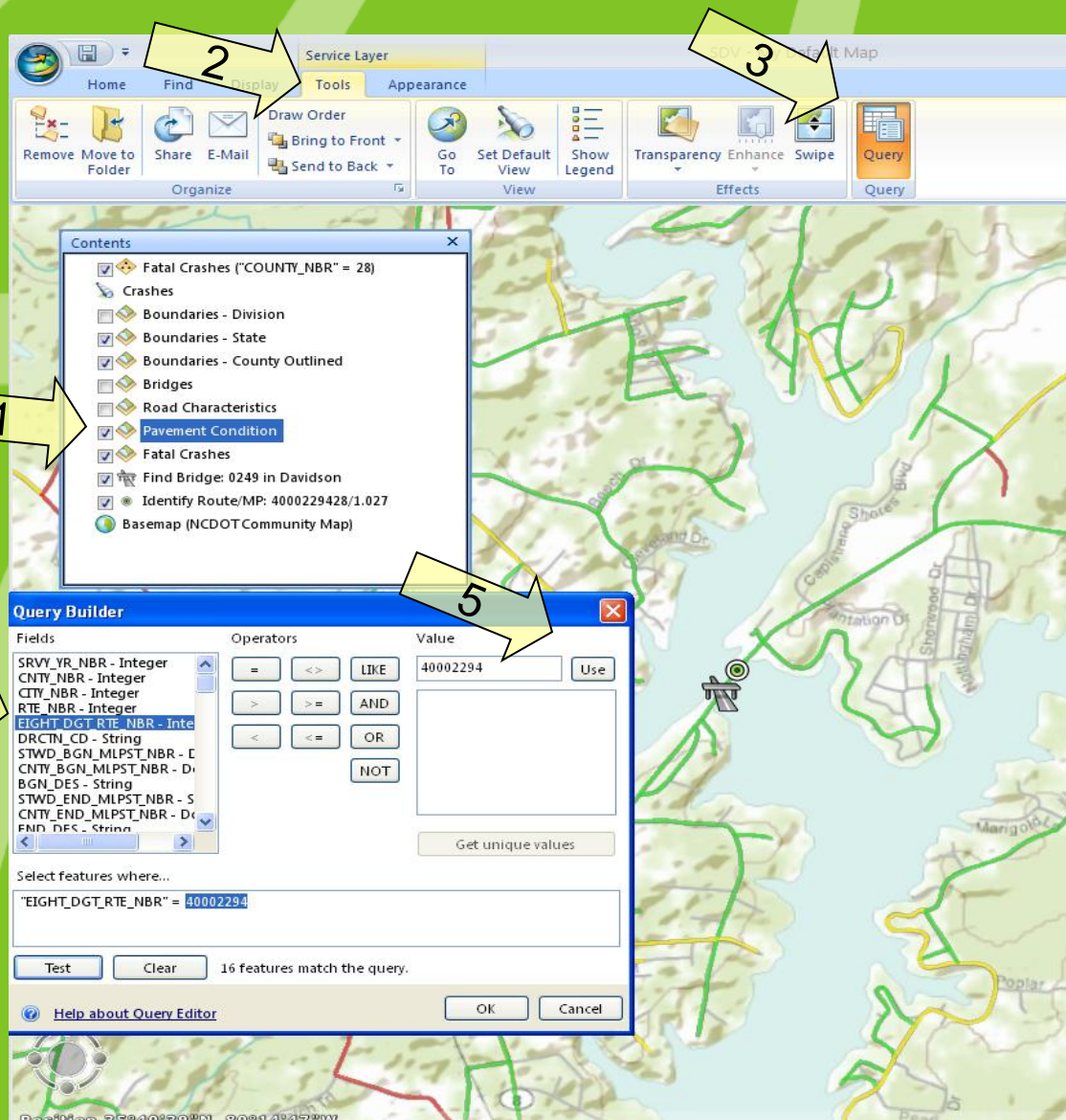
3. Query

4. Use the EIGHT_DGT_RTE_NMR to write SQL (hint – the number is already in Contents Window)

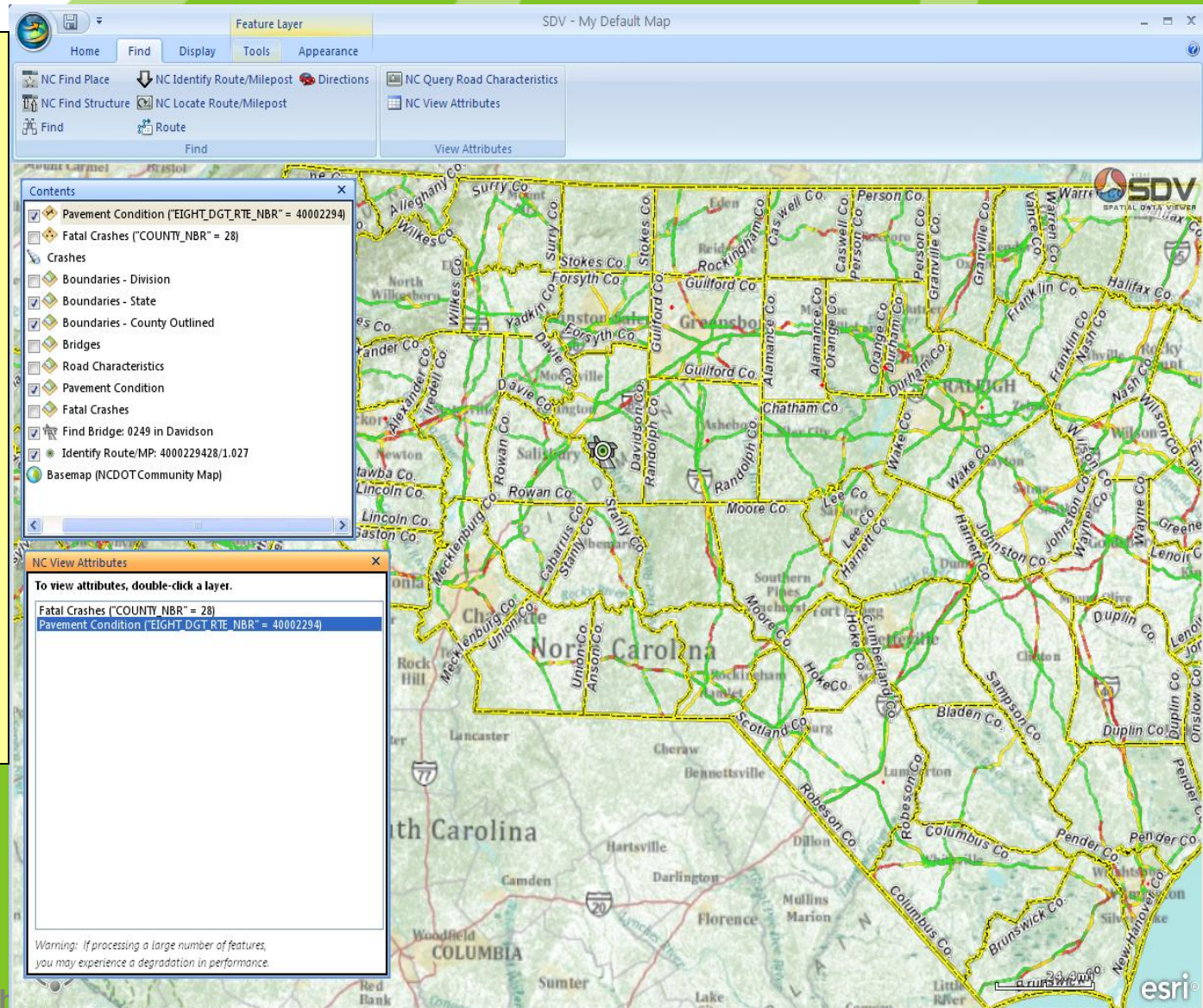
5. Click Use

6. Click Test

7. Click OK



- Map Zooms out
1. Click on Find
2. Click NC View Attributes
3. Double-Click Pavement Condition
4. Notice the CNTY_NBR field



SDV Training



Query the query

1. Click on Pavement condition results
2. Find Tab, Query
3. Use RTE_ID and string
4. Use & Test
5. Click Find
6. Double-click NC View Attributes
7. Examine results-
Symbology & data

Contents

- ☒ Pavement Condition ("EIGHT_DGT_RTE_NBR" = 40002294) AND
- ☒ Pavement Condition ("EIGHT_DGT_RTE_NBR" = 40002294)
- ☒ Fatal Crashes ("COUNTY_NBR" = 28)
- ☒ Crashes
- ☒ Boundaries - Division
- ☒ Boundaries - State
- ☒ Boundaries - County Outlined
- ☒ Bridges
- ☒ Road Characteristics
- ☒ Pavement Condition
- ☒ Fatal Crashes
- ☒ Find Bridge: 0249 in Davidson
- ☒ Identify Route/MP: 4000229428/1.027
- ☒ Basemap (NCDOT Community Map)

NC View Attributes

To view attributes, double-click a layer.

Fatal Crashes ("COUNTY_NBR" = 28)
Pavement Condition ("EIGHT_DGT_RTE_NBR" = 40002294)
Pavement Condition ("EIGHT_DGT_RTE_NBR" = 40002294) AND ("RTE_NBR" = 40002294)

Pavement Condition ("EIGHT_DGT_RTE_NBR" = 40002294) ...

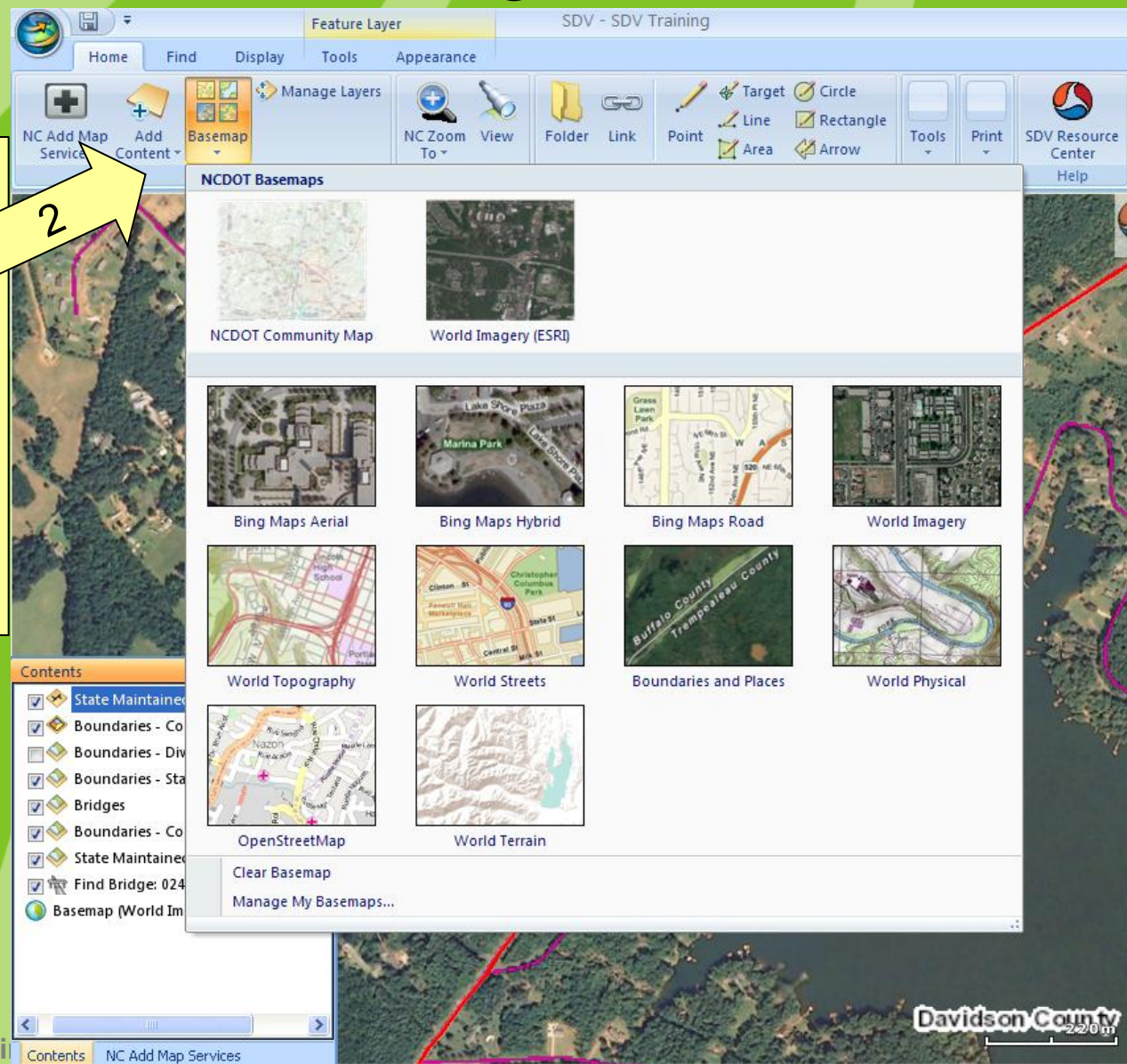
OBJECTID	SRVY_YR_NBR	CNTY_NBR	CITY_NBR	RTE_NBR
27401	2010	29		42294
27402	2010	29		42294
27403	2010	29		42294
27404	2010	29		42294

Warning: If processing a large number of features, you may experience a degradation in performance.

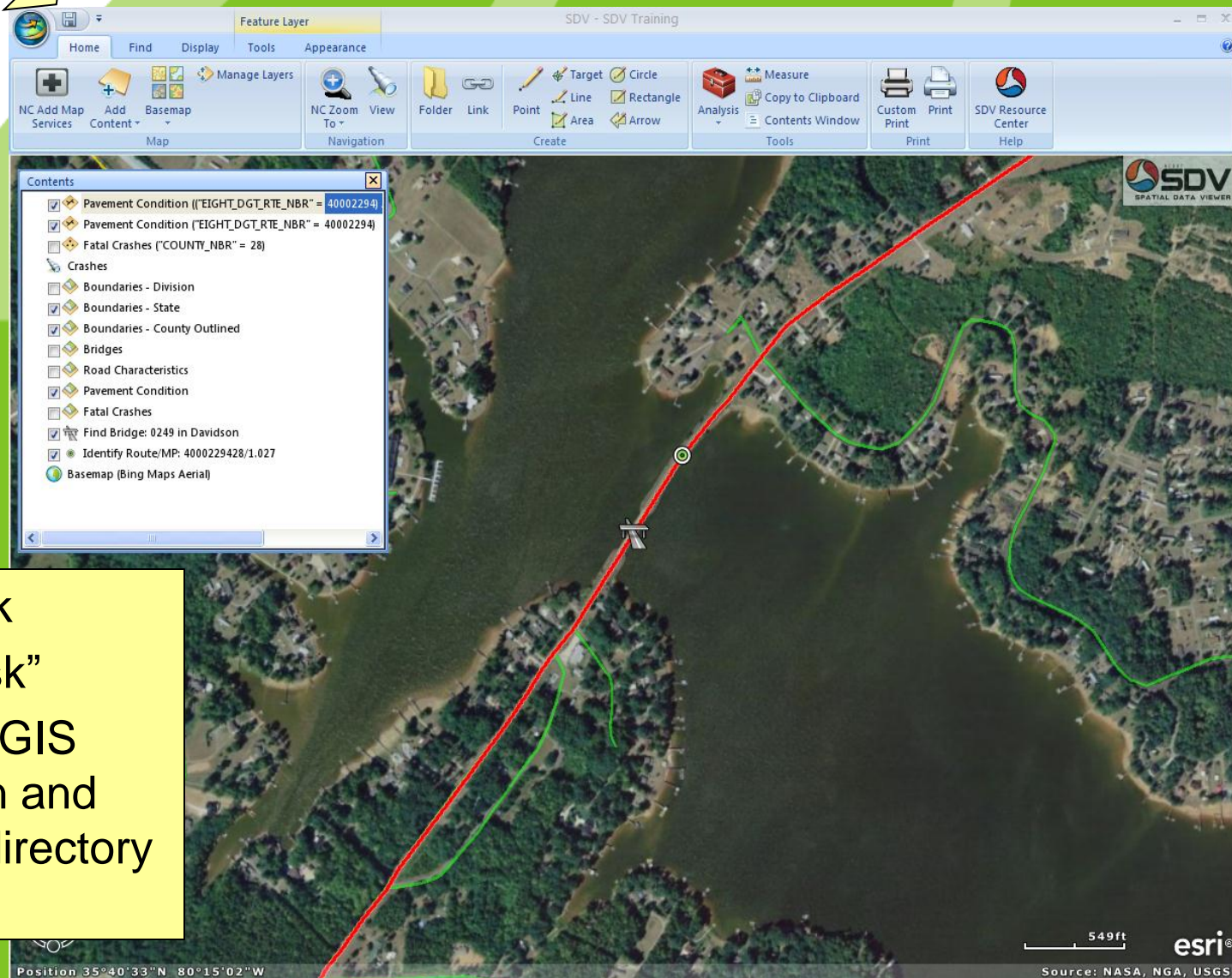
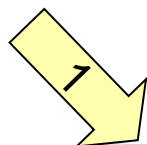
1

3. Click ESRI World Imagery

2



SDV Training



Save Your Work

1. Click on “disk”
2. Click on ArcGIS Explorer icon and navigate to directory

SDV Training

The screenshot displays the SDV Spatial Data Viewer application window. The main map area shows an aerial view of a lake with a red line and a green boundary. The 'Contents' panel on the left lists the following layers:

- ☒ Pavement Condition ("EIGHT_DGT_RTE_NBR" = 40002294)
- ☒ Pavement Condition ("EIGHT_DGT_RTE_NBR" = 40002294)
- ☒ Fatal Crashes ("COUNTY_NBR" = 28)
- Crashes
- ☐ Boundaries - Division
- ☒ Boundaries - State
- ☒ Boundaries - County Outlined
- ☐ Bridges
- ☐ Road Characteristics
- ☒ Pavement Condition
- ☐ Fatal Crashes
- ☒ Find Bridge: 0249 in Davidson
- ☒ Identify Route/MP: 4000229428/1.027
- ☒ Basemap (Bing Maps Aerial)

The 'Save As' dialog box is open, showing the file 'SDV Training.nmf' being saved to the 'ArcGIS Explorer' folder. The file name is 'SDV Training.nmf' and the save type is 'Map Files (*.nmf)'. The status bar at the bottom shows the position as 35°40'33"N 80°15'02"W and a scale bar of 549ft.

SDV Training



The screenshot displays the SDV Spatial Data Viewer interface. The main map shows an aerial view of a bridge crossing a creek. A 'Contents' window on the left lists layers, with 'Find Bridge: 0249 in Davidson' selected. A 'Find Bridge: 0249 in Davidson' window on the right displays the following attributes:

- OBJECTID: 1
- Bridge Number: 280249
- Intersected Feature: ABBOTTS CREEK
- Facility Carried: SR2294
- Bridge Type: BRIDGE
- County Name: DAVIDSON
- *ROUTE: 40002294
- *TIER: SUBREGIONAL
- Road Angle: 56.74
- Structure Angle: 56.74
- BSIP Bridge Number: 0290249
- Division: 9
- Functional Class: Local, Rural
- Structural Deficiency: N
- Functional Obsolescence: FO
- Sufficiency Rating: 80.4
- Defense Network: 0
- National Highway System: 0
- Detour Length: 3
- National Truck Network: 0
- Structure Type Main: 502
- Superstructure: RC DECK ON PPC GIRDERS, PPC DECK PANELS, APPROACH SLABS
- Substructure: E.BENTS:RC CAP ON STEEL PILES, INT.BENTS:RC HAMMERHEAD PIERS
- Posted Single Vehicle: 99
- Posted Tractor Trailer Semi Truck: 99
- Type of Service Carried: 1

The status bar at the bottom shows the position as 1630138.58 702924.48 ft and a scale of 1450 ft.

Double Click bridge symbol
- Verify attributes

SDV Training



Contents

- Wake_Property_2011_10
- Boundaries - Division
- Boundaries - State
- Bridges
 - Find Bridge: 0249 in Davidson**
 - Basemap (Statewide Ortho Imagery)

Find Bridge: 0249 in Davidson

OBJECTID: 1
 Bridge Number: 280249
 Intersected Feature: ABBOTTS CREEK
 Facility Carried: SR2294
 Bridge Type: BRIDGE
 County Name: DAVIDSON
 *ROUTE: 40002294
 *TIER: SUBREGIONAL
 Road Angle: 56.74
 Structure Angle: 56.74
 BSIP Bridge Number: 0290249
 Division: 9
 Functional Class: Local, Rural
 Structural Deficiency: N
 Functional Obsolescence: FO
 Sufficiency Rating: 80.4
 Defense Network: 0
 National Highway System: 0
 Detour Length: 3
 National Truck Network: 0
 Structure Type Main: 502
 Superstructure: RC DECK ON PPC GIRDERS, PPC DECK PANELS, APPROACH SLABS
 Substructure: E.BENTS:RC CAP ON STEEL PILES, INT.BENTS:RC HAMMERHEAD PIERS
 Posted Single Vehicle: 99
 Posted Tractor Trailer Semi Truck: 99
 Type of Service Carried: 1

Position 1630138.58 -702924.48 ft

esri® SDV Default Map

Options on bottom of Attributes list

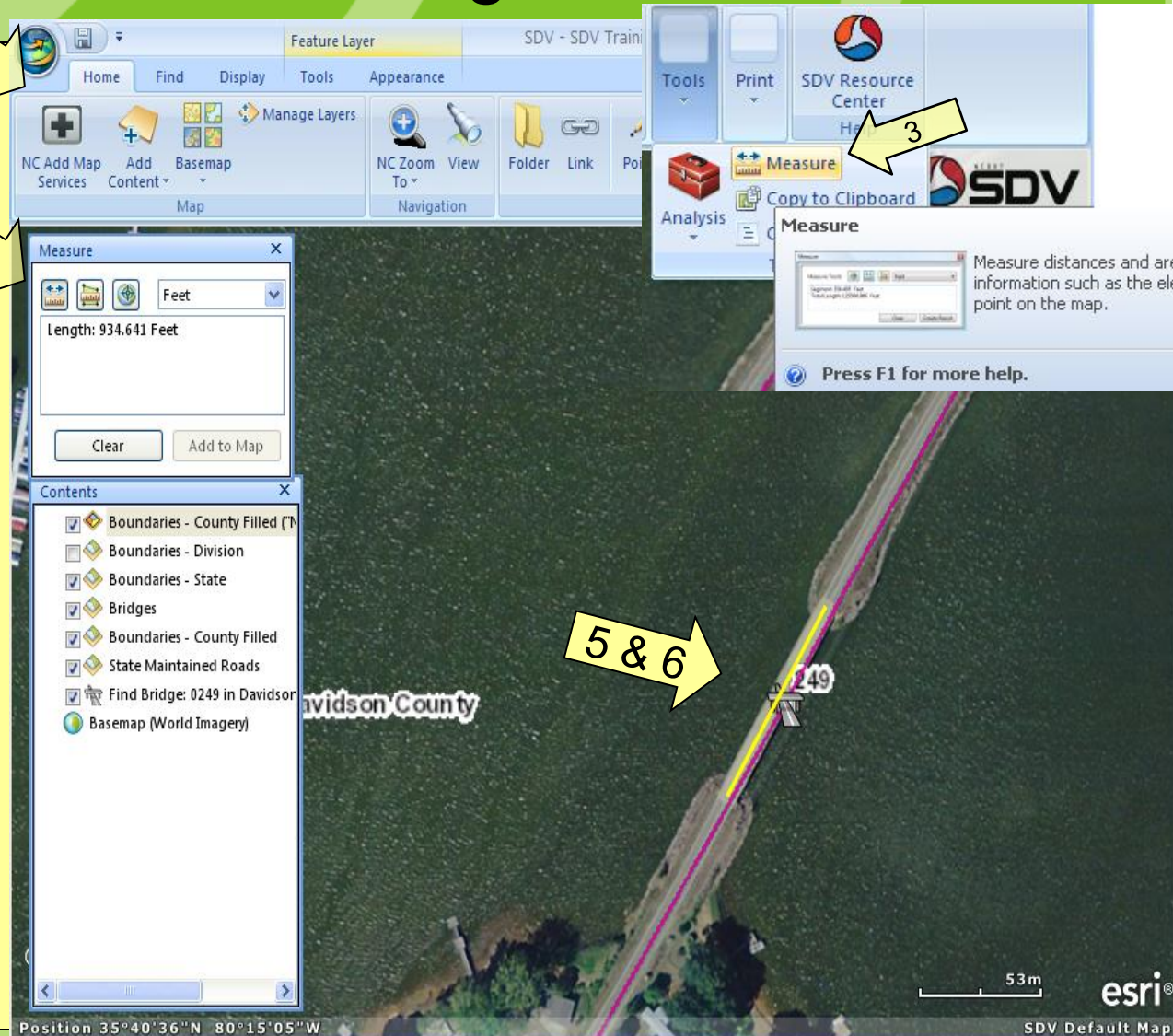
- Go To Map
- Find in Contents Window
- Email as .nmc
- Edit

SDV Training

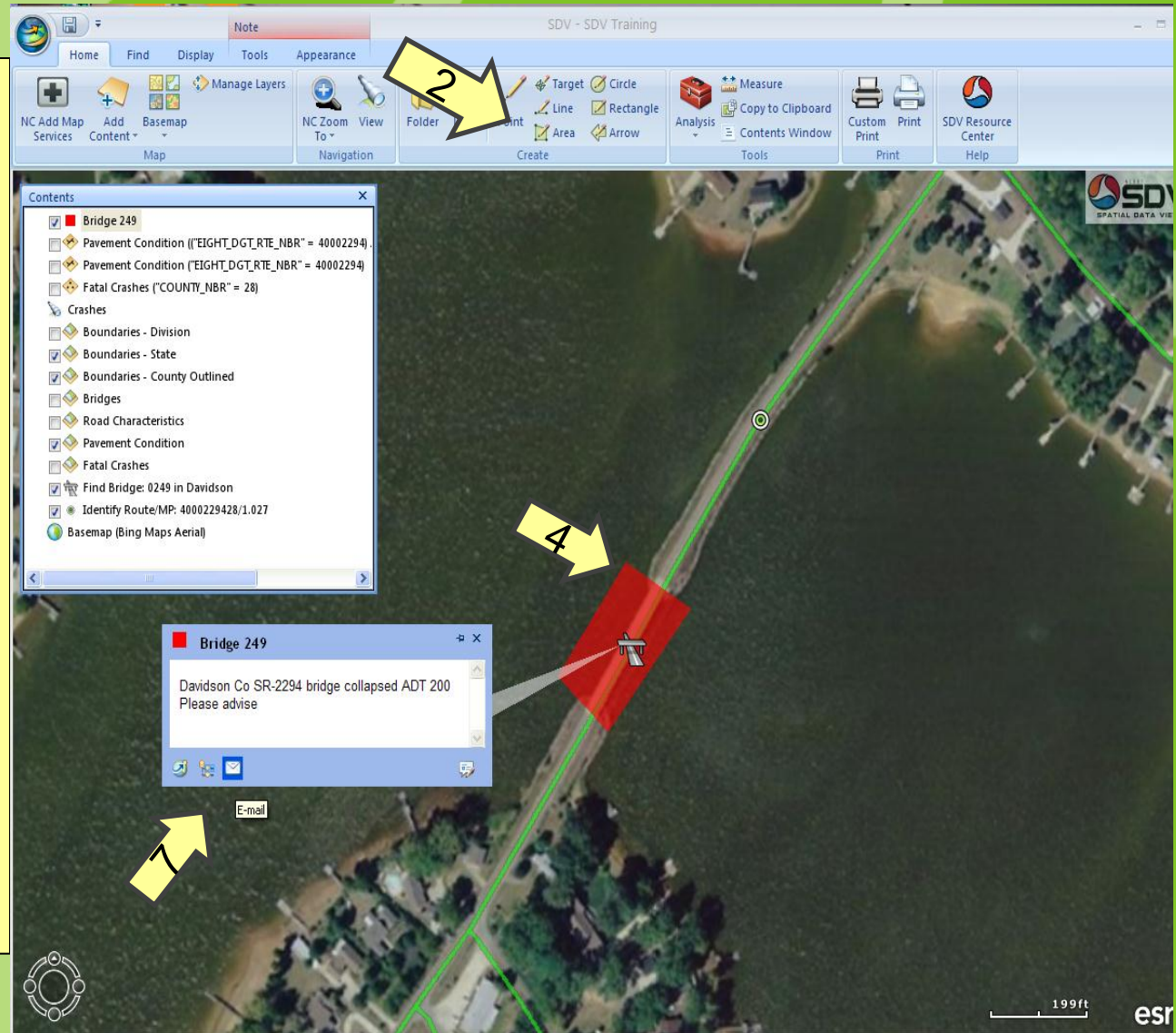
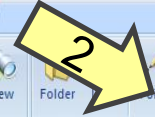


Measure Collapsed Bridge

1. Click Home tab
2. Click Tools
3. Click Measure tool
4. Click the first button for length and the middle button to measure area and select unit of measurement
5. Click, draw line, then double click to finish
6. Measured area gets hi-lighted



SDV Training



Create a Note

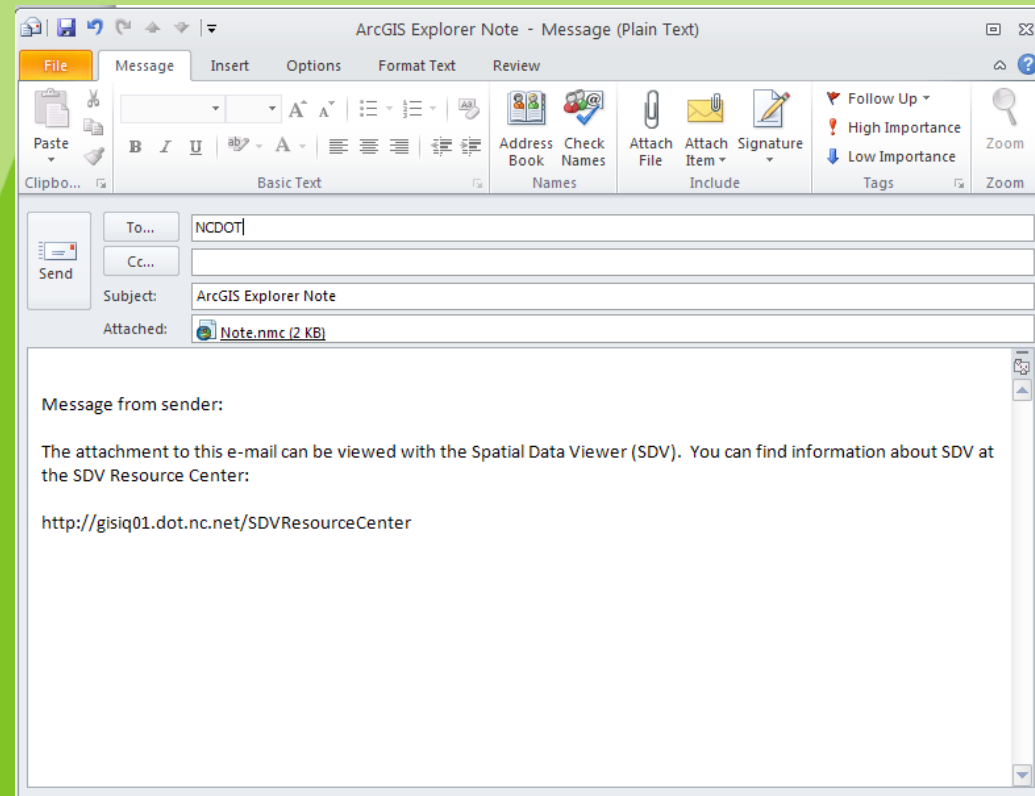
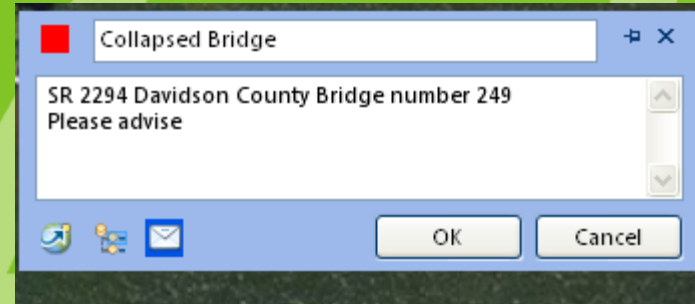
1. Click Home tab
2. Click Area in Tools section
3. Click on the map to outline the area of concern
4. Finish the area by double clicking
5. Add information to the note window
6. OK
7. Click Email

SDV Training



Sending E-Mail Options

1. Click E-Mail icon on note
2. ArcGIS Explorer button
3. Click Share
 - E-mail Map sends a map package, others will need the same access to the data
 - E-mail View sends a jpg
 - You can also right click the mouse and select Share option

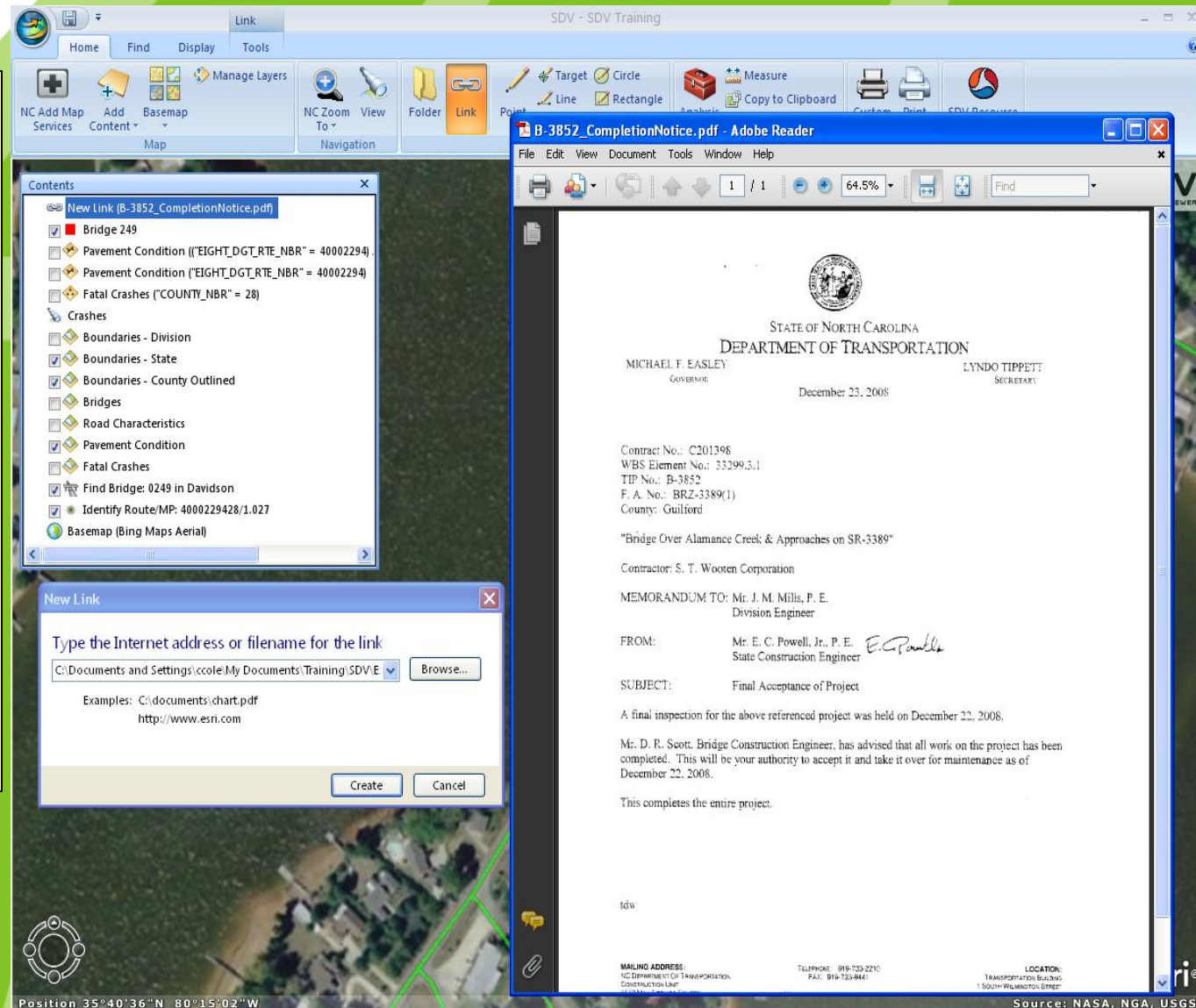


SDV Training



Add a link to documents

1. Click Link icon
2. Navigate to correct directory
3. Click on the new link in the Contents Window
4. Rename link



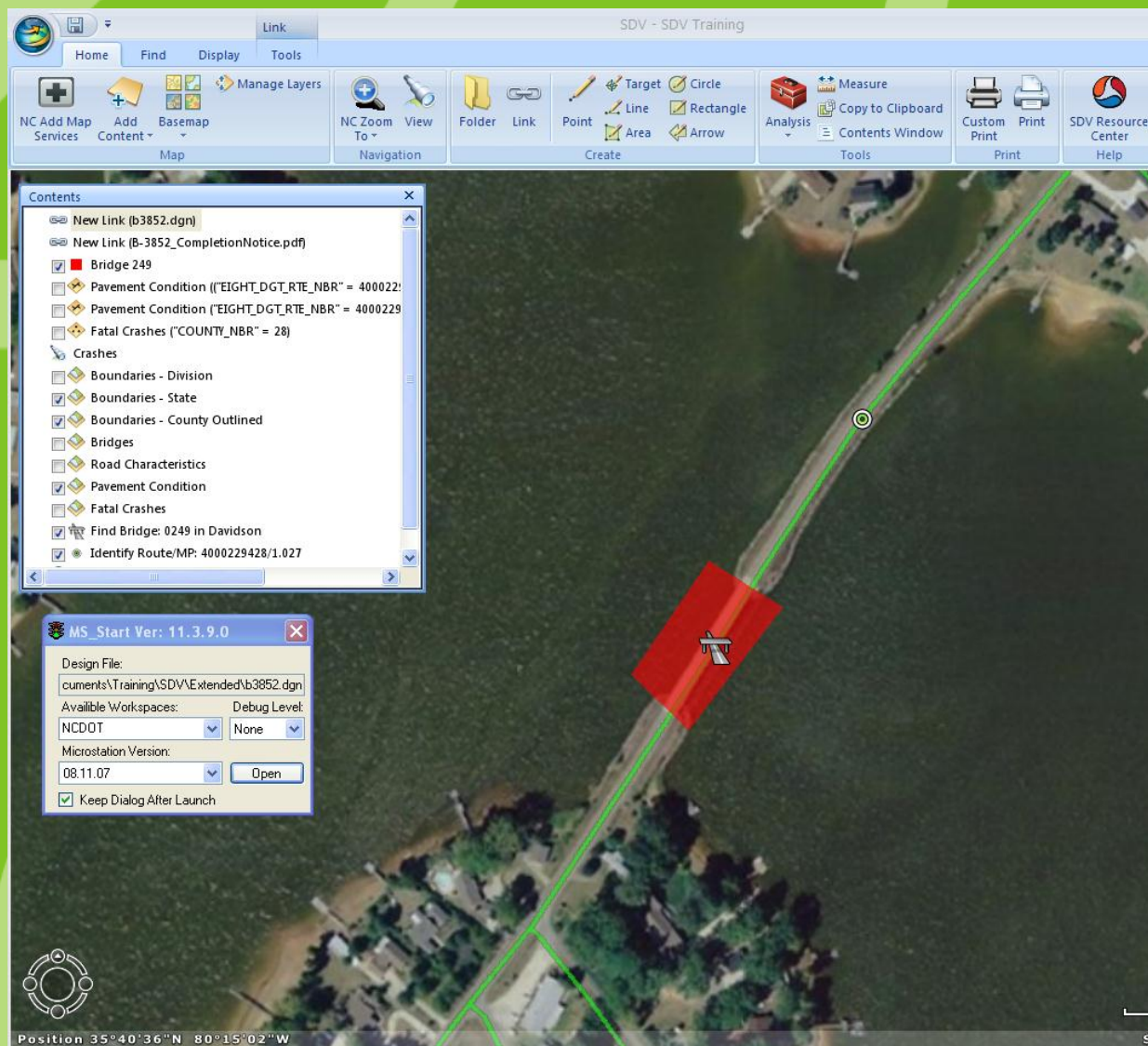
The screenshot displays the SDV Training application window. The top menu bar includes Home, Find, Display, and Tools. The toolbar contains icons for adding map services, adding content, managing layers, navigation, and linking. The 'Link' icon is highlighted. The 'Contents' window on the left lists various map layers, including 'New Link (B-3852_CompletionNotice.pdf)'. The 'New Link' dialog box is open, showing the file path 'C:\Documents and Settings\ccole\My Documents\Training\SDV\E' and a 'Browse...' button. The main map area shows an aerial view of a road. An Adobe Reader window is open, displaying a PDF document titled 'B-3852_CompletionNotice.pdf'. The document is from the North Carolina Department of Transportation, dated December 22, 2008, and discusses the completion of a bridge project.

SDV Training

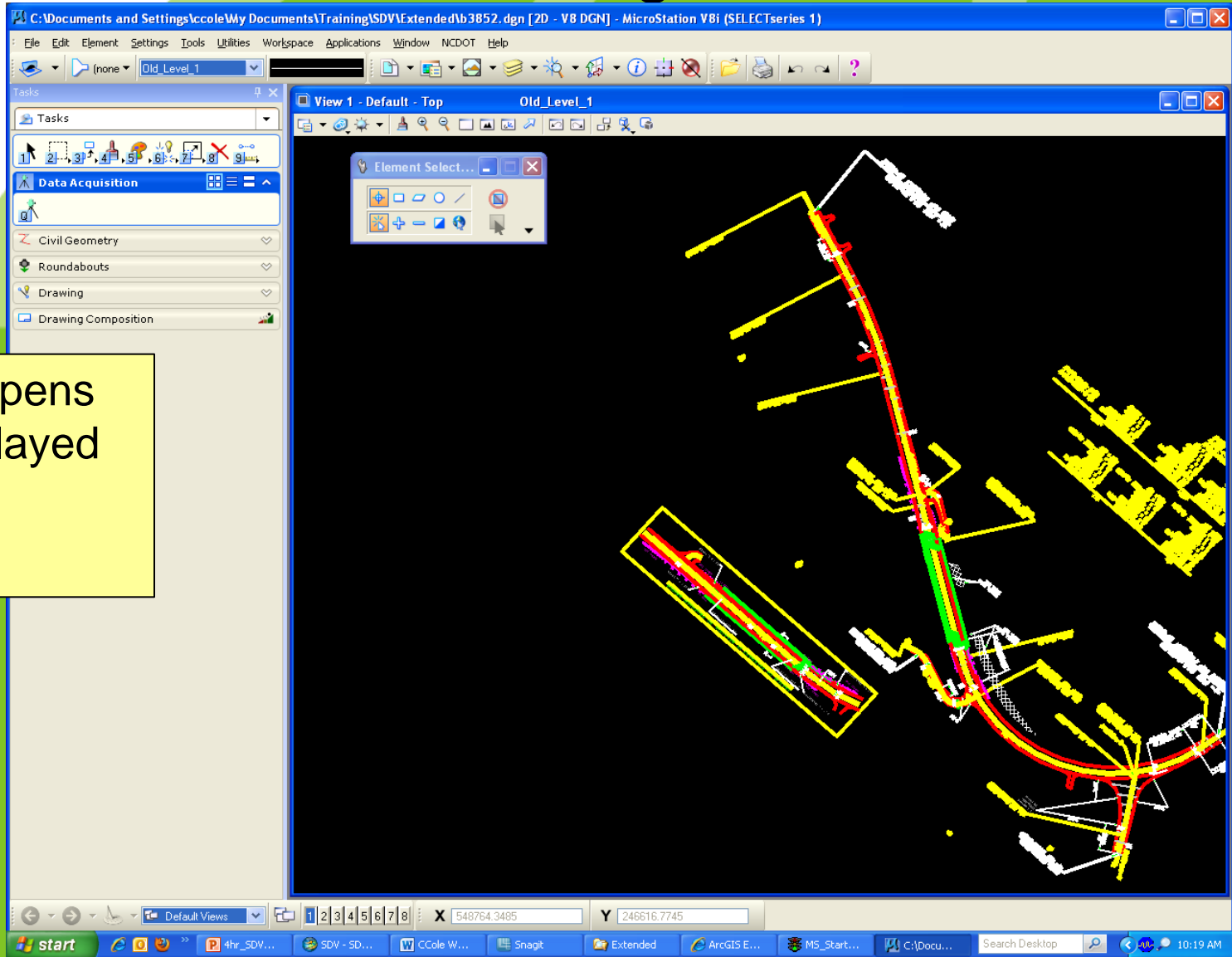


Add Link to .dgn

1. Click Home Tab
2. Click Link
3. Navigate to directory for .dgn
4. Double-click link to .dgn in Contents Window
5. Open new dialog

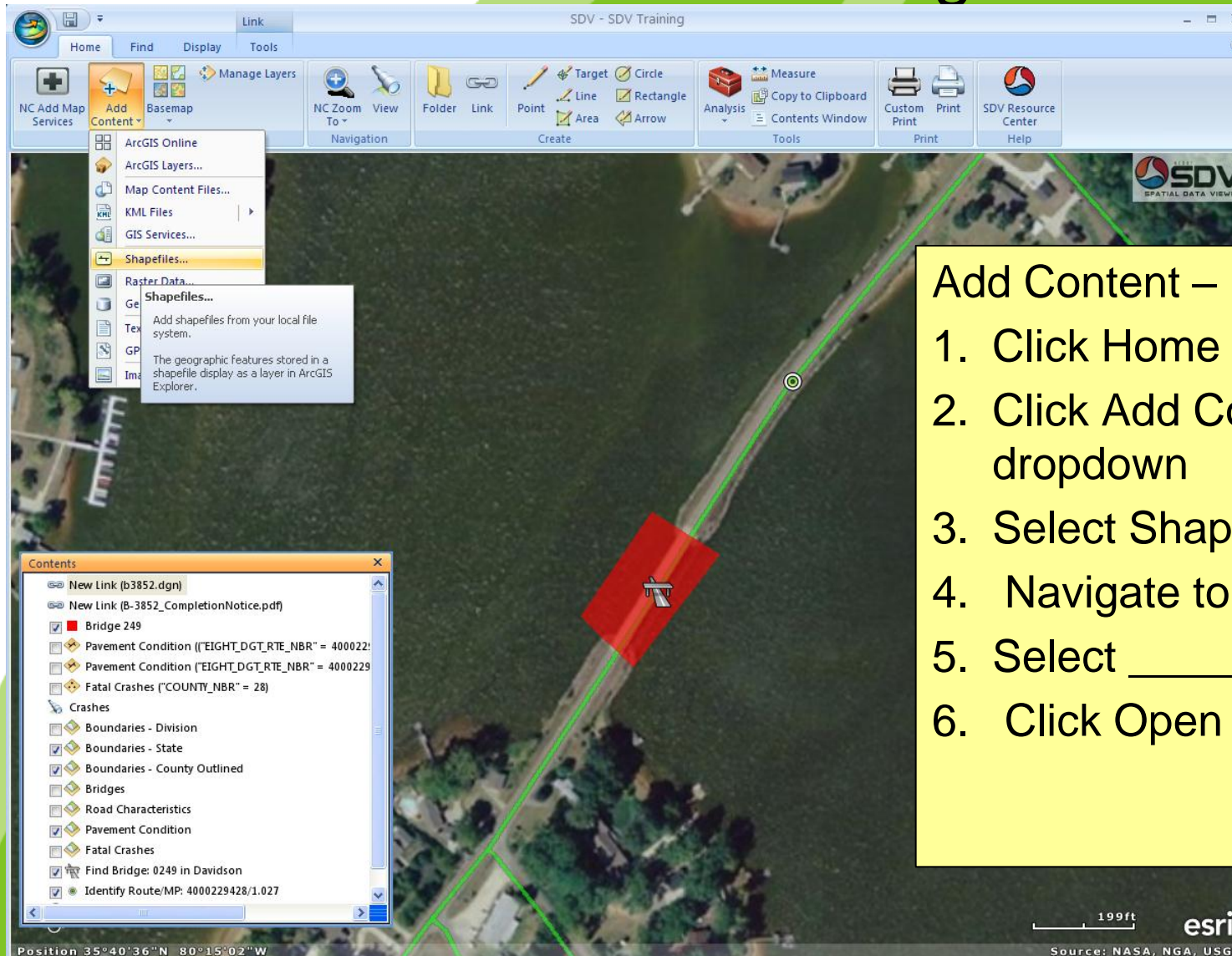


SDV Training



Microstation opens
with .dgn displayed

SDV Training



Add Content – External Data

1. Click Home tab
2. Click Add Content dropdown
3. Select Shapefiles option
4. Navigate to directory
5. Select _____.shp
6. Click Open

SDV Training

SDV - SDV Training

Feature Layer

Home Find Display Tools Appearance

NC Add Map Services Add Content Basemap Map

NC Zoom To View Navigation

Folder Link

Create Point Line Area Target Circle Rectangle Arrow

Analysis Measure Copy to Clipboard Contents Window Tools

Custom Print Print SDV Resource Center Help

Contents

- dauidsoncords
- New Link (b3852.dgn)
- New Link (B-3852_CompletionNotice.pdf)
- Bridge 249
- Pavement Condition ("EIGHT_DGT_RTE_NBR" = 400022)
- Pavement Condition ("EIGHT_DGT_RTE_NBR" = 4000229)
- Fatal Crashes ("COUNTY_NBR" = 28)
- Crashes
- Boundaries - Division
- Boundaries - State
- Boundaries - County Outlined
- Bridges
- Road Characteristics
- Pavement Condition
- Fatal Crashes
- Find Bridge: 0249 in Davidson

Position 35°40'20"N 80°15'32"W

ObjectID	394462
PREFIX	
PRETYPE	SR
NAME	8
TYPE	
SUFFIX	
FCC	A31
ACC	3
SHIELD	S
HWY_NUM	8
MILES	12.9037

3

Data is added to Contents Window

1. Double-click the major road closest to bridge 249
2. The closest major road is NC-8
3. Create note, send email

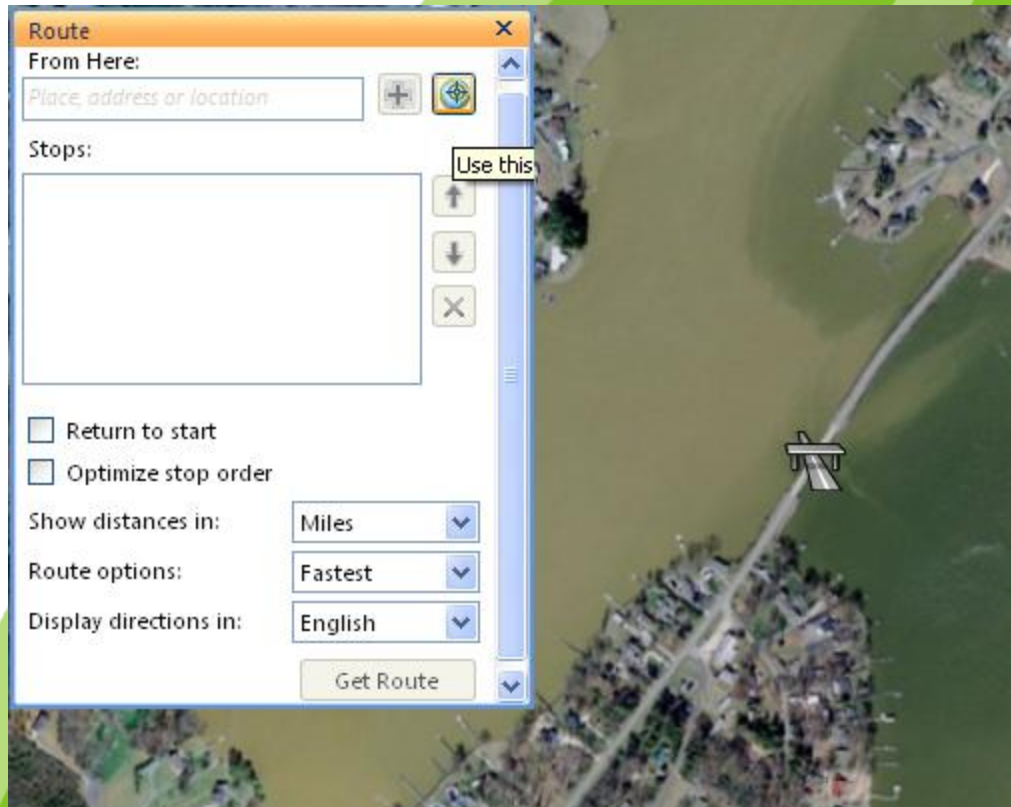
SDV Training

The screenshot displays the SDV - SDV Training application window. The main map area shows a satellite view of a road network. On the left, the 'Contents' pane lists various layers, including '8', 'davidsyncords', 'New Link (b3852.dgn)', 'New Link (8-3852_CompletionNotice.pdf)', 'Bridge 249', 'Pavement Condition ("EIGHT_DGT_RTE_NBR" = 400022)', 'Pavement Condition ("EIGHT_DGT_RTE_NBR" = 400029)', 'Fatal Crashes ("COUNTY_NBR" = 28)', 'Crashes', 'Boundaries - Division', 'Boundaries - State', 'Boundaries - County Outlined', 'Bridges', 'Road Characteristics', 'Pavement Condition', and 'Fatal Crashes'. Below the map, a table displays attributes for the selected layer '8':


Attribute	Value
ObjectID	394462
PREFIX	
PRETYPE	SR
NAME	8
TYPE	
SUFFIX	
FCC	A31
ACC	3
SHIELD	S
HWY_NUM	8
MILES	12.9037

At the bottom of the map, the position is displayed as 35°40'20"N 80°15'32"W. A scale bar indicates 1197 feet. The 'ArcGIS Explorer Note - Message (Plain Text)' window is open, showing a message from the sender with the subject 'ArcGIS Explorer Note' and an attachment '8.nmc (28 KB)'. The message text reads: 'Closest major road is SR8 | Message from sender: The attachment to this e-mail can be viewed with the Spatial Data Viewer (SDV). You can find information about SDV at the SDV Resource Center: http://gisi01.dot.nc.net/SDVResourceCenter'. The bottom right corner features the Esri logo and the text 'Source: USGS'.

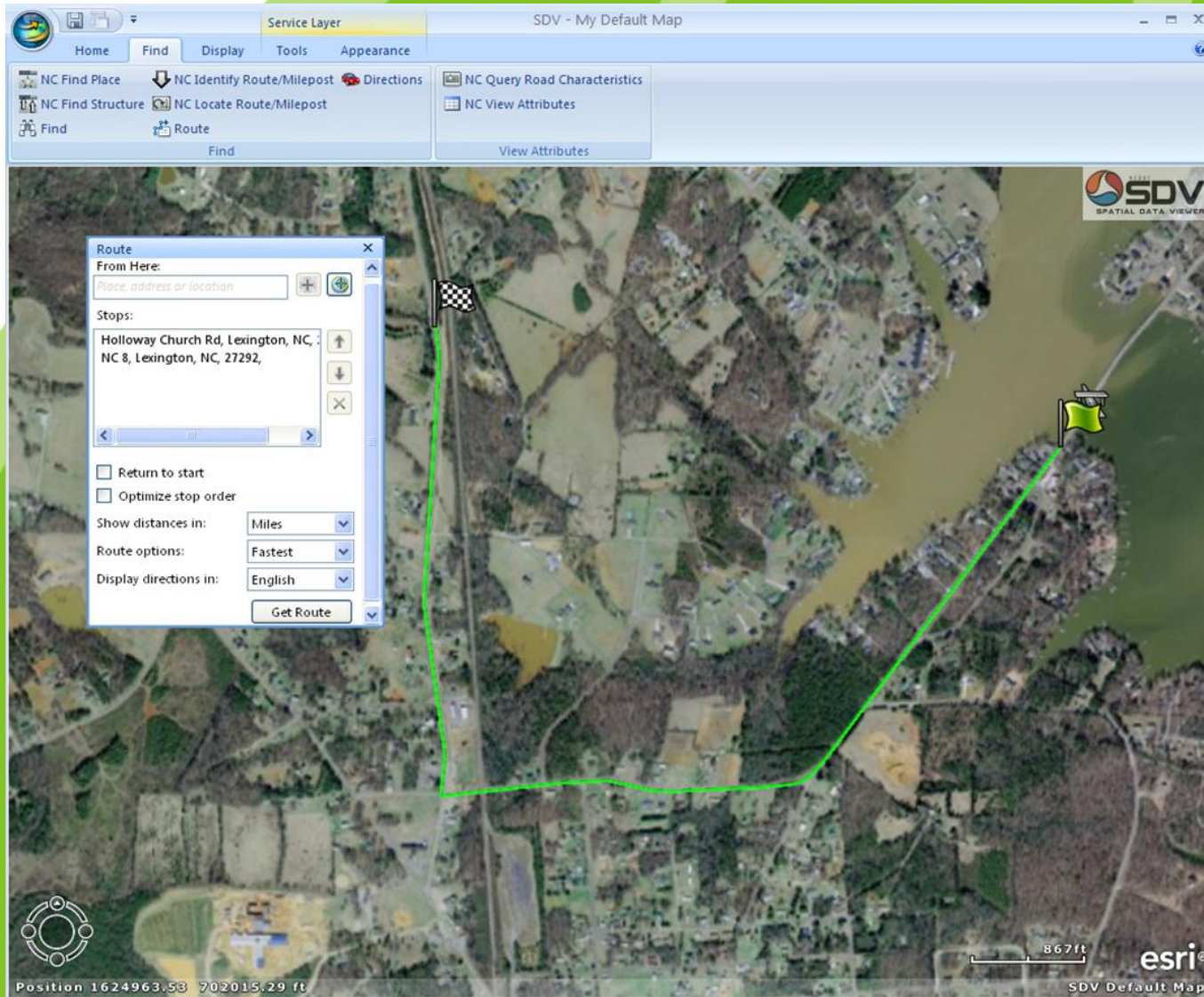
SDV Training



Create a Route

1. Click Find Tab, Route  Route
2. Click Select tool
3. Click on road near bridge
4. Click plus sign to add address
5. Click on NC – 8
6. Click to plus sign to add address as next stop
7. Click Get Route

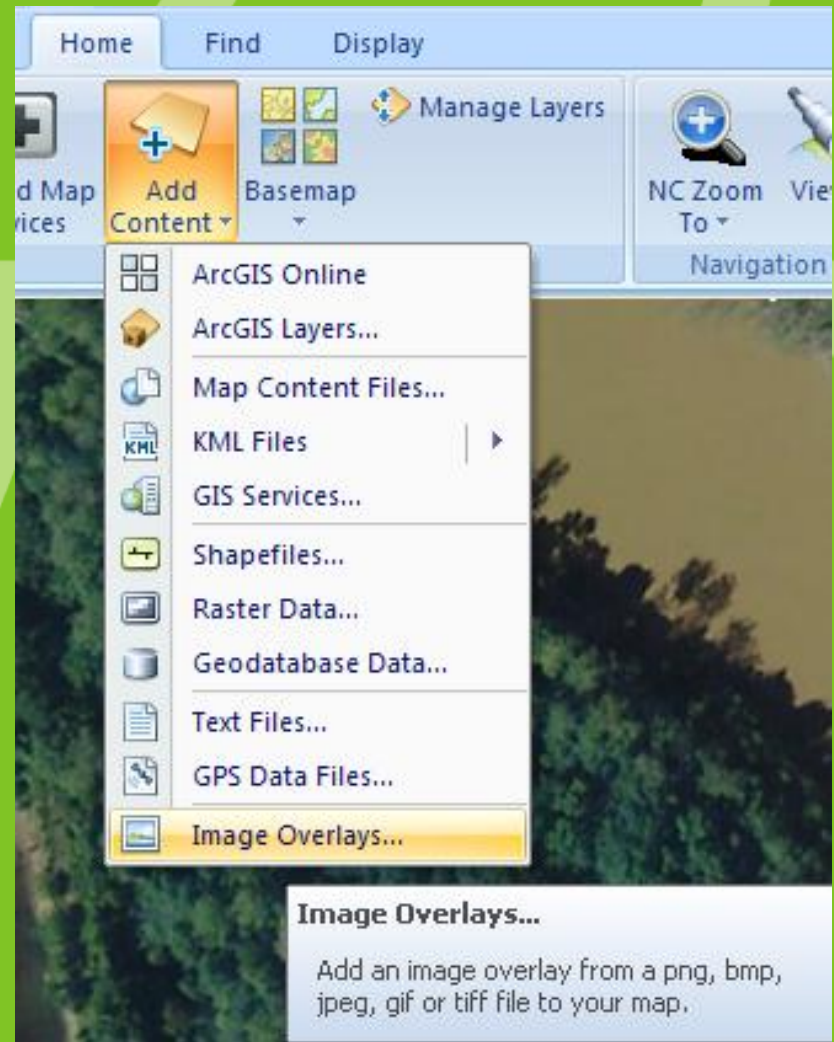
SDV Training



SDV Training

Add Content – External Data

1. Click Home tab
2. Click Add Content icon
3. Select File type and path

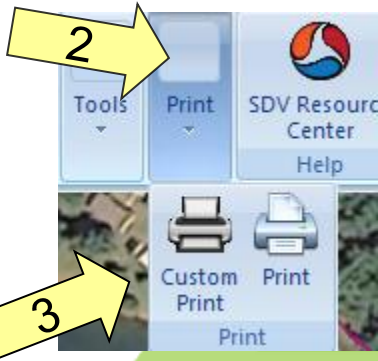


SDV Training



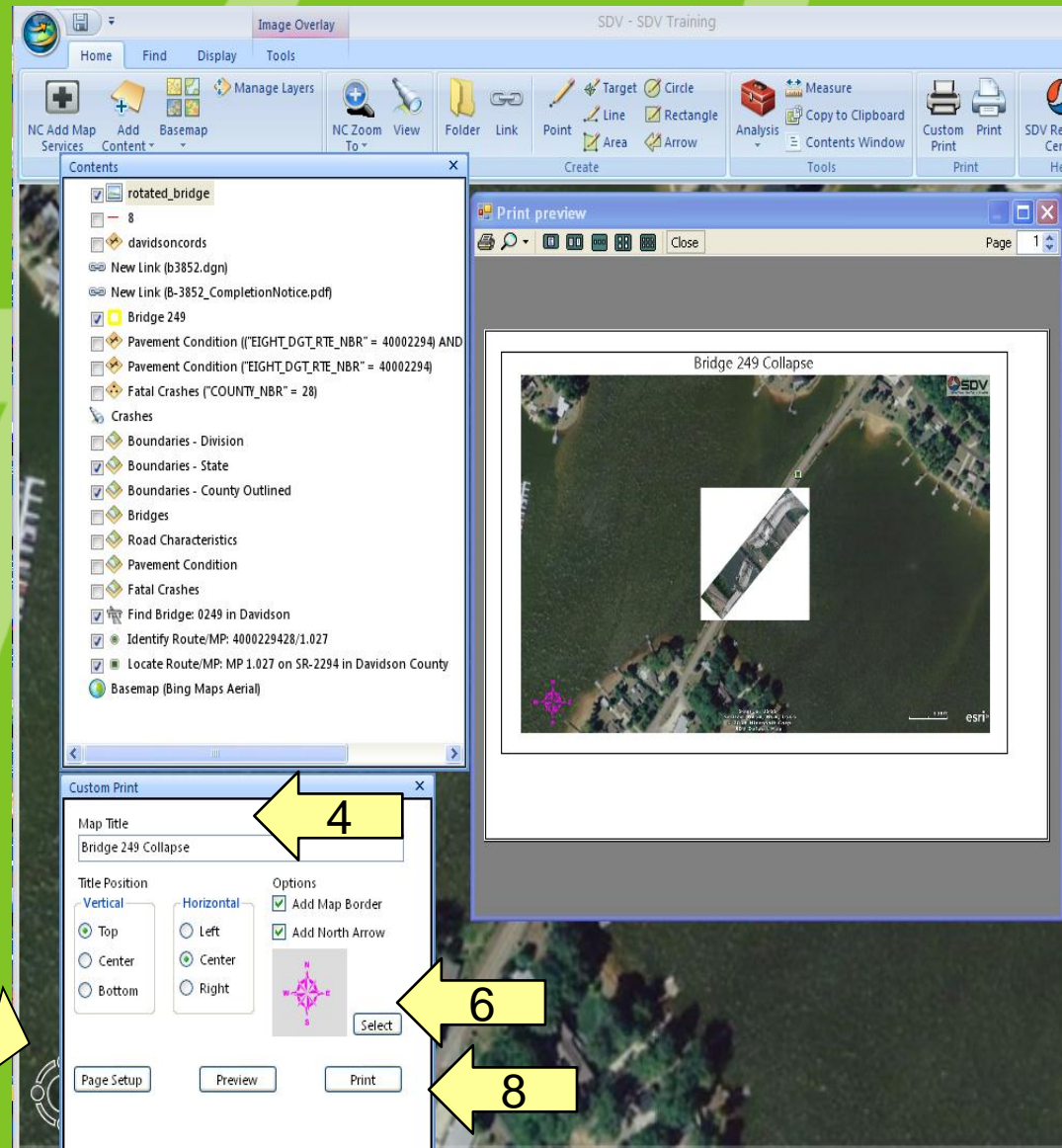
The screenshot displays the SDV Spatial Data Viewer interface. The main window shows an aerial map of a bridge area. A 'Contents' panel on the left lists various layers, including 'rotated_bridge', '8', 'davidsoncords', 'New Link (b3852.dgn)', 'New Link (B-3852_CompletionNotice.pdf)', 'Bridge 249', 'Pavement Condition', 'Fatal Crashes', 'Crashes', 'Boundaries - Division', 'Boundaries - State', 'Boundaries - County Outlined', 'Bridges', 'Road Characteristics', 'Pavement Condition', 'Fatal Crashes', 'Find Bridge: 0249 in Davidson', 'Identify Route/MP: 4000229428/1.027', 'Locate Route/MP: MP 1.027 on SR-2294 in Davidson County', and 'Basemap (Bing Maps Aerial)'. The 'Tools' panel at the top includes options for 'Home', 'Find', 'Display', 'Tools', 'Image Overlay', 'NC Add Map Services', 'Add Content', 'Manage Layers', 'Map', 'NC Zoom To', 'View', 'Navigation', 'Folder', 'Link', 'Point', 'Line', 'Area', 'Arrow', 'Circle', 'Rectangle', 'Measure', 'Copy to Clipboard', 'Contents Window', 'Tools', 'Custom Print', 'Print', 'SDV Resource Center', and 'Help'. A scale bar at the bottom right indicates 188ft. The status bar at the bottom shows the position: 35°40'36"N 80°15'01"W.

SDV Training

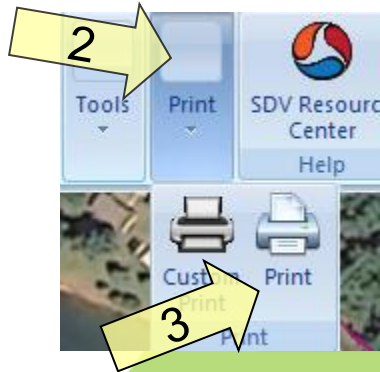


Print the Map using Custom Print

1. Click the Home tab
2. Click Print
3. Click Custom Print
4. Enter Map title
5. Select page options
6. Select North Arrow
7. Choose page settings
8. Click print preview or print

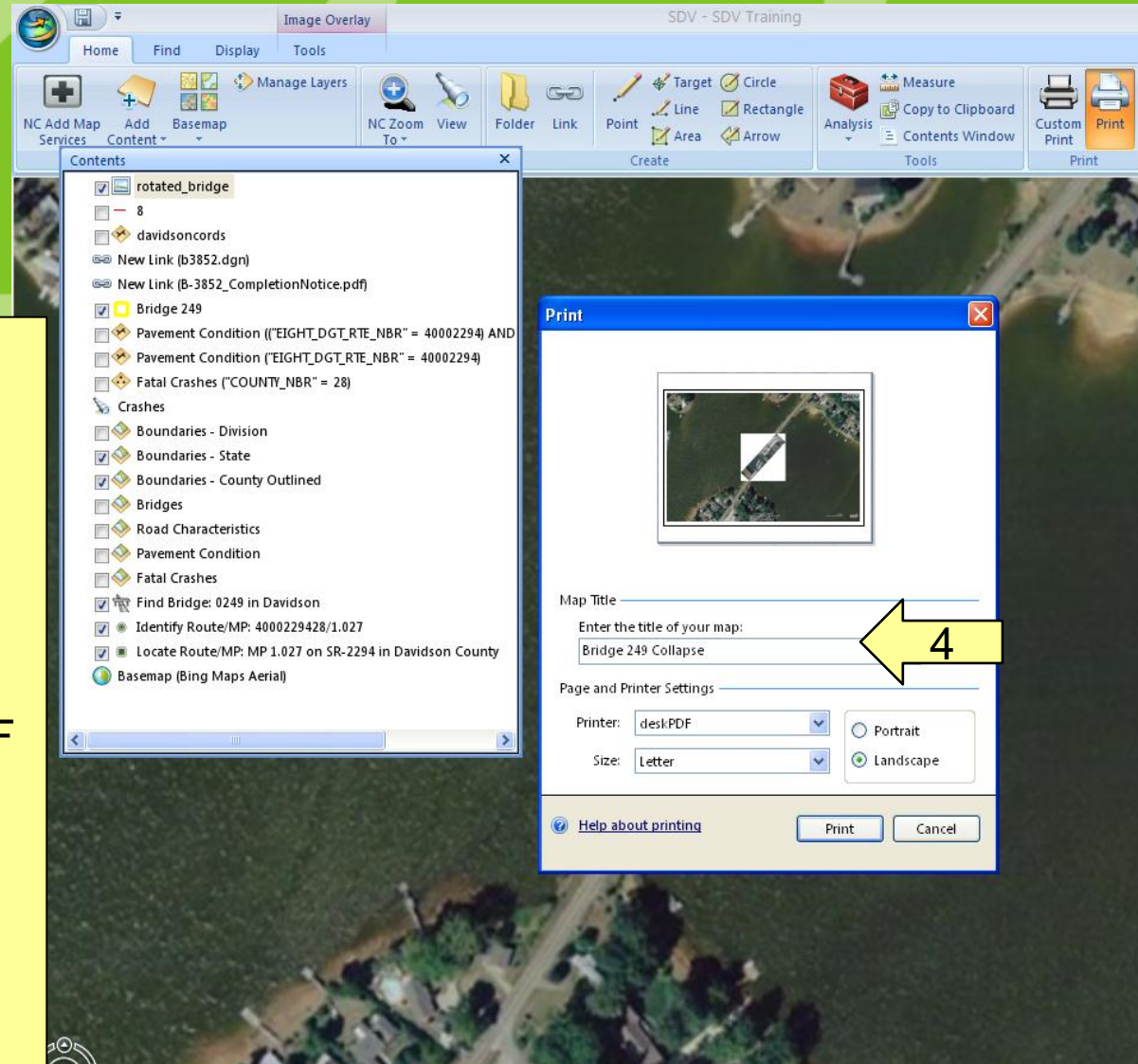


SDV Training

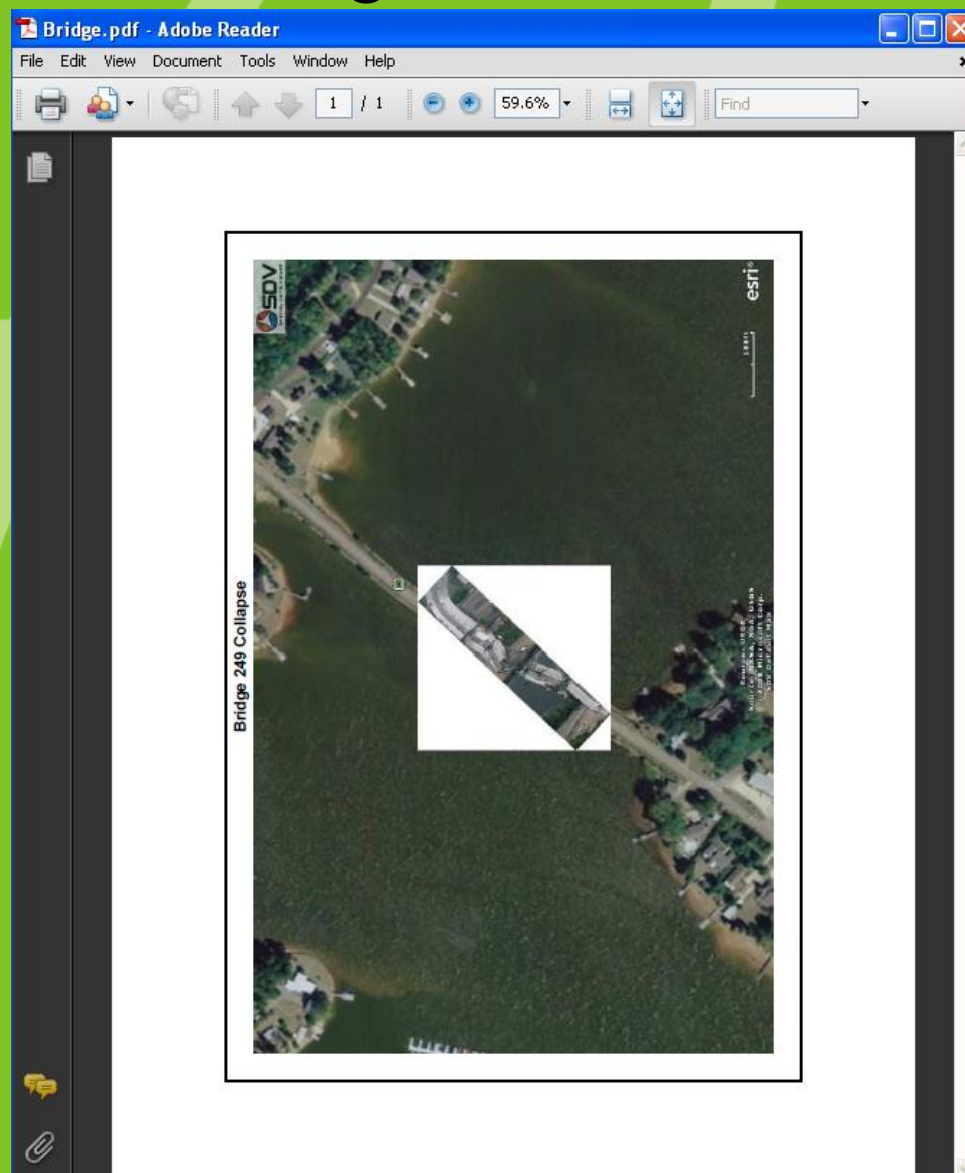
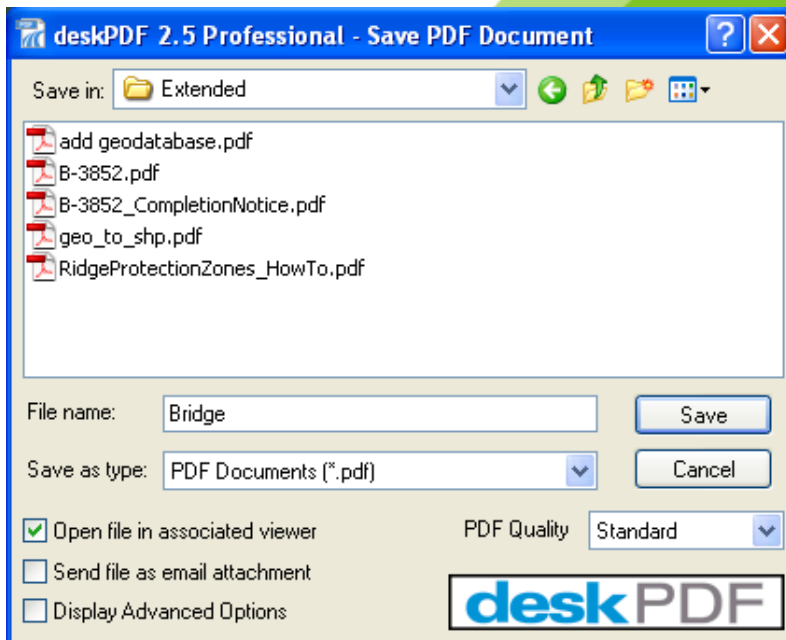


Print the Map using Custom Print

1. Click the Home tab
2. Click Print
3. Click Print
4. Enter Map title
5. Change printer to deskPDF
6. Select size
7. Choose page settings
8. Click print preview or print



SDV Training



SDV Training Questions? Thank you!



Thank you !

SDV Training brought to you by:

NCDOT GIS Unit

<https://connect.ncdot.gov/resources/gis/Pages/default.aspx>

Thank you !

To schedule training
ccole@ncdot.gov

To report an incident
dothelp@ncdot.gov

To request installation
gishelp@ncdot.gov

All other requests
gishelp@ncdot.gov