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1 List of workgroup participants

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MA	Alicia Norris	MA Dept. of Fish and Wildlife
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MA	Beth Lambert	MA Dept. of Fish and Game, Riverways Program
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Regional	Mark P. Smith	The Nature Conservancy
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VT	Brian Fitzgerald	VT Agency of Natural Resources
VT	Len Gerardi	VT Fish and Wildlife Department
VT	Rich Kirn	VT Fish and Wildlife Department
VT	Roy Schiff	Milone & MacBroom
WV	David Thorne	WV Division of Natural Resources
WV	Dan Cincotta	WV Division of Natural Resources
WV	Walt Kordek	WV Division of Natural Resources
WV	Jim Hedrick	WV Division of Natural Resources
WV	Ruth Thornton	The Nature Conservancy

2 Use of the Northeast Connectivity Assessment Tool

The NCAT can be used to run custom ranking analyses at varying scales, with custom metric weights, and with various filters applied to the results. It is distributed pre-loaded with all dams and metrics that were evaluated in the analysis and the metric weights that were chosen by the project team for the anadromous fish scenario. This section describes the hardware, software, and methods necessary to successfully run a custom analysis with the NCAT.

2.1 Hardware and Software

The NCAT is designed for use in Microsoft Excel 2007. Its native environment is MS Windows XP, but it can be run on any platform that supports Excel 2007 or higher, including Windows Vista, Windows 7, and Mac OS X. Several of the NCAT's processing steps involve ranking functions which are computationally expensive operations. Thus, the speed at which the NCAT will perform an analysis is directly related to the hardware on which it is run. Excel 2007 has the ability to utilize multiple processors, so dual core machines will perform analyses faster than single core machines. Processor speed, available memory, and the computer resources consumed by other running programs will all affect the NCAT 's performance.

2.2 Prior to running an NCAT analysis

2.2.1 Setting Calculation to Manual

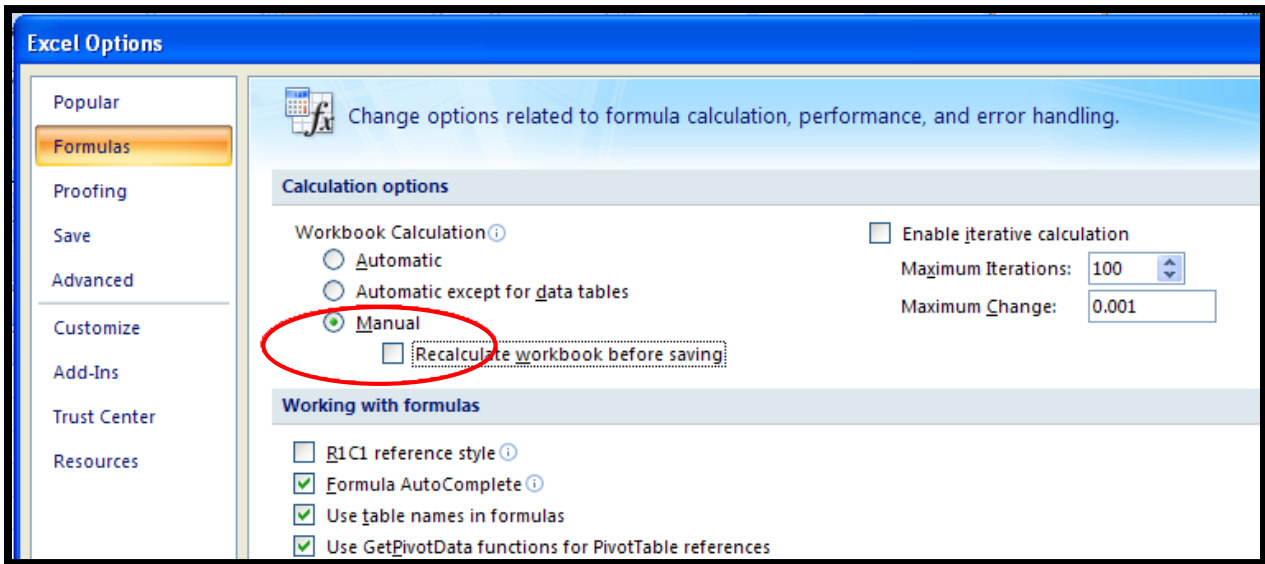
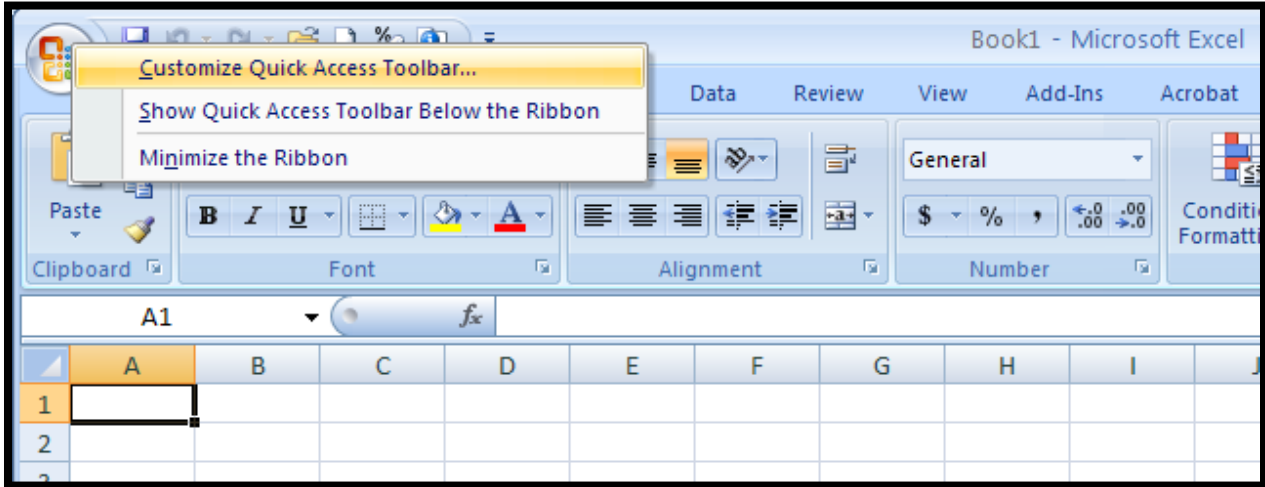
Before the NCAT is opened in Excel, it is important to set formula calculation to "manual". If left in the default "Automatic" mode, Excel will attempt to recalculate the entire workbook every time the NCAT is opened or a change is made. By setting the calculation mode to "manual", the NCAT is set to run only after all changes are made and the user executes the calculation.

The simplest way to do this is to follows, and is illustrated in Figure A1.

1. Open a new, blank Excel spreadsheet.
2. Right click on the Office button in the upper left corner of the spreadsheet
3. Select "Customize Quick Access Toolbar"
4. Select the "Formulas" tab on the left
5. Set "Workbook Calculation" to Manual
6. Unselect "Recalculate workbook before saving"
7. Click OK
8. Open NCAT

If the NCAT is opened and Excel begins automatic calculation, the calculation can be interrupted by clicking repeatedly in a cell. This method of interrupting the calculation, however, is not as reliable as setting the workbook to "manual calculation" in the beginning.

Figure A1: Setting up Excel prior to opening the NCAT



2.2.2 Accepting Macros

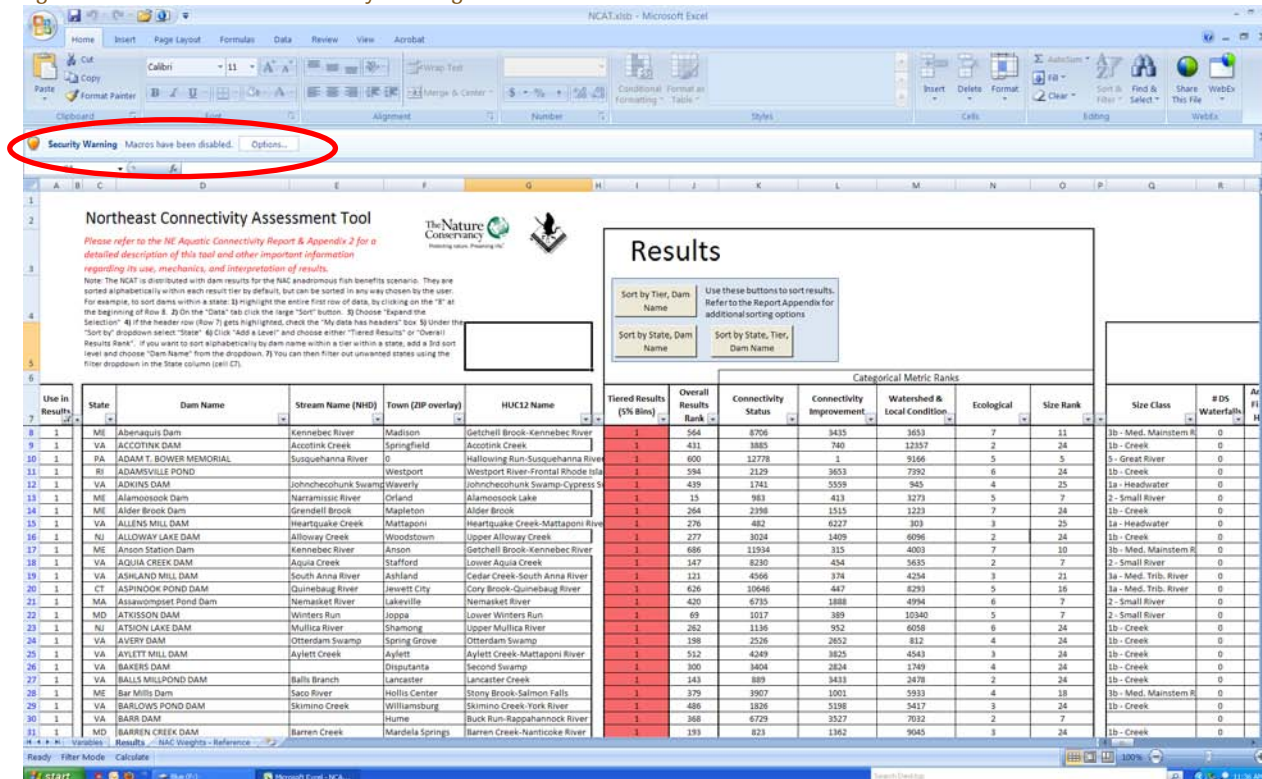
Some functionality in the NCAT relies on Visual Basin macros. Thus, when the NCAT is opened, the following warning in Figure A2 may be displayed, due to the potential misuse of macros and the resulting security concern. "Enable Macros" to enable full functionality. If you are concerned about the potential security risk posed by macros in general, refer to Appendix Section 2.5 for guidance on achieving the functionality provided by macros manually.

Figure A2: Security warning when NCAT is opened. Select "Enable Macros"



Depending on your software versions and settings, you may see the following banner (Figure A3) at the top of the excel Window. Selecting the "Options" button will bring up a dialog box to enable the content.

Figure A3: Alternate Macro security warning location



For more information on macros, macro security, and how set your Excel options to allow macros please refer to the Microsoft help website: <http://office.microsoft.com/en-us/excel-help/change-macro-security-settings-in-excel-HP010096919.aspx>.

2.3 Preparing a custom analysis

With the NCAT open and set to manual calculation mode, the custom analysis may begin. Two primary facets of the NCAT are available for customization: the relative weights for each of the metrics and the spatial scale of the analysis.

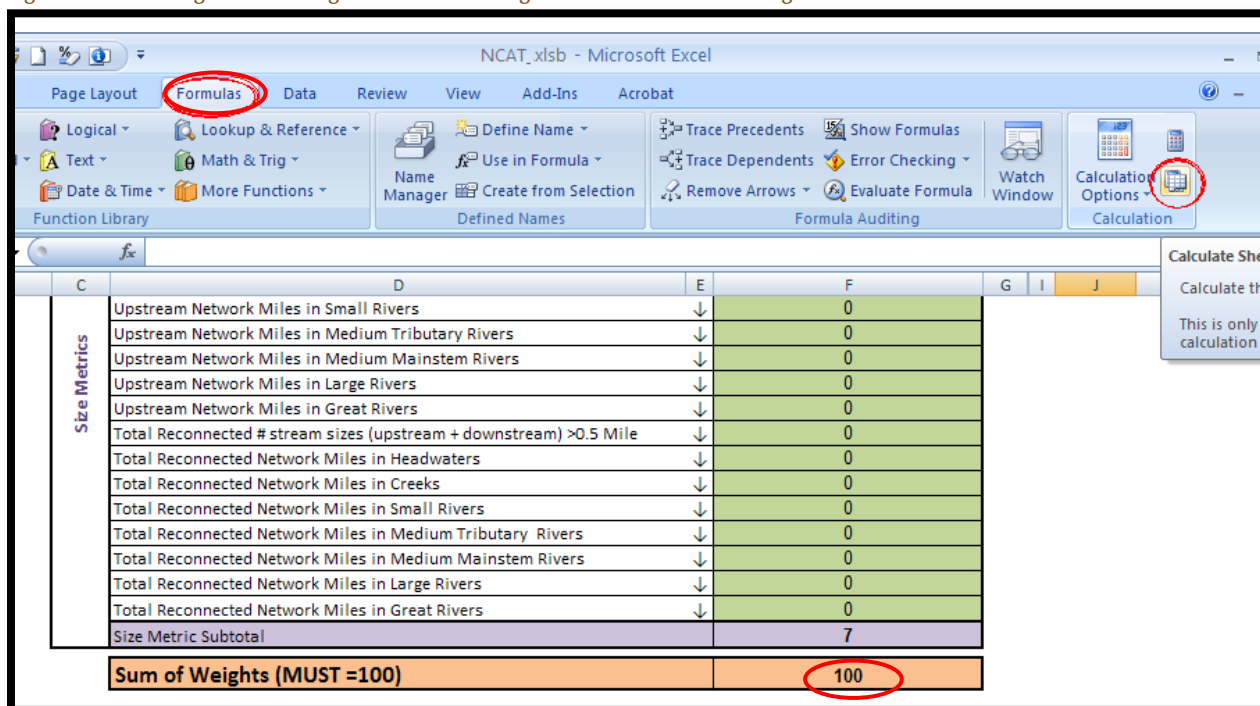
2.3.1 Custom weight scenario

Metric weights used in the NCAT are relative weights. That is, the weights assign the importance of each metric relative to the other metrics for a given scenario (e.g. anadromous fish). Thus, the sum of all weights must equal 100. If there was interest in running an analysis utilizing a single metric, a weight of 100 would be given to that metric. For example, if a weight of 100 were applied to the “Length of Functional Upstream Network” metric, the dam with the largest functional upstream network would be first in the results. Note that the number of metrics used in an analysis will have an effect on the processing time of the NCAT; additional metrics will slow the processing.

Metric weights are entered on the “Variables” worksheet in the NCAT. The NCAT comes pre-loaded with the anadromous fish scenario weights chosen by the project team in the “Variables” worksheet. (Additionally, resident fish scenario weights are included for reference on the “NEAFWA Weights” worksheet, but these are not “live” weights, simply a static list of the resident weights for reference.) The steps to make changes to metric weights are as follows:

1. Enter the desired weights on the “Variables” worksheet in the NCAT
2. Select the “Formula” tab at the top of the workbook (Figure A4)
3. Press the “Calculate sheet” button (or press Shift+F9) to ensure that the entered metric weights sum to 100. The "Calculate Sheet" option does not calculate all formulas in the entire workbook

Figure A4: Entering custom weights and calculating the sheet to confirm weights sum to 100



2.3.2 Custom spatial scale

A custom spatial scale can be applied so that only dams within a region of interest are included in the analysis. This scale can be set to a given state or watershed (HUC4, HUC6, HUC8, HUC10, HUC12). The HUC10 or HUC12 name may also be used, but the name must match exactly as it is stored in the NHD database. (HUCs which begin with a '0' must include the '0'). The scale is entered below the weights table on the "Variables" worksheet (cell F96). If this cell is left blank, the entire region will be included in the analysis. Note that the entire region will take longer to calculate than a scale which includes fewer dams.

Note: If a custom spatial scale is used in an analysis, it is important to ensure that the default filter which excludes results outside of the area of interest is applied on the results worksheet. Otherwise, the results, while correct, will contain many rows with no values. This is done by applying a filter which excludes "0" from the "Use" column in the results. Additional details on how to apply this filter are found in Section 2.5.3.

2.3.3 Other options

Categorical ranks break out each dam's standing with each of the five metric categories (Connectivity Status, Connectivity Improvement, Watershed and Local Condition, Ecological, and Size). These ranks can be helpful for determining what metrics are driving the overall results, but they slow the calculation

process. Enter "Yes" in the calculate categorical ranks option cell, F100, if you would like to calculate categorical ranks. If not, leave the cell blank.

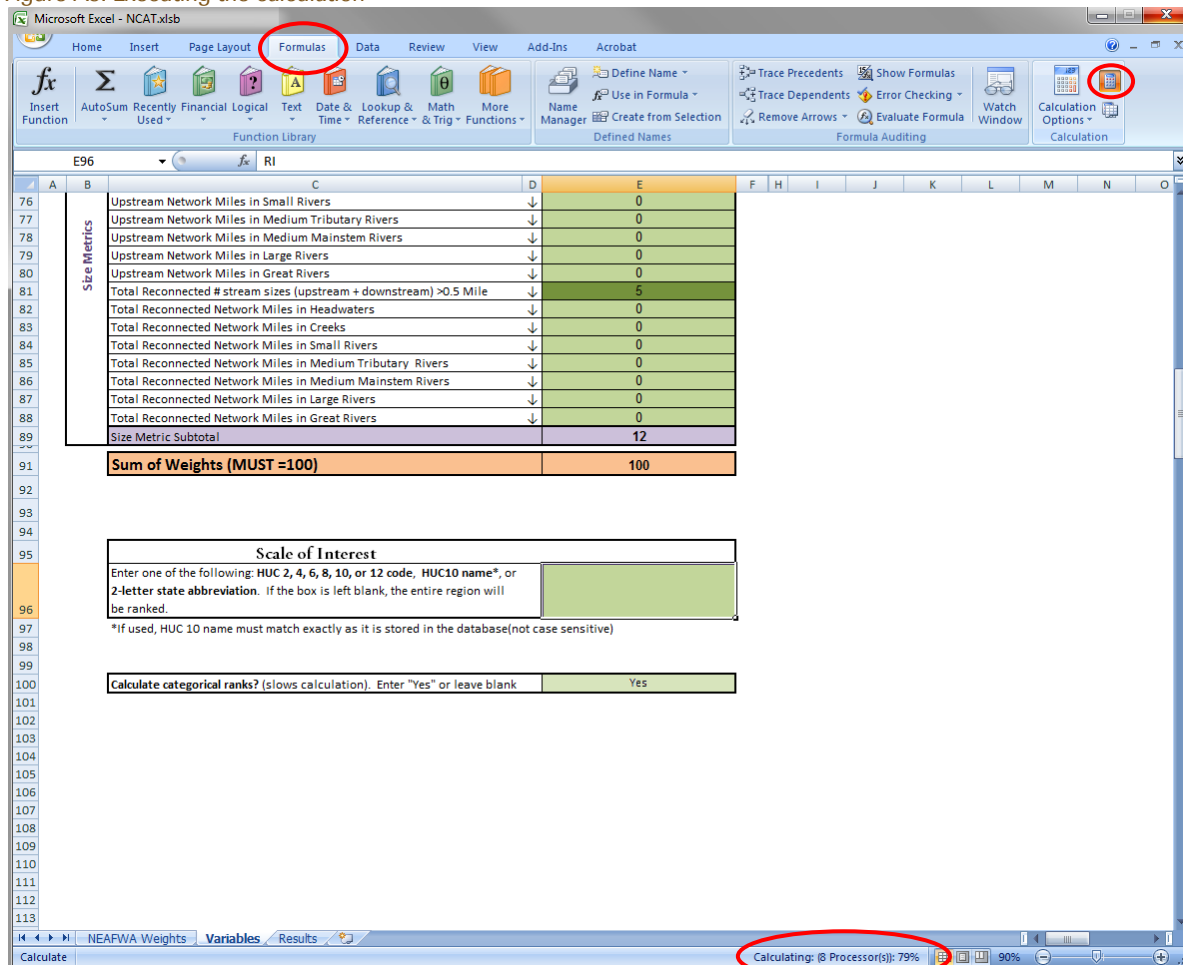
2.4 Executing a custom analysis calculation

When all options and variables are set, the NCAT is ready to be re-calculated. Click on the "Formulas" tab and locate the "Calculate Now" button in the upper-right hand corner (Figure A4). After confirming that all variables are set as desired, click on the "Calculate Now" button. Once this button is pressed, it is critical that no cells or edges of the Excel window be clicked on-- doing so can interrupt the calculation, thus necessitating re-running the calculation.

The time required to run the analysis will considerably be based on the hardware specifications of the computer, the other processes that are running concurrently on the computer, and the variables selected for the analysis. Larger geographic extents (states or watersheds) run slower than small ones, as do running the categorical ranks. An analysis of a small state or watershed (~500 dams) without categorical ranks on a computer with a dual core 2.4GHz processor and 2GB of RAM will run in about the time it takes to grab a cup of coffee. The entire region with categorical ranks will run on the same machine overnight. A small state or watershed will run on a quad core 3.3 GHz processor with 8 GB of RAM in a minute or less and will run the entire region with categorical ranks in about two hours.

The status of the calculation is displayed in the lower right-hand corner of the Excel window (Figure A5). Note that this figure is a percentage of the individual operations run, not a percentage of time required to run the entire analysis. Thus, it is possible for the last percentage to take longer than the first 75%.

Figure A5: Executing the calculation



2.5 Manipulating results

Results are output from the NCAT onto the “Results” worksheet in the NCAT workbook. Two buttons are provided to sort the results using three predetermined sort orders (*macros must be enabled for the button functionality to work*):

1. By state, then by dam name
2. By result tier, then by dam name
3. By state, tier, then by dam name

Other basic sorting and filtering of results can be also performed on this Results worksheet. It is important to note that the results presented on this worksheet are linked to other worksheets in the NCAT, which are hidden by default. **Thus, to help avoid potential problems, several intermediate worksheets are hidden from the user and the Results worksheet is protected to avoid accidental corruption of the tool.** The Sections below detail how to "unprotect" this worksheet and access the full sorting functionality. To further avoid potential problems, results can be copied into a new, blank Excel workbook and manipulated without concern of worksheet protection potentially corrupting the tool.

Additionally, copying the results into a new worksheet is necessary if results are to be joined back to a GIS. The steps for copying the results to a new worksheet are described in Appendix Section 2.5.4.

2.5.1 Re-applying the default filtering and sorting

After a new analysis is run in the NCAT, the sorting of the results will no longer be current. Three sorting options are prepared for the user as buttons, as shown in Figure A6 (macros must be enabled for this functionality to work).

Figure A6: Sorting using the provided sort options.

The screenshot shows the Microsoft Excel interface for the Northeast Connectivity Assessment Tool. The ribbon includes Home, Insert, Page Layout, Formulas, Data, Review, View, Developer, Add-Ins, and Acrobat. The data table below is as follows:

Use In Results	State	Dam Name	Stream Name (NHD)	Town (ZIP overlay)	HUC12 Name	Tiered Results (5% Bins)	Overall Results Rank	Connectivity Status	Connect Improve
1	CT	13TH HOLE POND DAM	Welton Brook	Waterbury	Hop Brook	11	6939	4165	7178
1	CT	ABBOTTS POND DAM	Hop Brook	Middlebury	Hop Brook	17	11152	11301	7607
1	CT	ABBY POND DAM	Abbey Brook	Ellington	Lower Scantic River	9	6225	2743	7427
1	CT	ABBY ROAD POND DAM	Plum Gully Brook	South Windsor	Podunk River	16	10660	690	1359
1	CT	ACME POND DAM	French River	North Grosvenordale	Lower French River	12	8228	12883	3457
1	CT	ACME POND DAM	Whetstone Brook	Dayville	Lower Fivemile River	19	12960	5588	1221
1	CT	ADAMCZK POND DAM	Hubbard Brook	Glastonbury	Goff Brook-Connecticut River	15	9724	4856	8882
1	CT	ADDIE ROAD POND DAM	Weekeepemee River	Bethlehem	Weekeepemee River	10	6272	12405	4174
1	CT	ADDISON POND DAM	Salmon Brook	Glastonbury	Salmon Brook	2	1264	8551	3753
1	CT	AFFRICANO POND DAM	Skungamaug River	Coventry	Skungamaug River	20	13165	9924	1229
1	CT	AGOES POND DAM	West Branch Saugatuck	Weston	Outlet Saugatuck River-Frontal Lo	14	9131	2727	1058
1	CT	AL TURNERS DAM	Chestnut Brook	Cromwell	Lower Mattabeset River	12	7925	4462	9086
1	CT	ALDON MILL POND DAM		Vernon Rockville	Lower Hockanum River	15	10253	8375	9633
1	CT	ALEXANDER LAKE DAM		Dayville	Fall Brook-Quinebaug River	11	7180	2083	1314
1	CT	ALEXANDER POND DAM		Colchester	Eightmile River	7	4820	3507	8183
1	CT	ALLEN BROOK POND DAM	Allen Brook	Wallingford	Outlet Quinnipiac River	3	1443	1464	6359
1	CT	ALLEN DAM	Nickel Mine Brook	Torrington	West Branch Naugatuck River	10	6573	8481	5590
1	CT	ALLYN MILL POND DAM		Durham	Coginchaug River	16	10601	10165	5028
1	CT	AMERICAN FELT DAM	Byram River	Greenwich	Byram River	12	8108	3127	1136

It is important to note that if a custom spatial scale was applied to the analysis, blank rows may be present in the results. There is a filter to exclude these. Simply select the dropdown arrow in Cell A7 (the "Use in Results" column) and uncheck the "0" value. This is one of the default sorting parameters, but may need to be reapplied following custom analyses.

2.5.2 Unprotecting the Results worksheet

Results can be sorted and filtered in many ways using Excel's native functionality, beyond the three options provided by the sorting buttons. In order to perform custom sorts, the Worksheet must first be unprotected. This is done by selecting the "Unprotect sheet" button on the "Review" tab (Figure A7).

Once this Worksheet is unprotected, it is possible to edit the formulas which underlay the NCAT and corrupt the results. Thus, it is important to follow the directions below carefully to avoid potential problems.

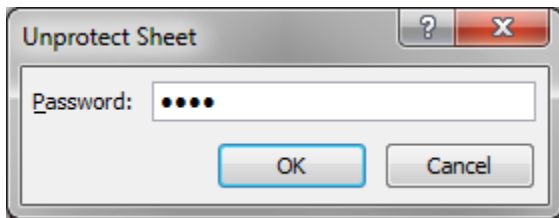
Figure A7: Unprotecting the Results worksheet prior to custom sorting.

The screenshot shows the Microsoft Excel interface with the 'Review' tab selected. The 'Unprotect Sheet' button is circled in red. Below the ribbon, the spreadsheet content is visible, including the title 'Northeast Connectivity Assessment Tool' and a table of dam results. The table has columns for 'Use in Results', 'State', 'Dam Name', 'Stream Name (NHD)', 'Town (ZIP overlay)', 'HUC12 Name', 'Tiered Results (5% Bins)', 'Overall Results Rank', 'Connectivity Status', and 'Conne Improv'. The 'Use in Results' column has a dropdown menu with '1' selected. The table contains 13 rows of data, with the first row being row 13827 and the last row being row 13842.

Use in Results	State	Dam Name	Stream Name (NHD)	Town (ZIP overlay)	HUC12 Name	Tiered Results (5% Bins)	Overall Results Rank	Connectivity Status	Conne Improv
1	WV	WEST MILFORD DAM	West Fork River	Lost Creek	Isaacs Creek-West Fork River	14	9035	12324	1
1	WV	WESTON DAM	West Fork River	Weston	Polk Creek-West Fork River	13	8782	12087	11
1	WV	WESTVACO SPORTSMAN CLUB NO.	Winfield	Winfield	Poplar Fork	14	9085	1935	13
1	WV	WEVACO PREP PLANT	Fifteenmile Fork	Eskdale	Headwaters Cabin Creek	7	4651	5006	35
1	WV	WHEELING CREEK #3	Dunkard Fork	Dallas	Outlet Dunkard Fork	5	3453	6945	4
1	WV	WHEELING CREEK NO. 7	Middle Wheeling Creek	Triadelphia	Middle Wheeling Creek	11	7588	11902	6
1	WV	WHEELING CREEK NO.18	Grandstaff Run	Wheeling	Grandstaff Run-Wheeling Creek	8	5365	4906	35
1	WV	WHEELING CREEK NO.25	Wolf Run	Dallas	Upper Wheeling Creek	7	4441	4947	13
1	WV	Widen-Taylor Fork Dam	Taylor Creek	Dille	Headwaters Buffalo Creek	5	3229	3848	15
1	WV	WILDWOOD LAKE		Morgantown	Headwaters Three Fork Creek	20	13742	10083	11
1	WV	WILLOW ISLAND L & D	Ohio River	0	Cow Creek-Ohio River	6	3496	10599	1
1	WV	WILMORE DAM	Tug Fork	laeger	Horse Creek-Tug Fork	6	3544	11226	1
1	WV	WILSON BIG HOLLOW DAM	Tear Coat Creek	Rio	Tear Coat Creek	16	10972	6026	2
1	WV	WINFIELD L & D	Kanawha River	Red House	Buffalo Creek-Kanawha River	4	2707	10148	12
1	WV	WYCO DAM	Allen Creek	Amigo	Devils Fork-Guyandotte River	5	3258	2757	37
1	WV	ZALKIN PREP	Lick Run	Beckley	Headwaters Clear Fork	17	11412	2753	13

A dialog box will appear asking for a password to unprotect the sheet. The password is "fish" (no quotes).

Figure A8: Password dialog box to "unprotect" the Results worksheet.



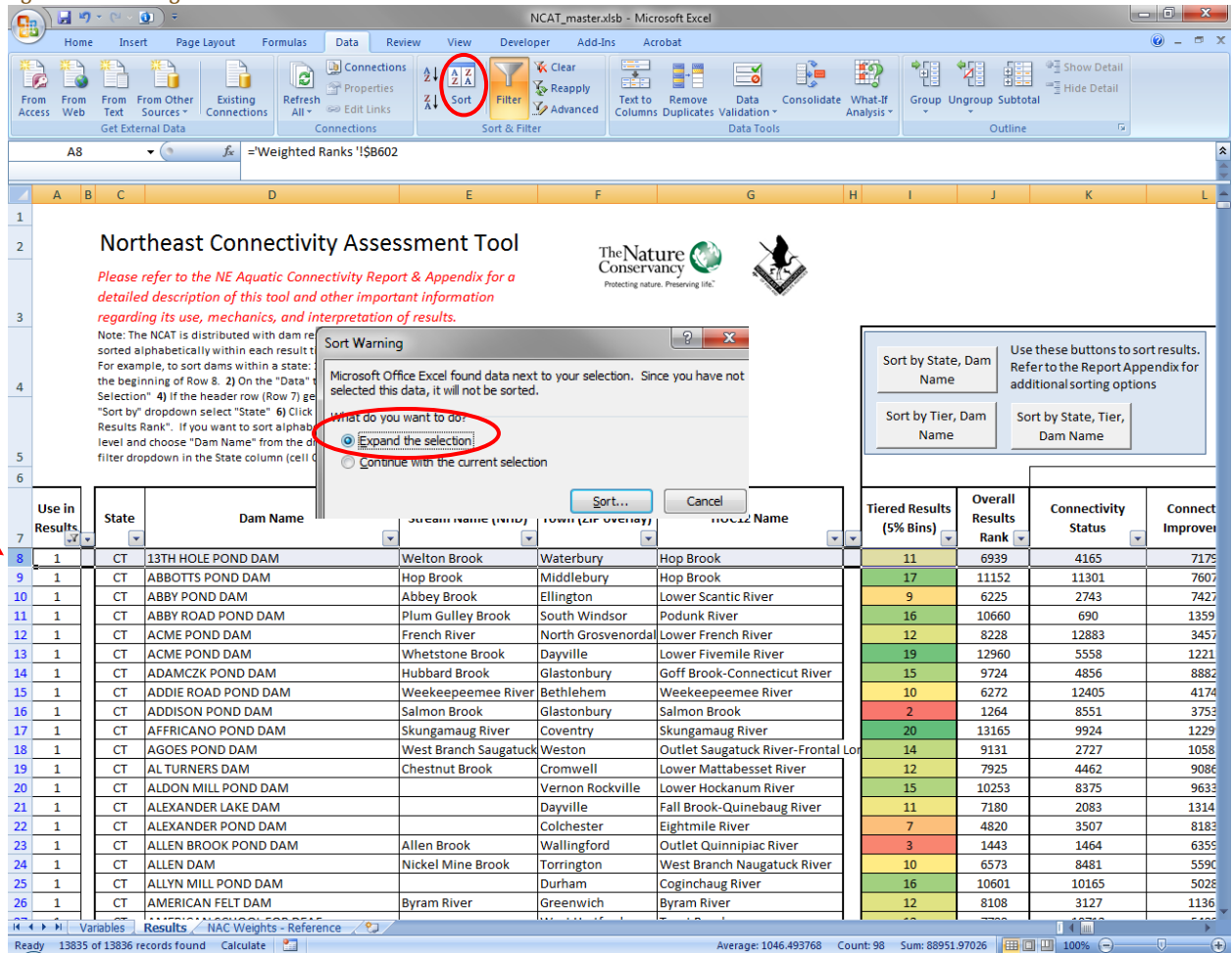
Note: The worksheet will be protected again if the sorting buttons are used to sort results after the worksheet is unprotected.

2.5.3 Manually Sorting the Results

Critical when sorting data is to confirm that all of the columns of interest are highlighted prior to performing the sort. If not all of the data are highlighted, some of the columns may not sort, in which case the rows (dams) will no longer correctly report all of their associated data. The steps to correctly sort data are as follows (Figure A9):

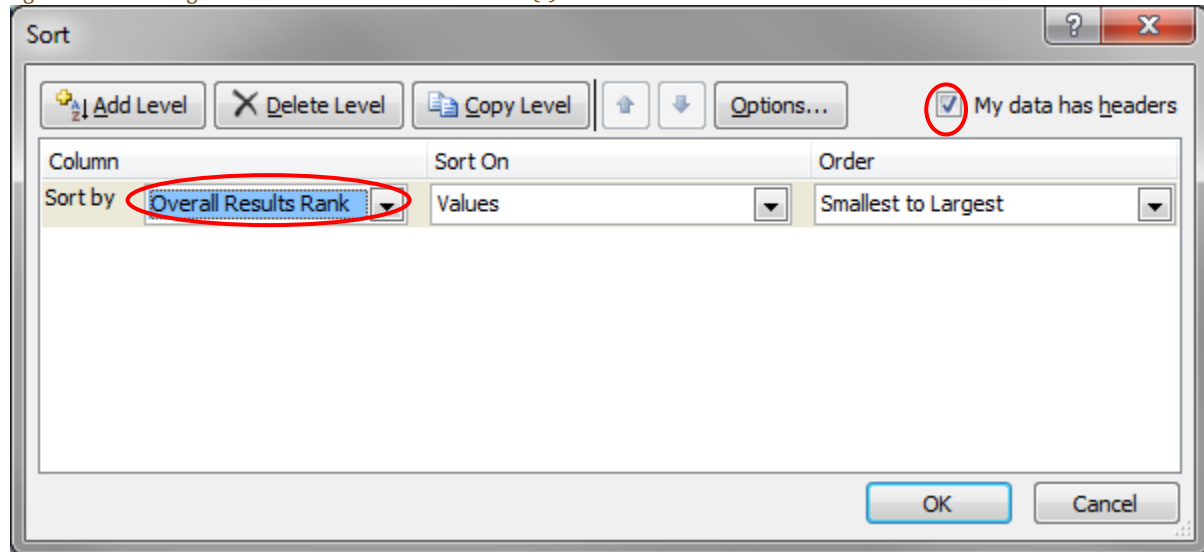
1. Highlight the entire first row of data (i.e. Row 8, below the column names). If the entire row is not selected, columns that are to the right of any blank columns may not sort.
2. Click on the "Data" tab at the top of the Excel window
3. Click on the large "Sort" button in the "Sort & Filter" section of the Data ribbon
4. Select "Expand the Selection" This will select all of the active rows in the worksheet. Including a header row.

Figure A9: Sorting the results – Define the cells to sort



5. In the “Sort” dialog box, check the “My data has headers” box. This will unselect the header row with column names. (Figure A10)
6. Select the column to sort by (e.g. “Rank”). Confirm that the “Sort On” option reads “Values” and the “Order” option reads “Smallest to Largest” (unless you want to look at the lowest ranked dams.)
7. Additional columns can be sorted on if desired by clicking “Add a Level” on the “Sort” dialog box. For example, this can allow you to sort dams alphabetically within a 5% tier.
8. Click OK.

Figure A10: Sorting the results – Choose the column(s) to sort on



2.5.4 Filtering the Results

Results can be filtered using data from any one of the columns. (*Note: the Results worksheet does **NOT** need to be Unprotected for the filtering functionality to work*). The filtering functionality can be used to exclude dams who don't meet a given criteria. For example, dams with existing fish passage facilities can be excluded from the results to identify high ranking dams that lack fish passage. Similarly, dams could be filtered on their primary purpose (e.g. exclude hydro power dams or flood control dams) or the size of the river (e.g. exclude dams on large rivers). The steps needed to filter the results are (Figure A11):

1. Confirm that filters are in place. If so, the header row will have drop-down arrows at each of the cells with a column name. NCAT is distributed with filtering in place, but subsequent analyses made remove the filtering, or the filtering may need to be refreshed.
2. To apply filters, select all the cells with column names.
3. On the "Data" tab, click the large "Filter" button. Drop down arrows will appear in each of the header cells.
4. Click on the drop down arrow for the column of interest. Uncheck values which you wish to exclude from the results.
5. Filters can be removed by either re-checking the box for the excluded results or by clicking the large "Filter" button to remove the filters all together.

Figure A11: Filtering results

The screenshot shows the Microsoft Excel interface with the 'Data' tab selected. The 'Filter' button in the ribbon is circled in red. The spreadsheet displays the following data:

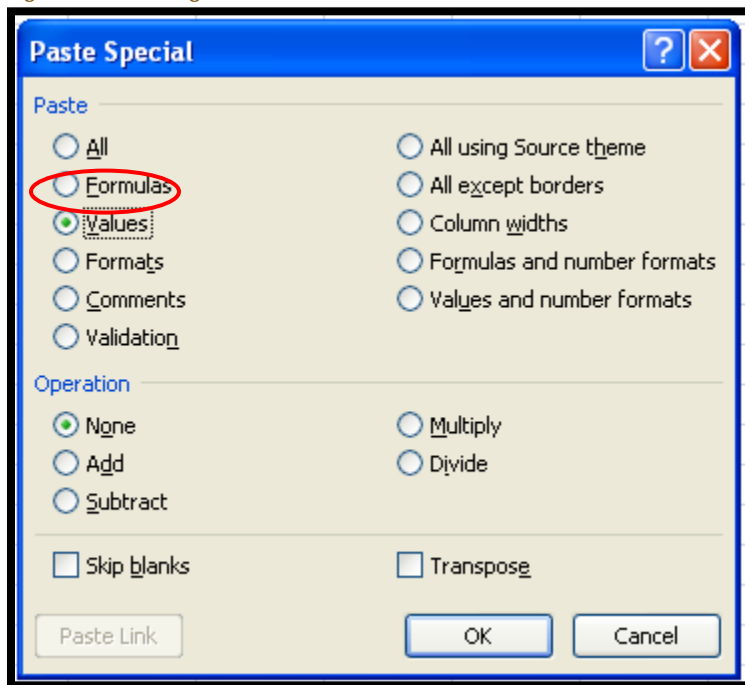
Use in Results	State	Dam Name	Stream Name (NHD)	Town (ZIP overlay)	HUC12 Name	Tiered Results (5% Bins)	Overall Results Rank	Connectivity Status	Connect Improver	
23	1	CT	ALLEN BROOK POND DAM	Allen Brook	Wallingford	Outlet Quinnipiac River	3	1443	1464	6359
24	1	CT	ALLEN DAM	Nickel Mine Brook	Torrington	West Branch Naugatuck River	10	6573	8481	5590
25	1	CT	ALLYN MILL POND DAM		Durham	Coginchaug River	16	10601	10165	5028
26	1	CT	AMERICAN FELT DAM	Byram River	Greenwich	Byram River	12	8108	3127	1136
27	1	CT	AMERICAN SCHOOL FOR DEAF		West Hartford	Trout Brook	12	7788	10712	5488
28	1	CT	AMERICAN THREAD DAM #1		Willimantic	Nelson Brook-Willimantic River	8	4845	11375	2225
29	1	CT	AMERICAN THREAD DAM #2		Willimantic	Nelson Brook-Willimantic River	14	9173	4804	1215
30	1	CT	AMERICAN THREAD DAM #3		Willimantic	Nelson Brook-Willimantic River	8	5125	4809	1202
31	1	CT	AMERICAN THREAD DAM #4		Willimantic	Nelson Brook-Willimantic River	7	4723	4807	1133
32	1	CT	AMES BROOK DAM	Ames Brook	Chaplin	Sawmill Brook-Natchaug River	14	9413	5604	1099
33	1	CT	AMOS LAKE DAM		Preston	Poquetanuck Brook	11	7206	3248	9105
34	1	CT	ANDERSON POND DAM		Lakeville	Salmon Creek	20	13186	7980	1139
35	1	CT	ANDERSON ROAD DAM	Skungamaug River	Tolland	Skungamaug River	15	10299	5915	9008
36	1	CT	ANDREW POND DAM	Farmill River	Shelton	Farmill River	10	6646	1008	1158
37	1	CT	ANGULUS POND DAM	Byram River	Greenwich	Byram River	15	9717	8384	9358
38	1	CT	ANGUS PARK POND DAM	Roaring Brook	Glastonbury	Roaring Brook	12	7967	8546	5956
39	1	CT	ANO COIL POND DAM	Hockanum River	Vernon Rockville	Upper Hockanum River	19	13001	5580	1237
40	1	CT	AQUA POND DAM	Latimer Brook	Oakdale	Niantic River	7	4708	7483	4825
41	1	CT	AQUA POND DAM	Snake Meadow Brook	Moosup	Lower Moosup River	13	8362	12220	5280

2.5.5 Copying results to a blank workbook

Results can easily be copied into a new workbook using Excel’s native copy and paste functionality. To do this:

1. Simply highlight all of the data and header rows of interest and press Control-C or right-click and select “Copy” to copy the data to the computer’s clipboard
2. On a new blank worksheet, select a cell near the top left (e.g. call A1)
3. Right-click and select “Paste Special”
4. Select “Values” to paste the values of the cells (not the formulas which link to the NCAT) into the new spreadsheet. (Figure A12).

Figure A12: Pasting result values into a blank worksheet



The resulting data will have none of the formatting or formulas from the original results worksheet, only the values. This is a necessary step when joining the results to a GIS.

2.5.6 Joining results to GIS data

In order to be joined back to a GIS, results must be formatted as a simple table with no supplementary formatting (e.g. merged cells, filters, etc). This is best done by creating a new blank workbook and copying the results, as described above. In addition to these steps, column names are best formatted in a GIS-friendly manner: short name of no more than 10 characters with no spaces or special characters. Thus, the “Primary Purpose” column might be renamed “PrimPurp” and “# DS Waterfalls” be renamed “NumDSFalls.”

For full compatibility with a GIS, the worksheet should be saved as a dBase (.dbf) file. If using ArcGIS, this can be done by adding the worksheet to your map project, and exporting it as a dBase file. This process will also add a GIS-generated ObjectID, which is necessary to perform spatial selections in the GIS.

3 Dam review error flagging process

Dams were prioritized for manual review using an automated flagging process which highlighted dams with a high potential for having error introduced from the snapping process. The following fields were added to the dam dataset and values calculated for each dam. Next to each value is a definition of the value.

“PROBNAME” – A problem with the waterbody name.

‘1’ = waterbody name in the dam database does not match the waterbody name in the NHDPlus

‘2’ = no waterbody name in the dam database, so no comparison could be made

“PROBSZ1” – A large dam on a small stream

‘1’ = dam \geq 15ft high on small stream (size 1a or 1b; <38.61 mile² watershed)

‘2’ = dam does not have size attribute so comparison cannot be made

“CHECK2UP” – Critical to make sure that all dams that snapped to larger rivers are correct, since errors will have a greater impact when the network analysis is run.

‘1’ = all dams that snapped to size 2+ rivers (watershed ≥ 38.61 mile²)

‘2’ = dams that did not snap to the hydrography (100m) but are within 500m

“UNSNAPPED” – Indicates whether or not the dam snapped to the hydrography

‘1’ = dam did not snap to the hydrography using a 100m snap tolerance

“CHKDMSZ” – Review all large dams to ensure they are correctly snapped.

‘1’ = all dams with either height ≥ 40 or length ≥ 1500 or surface area ≥ 300

‘2’ = all dams with either height ≥ 25 or length ≥ 1000 or surface area ≥ 100

‘3’ = all dams with either height ≥ 15 or length ≥ 750 or surface area ≥ 50

“DISTNEIGHB” – Avoid counting a dam twice if it is a duplicate (e.g. state data and NID data) or two structures of the same dam. Calculated in GIS - Distance in meters to the closest neighboring dam

The flags calculated above were then combined into a new “PRIORITZIE” field which prioritized dams for review, using the following system:

“PRIORITIZE” =

‘1’ = Dams that snapped to a larger river (size 2+) and where the waterbody name between the two datasets does not match. Also all dams that are within 100m of their nearest neighbor. [“CHECK2UP” =1 AND “PROBNAME” in (1, 2) OR “DISTNEIGHB” ≤ 100]

‘2’ = Dams that are near larger rivers (size 2+) and didn’t snap, and/or don’t have matching waterbody names. [“CHECK2UP” = 2 AND “CHKDMSZ” > 0 OR “CHECK2UP” = 2 AND “PROBNAME” > 0]

‘3’ = Large dams that were not already checked in the above steps. [“CHKDMSZ” > 0 AND “PRIORITIZE” =0]

'4' = Large dams on small streams that also have inconsistent waterbody names. ["PROBSZ1" = 1 AND "PROBNAME" = 1]

'5' = Remaining dams that snapped to smaller streams (size 1a and size 1b) and have waterbody name inconsistencies. ["PROBNAME" =1 AND "PRIORITIZE" =0]

'6' = The remaining unsnapped dams. Check for dams near rivers with matching waterbody names. ["UNSNAPPED" =1 and "PRIORITIZE" =0]

'7' = Remaining dams with nearest neighbors closer than 500m. ["DISTNEIGHB" <=500 AND "PRIORITIZE" =0]

4 Primary Dam Data Sources

CT: Connecticut DEEP, Inland Water Resources Div

DE: Delaware Dams: Dept. of Natural Resources and Environmental Control

MA: Massachusetts Division of Ecological Restoration.

MD: Maryland Dept. of Natural Resources

ME: Army Corp of Engineers (USACE), Maine Emergency Management Agency (MEMA), Maine Department of Environmental Protection (MEDEP)(comp., ed.), Maine Office of Geographic Information Systems (comp., ed.)

NH: New Hampshire Dept. of Environmental Services

NJ: New Jersey Dept. of Environmental Protection - Bureau of Dam Safety and Flood Control

NY: New York State Department of Environmental Conservation; USGS Great Lakes Science Center

PA: Division of Dam Safety, Department of Environmental Protection; PA Fish and Boat Commission

RI: Rhode Island Department of Environmental Management

VA: Virginia Dept. of Game & Inland Fisheries

VT: Vermont Agency of Natural Resources, Department of Environmental Conservation

WV: West Virginia Dept. of Natural Resources: Wildlife Diversity and Technical Support Units; WV Non-coal dams, DMR Dams, NID dams: WV State GIS Data Clearinghouse

US Army Corps' National Inventory of Dams

USGS Geographic Names Information System (GNIS)

5 Metric Calculation Python Scripts

The following Python scripts were exported from ArcGIS ModelBuilder (version 9.3.1). They were used to calculate those dam metrics that were not calculated using the Barrier Analysis Tool (see Table 4-1 for a complete list of metrics including those that were calculated using the BAT). *These scripts are not provided to enable users to run the analysis.* Rather, they are provided to illustrate, for an experienced GIS user, the detailed methodology that was used to calculate each metric. If a user is interested in replicating any of the processes described in these scripts, please contact the author for an electronic copy of the Python scripts or the ArcGIS toolbox with the models.

5.1 BAT Data Prep.py

```
# -----  
# BAT Data Prep.py  
# Created on: Sun Aug 28 2011 12:57:26 PM  
# (generated by ArcGIS/ModelBuilder)  
# -----  
  
# Import system modules  
import sys, string, os, arcgisscripting  
  
# Create the Geoprocessor object  
gp = arcgisscripting.create()  
  
# Load required toolboxes...  
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Data Management Tools.tbx")  
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Analysis Tools.tbx")  
  
# Set the Geoprocessing environment...  
gp.scratchWorkspace = "K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6"  
gp.outputZFlag = "Disabled"  
gp.outputMFlag = "Disabled"  
  
# Local variables...  
Dams_Use1_shp = "%scratchworkspace%\\Dams_Use1.shp"  
Dams_Use2_shp = "%scratchworkspace%\\Dams_Use2.shp"  
Falls_Use1_shp = "%scratchworkspace%\\Falls_Use1.shp"  
RegionDams_current = "RegionDams_current"  
RegionWaterfalls_current = "RegionWaterfalls_current"  
HydroDams_Use1_shp = "%scratchworkspace%\\HydroDams_Use1.shp"  
Damsfalls_Use1_shp = "%scratchworkspace%\\DamsFalls_Use1.shp"  
ImpassableDams_shp = "%scratchworkspace%\\ImpassableDams.shp"  
  
# Process: Select (2)...  
gp.Select_analysis(RegionDams_current, Dams_Use2_shp, "\"Use\" = 2")
```

```

# Process: Select (4)...
gp.Select_analysis(RegionDams_current, HydroDams_Use1_shp, "\"Use\" =1 AND \"P_CODE\" LIKE '%H%'")

# Process: Select (3)...
gp.Select_analysis(RegionWaterfalls_current, Falls_Use1_shp, "\"Use\" = 1")

# Process: Select...
gp.Select_analysis(RegionDams_current, Dams_Use1_shp, "\"Use\" =1")

# Process: Merge...
gp.Merge_management("%scratchworkspace%\\Falls_Use1.shp;%scratchworkspace%\\Dams_Use1.shp",
Damsfalls_Use1_shp, "Join_Count 'Join_Count' true true false 4 Long 0 0
,First,#,%scratchworkspace%\\Falls_Use1.shp,Join_Count,-1,-1;Id 'Id' true true false 4 Long 0 0
,First,#,%scratchworkspace%\\Falls_Use1.shp,Id,-1,-1;FEATURE_ID 'FEATURE_ID' true true false 8
Double 0 0 ,First,#,%scratchworkspace%\\Falls_Use1.shp,FEATURE_ID,-1,-1;FEATURE_NA 'FEATURE_NA'
true true false 254 Text 0 0 ,First,#,%scratchworkspace%\\Falls_Use1.shp,FEATURE_NA,-1,-
1;FEATURE_CL 'FEATURE_CL' true true false 254 Text 0 0
,First,#,%scratchworkspace%\\Falls_Use1.shp,FEATURE_CL,-1,-1;STATE_ALPH 'STATE_ALPH' true true
false 254 Text 0 0 ,First,#,%scratchworkspace%\\Falls_Use1.shp,STATE_ALPH,-1,-1;STATE_NUME
'STATE_NUME' true true false 8 Double 0 0
,First,#,%scratchworkspace%\\Falls_Use1.shp,STATE_NUME,-1,-1;COUNTY_NAM 'COUNTY_NAM' true
true false 254 Text 0 0 ,First,#,%scratchworkspace%\\Falls_Use1.shp,COUNTY_NAM,-1,-1;COUNTY_NUM
'COUNTY_NUM' true true false 8 Double 0 0
,First,#,%scratchworkspace%\\Falls_Use1.shp,COUNTY_NUM,-1,-1;PRIMARY_LA 'PRIMARY_LA' true true
false 254 Text 0 0 ,First,#,%scratchworkspace%\\Falls_Use1.shp,PRIMARY_LA,-1,-1;PRIM_LONG_
'PRIM_LONG_' true true false 254 Text 0 0 ,First,#,%scratchworkspace%\\Falls_Use1.shp,PRIM_LONG_,-
1,-1;PRIM_LAT_D 'PRIM_LAT_D' true true false 8 Double 0 0
,First,#,%scratchworkspace%\\Falls_Use1.shp,PRIM_LAT_D,-1,-1;PRIM_LONG1 'PRIM_LONG1' true true
false 8 Double 0 0 ,First,#,%scratchworkspace%\\Falls_Use1.shp,PRIM_LONG1,-1,-1;ELEVATION
'ELEVATION' true true false 8 Double 0 0 ,First,#,%scratchworkspace%\\Falls_Use1.shp,ELEVATION,-1,-
1;MAP_NAME 'MAP_NAME' true true false 254 Text 0 0
,First,#,%scratchworkspace%\\Falls_Use1.shp,MAP_NAME,-1,-1;DATE_CREAT 'DATE_CREAT' true true
false 8 Date 0 0 ,First,#,%scratchworkspace%\\Falls_Use1.shp,DATE_CREAT,-1,-1;DATE_EDITE
'DATE_EDITE' true true false 254 Text 0 0 ,First,#,%scratchworkspace%\\Falls_Use1.shp,DATE_EDITE,-1,-
1;evaluate 'evaluate' true true false 2 Short 0 0 ,First,#,%scratchworkspace%\\Falls_Use1.shp,evaluate,-
1,-1,%scratchworkspace%\\Dams_Use1.shp,EVALUATE,-1,-1;state_edit 'state_edit' true true false 2
Short 0 0 ,First,#,%scratchworkspace%\\Falls_Use1.shp,state_edit,-1,-
1,%scratchworkspace%\\Dams_Use1.shp,State_edit,-1,-1;Use 'Use' true true false 2 Short 0 0
,First,#,%scratchworkspace%\\Falls_Use1.shp,Use,-1,-1,%scratchworkspace%\\Dams_Use1.shp,Use,-1,-
1;UNIQUE_ID 'UNIQUE_ID' true true false 50 Text 0 0
,First,#,%scratchworkspace%\\Falls_Use1.shp,UNIQUE_ID,-1,-
1,%scratchworkspace%\\Dams_Use1.shp,UNIQUE_ID,-1,-1;OnNode 'OnNode' true true false 2 Short 0 0
,First,#,%scratchworkspace%\\Falls_Use1.shp,OnNode,-1,-1;UniqueNHD 'UniqueNHD' true true false 4
Long 0 0 ,First,#,%scratchworkspace%\\Falls_Use1.shp,UniqueNHD,-1,-1;COMID 'COMID' true true false
4 Long 0 0 ,First,#,%scratchworkspace%\\Falls_Use1.shp,COMID,-1,-
1,%scratchworkspace%\\Dams_Use1.shp,COMID,-1,-1;GNIS_NAME 'GNIS_NAME' true true false 65 Text
0 0 ,First,#,%scratchworkspace%\\Falls_Use1.shp,GNIS_NAME,-1,-1;NE_SZCL 'NE_SZCL' true true false 6

```

Text 0 0 ,First,#,%scratchworkspace%\Falls_Use1.shp,NE_SZCL,-1,-1;GRIDVAL 'GRIDVAL' true true false
 4 Long 0 0 ,First,#,%scratchworkspace%\Falls_Use1.shp,GRIDVAL,-1,-
 1,%scratchworkspace%\Dams_Use1.shp,GRIDVAL,-1,-1;DA_SQMI 'DA_SQMI' true true false 8 Double 0
 0 ,First,#,%scratchworkspace%\Falls_Use1.shp,DA_SQMI,-1,-1;NHD_REGION 'NHD_REGION' true true
 false 24 Text 0 0 ,First,#,%scratchworkspace%\Falls_Use1.shp,NHD_REGION,-1,-1;AO_SIZECL
 'AO_SIZECL' true true false 10 Text 0 0 ,First,#,%scratchworkspace%\Falls_Use1.shp,AO_SIZECL,-1,-
 1,%scratchworkspace%\Dams_Use1.shp,AO_sizecl,-1,-1;Comment 'Comment' true true false 200 Text 0
 0 ,First,#,%scratchworkspace%\Falls_Use1.shp,Comment,-1,-
 1,%scratchworkspace%\Dams_Use1.shp,Comment,-1,-1;emID 'emID' true true false 4 Long 0 0
 ,First,#,%scratchworkspace%\Falls_Use1.shp,emID,-1,-1,%scratchworkspace%\Dams_Use1.shp,emID,-
 1,-1;NIDID 'NIDID' true true false 20 Text 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,NIDID,-1,-
 1;STATE_ID 'STATE_ID' true true false 16 Text 0 0
 ,First,#,%scratchworkspace%\Dams_Use1.shp,STATE_ID,-1,-1;STATE 'STATE' true true false 2 Text 0 0
 ,First,#,%scratchworkspace%\Dams_Use1.shp,STATE,-1,-1;DAM_NAME 'DAM_NAME' true true false 50
 Text 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,DAM_NAME,-1,-1;DAM_NAME2 'DAM_NAME2'
 true true false 50 Text 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,DAM_NAME2,-1,-
 1;WATERBODY 'WATERBODY' true true false 100 Text 0 0
 ,First,#,%scratchworkspace%\Dams_Use1.shp,WATERBODY,-1,-1;OWNER 'OWNER' true true false 50
 Text 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,OWNER,-1,-1;OWNER_CODE 'OWNER_CODE'
 true true false 6 Text 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,OWNER_CODE,-1,-1;TYPE_ID
 'TYPE_ID' true true false 16 Text 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,TYPE_ID,-1,-
 1;P_CODE 'P_CODE' true true false 6 Text 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,P_CODE,-
 1,-1;PrimPurp 'PrimPurp' true true false 1 Text 0 0
 ,First,#,%scratchworkspace%\Dams_Use1.shp,PrimPurp,-1,-1;YEAR 'YEAR' true true false 4 Long 0 0
 ,First,#,%scratchworkspace%\Dams_Use1.shp,YEAR,-1,-1;WIDTH 'WIDTH' true true false 8 Double 0 0
 ,First,#,%scratchworkspace%\Dams_Use1.shp,WIDTH,-1,-1;HEIGHT 'HEIGHT' true true false 8 Double 0
 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,HEIGHT,-1,-1;LENGTH 'LENGTH' true true false 8
 Double 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,LENGTH,-1,-1;SURFAREA 'SURFAREA' true
 true false 8 Double 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,SURFAREA,-1,-1;MAXSTOR
 'MAXSTOR' true true false 8 Double 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,MAXSTOR,-1,-
 1;NORMSTOR 'NORMSTOR' true true false 8 Double 0 0
 ,First,#,%scratchworkspace%\Dams_Use1.shp,NORMSTOR,-1,-1;HAZCLASS 'HAZCLASS' true true false 4
 Text 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,HAZCLASS,-1,-1;WATERSHED 'WATERSHED' true
 true false 50 Text 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,WATERSHED,-1,-1;COND 'COND'
 true true false 16 Text 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,COND,-1,-1;CITY 'CITY' true
 true false 50 Text 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,CITY,-1,-1;SNAPDST 'SNAPDST' true
 true false 8 Double 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,SNAPDST,-1,-1;UNSNAP 'UNSNAP'
 true true false 2 Short 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,UNSNAP,-1,-1;NESZCL 'NESZCL'
 true true false 8 Text 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,NESZCL,-1,-1;NHD_NAME
 'NHD_NAME' true true false 65 Text 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,NHD_NAME,-1,-
 1;PROBNAME 'PROBNAME' true true false 2 Short 0 0
 ,First,#,%scratchworkspace%\Dams_Use1.shp,PROBNAME,-1,-1;PROBSZ1 'PROBSZ1' true true false 2
 Short 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,PROBSZ1,-1,-1;CHECK2UP 'CHECK2UP' true true
 false 2 Short 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,CHECK2UP,-1,-1;CHKDMSZ 'CHKDMSZ'
 true true false 2 Short 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,CHKDMSZ,-1,-1;PRIORITIZE
 'PRIORITIZE' true true false 2 Short 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,PRIORITIZE,-1,-
 1;Source 'Source' true true false 50 Text 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,Source,-1,-
 1;deg_barr 'deg_barr' true true false 2 Short 0 0

```
,First,#,%scratchworkspace%\Dams_Use1.shp,deg_barr,-1,-1;Duplicate 'Duplicate' true true false 2
Short 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,Duplicate,-1,-1;NO_BARRIER 'NO_BARRIER'
true true false 2 Short 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,NO_BARRIER,-1,-
1;NotOnHydro 'NotOnHydro' true true false 2 Short 0 0
,First,#,%scratchworkspace%\Dams_Use1.shp,NotOnHydro,-1,-1;Culvert 'Culvert' true true false 2 Short
0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,Culvert,-1,-1;Lock 'Lock' true true false 2 Short 0 0
,First,#,%scratchworkspace%\Dams_Use1.shp,Lock,-1,-1;OthNonDam 'OthNonDam' true true false 2
Short 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,OthNonDam,-1,-1;WrngCoord 'WrngCoord'
true true false 2 Short 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,WrngCoord,-1,-1;Historical
'Historical' true true false 2 Short 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,Historical,-1,-
1;PO_NAME 'PO_NAME' true true false 28 Text 0 0
,First,#,%scratchworkspace%\Dams_Use1.shp,PO_NAME,-1,-1;Latit 'Latit' true true false 8 Double 0 0
,First,#,%scratchworkspace%\Dams_Use1.shp,Latit,-1,-1;Longit 'Longit' true true false 8 Double 0 0
,First,#,%scratchworkspace%\Dams_Use1.shp,Longit,-1,-1;NIDIDsourc 'NIDIDsourc' true true false 25
Text 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,NIDIDsourc,-1,-1;ModPass 'ModPass' true true
false 2 Short 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,ModPass,-1,-1;AtFalls 'AtFalls' true true
false 2 Short 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,AtFalls,-1,-1;RevuedPass 'RevuedPass'
true true false 2 Short 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,RevuedPass,-1,-1;CTBasin
'CTBasin' true true false 2 Short 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,CTBasin,-1,-
1;HistFishOc 'HistFishOc' true true false 2 Short 0 0
,First,#,%scratchworkspace%\Dams_Use1.shp,HistFishOc,-1,-1;AtlCoast 'AtlCoast' true true false 2
Short 0 0 ,First,#,%scratchworkspace%\Dams_Use1.shp,AtlCoast,-1,-1")
```

```
# Process: Select (5)...
```

```
gp.Select_analysis(RegionDams_current, ImpassableDams_shp, "\"RevuedPass\" =0 and \"Use\"=1")
```

5.2 BAT Data Join

```
# -----
# BAT Data Join.py
# Created on: Sun Aug 28 2011 12:57:53 PM
# (generated by ArcGIS/ModelBuilder)
# -----
```

```
# Import system modules
import sys, string, os, arcgisscripting
```

```
# Create the Geoprocessor object
gp = arcgisscripting.create()
```

```
# Set the necessary product code
gp.SetProduct("ArcInfo")
```

```
# Load required toolboxes...
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Data Management Tools.tbx")
```

```
# Set the Geoprocessing environment...
```



```
gp.scratchWorkspace = "K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6"
```

```
# Local variables...
```

```
Dams_Snapped = "Dams_Snapped"
```

```
BarrierData_dbf = "C:\\BAT\\Output\\RegionAnalysis6\\BarrierData.dbf"
```

```
Dams_Snapped__3_ = "Dams_Snapped"
```

```
# Process: Join Field (2)...
```

```
gp.JoinField_management(Dams_Snapped, "UNIQUE_ID", BarrierData_dbf, "UNIQUE_ID",  
"batFuncUS;batCountUS;batLenUS;batFuncDS;batDis2Mth;batCountDS;batTotUSDS;batAbs;batRel;batD  
SDnsty;batUSDnsty;batImpass;batDSFalls;batDSHydro;batUSNetID;batDSNetID")
```

5.3 Join to Watersheds

```
# -----
```

```
# Join to Watershed.py
```

```
# Created on: Sun Aug 28 2011 12:58:12 PM
```

```
# (generated by ArcGIS/ModelBuilder)
```

```
# Usage: 4Join to Watershed <wbhuc12_a_ero_usp> <Dams_Snapped>
```

```
# -----
```

```
# Import system modules
```

```
import sys, string, os, arcgisscripting
```

```
# Create the Geoprocessor object
```

```
gp = arcgisscripting.create()
```

```
# Load required toolboxes...
```

```
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Analysis Tools.tbx")
```

```
# Set the Geoprocessing environment...
```

```
gp.scratchWorkspace = "K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6"
```

```
# Script arguments...
```

```
wbhuc12_a_ero_usp = sys.argv[1]
```

```
if wbhuc12_a_ero_usp == '#':
```

```
    wbhuc12_a_ero_usp = "wbhuc12_a_ero_usp" # provide a default value if unspecified
```

```
Dams_Snapped = sys.argv[2]
```

```
if Dams_Snapped == '#':
```

```
    Dams_Snapped = "Dams_Snapped" # provide a default value if unspecified
```

```
# Local variables...
```

```
DamsFalls_Use1_snapped1_shp = "%scratchworkspace%\\DamsFalls_Use1_snapped1.shp"
```

```

# Process: Spatial Join...
gp.SpatialJoin_analysis(Dams_Snapped, wbhuc12_a_ero_usp, DamsFalls_Use1_snapped1_shp,
"JOIN_ONE_TO_ONE", "KEEP_ALL", "Join_Count 'Join_Count' true true false 9 Long 0 9
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,Join_Count,-1,-1;Use 'Use'
true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,Use,-1,-1;UNIQUE_ID
'UNIQUE_ID' true true false 50 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,UNIQUE_ID,-1,-1;OnNode
'OnNode' true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,OnNode,-1,-1;UniqueNHD
'UniqueNHD' true true false 9 Long 0 9
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,UniqueNHD,-1,-1;COMID
'COMID' true true false 9 Long 0 9
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,COMID,-1,-1;GNIS_NAME
'GNIS_NAME' true true false 65 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,GNIS_NAME,-1,-1;NE_SZCL
'NE_SZCL' true true false 6 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,NE_SZCL,-1,-1;GRIDVAL
'GRIDVAL' true true false 9 Long 0 9
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,GRIDVAL,-1,-1;NHD_REGION
'NHD_REGION' true true false 24 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,NHD_REGION,-1,-
1;AO_SIZECL 'AO_SIZECL' true true false 10 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,AO_SIZECL,-1,-1;Comment
'Comment' true true false 200 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,Comment,-1,-1;emID 'emID'
true true false 9 Long 0 9
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,emID,-1,-1;NIDID 'NIDID' true
true false 20 Text 0 0 ,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,NIDID,-
1,-1;STATE_ID 'STATE_ID' true true false 16 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,STATE_ID,-1,-1;STATE 'STATE'
true true false 2 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,STATE,-1,-1;DAM_NAME
'DAM_NAME' true true false 50 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,DAM_NAME,-1,-
1;DAM_NAME2 'DAM_NAME2' true true false 50 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,DAM_NAME2,-1,-
1;WATERBODY 'WATERBODY' true true false 100 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,WATERBODY,-1,-1;TYPE_ID
'TYPE_ID' true true false 16 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,TYPE_ID,-1,-1;P_CODE
'P_CODE' true true false 6 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,P_CODE,-1,-1;PrimPurp
'PrimPurp' true true false 1 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,PrimPurp,-1,-1;COND 'COND'
true true false 16 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,COND,-1,-1;deg_barr
'deg_barr' true true false 4 Short 0 4

```

,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,deg_barr,-1,-1;PO_NAME
'PO_NAME' true true false 28 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,PO_NAME,-1,-1;AtFalls
'AtFalls' true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,AtFalls,-1,-1;RevuedPass
'RevuedPass' true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,RevuedPass,-1,-1;CTBasin
'CTBasin' true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,CTBasin,-1,-1;HistFishOc
'HistFishOc' true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,HistFishOc,-1,-1;AtlCoast
'AtlCoast' true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,AtlCoast,-1,-1;COND_1
'COND_1' true true false 16 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,COND_1,-1,-1;Source_1
'Source_1' true true false 50 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,Source_1,-1,-1;deg_barr_1
'deg_barr_1' true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,deg_barr_1,-1,-1;
1;PO_NAME_1 'PO_NAME_1' true true false 28 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,PO_NAME_1,-1,-1;AtFalls_1
'AtFalls_1' true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,AtFalls_1,-1,-1;RevuedPa_1
'RevuedPa_1' true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,RevuedPa_1,-1,-1;CTBasin_1
'CTBasin_1' true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,CTBasin_1,-1,-1;HistFish_1
'HistFish_1' true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,HistFish_1,-1,-1;AtlCoast_1
'AtlCoast_1' true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,AtlCoast_1,-1,-1;batSnapped
'batSnapped' true true false 1 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batSnapped,-1,-1;batLineID
'batLineID' true true false 9 Long 0 9
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batLineID,-1,-1;batRegion
'batRegion' true true false 25 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batRegion,-1,-1;batSnapDis
'batSnapDis' true true false 9 Double 3 8
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batSnapDis,-1,-1;batDisAlng
'batDisAlng' true true false 17 Double 8 16
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batDisAlng,-1,-1;batDis2Mth
'batDis2Mth' true true false 17 Double 8 16
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batDis2Mth,-1,-1;batFuncUS
'batFuncUS' true true false 17 Double 8 16
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batFuncUS,-1,-1;batCountUS
'batCountUS' true true false 8 Long 0 8
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batCountUS,-1,-1;batLenUS
'batLenUS' true true false 17 Double 8 16

```
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batLenUS,-1,-1;batFuncDS
'batFuncDS' true true false 17 Double 8 16
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batFuncDS,-1,-1;batDis2M_1
'batDis2M_1' true true false 17 Double 8 16
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batDis2M_1,-1,-
1;batCountDS 'batCountDS' true true false 8 Long 0 8
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batCountDS,-1,-
1;batTotUSDS 'batTotUSDS' true true false 17 Double 8 16
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batTotUSDS,-1,-1;batAbs
'batAbs' true true false 17 Double 8 16
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batAbs,-1,-1;batRel 'batRel'
true true false 17 Double 8 16
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batRel,-1,-1;batDSDnsty
'batDSDnsty' true true false 17 Double 8 16
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batDSDnsty,-1,-1;batUSDnsty
'batUSDnsty' true true false 17 Double 8 16
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batUSDnsty,-1,-1;batImpass
'batImpass' true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batImpass,-1,-1;batDSFalls
'batDSFalls' true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batDSFalls,-1,-1;batDSHydro
'batDSHydro' true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batDSHydro,-1,-
1;batUSNetID 'batUSNetID' true true false 8 Long 0 8
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batUSNetID,-1,-1;batDSNetID
'batDSNetID' true true false 8 Long 0 8
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batDSNetID,-1,-1;HUC_8
'HUC_8' true true false 8 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\stratifications\\wbhuc12_a_ero_usp.shp,HUC_8,-1,-
1;HUC_10 'HUC_10' true true false 10 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\stratifications\\wbhuc12_a_ero_usp.shp,HUC_10,-1,-
1;HUC_12 'HUC_12' true true false 12 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\stratifications\\wbhuc12_a_ero_usp.shp,HUC_12,-1,-
1;HU_10_NAME 'HU_10_NAME' true true false 80 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\stratifications\\wbhuc12_a_ero_usp.shp,HU_10_NAM
E,-1,-1;HU_12_NAME 'HU_12_NAME' true true false 80 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\stratifications\\wbhuc12_a_ero_usp.shp,HU_12_NAM
E,-1,-1, "INTERSECTS", "0 Meters", "")
```

5.4 Contributing Watershed % Impervious

```
# -----
# Contributing Watershed % Impervious.py
# Created on: Sun Aug 28 2011 12:58:40 PM
# (generated by ArcGIS/ModelBuilder)
# -----
```

```

# Import system modules
import sys, string, os, arcgisscripting

# Create the Geoprocessor object
gp = arcgisscripting.create()

# Set the necessary product code
gp.SetProduct("ArcInfo")

# Load required toolboxes...
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Data Management Tools.tbx")

# Set the Geoprocessing environment...
gp.scratchWorkspace = "K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6"

# Local variables...
Dams_Snapped__2_ = "Dams_Snapped"
Dams_Snapped = "Dams_Snapped"
Dams_Snapped__3_ = "Dams_Snapped"
imperv_accum_merge_dbf =
"K:\\NE_Aquatic_Connectivity\\GIS_Data\\Hydrography\\source\\imperv_accum_merge.dbf"
Dams_Snapped__4_ = "Dams_Snapped"
Dams_Snapped__5_ = "Dams_Snapped"

# Process: Add Field...
gp.AddField_management(Dams_Snapped, "US_PerImp", "DOUBLE", "", "", "", "", "NON_NULLABLE",
"NON_REQUIRED", "")

# Process: Join Field...
gp.JoinField_management(Dams_Snapped__2_, "COMID", imperv_accum_merge_dbf, "COMID",
"ImpPerc")

# Process: Calculate Field...
gp.CalculateField_management(Dams_Snapped__3_, "US_PerImp", "[ImpPerc]", "VB", "")

# Process: Delete Field...
gp.DeleteField_management(Dams_Snapped__4_, "ImpPerc")

```

5.5 Contributing Watershed % Natural and Agriculture

```

# -----
# Contributing Watershed % Natural and Agriculture.py
# Created on: Sun Aug 28 2011 12:59:04 PM
# (generated by ArcGIS/ModelBuilder)
# -----

```

```

# Import system modules
import sys, string, os, arcgisscripting

# Create the Geoprocessor object
gp = arcgisscripting.create()

# Set the necessary product code
gp.SetProduct("ArcInfo")

# Load required toolboxes...
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Data Management Tools.tbx")

# Set the Geoprocessing environment...
gp.scratchWorkspace = "K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6"

# Local variables...
Dams_Snapped__6_ = "Dams_Snapped"
Dams_Snapped = "Dams_Snapped"
Dams_Snapped__7_ = "Dams_Snapped"
Dams_Snapped__2_ = "Dams_Snapped"
Dams_Snapped__5_ = "Dams_Snapped"
landcover_accum_merge_dbf =
"K:\\NE_Aquatic_Connectivity\\GIS_Data\\Hydrography\\source\\landcover_accum_merge.dbf"
Dams_Snapped__8_ = "Dams_Snapped"
Dams_Snapped__3_ = "Dams_Snapped"

# Process: Add Field...
gp.AddField_management(Dams_Snapped, "US_PercNat", "DOUBLE", "", "", "", "", "NON_NULLABLE",
"NON_REQUIRED", "")

# Process: Add Field (2)...
gp.AddField_management(Dams_Snapped__6_, "US_PercAg", "DOUBLE", "", "", "", "",
"NON_NULLABLE", "NON_REQUIRED", "")

# Process: Join Field...
gp.JoinField_management(Dams_Snapped__8_, "COMID", landcover_accum_merge_dbf, "COMID",
"NLCD11PC;NLCD12PC;NLCD31PC;NLCD32PC;NLCD41PC;NLCD42PC;NLCD43PC;NLCD52PC;NLCD71PC;NL
CD81PC;NLCD82PC;NLCD90PC;NLCD95PC")

# Process: Calculate Field...
gp.CalculateField_management(Dams_Snapped__7_, "US_PercNat", "[NLCD11PC]+ [NLCD12PC]+
[NLCD31PC]+ [NLCD32PC]+ [NLCD41PC]+ [NLCD42PC]+ [NLCD43PC]+ [NLCD52PC]+ [NLCD71PC]+
[NLCD90PC]+ [NLCD95PC]", "VB", "")

# Process: Calculate Field (2)...
gp.CalculateField_management(Dams_Snapped__2_, "US_PercAg", "[NLCD81PC] + [NLCD82PC]", "VB",
"")

```

```
# Process: Delete Field...
gp.DeleteField_management(Dams_Snapped__3_,
"NLCD11PC;NLCD12PC;NLCD31PC;NLCD32PC;NLCD41PC;NLCD42PC;NLCD43PC;NLCD52PC;NLCD71PC;NL
CD81PC;NLCD82PC;NLCD90PC;NLCD95PC")
```

5.6 100m Buffer Landcover

```
# -----
# 100m Buffer Landcover.py
# Created on: Sun Aug 28 2011 12:59:47 PM
# (generated by ArcGIS/ModelBuilder)
# -----

# Import system modules
import sys, string, os, arcgisscripting

# Create the Geoprocessor object
gp = arcgisscripting.create()

# Set the necessary product code
gp.SetProduct("ArcInfo")

# Check out any necessary licenses
gp.CheckOutExtension("spatial")

# Load required toolboxes...
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Spatial Analyst Tools.tbx")
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Data Management Tools.tbx")
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Analysis Tools.tbx")

# Set the Geoprocessing environment...
gp.scratchWorkspace = "K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6"

# Local variables...
FunctionalRiverNetwork_batNetBuffer_shp =
"%scratchworkspace%\\FunctionalRiverNetwork_batNetBuffer.shp"
lc_100m_tabarea_dbf__2_ = "%scratchworkspace%\\lc_100m_tabarea.dbf"
lc_100m_tabarea_dbf__3_ = "%scratchworkspace%\\lc_100m_tabarea.dbf"
FunctionalRiverNetwork = "FunctionalRiverNetwork"
lc_100m_tabarea_dbf = "%scratchworkspace%\\lc_100m_tabarea.dbf"
lc_100m_tabarea_dbf__4_ = "%scratchworkspace%\\lc_100m_tabarea.dbf"
Dams_Snapped = "Dams_Snapped"
Dams_Snapped__2_ = "Dams_Snapped"
Dams_Snapped__3_ = "Dams_Snapped"
Dams_Snapped__4_ = "Dams_Snapped"
```

```

Dams_Snapped__5_ = "Dams_Snapped"
Dams_Snapped__6_ = "Dams_Snapped"
Dams_Snapped__7_ = "Dams_Snapped"
Dams_Snapped__9_ = "Dams_Snapped"
Dams_Snapped__10_ = "Dams_Snapped"
Dams_Snapped__15_ = "Dams_Snapped"
Dams_Snapped__12_ = "Dams_Snapped"
Dams_Snapped__13_ = "Dams_Snapped"
FunctionalRiverNetwork_Disso_shp = "%scratchworkspace%\\FunctionalRiverNetwork_Disso.shp"
lc_100m_tabarea_dbf__5_ = "%scratchworkspace%\\lc_100m_tabarea.dbf"
Dams_Snapped__11_ = "Dams_Snapped"
nlcd06_lc = "nlcd06_lc"

# Process: Dissolve...
gp.Dissolve_management(FunctionalRiverNetwork, FunctionalRiverNetwork_Disso_shp, "batNetID", "",
"MULTI_PART", "DISSOLVE_LINES")

# Process: Buffer...
gp.Buffer_analysis("", FunctionalRiverNetwork_batNetBuffer_shp, "100 Meters", "FULL", "FLAT", "LIST",
"batNetID")

# Process: Tabulate Area (2)...
gp.TabulateArea_sa(FunctionalRiverNetwork_batNetBuffer_shp, "batNetID", nlcd06_lc, "DESCRIPTION",
lc_100m_tabarea_dbf__5_, "30")

# Process: Add Field...
gp.AddField_management(lc_100m_tabarea_dbf__5_, "PercNat", "DOUBLE", "", "", "", "",
"NON_NULLABLE", "NON_REQUIRED", "")

# Process: Add Field (2)...
gp.AddField_management(lc_100m_tabarea_dbf__2_, "PercAg", "DOUBLE", "", "", "", "",
"NON_NULLABLE", "NON_REQUIRED", "")

# Process: Calculate Field...
gp.CalculateField_management(lc_100m_tabarea_dbf__3_, "PercNat", "([OPEN_WATER] +
[BARREN_LAN] + [DECIDUOUS_] + [EVERGREEN_] + [MIXED_FORE] + [SHRUB_SCRU] + [GRASSLAND_] +
[WOODY_WETL] + [EMERGENT_H])/([OPEN_WATER]+ [DEVELOPED_]+ [DEVELOPED1]+ [DEVELOPE_1]+
[DEVELOPE_2]+ [BARREN_LAN]+ [DECIDUOUS_]+ [EVERGREEN_]+ [MIXED_FORE]+ [SHRUB_SCRU]+
[GRASSLAND_]+ [PASTURE_HA]+ [CULTIVATED]+ [WOODY_WETL]+ [EMERGENT_H])", "VB", "")

# Process: Calculate Field (2)...
gp.CalculateField_management(lc_100m_tabarea_dbf, "PercAg", "([PASTURE_HA] + [CULTIVATED])/([
OPEN_WATER]+ [DEVELOPED_] + [DEVELOPED1]+ [DEVELOPE_1]+ [DEVELOPE_2]+ [BARREN_LAN]+
[DECIDUOUS_] + [EVERGREEN_] + [MIXED_FORE]+ [SHRUB_SCRU]+ [GRASSLAND_] + [PASTURE_HA]+
[CULTIVATED]+ [WOODY_WETL]+ [EMERGENT_H])", "VB", "")

# Process: Add Field (3)...

```



```

gp.AddField_management(Dams_Snapped, "usAg100", "DOUBLE", "", "", "", "", "NON_NULLABLE",
"NON_REQUIRED", "")

# Process: Add Field (4)...
gp.AddField_management(Dams_Snapped__2_, "dsAg100", "DOUBLE", "", "", "", "", "NON_NULLABLE",
"NON_REQUIRED", "")

# Process: Add Field (5)...
gp.AddField_management(Dams_Snapped__3_, "usNat100", "DOUBLE", "", "", "", "", "NON_NULLABLE",
"NON_REQUIRED", "")

# Process: Add Field (6)...
gp.AddField_management(Dams_Snapped__4_, "dsNat100", "DOUBLE", "", "", "", "", "NON_NULLABLE",
"NON_REQUIRED", "")

# Process: Join Field (2)...
gp.JoinField_management(Dams_Snapped__5_, "batUSNetID", lc_100m_tabarea_dbf__4_, "BATNETID",
"PercNat;PercAg")

# Process: Calculate Field (3)...
gp.CalculateField_management(Dams_Snapped__6_, "usAg100", "[PercAg]", "VB", "")

# Process: Calculate Field (4)...
gp.CalculateField_management(Dams_Snapped__7_, "usNat100", "[PercNat]", "VB", "")

# Process: Delete Field...
gp.DeleteField_management(Dams_Snapped__9_, "PercNat;PercAg")

# Process: Join Field (3)...
gp.JoinField_management(Dams_Snapped__10_, "batDSNetID", lc_100m_tabarea_dbf__4_,
"BATNETID", "PercNat;PercAg")

# Process: Calculate Field (5)...
gp.CalculateField_management(Dams_Snapped__15_, "dsAg100", "[PercAg]", "VB", "")

# Process: Calculate Field (6)...
gp.CalculateField_management(Dams_Snapped__12_, "dsNat100", "[PercNat]", "VB", "")

# Process: Delete Field (2)...
gp.DeleteField_management(Dams_Snapped__13_, "PercNat;PercAg")

```

5.7 100m Buffer Impervious

```

# -----
# 100m Buffer Impervious.py
# Created on: Sun Aug 28 2011 01:00:12 PM

```

```

# (generated by ArcGIS/ModelBuilder)
# -----

# Import system modules
import sys, string, os, arcgisscripting

# Create the Geoprocessor object
gp = arcgisscripting.create()

# Set the necessary product code
gp.SetProduct("ArcInfo")

# Check out any necessary licenses
gp.CheckOutExtension("spatial")

# Load required toolboxes...
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Spatial Analyst Tools.tbx")
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Data Management Tools.tbx")

# Set the Geoprocessing environment...
gp.scratchWorkspace = "K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6"

# Local variables...
Dams_snapped = "Dams_Snapped"
FunctionalRiverNetwork_batNetBuffer = "FunctionalRiverNetwork_batNetBuffer"
imp_100mbuffer_batNetID__2_ = "%scratchworkspace%\\imp_100mbuffer_batNetID.dbf"
imp_100mbuffer_batNetID__3_ = "%scratchworkspace%\\imp_100mbuffer_batNetID.dbf"
Dams_snapped__4_ = "Dams_Snapped"
Dams_snapped__7_ = "Dams_Snapped"
Dams_snapped__2_ = "Dams_Snapped"
Dams_snapped__3_ = "Dams_Snapped"
Dams_snapped__6_ = "Dams_Snapped"
Dams_snapped__8_ = "Dams_Snapped"
Dams_snapped__5_ = "Dams_Snapped"
Output_Layer_Name__2_ = "Dams_Snapped"
imp_100mbuffer_batNetID__6_ = "%scratchworkspace%\\imp_100mbuffer_batNetID.dbf"
imp_100mbuffer_batNetID__4_ = "%scratchworkspace%\\imp_100mbuffer_batNetID.dbf"
nlcd06_imper = "nlcd06_imper"
imp_100mbuffer_batNetID_dbf__2_ = "%scratchworkspace%\\imp_100mbuffer_batNetID.dbf"

# Process: Add Field (2)...
gp.AddField_management(Dams_snapped, "usImp100", "DOUBLE", "", "", "", "", "NON_NULLABLE",
"NON_REQUIRED", "")

# Process: Add Field (3)...
gp.AddField_management(Dams_snapped__2_, "dslmp100", "DOUBLE", "", "", "", "", "NON_NULLABLE",
"NON_REQUIRED", "")

```

```

# Process: Zonal Statistics as Table (2)...
gp.ZonalStatisticsAsTable_sa(FunctionalRiverNetwork_batNetBuffer, "batNetID", nlcd06_imper,
imp_100mbuffer_batNetID_dbf__2_, "DATA")

# Process: Add Field (4)...
gp.AddField_management(imp_100mbuffer_batNetID_dbf__2_, "batNetID", "LONG", "", "", "", "",
"NON_NULLABLE", "NON_REQUIRED", "")

# Process: Calculate Field (4)...
gp.CalculateField_management(imp_100mbuffer_batNetID__6_, "batNetID", "[VALUE]", "VB", "")

# Process: Add Field...
gp.AddField_management(imp_100mbuffer_batNetID__4_, "PerImp", "DOUBLE", "", "", "", "",
"NON_NULLABLE", "NON_REQUIRED", "")

# Process: Calculate Field...
gp.CalculateField_management(imp_100mbuffer_batNetID__2_, "PerImp", "[SUM] / [COUNT]", "VB",
"")

# Process: US Join Field...
gp.JoinField_management(Dams_snapped__3_, "batUSNetID", imp_100mbuffer_batNetID__3_,
"batNetID", "PerImp")

# Process: Calculate Field (2)...
gp.CalculateField_management(Dams_snapped__5_, "usImp100", "[PerImp]", "VB", "")

# Process: Delete Field...
gp.DeleteField_management(Dams_snapped__4_, "PerImp")

# Process: DS Join Field (2)...
gp.JoinField_management(Dams_snapped__6_, "batDSNetID", imp_100mbuffer_batNetID__3_,
"batNetID", "PerImp")

# Process: Calculate Field (3)...
gp.CalculateField_management(Output_Layer_Name__2_, "dsImp100", "[PerImp]", "VB", "")

# Process: Delete Field (2)...
gp.DeleteField_management(Dams_snapped__7_, "PerImp")

```

5.8 Dam on Conservation Land

```

# -----
# Dam on Conservation Land.py
# Created on: Sun Aug 28 2011 01:00:32 PM
# (generated by ArcGIS/ModelBuilder)
# -----

```

```

# Import system modules
import sys, string, os, arcgisscripting

# Create the Geoprocessor object
gp = arcgisscripting.create()

# Load required toolboxes...
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Data Management Tools.tbx")
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Analysis Tools.tbx")

# Set the Geoprocessing environment...
gp.scratchWorkspace = "K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6"

# Local variables...
Dams_snapped = "Dams_Snapped"
Dams_Snapped__2_ = "Dams_Snapped"
RegionDamsFalls_Use1_012111_ = "DamsFalls_Use1_Snapped_Layer"
Output_Layer = "DamsFalls_Use1_Snapped_Layer"
DamsFalls_Use1_snapped1_Laye = "DamsFalls_Use1_Snapped_Layer"
sa2009_NE_internal = "sa2009_NE_internal"
sa2009_NE_internal_GAP123_NoRest_shp =
"%scratchworkspace%\\sa2009_NE_internal_GAP123_NoRest.shp"

# Process: Add Field...
gp.AddField_management(Dams_snapped, "ConsLand", "SHORT", "", "", "", "", "NON_NULLABLE",
"NON_REQUIRED", "")

# Process: Make Feature Layer...
gp.MakeFeatureLayer_management(Dams_Snapped__2_, Output_Layer, "", "", "Join_Count Join_Count
VISIBLE NONE;Use Use VISIBLE NONE;UNIQUE_ID UNIQUE_ID VISIBLE NONE;OnNode OnNode VISIBLE
NONE;UniqueNHD UniqueNHD VISIBLE NONE;COMID COMID VISIBLE NONE;GNIS_NAME GNIS_NAME
VISIBLE NONE;NE_SZCL NE_SZCL VISIBLE NONE;GRIDVAL GRIDVAL VISIBLE NONE;NHD_REGION
NHD_REGION VISIBLE NONE;AO_SIZECL AO_SIZECL VISIBLE NONE;Comment Comment VISIBLE
NONE;emID emID VISIBLE NONE;NIDID NIDID VISIBLE NONE;STATE_ID STATE_ID VISIBLE NONE;STATE
STATE VISIBLE NONE;DAM_NAME DAM_NAME VISIBLE NONE;DAM_NAME2 DAM_NAME2 VISIBLE
NONE;WATERBODY WATERBODY VISIBLE NONE;TYPE_ID TYPE_ID VISIBLE NONE;P_CODE P_CODE
VISIBLE NONE;PrimPurp PrimPurp VISIBLE NONE;COND COND VISIBLE NONE;deg_barr deg_barr VISIBLE
NONE;PO_NAME PO_NAME VISIBLE NONE;AtFalls AtFalls VISIBLE NONE;RevuedPass RevuedPass VISIBLE
NONE;CTBasin CTBasin VISIBLE NONE;HistFishOc HistFishOc VISIBLE NONE;AtlCoast AtlCoast VISIBLE
NONE;COND_1 COND_1 VISIBLE NONE;Source_1 Source_1 VISIBLE NONE;deg_barr_1 deg_barr_1
VISIBLE NONE;PO_NAME_1 PO_NAME_1 VISIBLE NONE;AtFalls_1 AtFalls_1 VISIBLE NONE;RevuedPa_1
RevuedPa_1 VISIBLE NONE;CTBasin_1 CTBasin_1 VISIBLE NONE;HistFish_1 HistFish_1 VISIBLE
NONE;AtlCoast_1 AtlCoast_1 VISIBLE NONE;batSnapped batSnapped VISIBLE NONE;batLineID batLineID
VISIBLE NONE;batRegion batRegion VISIBLE NONE;batSnapDis batSnapDis VISIBLE NONE;batDisAlng
batDisAlng VISIBLE NONE;batDis2Mth batDis2Mth VISIBLE NONE;batFuncUS batFuncUS VISIBLE
NONE;batCountUS batCountUS VISIBLE NONE;batLenUS batLenUS VISIBLE NONE;batFuncDS batFuncDS

```

```
VISIBLE NONE;batDis2M_1 batDis2M_1 VISIBLE NONE;batCountDS batCountDS VISIBLE
NONE;batTotUSDS batTotUSDS VISIBLE NONE;batAbs batAbs VISIBLE NONE;batRel batRel VISIBLE
NONE;batDSDnsty batDSDnsty VISIBLE NONE;batUSDnsty batUSDnsty VISIBLE NONE;batImpass
batImpass VISIBLE NONE;batDSFalls batDSFalls VISIBLE NONE;batDSHydro batDSHydro VISIBLE
NONE;batUSNetID batUSNetID VISIBLE NONE;batDSNetID batDSNetID VISIBLE NONE;US_PerImp
US_PerImp VISIBLE NONE;usAg100 usAg100 VISIBLE NONE;dsAg100 dsAg100 VISIBLE NONE;usNat100
usNat100 VISIBLE NONE;dsNat100 dsNat100 VISIBLE NONE;usImp100 usImp100 VISIBLE
NONE;dsImp100 dsImp100 VISIBLE NONE;ConsLand ConsLand VISIBLE NONE")
```

```
# Process: Select...
```

```
gp.Select_analysis(sa2009_NE_internal, sa2009_NE_internal_GAP123_NoRest_shp, "\"GAP_STATUS\" in
( 1, 2, 3) AND \"REST_DATA\" = 'N'")
```

```
# Process: Select Layer By Location...
```

```
gp.SelectLayerByLocation_management(Output_Layer, "INTERSECT",
sa2009_NE_internal_GAP123_NoRest_shp, "10 Meters", "NEW_SELECTION")
```

```
# Process: Calculate Field...
```

```
gp.CalculateField_management(RegionDamsFalls_Use1_012111_, "ConsLand", "1", "VB", "")
```

5.9 100m Buffer % Conservation Land

```
# -----
# 100m Buffer % Conservation Land.py
# Created on: Sun Aug 28 2011 01:00:53 PM
# (generated by ArcGIS/ModelBuilder)
# -----
```

```
# Import system modules
```

```
import sys, string, os, arcgisscripting
```

```
# Create the Geoprocessor object
```

```
gp = arcgisscripting.create()
```

```
# Set the necessary product code
```

```
gp.SetProduct("ArcInfo")
```

```
# Load required toolboxes...
```

```
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Data Management Tools.tbx")
```

```
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Analysis Tools.tbx")
```

```
# Set the Geoprocessing environment...
```

```
gp.scratchWorkspace = "K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6"
```

```
# Local variables...
```

```
FunctionalRiverNetwork_batNetBuffer = "FunctionalRiverNetwork_batNetBuffer"
```

```

FunctionalRiverNetwork_batNetBuffer_Consland_shp =
"K:\NE_Aquatic_Connectivity\GIS_Data\RegionAnalysis\FunctionalRiverNetwork_batNetBuffer_Con
sland.shp"
Dams_snapped__2_ = "Dams_Snapped"
Dams_snapped__3_ = "Dams_Snapped"
Dams_snapped = "Dams_Snapped"
FunctionalRiverNetwork_batNet_Buffer_Consland_Dissolve_shp =
"%Scratchworkspace%\FunctionalRiverNetwork_batNet_Buffer_Consland_Dissolve.shp"
FunctionalRiverNetwork_batNetBuffer__3_ = "FunctionalRiverNetwork_batNetBuffer"
FunctionalRiverNetwork_batNetBuffer__6_ = "FunctionalRiverNetwork_batNetBuffer"
Dams_snapped__4_ = "Dams_Snapped"
Dams_snapped__5_ = "Dams_Snapped"
Dams_snapped__6_ = "Dams_Snapped"
Dams_snapped__7_ = "Dams_Snapped"
Dams_snapped__8_ = "Dams_Snapped"
Dams_Snapped__10_ = "Dams_Snapped"
FunctionalRiverNetwork_batNet_Buffer_Consland_Dissolve_shp__2_ =
"%Scratchworkspace%\FunctionalRiverNetwork_batNet_Buffer_Consland_Dissolve.shp"
FunctionalRiverNetwork_batNet_Buffer_Consland_Dissolve_shp__4_ =
"%Scratchworkspace%\FunctionalRiverNetwork_batNet_Buffer_Consland_Dissolve.shp"
FunctionalRiverNetwork_batNetBuffer__4_ = "FunctionalRiverNetwork_batNetBuffer"
FunctionalRiverNetwork_batNetBuffer__5_ = "FunctionalRiverNetwork_batNetBuffer"
FunctionalRiverNetwork_batNetBuffer__7_ = "FunctionalRiverNetwork_batNetBuffer"
sa2009_NE_internal_GAP123_shp = "%scratchworkspace%\sa2009_NE_internal_GAP123.shp"
sa2009_NE_internal = "sa2009_NE_internal"

# Process: Add Field (2)...
gp.AddField_management(Dams_snapped, "usCons100", "DOUBLE", "", "", "", "", "NON_NULLABLE",
"NON_REQUIRED", "")

# Process: Add Field (3)...
gp.AddField_management(Dams_snapped__2_, "dsCons100", "DOUBLE", "", "", "", "",
"NON_NULLABLE", "NON_REQUIRED", "")

# Process: Select...
gp.Select_analysis(sa2009_NE_internal, sa2009_NE_internal_GAP123_shp, "\"GAP_STATUS\" in
(1,2,3)")

# Process: Intersect...
gp.Intersect_analysis("FunctionalRiverNetwork_batNetBuffer
#;%scratchworkspace%\sa2009_NE_internal_GAP123.shp #",
FunctionalRiverNetwork_batNetBuffer_Consland_shp, "ALL", "", "INPUT")

# Process: Dissolve...
gp.Dissolve_management(FunctionalRiverNetwork_batNetBuffer_Consland_shp,
FunctionalRiverNetwork_batNet_Buffer_Consland_Dissolve_shp, "batNetID;One", "", "MULTI_PART",
"DISSOLVE_LINES")

```

```

# Process: Add Field...
gp.AddField_management(FunctionalRiverNetwork_batNet_Buffer_Consland_Dissolve_shp,
"ConsAreaM2", "DOUBLE", "", "", "", "", "NON_NULLABLE", "NON_REQUIRED", "")

# Process: Calculate Field (4)...
gp.CalculateField_management(FunctionalRiverNetwork_batNet_Buffer_Consland_Dissolve_shp__2_,
"ConsAreaM2", "!shape.area@meters!", "PYTHON_9.3", "")

# Process: Join Field...
gp.JoinField_management(FunctionalRiverNetwork_batNetBuffer, "batNetID",
FunctionalRiverNetwork_batNet_Buffer_Consland_Dissolve_shp__4_, "batNetID", "ConsAreaM2")

# Process: Add Field (4)...
gp.AddField_management(FunctionalRiverNetwork_batNetBuffer__3_, "PercCons", "DOUBLE", "", "", "",
"", "NON_NULLABLE", "NON_REQUIRED", "")

# Process: Add Field (5)...
gp.AddField_management(FunctionalRiverNetwork_batNetBuffer__4_, "BuffAreaM2", "DOUBLE", "", "",
"", "", "NON_NULLABLE", "NON_REQUIRED", "")

# Process: Calculate Field (5)...
gp.CalculateField_management(FunctionalRiverNetwork_batNetBuffer__5_, "BuffAreaM2",
"!shape.area@meters!", "PYTHON_9.3", "")

# Process: Calculate Field...
gp.CalculateField_management(FunctionalRiverNetwork_batNetBuffer__7_, "PercCons", "
[ConsAreaM2]/[BuffAreaM2]*100", "VB", "")

# Process: Join Field (2)...
gp.JoinField_management(Dams_snapped__3_, "batUSNetID",
FunctionalRiverNetwork_batNetBuffer__6_, "batNetID", "PercCons")

# Process: Calculate Field (2)...
gp.CalculateField_management(Dams_snapped__4_, "usCons100", "[PercCons]", "VB", "")

# Process: Delete Field...
gp.DeleteField_management(Dams_snapped__5_, "PercCons")

# Process: Join Field (3)...
gp.JoinField_management(Dams_snapped__6_, "batDSNetID",
FunctionalRiverNetwork_batNetBuffer__6_, "batNetID", "PercCons")

# Process: Calculate Field (3)...
gp.CalculateField_management(Dams_snapped__7_, "dsCons100", "[PercCons]", "VB", "")

# Process: Delete Field (2)...
gp.DeleteField_management(Dams_snapped__8_, "PercCons_1;PercCons")

```

5.10 ARA Landcover

```
# -----  
# ARA Landcover.py  
# Created on: Sun Aug 28 2011 01:01:08 PM  
# (generated by ArcGIS/ModelBuilder)  
# -----  
  
# Import system modules  
import sys, string, os, arcgisscripting  
  
# Create the Geoprocessor object  
gp = arcgisscripting.create()  
  
# Set the necessary product code  
gp.SetProduct("ArcInfo")  
  
# Check out any necessary licenses  
gp.CheckOutExtension("spatial")  
  
# Load required toolboxes...  
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Spatial Analyst Tools.tbx")  
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Conversion Tools.tbx")  
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Data Management Tools.tbx")  
  
# Set the Geoprocessing environment...  
gp.scratchWorkspace = "K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6"  
  
# Local variables...  
batNet_alloc = "%scratchworkspace%\\batNet_alloc"  
batNet_grid = "%scratchworkspace%\\batNet_grid"  
batNet_Alloc_watershed_shp = "%scratchworkspace%\\batNet_Alloc_watershed.shp"  
ara_rip_all = "ara_rip_all"  
ara_net_allo = "%scratchworkspace%\\ara_net_allo"  
ara_batnet_lc_tabarea_dbf = "%scratchworkspace%\\ara_batnet_lc_tabarea.dbf"  
ara_batnet_lc_tabarea_dbf__5_ = "%scratchworkspace%\\ara_batnet_lc_tabarea.dbf"  
ara_batnet_lc_tabarea_dbf__7_ = "%scratchworkspace%\\ara_batnet_lc_tabarea.dbf"  
ara_batnet_lc_tabarea_dbf__2_ = "%scratchworkspace%\\ara_batnet_lc_tabarea.dbf"  
ara_batnet_lc_tabarea_dbf__3_ = "%scratchworkspace%\\ara_batnet_lc_tabarea.dbf"  
ara_batnet_lc_tabarea_dbf__4_ = "%scratchworkspace%\\ara_batnet_lc_tabarea.dbf"  
ara_batnet_lc_tabarea_dbf__6_ = "%scratchworkspace%\\ara_batnet_lc_tabarea.dbf"  
ara_batnet_imp_stats_dbf = "%scratchworkspace%\\ara_batnet_imp_stats.dbf"  
FunctionalRiverNetwork = "FunctionalRiverNetwork"  
fdr = "fdr"  
Dams_snapped = "Dams_Snapped"  
Dams_snapped__2_ = "Dams_Snapped"  
Dams_snapped__3_ = "Dams_Snapped"
```



```

Dams_snapped__4_ = "Dams_Snapped"
Dams_snapped__5_ = "Dams_Snapped"
Dams_snapped__6_ = "Dams_Snapped"
Dams_snapped__7_ = "Dams_Snapped"
Output_Layer_Name = "Dams_Snapped"
Dams_snapped__8_ = "Dams_Snapped"
Dams_snapped__9_ = "Dams_Snapped"
Dams_snapped__10_ = "Dams_Snapped"
Output_Layer_Name__2_ = "Dams_Snapped"
Dams_snapped__11_ = "Dams_Snapped"
Dams_snapped__12_ = "Dams_Snapped"
Dams_snapped__13_ = "Dams_Snapped"
Dams_snapped__15_ = "Dams_Snapped"
ara_batnet_imp_stats_dbf__2_ = "%scratchworkspace%\\ara_batnet_imp_stats.dbf"
ara_batnet_imp_stats_dbf__3_ = "%scratchworkspace%\\ara_batnet_imp_stats.dbf"
ara_batnet_imp_stats_dbf__4_ = "%scratchworkspace%\\ara_batnet_imp_stats.dbf"
ara_batnet_imp_stats_dbf__6_ = "%scratchworkspace%\\ara_batnet_imp_stats.dbf"
Dams_snapped__14_ = "Dams_Snapped"
Dams_snapped__17_ = "Dams_Snapped"
Dams_snapped__16_ = "Dams_Snapped"
Dams_snapped__18_ = "Dams_Snapped"
Output_Layer_Name__3_ = "Dams_Snapped"
nlcd06_lc = "nlcd06_lc"
nlcd06_imper = "nlcd06_imper"

# Process: Polyline to Raster...
tempEnvironment0 = gp.snapRaster
gp.snapRaster = "fdr"
gp.PolylineToRaster_conversion(FunctionalRiverNetwork, "batNetID", batNet_grid,
"MAXIMUM_LENGTH", "NONE", "30")
gp.snapRaster = tempEnvironment0

# Process: Watershed...
gp.Watershed_sa(fdr, batNet_grid, batNet_alloc, "VALUE")

# Process: Raster to Polygon...
gp.RasterToPolygon_conversion(batNet_alloc, batNet_Alloc_watershed_shp, "NO_SIMPLIFY", "VALUE")

# Process: Add Field (4)...
gp.AddField_management(Dams_snapped, "usNatARA", "DOUBLE", "", "", "", "", "NON_NULLABLE",
"NON_REQUIRED", "")

# Process: Add Field (5)...
gp.AddField_management(Dams_snapped__2_, "dsNatARA", "DOUBLE", "", "", "", "", "NON_NULLABLE",
"NON_REQUIRED", "")

# Process: Add Field (6)...

```

```
gp.AddField_management(Dams_snapped__3_, "usAgARA", "DOUBLE", "", "", "", "", "NON_NULLABLE",  
"NON_REQUIRED", "")
```

```
# Process: Add Field (7)...
```

```
gp.AddField_management(Dams_snapped__4_, "dsAgARA", "DOUBLE", "", "", "", "", "NON_NULLABLE",  
"NON_REQUIRED", "")
```

```
# Process: Add Field (8)...
```

```
gp.AddField_management(Dams_snapped__5_, "usImpARA", "DOUBLE", "", "", "", "",  
"NON_NULLABLE", "NON_REQUIRED", "")
```

```
# Process: Add Field (9)...
```

```
gp.AddField_management(Dams_snapped__6_, "dsImpARA", "DOUBLE", "", "", "", "",  
"NON_NULLABLE", "NON_REQUIRED", "")
```

```
# Process: SingleOutputMapAlgebra...
```

```
gp.SingleOutputMapAlgebra_sa("con((ara_rip_all >=11 and batnet_alloc >=1), batnet_alloc,  
setnull(batnet_alloc))", ara_net_allo, "ara_rip_all;%scratchworkspace%\batNet_alloc")
```

```
# Process: Tabulate Area...
```

```
gp.TabulateArea_sa(ara_net_allo, "VALUE", nlcd06_lc, "DESCRIPTION", ara_batnet_lc_tabarea_dbf,  
"30")
```

```
# Process: Add Field...
```

```
gp.AddField_management(ara_batnet_lc_tabarea_dbf, "Perc_Nat", "DOUBLE", "", "", "", "",  
"NON_NULLABLE", "NON_REQUIRED", "")
```

```
# Process: Add Field (2)...
```

```
gp.AddField_management(ara_batnet_lc_tabarea_dbf__5_, "Perc_Ag", "DOUBLE", "", "", "", "",  
"NON_NULLABLE", "NON_REQUIRED", "")
```

```
# Process: Calculate Field...
```

```
gp.CalculateField_management(ara_batnet_lc_tabarea_dbf__7_, "Perc_Nat", "([OPEN_WATER] +  
[BARREN_LAN] + [DECIDUOUS_] + [EVERGREEN_] + [MIXED_FORE] + [SHRUB_SCRU] + [GRASSLAND_] +  
[WOODY_WETL] + [EMERGENT_H]) / ([OPEN_WATER] + [DEVELOPED_] + [DEVELOPED1] +  
[DEVELOPE_1] + [DEVELOPE_2] + [BARREN_LAN] + [DECIDUOUS_] + [EVERGREEN_] + [MIXED_FORE] +  
[SHRUB_SCRU] + [GRASSLAND_] + [PASTURE_HA] + [CULTIVATED] + [WOODY_WETL] + [EMERGENT_H]  
) * 100", "VB", "")
```

```
# Process: Calculate Field (2)...
```

```
gp.CalculateField_management(ara_batnet_lc_tabarea_dbf__2_, "Perc_Ag", "( [PASTURE_HA] +  
[CULTIVATED]) / ([OPEN_WATER] + [DEVELOPED_] + [DEVELOPED1] + [DEVELOPE_1] + [DEVELOPE_2] +  
[BARREN_LAN] + [DECIDUOUS_] + [EVERGREEN_] + [MIXED_FORE] + [SHRUB_SCRU] + [GRASSLAND_] +  
[PASTURE_HA] + [CULTIVATED] + [WOODY_WETL] + [EMERGENT_H]) * 100", "VB", "")
```

```
# Process: Add Field (3)...
```

```
gp.AddField_management(ara_batnet_lc_tabarea_dbf__3_, "batNetID", "LONG", "", "", "", "",  
"NON_NULLABLE", "NON_REQUIRED", "")
```

```

# Process: Calculate Field (3)...
gp.CalculateField_management(ara_batnet_lc_tabarea_dbf__4_, "batNetID", "[VALUE]", "VB", "")

# Process: US Join Field...
gp.JoinField_management(Dams_snapped__7_, "batUSNetID", ara_batnet_lc_tabarea_dbf__6_,
"batNetID", "Perc_Nat;Perc_Ag")

# Process: Calculate Field (4)...
gp.CalculateField_management(Output_Layer_Name, "usNatARA", "[Perc_Nat]", "VB", "")

# Process: Calculate Field (5)...
gp.CalculateField_management(Dams_snapped__8_, "usAgARA", "[Perc_Ag]", "VB", "")

# Process: Delete Field...
gp.DeleteField_management(Dams_snapped__9_, "Perc_Nat;Perc_Ag")

# Process: DS Join Field...
gp.JoinField_management(Dams_snapped__10_, "batDSNetID", ara_batnet_lc_tabarea_dbf__6_,
"batNetID", "Perc_Nat;Perc_Ag")

# Process: Calculate Field (6)...
gp.CalculateField_management(Output_Layer_Name__2_, "dsNatARA", "[Perc_Nat]", "VB", "")

# Process: Calculate Field (7)...
gp.CalculateField_management(Dams_snapped__11_, "dsAgARA", "[Perc_Ag]", "VB", "")

# Process: Delete Field (2)...
gp.DeleteField_management(Dams_snapped__12_, "Perc_Nat;Perc_Ag")

# Process: Zonal Statistics as Table...
gp.ZonalStatisticsAsTable_sa(ara_net_allo, "VALUE", nlcd06_imper, ara_batnet_imp_stats_dbf, "DATA")

# Process: Add Field (10)...
gp.AddField_management(ara_batnet_imp_stats_dbf, "batNetID", "LONG", "", "", "", "",
"NON_NULLABLE", "NON_REQUIRED", "")

# Process: Calculate Field (8)...
gp.CalculateField_management(ara_batnet_imp_stats_dbf__2_, "batNetID", "[VALUE]", "VB", "")

# Process: Add Field (11)...
gp.AddField_management(ara_batnet_imp_stats_dbf__3_, "PerImp", "DOUBLE", "", "", "", "",
"NON_NULLABLE", "NON_REQUIRED", "")

# Process: Calculate Field (9)...
gp.CalculateField_management(ara_batnet_imp_stats_dbf__4_, "PerImp", "[SUM]/[COUNT]", "VB",
"")

```

```

# Process: US Join Field (2)...
gp.JoinField_management(Dams_snapped__13_, "batUSNetID", ara_batnet_imp_stats_dbf__6_,
"batNetID", "PerImp")

# Process: Calculate Field (10)...
gp.CalculateField_management(Dams_snapped__15_, "usImpARA", "[PerImp]", "VB", "")

# Process: Delete Field (3)...
gp.DeleteField_management(Dams_snapped__14_, "PerImp")

# Process: DS Join Field (2)...
gp.JoinField_management(Dams_snapped__16_, "batDSNetID", ara_batnet_imp_stats_dbf__6_,
"batNetID", "PerImp")

# Process: Calculate Field (11)...
gp.CalculateField_management(Output_Layer_Name__3_, "dsImpARA", "[PerImp]", "VB", "")

# Process: Delete Field (4)...
gp.DeleteField_management(Dams_snapped__17_, "PerImp")

```

5.11 Density of Dams on Small (non -100k) Streams

```

# -----
# Density of Dams on Small (non -100k) Streams.py
# Created on: Sun Aug 28 2011 01:01:40 PM
# (generated by ArcGIS/ModelBuilder)
# -----

# Import system modules
import sys, string, os, arcgisscripting

# Create the Geoprocessor object
gp = arcgisscripting.create()

# Set the necessary product code
gp.SetProduct("ArcInfo")

# Load required toolboxes...
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Data Management Tools.tbx")
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Analysis Tools.tbx")

# Set the Geoprocessing environment...
gp.scratchWorkspace = "K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6"

# Local variables...
batNet_Alloc_watershed = "batnet_alloc_watershed"

```

```

batNet_Alloc_watershed__2_ = "batnet_alloc_watershed"
batNet_Alloc_watershed__3_ = "batnet_alloc_watershed"
batNet_Alloc_Watershed_SqKMsum_dbf =
"%scratchworkspace%\\batNet_Alloc_Watershed_SqKMsum.dbf"
batNet_Alloc_Watershed_SqKMsum_dbf__2_ =
"%scratchworkspace%\\batNet_Alloc_Watershed_SqKMsum.dbf"
batNet_Alloc_Watershed_SqKMsum_dbf__4_ =
"%scratchworkspace%\\batNet_Alloc_Watershed_SqKMsum.dbf"
Dams_snapped = "Dams_Snapped"
Dams_snapped__2_ = "Dams_Snapped"
Dams_snapped__3_ = "Dams_Snapped"
Output_Layer_Name = "Dams_Snapped"
Dams_snapped__4_ = "Dams_Snapped"
Dams_Snapped__9_ = "Dams_Snapped"
Dams_snapped__8_ = "Dams_Snapped"
Dams_snapped__6_ = "Dams_Snapped"
Dams_snapped__7_ = "Dams_Snapped"
batnet_alloc_watershed__4_ = "batnet_alloc_watershed"
batNet_Alloc_watershed__5_ = "batnet_alloc_watershed"
Dams_Use2 = "Dams_Use2"
Dams_Use2_SpatialJoin_Select_shp =
"K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2_SpatialJoin_Select.shp"
Dams_Use2_SpatialJoin_shp__2_ = "%scratchworkspace%\\Dams_Use2_SpatialJoin.shp"

# Process: Add Field (3)...
gp.AddField_management(Dams_snapped, "usSmDamDen", "DOUBLE", "", "", "", "", "NON_NULLABLE",
"NON_REQUIRED", "")

# Process: Add Field (4)...
gp.AddField_management(Dams_snapped__2_, "dsSmDamDen", "DOUBLE", "", "", "", "",
"NON_NULLABLE", "NON_REQUIRED", "")

# Process: Add Field...
gp.AddField_management(batNet_Alloc_watershed, "batNetID", "LONG", "", "", "", "",
"NON_NULLABLE", "NON_REQUIRED", "")

# Process: Calculate Field...
gp.CalculateField_management(batNet_Alloc_watershed__2_, "batNetID", "[GRIDCODE]", "VB", "")

# Process: Add Field (5)...
gp.AddField_management(batNet_Alloc_watershed__3_, "AreaSqKm", "DOUBLE", "", "", "", "",
"NON_NULLABLE", "NON_REQUIRED", "")

# Process: Calculate Field (5)...
gp.CalculateField_management(batNet_Alloc_watershed__5_, "AreaSqKm",
"!shape.area@SQUAREKILOMETERS!", "PYTHON_9.3", "")

# Process: Spatial Join...

```

```

gp.SpatialJoin_analysis(Dams_Use2, batnet_alloc_watershed__4_, Dams_Use2_SpatialJoin_shp__2_,
"JOIN_ONE_TO_ONE", "KEEP_ALL", "NIDID 'NIDID' true true false 20 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,NIDID,-1,-
1;UNIQUE_ID 'UNIQUE_ID' true true false 50 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,UNIQUE_ID,-1,-
1;STATE_ID 'STATE_ID' true true false 16 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,STATE_ID,-1,-
1;STATE 'STATE' true true false 2 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,STATE,-1,-
1;DAM_NAME 'DAM_NAME' true true false 50 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,DAM_NAME,-1,-
1;DAM_NAME2 'DAM_NAME2' true true false 50 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,DAM_NAME2,-1,-
1;WATERBODY 'WATERBODY' true true false 100 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,WATERBODY,-1,-
1;OWNER 'OWNER' true true false 50 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,OWNER,-1,-
1;OWNER_CODE 'OWNER_CODE' true true false 6 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,OWNER_CODE,-1,-
1;TYPE_ID 'TYPE_ID' true true false 16 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,TYPE_ID,-1,-
1;P_CODE 'P_CODE' true true false 6 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,P_CODE,-1,-
1;PrimPurp 'PrimPurp' true true false 1 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,PrimPurp,-1,-
1;YEAR 'YEAR' true true false 9 Long 0 9
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,YEAR,-1,-1;WIDTH
'WIDTH' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,WIDTH,-1,-
1;HEIGHT 'HEIGHT' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,HEIGHT,-1,-
1;LENGTH 'LENGTH' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,LENGTH,-1,-
1;SURFAREA 'SURFAREA' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,SURFAREA,-1,-
1;MAXSTOR 'MAXSTOR' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,MAXSTOR,-1,-
1;NORMSTOR 'NORMSTOR' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,NORMSTOR,-1,-
1;HAZCLASS 'HAZCLASS' true true false 4 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,HAZCLASS,-1,-
1;WATERSHED 'WATERSHED' true true false 50 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,WATERSHED,-1,-
1;COND 'COND' true true false 16 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,COND,-1,-1;CITY
'CITY' true true false 50 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,CITY,-1,-1;SNAPDST
'SNAPDST' true true false 19 Double 0 0

```

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,SNAPDST,-1,-1;UNSNAP 'UNSNAP' true true false 4 Short 0 4

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,UNSNAP,-1,-1;COMID 'COMID' true true false 9 Long 0 9

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,COMID,-1,-1;NESZCL 'NESZCL' true true false 8 Text 0 0

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,NESZCL,-1,-1;AO_sizecl 'AO_sizecl' true true false 10 Text 0 0

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,AO_sizecl,-1,-1;GRIDVAL 'GRIDVAL' true true false 4 Short 0 4

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,GRIDVAL,-1,-1;NHD_NAME 'NHD_NAME' true true false 65 Text 0 0

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,NHD_NAME,-1,-1;PROBNAME 'PROBNAME' true true false 4 Short 0 4

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,PROBNAME,-1,-1;PROBSZ1 'PROBSZ1' true true false 4 Short 0 4

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,PROBSZ1,-1,-1;CHECK2UP 'CHECK2UP' true true false 4 Short 0 4

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,CHECK2UP,-1,-1;CHKDMSZ 'CHKDMSZ' true true false 4 Short 0 4

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,CHKDMSZ,-1,-1;PRIORITIZE 'PRIORITIZE' true true false 4 Short 0 4

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,PRIORITIZE,-1,-1;EVALUATE 'EVALUATE' true true false 4 Short 0 4

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,EVALUATE,-1,-1;State_edit 'State_edit' true true false 4 Short 0 4

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,State_edit,-1,-1;Source 'Source' true true false 50 Text 0 0

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,Source,-1,-1;deg_barr 'deg_barr' true true false 4 Short 0 4

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,deg_barr,-1,-1;Duplicate 'Duplicate' true true false 4 Short 0 4

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,Duplicate,-1,-1;NO_BARRIER 'NO_BARRIER' true true false 4 Short 0 4

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,NO_BARRIER,-1,-1;NotOnHydro 'NotOnHydro' true true false 4 Short 0 4

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,NotOnHydro,-1,-1;Culvert 'Culvert' true true false 4 Short 0 4

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,Culvert,-1,-1;Lock 'Lock' true true false 4 Short 0 4

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,Lock,-1,-1;OthNonDam 'OthNonDam' true true false 4 Short 0 4

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,OthNonDam,-1,-1;WrngCoord 'WrngCoord' true true false 4 Short 0 4

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,WrngCoord,-1,-1;Historical 'Historical' true true false 4 Short 0 4

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,Historical,-1,-1;Use 'Use' true true false 4 Short 0 4

```
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,Use,-1,-1;PO_NAME
'PO_NAME' true true false 28 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,PO_NAME,-1,-
1;Latit 'Latit' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,Latit,-1,-1;Longit
'Longit' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,Longit,-1,-
1;NIDIDsourc 'NIDIDsourc' true true false 25 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,NIDIDsourc,-1,-
1;ModPass 'ModPass' true true false 4 Short 0 4
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,ModPass,-1,-
1;Comment 'Comment' true true false 200 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,Comment,-1,-
1;AtFalls 'AtFalls' true true false 4 Short 0 4
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,AtFalls,-1,-
1;RevuedPass 'RevuedPass' true true false 4 Short 0 4
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,RevuedPass,-1,-
1;emID 'emID' true true false 9 Long 0 9
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,emID,-1,-1;CTBasin
'CTBasin' true true false 4 Short 0 4
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,CTBasin,-1,-
1;HistFishOc 'HistFishOc' true true false 4 Short 0 4
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,HistFishOc,-1,-
1;AtlCoast 'AtlCoast' true true false 4 Short 0 4
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\Dams_Use2.shp,AtlCoast,-1,-1;ID 'ID'
true true false 10 Double 0 10
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\batnet_alloc_watershed.shp,ID,-1,-
1;GRIDCODE 'GRIDCODE' true true false 10 Double 0 10
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\batnet_alloc_watershed.shp,GRIDC
ODE,-1,-1;batNetID 'batNetID' true true false -1 Long -1 -2
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\batnet_alloc_watershed.shp,batNetI
D,-1,-1;AreaSqKm 'AreaSqKm' true true false -1 Double -1 -2
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\batnet_alloc_watershed.shp,AreaSq
Km,-1,-1, "INTERSECTS", "0 Meters", ""))
```

```
# Process: Select...
```

```
gp.Select_analysis(Dams_Use2_SpatialJoin_shp__2_, Dams_Use2_SpatialJoin_Select_shp,
"\"Join_Count\" <>0")
```

```
# Process: Summary Statistics...
```

```
gp.Statistics_analysis(Dams_Use2_SpatialJoin_Select_shp, batNet_Alloc_Watershed_SqKMsum_dbf,
"AreaSqKM FIRST;Join_Count SUM", "batNetID")
```

```
# Process: Add Field (2)...
```

```
gp.AddField_management(batNet_Alloc_Watershed_SqKMsum_dbf, "SmDamDens", "DOUBLE", "", "",
"", "", "NON_NULLABLE", "NON_REQUIRED", "")
```

```
# Process: Calculate Field (2)...
```



```

gp.CalculateField_management(batNet_Alloc_Watershed_SqKMsum_dbf__2_, "SmDamDens",
"[SUM_Join_C] / [FIRST_Area]", "VB", "")

# Process: US Join Field...
gp.JoinField_management(Dams_snapped__3_, "batUSNetID",
batNet_Alloc_Watershed_SqKMsum_dbf__4_, "batNetID", "SmDamDens")

# Process: Calculate Field (3)...
gp.CalculateField_management(Output_Layer_Name, "usSmDamDen", "[SmDamDens]", "VB", "")

# Process: Delete Field...
gp.DeleteField_management(Dams_snapped__4_, "SmDamDens")

# Process: DS Join Field...
gp.JoinField_management(Dams_Snapped__9_, "batDSNetID",
batNet_Alloc_Watershed_SqKMsum_dbf__4_, "batNetID", "SmDamDens")

# Process: Calculate Field (4)...
gp.CalculateField_management(Dams_snapped__6_, "dsSmDamDen", "[SmDamDens]", "VB", "")

# Process: Delete Field (2)...
gp.DeleteField_management(Dams_snapped__7_, "SmDamDens")

```

5.12 Nature Serve HUC 8 data

```

# -----
# Nature Serve HUC 8 data.py
# Created on: Sun Aug 28 2011 01:02:15 PM
# (generated by ArcGIS/ModelBuilder)
# -----

# Import system modules
import sys, string, os, arcgisscripting

# Create the Geoprocessor object
gp = arcgisscripting.create()

# Set the necessary product code
gp.SetProduct("ArcInfo")

# Load required toolboxes...
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Data Management Tools.tbx")
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Analysis Tools.tbx")

# Set the Geoprocessing environment...
gp.scratchWorkspace = "K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6"

```

```

# Local variables...
Dams_snapped = "Dams_Snapped"
fish_huc8_metrics_xtoc_dbf =
"K:\NE_Aquatic_Connectivity\GIS_Data\NatureServe\summary_distribute_2008_11_03\fish_huc8_
metrics_xtoc.dbf"
Dams_snapped__2_ = "Dams_Snapped"
Dams_snapped__3_ = "Dams_Snapped"
Dams_snapped__4_ = "Dams_Snapped"
Dams_Snapped__5_ = "Dams_Snapped"
Dams_snapped__7_ = "Dams_Snapped"
Dams_snapped__9_ = "Dams_Snapped"
Dams_snapped__6_ = "Dams_Snapped"
Dams_snapped__8_ = "Dams_Snapped"
Output_Layer_Name__2_ = "Dams_Snapped"
Output_Layer_Name__3_ = "Dams_Snapped"
Dams_snapped__10_ = "Dams_Snapped"
Dams_snapped__12_ = "Dams_Snapped"
Dams_snapped__14_ = "Dams_Snapped"
Dams_snapped__11_ = "Dams_Snapped"
Dams_snapped__13_ = "Dams_Snapped"
Dams_Snapped__16_ = "Dams_Snapped"
crayg123_huc8_metrics_dbf =
"K:\NE_Aquatic_Connectivity\GIS_Data\NatureServe\summary_distribute_2008_11_03\crayg123_
huc8_metrics.dbf"
musselg123_huc8_metrics_dbf =
"K:\NE_Aquatic_Connectivity\GIS_Data\NatureServe\summary_distribute_2008_11_03\musselg12
3_huc8_metrics.dbf"
DamsFalls_Use1_snapped1_NatSrvHUC8_shp =
"%scratchworkspace%\DamsFalls_Use1_snapped1_NatSrvHUC8.shp"
Dams_Snapped__15_ = "Dams_Snapped"
huc_us_can_east_project = "huc_us_can_east_project"

# Process: Spatial Join...
gp.SpatialJoin_analysis(Dams_snapped, huc_us_can_east_project,
DamsFalls_Use1_snapped1_NatSrvHUC8_shp, "JOIN_ONE_TO_ONE", "KEEP_ALL", "Join_Count
'Join_Count' true true false 9 Long 0 9
,First,#,C:\BAT\Output\RegionAnalysis6\DamsFalls_Use1_Snapped.shp,Join_Count,-1,-1;Use 'Use'
true true false 4 Short 0 4
,First,#,C:\BAT\Output\RegionAnalysis6\DamsFalls_Use1_Snapped.shp,Use,-1,-1;UNIQUE_ID
'UNIQUE_ID' true true false 50 Text 0 0
,First,#,C:\BAT\Output\RegionAnalysis6\DamsFalls_Use1_Snapped.shp,UNIQUE_ID,-1,-1;OnNode
'OnNode' true true false 4 Short 0 4
,First,#,C:\BAT\Output\RegionAnalysis6\DamsFalls_Use1_Snapped.shp,OnNode,-1,-1;UniqueNHD
'UniqueNHD' true true false 9 Long 0 9
,First,#,C:\BAT\Output\RegionAnalysis6\DamsFalls_Use1_Snapped.shp,UniqueNHD,-1,-1;COMID
'COMID' true true false 9 Long 0 9
,First,#,C:\BAT\Output\RegionAnalysis6\DamsFalls_Use1_Snapped.shp,COMID,-1,-1;GNIS_NAME

```

'GNIS_NAME' true true false 65 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,GNIS_NAME,-1,-1;NE_SZCL
'NE_SZCL' true true false 6 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,NE_SZCL,-1,-1;GRIDVAL
'GRIDVAL' true true false 9 Long 0 9
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,GRIDVAL,-1,-1;NHD_REGION
'NHD_REGION' true true false 24 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,NHD_REGION,-1,-
1;AO_SIZECL 'AO_SIZECL' true true false 10 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,AO_SIZECL,-1,-1;Comment
'Comment' true true false 200 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,Comment,-1,-1;emID 'emID'
true true false 9 Long 0 9
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,emID,-1,-1;NIDID 'NIDID' true
true false 20 Text 0 0 ,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,NIDID,-
1,-1;STATE_ID 'STATE_ID' true true false 16 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,STATE_ID,-1,-1;STATE 'STATE'
true true false 2 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,STATE,-1,-1;DAM_NAME
'DAM_NAME' true true false 50 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,DAM_NAME,-1,-
1;DAM_NAME2 'DAM_NAME2' true true false 50 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,DAM_NAME2,-1,-
1;WATERBODY 'WATERBODY' true true false 100 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,WATERBODY,-1,-1;TYPE_ID
'TYPE_ID' true true false 16 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,TYPE_ID,-1,-1;P_CODE
'P_CODE' true true false 6 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,P_CODE,-1,-1;PrimPurp
'PrimPurp' true true false 1 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,PrimPurp,-1,-1;COND 'COND'
true true false 16 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,COND,-1,-1;deg_barr
'deg_barr' true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,deg_barr,-1,-1;PO_NAME
'PO_NAME' true true false 28 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,PO_NAME,-1,-1;AtFalls
'AtFalls' true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,AtFalls,-1,-1;RevuedPass
'RevuedPass' true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,RevuedPass,-1,-1;CTBasin
'CTBasin' true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,CTBasin,-1,-1;HistFishOc
'HistFishOc' true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,HistFishOc,-1,-1;AtlCoast
'AtlCoast' true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,AtlCoast,-1,-1;COND_1
'COND_1' true true false 16 Text 0 0

,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,COND_1,-1,-1;Source_1
'Source_1' true true false 50 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,Source_1,-1,-1;deg_barr_1
'deg_barr_1' true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,deg_barr_1,-1,-
1;PO_NAME_1 'PO_NAME_1' true true false 28 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,PO_NAME_1,-1,-1;AtFalls_1
'AtFalls_1' true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,AtFalls_1,-1,-1;RevuedPa_1
'RevuedPa_1' true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,RevuedPa_1,-1,-1;CTBasin_1
'CTBasin_1' true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,CTBasin_1,-1,-1;HistFish_1
'HistFish_1' true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,HistFish_1,-1,-1;AtlCoast_1
'AtlCoast_1' true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,AtlCoast_1,-1,-1;batSnapped
'batSnapped' true true false 1 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batSnapped,-1,-1;batLineID
'batLineID' true true false 9 Long 0 9
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batLineID,-1,-1;batRegion
'batRegion' true true false 25 Text 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batRegion,-1,-1;batSnapDis
'batSnapDis' true true false 9 Double 3 8
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batSnapDis,-1,-1;batDisAlng
'batDisAlng' true true false 17 Double 8 16
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batDisAlng,-1,-1;batDis2Mth
'batDis2Mth' true true false 17 Double 8 16
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batDis2Mth,-1,-1;batFuncUS
'batFuncUS' true true false 17 Double 8 16
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batFuncUS,-1,-1;batCountUS
'batCountUS' true true false 8 Long 0 8
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batCountUS,-1,-1;batLenUS
'batLenUS' true true false 17 Double 8 16
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batLenUS,-1,-1;batFuncDS
'batFuncDS' true true false 17 Double 8 16
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batFuncDS,-1,-1;batDis2M_1
'batDis2M_1' true true false 17 Double 8 16
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batDis2M_1,-1,-
1;batCountDS 'batCountDS' true true false 8 Long 0 8
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batCountDS,-1,-
1;batTotUSDS 'batTotUSDS' true true false 17 Double 8 16
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batTotUSDS, -1,-1;batAbs
'batAbs' true true false 17 Double 8 16
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batAbs,-1,-1;batRel 'batRel'
true true false 17 Double 8 16
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batRel,-1,-1;batDSDnsty
'batDSDnsty' true true false 17 Double 8 16

,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batDSDnsty,-1,-1;batUSDnsty
'batUSDnsty' true true false 17 Double 8 16
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batUSDnsty,-1,-1;batImpass
'batImpass' true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batImpass,-1,-1;batDSFalls
'batDSFalls' true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batDSFalls,-1,-1;batDSHydro
'batDSHydro' true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batDSHydro,-1,-
1;batUSNetID 'batUSNetID' true true false 8 Long 0 8
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batUSNetID,-1,-1;batDSNetID
'batDSNetID' true true false 8 Long 0 8
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,batDSNetID,-1,-
1;US_PerImp 'US_PerImp' true true false 19 Double 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,US_PerImp,-1,-1;usAg100
'usAg100' true true false 19 Double 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,usAg100,-1,-1;dsAg100
'dsAg100' true true false 19 Double 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,dsAg100,-1,-1;usNat100
'usNat100' true true false 19 Double 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,usNat100,-1,-1;dsNat100
'dsNat100' true true false 19 Double 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,dsNat100,-1,-1;usImp100
'usImp100' true true false 19 Double 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,usImp100,-1,-1;dsImp100
'dsImp100' true true false 19 Double 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,dslmp100,-1,-1;ConsLand
'ConsLand' true true false 4 Short 0 4
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,ConsLand,-1,-1;usCons100
'usCons100' true true false 19 Double 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,usCons100,-1,-1;dsCons100
'dsCons100' true true false 19 Double 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,dsCons100,-1,-1;usNatARA
'usNatARA' true true false 19 Double 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,usNatARA,-1,-1;dsNatARA
'dsNatARA' true true false 19 Double 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,dsNatARA,-1,-1;usAgARA
'usAgARA' true true false 19 Double 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,usAgARA,-1,-1;dsAgARA
'dsAgARA' true true false 19 Double 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,dsAgARA,-1,-1;usImpARA
'usImpARA' true true false 19 Double 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,usImpARA,-1,-1;dslmpARA
'dslmpARA' true true false 19 Double 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,dslmpARA,-1,-
1;usSmDamDen 'usSmDamDen' true true false 19 Double 0 0
,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,usSmDamDen,-1,-
1;dsSmDamDen 'dsSmDamDen' true true false 19 Double 0 0

,First,#,C:\\BAT\\Output\\RegionAnalysis6\\DamsFalls_Use1_Snapped.shp,dsSmDamDen,-1,-1;AREA 'AREA' true true false 12 Double 3 11

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\NatureServe\\summary_distribute_2008_11_03\\geo data\\huc_us_can_east_project.shp,AREA,-1,-1;PERIMETER 'PERIMETER' true true false 12 Double 3 11

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\NatureServe\\summary_distribute_2008_11_03\\geo data\\huc_us_can_east_project.shp,PERIMETER,-1,-1;HUCS00M020 'HUCS00M020' true true false 11 Double 0 11

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\NatureServe\\summary_distribute_2008_11_03\\geo data\\huc_us_can_east_project.shp,HUCS00M020,-1,-1;PLYTYPE 'PLYTYPE' true true false 1 Short 0 1

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\NatureServe\\summary_distribute_2008_11_03\\geo data\\huc_us_can_east_project.shp,PLYTYPE,-1,-1;HUC 'HUC' true true false 8 Long 0 8

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\NatureServe\\summary_distribute_2008_11_03\\geo data\\huc_us_can_east_project.shp,HUC,-1,-1;REG_NAME 'REG_NAME' true true false 50 Text 0 0

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\NatureServe\\summary_distribute_2008_11_03\\geo data\\huc_us_can_east_project.shp,REG_NAME,-1,-1;MAP_LABEL 'MAP_LABEL' true true false 6 Text 0 0

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\NatureServe\\summary_distribute_2008_11_03\\geo data\\huc_us_can_east_project.shp,MAP_LABEL,-1,-1;SUB_NAME 'SUB_NAME' true true false 51 Text 0 0

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\NatureServe\\summary_distribute_2008_11_03\\geo data\\huc_us_can_east_project.shp,SUB_NAME,-1,-1;ACC_NAME 'ACC_NAME' true true false 36 Text 0 0

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\NatureServe\\summary_distribute_2008_11_03\\geo data\\huc_us_can_east_project.shp,ACC_NAME,-1,-1;CAT_NAME 'CAT_NAME' true true false 60 Text 0 0

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\NatureServe\\summary_distribute_2008_11_03\\geo data\\huc_us_can_east_project.shp,CAT_NAME,-1,-1;HUC2 'HUC2' true true false 2 Short 0 2

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\NatureServe\\summary_distribute_2008_11_03\\geo data\\huc_us_can_east_project.shp,HUC2,-1,-1;HUC4 'HUC4' true true false 4 Short 0 4

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\NatureServe\\summary_distribute_2008_11_03\\geo data\\huc_us_can_east_project.shp,HUC4,-1,-1;HUC6 'HUC6' true true false 6 Long 0 6

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\NatureServe\\summary_distribute_2008_11_03\\geo data\\huc_us_can_east_project.shp,HUC6,-1,-1;REG 'REG' true true false 2 Short 0 2

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\NatureServe\\summary_distribute_2008_11_03\\geo data\\huc_us_can_east_project.shp,REG,-1,-1;SUB 'SUB' true true false 4 Short 0 4

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\NatureServe\\summary_distribute_2008_11_03\\geo data\\huc_us_can_east_project.shp,SUB,-1,-1;ACC 'ACC' true true false 6 Long 0 6

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\NatureServe\\summary_distribute_2008_11_03\\geo data\\huc_us_can_east_project.shp,ACC,-1,-1;CAT 'CAT' true true false 8 Long 0 8

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\NatureServe\\summary_distribute_2008_11_03\\geo data\\huc_us_can_east_project.shp,CAT,-1,-1;CAT_NUM 'CAT_NUM' true true false 8 Text 0 0

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\NatureServe\\summary_distribute_2008_11_03\\geo data\\huc_us_can_east_project.shp,CAT_NUM,-1,-1;HUC_S 'HUC_S' true true false 16 Text 0 0

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\NatureServe\\summary_distribute_2008_11_03\\geo data\\huc_us_can_east_project.shp,HUC_S,-1,-1;SOURCETHM 'SOURCETHM' true true false 16 Text 0 0

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\NatureServe\\summary_distribute_2008_11_03\\geo data\\huc_us_can_east_project.shp,SOURCETHM,-1,-1;HUC6ED 'HUC6ED' true true false 16 Text 0 0

,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\NatureServe\\summary_distribute_2008_11_03\\geo

```

data\\huc_us_can_east_project.shp,HUC6ED,-1,-1;one 'one' true true false 4 Short 0 4
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\NatureServe\\summary_distribute_2008_11_03\\geo
data\\huc_us_can_east_project.shp,one,-1,-1;NatSrvHUC8 'NatSrvHUC8' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\NatureServe\\summary_distribute_2008_11_03\\geo
data\\huc_us_can_east_project.shp,NatSrvHUC8,-1,-1, "INTERSECTS", "0 Meters", "")

# Process: Join Field...
gp.JoinField_management(Dams_snapped, "UNIQUE_ID", DamsFalls_Use1_snapped1_NatSrvHUC8_shp,
"UNIQUE_ID", "NatSrvHUC8")

# Process: Add Field...
gp.AddField_management(Dams_Snapped__15_, "NtvFshRich", "SHORT", "", "", "", "",
"NON_NULLABLE", "NON_REQUIRED", "")

# Process: Add Field (2)...
gp.AddField_management(Dams_snapped__2_, "FishHUC8", "SHORT", "", "", "", "", "NON_NULLABLE",
"NON_REQUIRED", "")

# Process: Add Field (3)...
gp.AddField_management(Dams_snapped__7_, "MussHUC8", "SHORT", "", "", "", "", "NON_NULLABLE",
"NON_REQUIRED", "")

# Process: Add Field (4)...
gp.AddField_management(Dams_snapped__9_, "CrayHUC8", "SHORT", "", "", "", "", "NON_NULLABLE",
"NON_REQUIRED", "")

# Process: Fish Richness Join Field...
gp.JoinField_management(Dams_snapped__6_, "NatSrvHUC8", fish_huc8_metrics_xtoc_dbf,
"LOCATION", "N_C")

# Process: Calculate Field...
gp.CalculateField_management(Dams_snapped__3_, "NtvFshRich", "[N_C]", "VB", "")

# Process: Delete Field...
gp.DeleteField_management(Dams_snapped__4_, "N_C")

# Process: Rare Fish Join Field...
gp.JoinField_management(Dams_Snapped__5_, "NatSrvHUC8", fish_huc8_metrics_xtoc_dbf,
"LOCATION", "NG123_C")

# Process: Calculate Field (2)...
gp.CalculateField_management(Dams_snapped__8_, "FishHUC8", "[NG123_C]", "VB", "")

# Process: Delete Field (2)...
gp.DeleteField_management(Dams_snapped__10_, "NG123_C")

# Process: Rare Mussel Join Field...

```

```
gp.JoinField_management(Dams_snapped__11_, "NatSrvHUC8", musselg123_huc8_metrics_dbf,
"Location", "NG123_C")
```

```
# Process: Calculate Field (3)...
```

```
gp.CalculateField_management(Output_Layer_Name__2_, "MussHUC8", "[NG123_C]", "VB", "")
```

```
# Process: Delete Field (3)...
```

```
gp.DeleteField_management(Dams_snapped__12_, "NG123_C")
```

```
# Process: Rare Crayfish Join Field...
```

```
gp.JoinField_management(Dams_snapped__13_, "NatSrvHUC8", crayg123_huc8_metrics_dbf,
"LOCATION", "NG123_C")
```

```
# Process: Calculate Field (4)...
```

```
gp.CalculateField_management(Output_Layer_Name__3_, "CrayHUC8", "[NG123_C]", "VB", "")
```

```
# Process: Delete Field (4)...
```

```
gp.DeleteField_management(Dams_snapped__14_, "NG123_C")
```

5.13 Eastern Brook Trout Joint Venture Data

```
# -----
# EBTJV.py
# Created on: Sun Aug 28 2011 01:02:30 PM
# (generated by ArcGIS/ModelBuilder)
# -----
```

```
# Import system modules
import sys, string, os, arcgisscripting
```

```
# Create the Geoprocessor object
gp = arcgisscripting.create()
```

```
# Load required toolboxes...
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Data Management Tools.tbx")
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Analysis Tools.tbx")
```

```
# Set the Geoprocessing environment...
gp.scratchWorkspace = "K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6"
```

```
# Local variables...
EBTJV_categlot_healthy_shp = "%scratchworkspace%\\EBTJV_categlot_healthy.shp"
Dams_Snapped_layer__5_ = "DamsFalls_Use1_Snapped_Layer"
DamsFalls_Use1_snapped1_Laye = "DamsFalls_Use1_Snapped_Layer"
Dams_Snapped_layer__4_ = "DamsFalls_Use1_Snapped_Layer"
EBTJV_m3_healthy_shp = "%scratchworkspace%\\EBTJV_m3_healthy.shp"
```



```
Dams_Snapped_layer__3_ = "DamsFalls_Use1_Snapped_Layer"  
Dams_Snapped_layer__6_ = "DamsFalls_Use1_Snapped_Layer"  
EBTJV_-_subwatersheds = "EBTJV - subwatersheds"  
Dams_Snapped_layer__2_ = "DamsFalls_Use1_Snapped_Layer"  
Dams_snapped__3_ = "DamsFalls_Use1_Snapped_Layer"  
Dams_Snapped_layer__8_ = "DamsFalls_Use1_Snapped_Layer"  
Dams_Snapped_layer__7_ = "DamsFalls_Use1_Snapped_Layer"  
Dams_Snapped_layer__11_ = "DamsFalls_Use1_Snapped_Layer"  
Dams_Snapped_layer__9_ = "DamsFalls_Use1_Snapped_Layer"  
Output_Layer_Name = "DamsFalls_Use1_Snapped_Layer"  
Dams_Snapped = "Dams_Snapped"  
DamsFalls_Use1_snapped1_Layer__2_ = "DamsFalls_Use1_Snapped_Layer"
```

```
# Process: Make Feature Layer...
```

```
gp.MakeFeatureLayer_management(Dams_Snapped, DamsFalls_Use1_snapped1_Layer, "", "",  
"Join_Count Join_Count VISIBLE NONE;Use Use VISIBLE NONE;UNIQUE_ID UNIQUE_ID VISIBLE  
NONE;OnNode OnNode VISIBLE NONE;UniqueNHD UniqueNHD VISIBLE NONE;COMID COMID VISIBLE  
NONE;GNIS_NAME GNIS_NAME VISIBLE NONE;NE_SZCL NE_SZCL VISIBLE NONE;GRIDVAL GRIDVAL  
VISIBLE NONE;NHD_REGION NHD_REGION VISIBLE NONE;AO_SIZECL AO_SIZECL VISIBLE  
NONE;Comment Comment VISIBLE NONE;emID emID VISIBLE NONE;NIDID NIDID VISIBLE  
NONE;STATE_ID STATE_ID VISIBLE NONE;STATE STATE VISIBLE NONE;DAM_NAME DAM_NAME VISIBLE  
NONE;DAM_NAME2 DAM_NAME2 VISIBLE NONE;WATERBODY WATERBODY VISIBLE NONE;TYPE_ID  
TYPE_ID VISIBLE NONE;P_CODE P_CODE VISIBLE NONE;PrimPurp PrimPurp VISIBLE NONE;COND COND  
VISIBLE NONE;deg_barr deg_barr VISIBLE NONE;PO_NAME PO_NAME VISIBLE NONE;AtFalls AtFalls  
VISIBLE NONE;RevuedPass RevuedPass VISIBLE NONE;CTBasin CTBasin VISIBLE NONE;HistFishOc  
HistFishOc VISIBLE NONE;AtlCoast AtlCoast VISIBLE NONE;COND_1 COND_1 VISIBLE NONE;Source_1  
Source_1 VISIBLE NONE;deg_barr_1 deg_barr_1 VISIBLE NONE;PO_NAME_1 PO_NAME_1 VISIBLE  
NONE;AtFalls_1 AtFalls_1 VISIBLE NONE;RevuedPa_1 RevuedPa_1 VISIBLE NONE;CTBasin_1 CTBasin_1  
VISIBLE NONE;HistFish_1 HistFish_1 VISIBLE NONE;AtlCoast_1 AtlCoast_1 VISIBLE NONE;batSnapped  
batSnapped VISIBLE NONE;batLineID batLineID VISIBLE NONE;batRegion batRegion VISIBLE  
NONE;batSnapDis batSnapDis VISIBLE NONE;batDisAlng batDisAlng VISIBLE NONE;batDis2Mth  
batDis2Mth VISIBLE NONE;batFuncUS batFuncUS VISIBLE NONE;batCountUS batCountUS VISIBLE  
NONE;batLenUS batLenUS VISIBLE NONE;batFuncDS batFuncDS VISIBLE NONE;batDis2M_1 batDis2M_1  
VISIBLE NONE;batCountDS batCountDS VISIBLE NONE;batTotUSDS batTotUSDS VISIBLE NONE;batAbs  
batAbs VISIBLE NONE;batRel batRel VISIBLE NONE;batDSDnsty batDSDnsty VISIBLE NONE;batUSDnsty  
batUSDnsty VISIBLE NONE;batImpass batImpass VISIBLE NONE;batDSFalls batDSFalls VISIBLE  
NONE;batDSHydro batDSHydro VISIBLE NONE;batUSNetID batUSNetID VISIBLE NONE;batDSNetID  
batDSNetID VISIBLE NONE;US_Perclmp US_Perclmp VISIBLE NONE;usAg100 usAg100 VISIBLE  
NONE;dsAg100 dsAg100 VISIBLE NONE;usNat100 usNat100 VISIBLE NONE;dsNat100 dsNat100 VISIBLE  
NONE;usImp100 usImp100 VISIBLE NONE;dsImp100 dsImp100 VISIBLE NONE;ConsLand ConsLand  
VISIBLE NONE;usCons100 usCons100 VISIBLE NONE;dsCons100 dsCons100 VISIBLE NONE;usNatARA  
usNatARA VISIBLE NONE;dsNatARA dsNatARA VISIBLE NONE;usAgARA usAgARA VISIBLE NONE;dsAgARA  
dsAgARA VISIBLE NONE;usImpARA usImpARA VISIBLE NONE;dsImpARA dsImpARA VISIBLE  
NONE;usSmDamDen usSmDamDen VISIBLE NONE;dsSmDamDen dsSmDamDen VISIBLE  
NONE;NatSrvHUC8 NatSrvHUC8 VISIBLE NONE;NtvFshRich NtvFshRich VISIBLE NONE;FishHUC8  
FishHUC8 VISIBLE NONE;MussHUC8 MussHUC8 VISIBLE NONE;CrayHUC8 CrayHUC8 VISIBLE NONE")
```

```
# Process: Add Field (2)...
```

```

gp.AddField_management(DamsFalls_Use1_snapped1_Laye, "EBTJVhlthy", "SHORT", "", "", "", "", "NON_NULLABLE", "NON_REQUIRED", "")

# Process: Add Field...
gp.AddField_management(Dams_snapped__3_, "EBTsurhlth", "SHORT", "", "", "", "", "NON_NULLABLE", "NON_REQUIRED", "")

# Process: Add Field (3)...
gp.AddField_management(Dams_Snapped_layer__2_, "EBTmodhlth", "SHORT", "", "", "", "", "NON_NULLABLE", "NON_REQUIRED", "")

# Process: Select - Modeled Healthy...
gp.Select_analysis(EBTJV_-_subwatersheds, EBTJV_m3_healthy_shp, "\"M3_CATEGRY\" in ( '1p', '2p') AND \"CATEG_LOT\" in ( ' ', '1', '1.1')")

# Process: Select Layer By Location (2)...
gp.SelectLayerByLocation_management(Dams_Snapped_layer__8_, "INTERSECT", EBTJV_m3_healthy_shp, "", "NEW_SELECTION")

# Process: Calculate Field (2)...
gp.CalculateField_management(Dams_Snapped_layer__3_, "EBTmodhlth", "2", "VB", "")

# Process: Select - Survey Healthy...
gp.Select_analysis(EBTJV_-_subwatersheds, EBTJV_categlot_healthy_shp, "\"CATEG_LOT\" in ( '4', '5', '7')")

# Process: Select Layer By Location...
gp.SelectLayerByLocation_management(Dams_Snapped_layer__6_, "INTERSECT", EBTJV_categlot_healthy_shp, "", "NEW_SELECTION")

# Process: Calculate Field...
gp.CalculateField_management(Dams_Snapped_layer__4_, "EBTsurhlth", "1", "VB", "")

# Process: Select Layer By Attribute (2)...
gp.SelectLayerByAttribute_management(Dams_Snapped_layer__5_, "NEW_SELECTION", "\"EBTmodhlth\" =2")

# Process: Calculate Field (3)...
gp.CalculateField_management(Output_Layer_Name, "EBTJVhlthy", "[EBTmodhlth]", "VB", "")

# Process: Select Layer By Attribute...
gp.SelectLayerByAttribute_management(Dams_Snapped_layer__7_, "NEW_SELECTION", "\"EBTsurhlth\" =1")

# Process: Calculate Field (4)...
gp.CalculateField_management(Dams_Snapped_layer__9_, "EBTJVhlthy", "[EBTsurhlth]", "VB", "")

# Process: Delete Field...

```

```
gp.DeleteField_management(Dams_Snapped_layer__11_, "EBTsurhlth;EBTmodhlth")
```

5.14 Miles Gained Cool and Cold Water

```
# -----  
# Miles Gained Cool and Cold Water.py  
# Created on: Sun Aug 28 2011 01:03:24 PM  
# (generated by ArcGIS/ModelBuilder)  
# -----  
  
# Import system modules  
import sys, string, os, arcgisscripting  
  
# Create the Geoprocessor object  
gp = arcgisscripting.create()  
  
# Set the necessary product code  
gp.SetProduct("ArcInfo")  
  
# Load required toolboxes...  
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Data Management Tools.tbx")  
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Analysis Tools.tbx")  
  
# Set the Geoprocessing environment...  
gp.scratchWorkspace = "K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6"  
  
# Local variables...  
Dams_snapped = "Dams_Snapped"  
flowlines_nahcs_rev2010_10_dbf =  
"K:\\NE_Aquatic_Connectivity\\GIS_Data\\Hydrography\\NEAFWA_StreamClassification\\flowlines_nah  
cs_rev2010_10.dbf"  
FunctionalRiverNetwork = "FunctionalRiverNetwork"  
FunctionalRiverNetwork__4_ = "FunctionalRiverNetwork"  
FunctionalRiverNetwork_Select_shp = "%scratchworkspace%\\FunctionalRiverNetwork_SelectCold.shp"  
FunctionalRiverNetwork_SelectCool_shp =  
"%scratchworkspace%\\FunctionalRiverNetwork_SelectCool.shp"  
FunctionalRiverNetwork_SelectColdSumm_dbf =  
"%scratchworkspace%\\FunctionalRiverNetwork_SelectColdSumm.dbf"  
FunctionalRiverNetwork__2_ = "FunctionalRiverNetwork"  
FunctionalRiverNetwork_SelectCoolSumm_dbf =  
"%scratchworkspace%\\FunctionalRiverNetwork_SelectCoolSumm.dbf"  
Dams_snapped__6_ = "Dams_Snapped"  
Dams_snapped__12_ = "Dams_Snapped"  
Dams_snapped__2_ = "Dams_Snapped"  
Dams_snapped__5_ = "Dams_Snapped"  
Dams_snapped__4_ = "Dams_Snapped"
```

```
Dams_snapped__3_ = "Dams_Snapped"  
Dams_snapped__7_ = "Dams_Snapped"  
Dams_snapped__8_ = "Dams_Snapped"  
Dams_snapped__9_ = "Dams_Snapped"  
Dams_snapped__10_ = "Dams_Snapped"  
Dams_snapped__22_ = "Dams_Snapped"  
Dams_snapped__14_ = "Dams_Snapped"  
Dams_snapped__17_ = "Dams_Snapped"  
Dams_snapped__16_ = "Dams_Snapped"  
Dams_snapped__13_ = "Dams_Snapped"  
Dams_snapped__15_ = "Dams_Snapped"  
Dams_snapped__18_ = "Dams_Snapped"  
Dams_snapped__19_ = "Dams_Snapped"  
Dams_snapped__21_ = "Dams_Snapped"  
Dams_snapped__20_ = "Dams_Snapped"  
FunctionalRiverNetwork__3_ = "FunctionalRiverNetwork"
```

```
# Process: Add Field (2)...
```

```
gp.AddField_management(Dams_snapped, "usMiCold", "DOUBLE", "", "", "", "", "NON_NULLABLE",  
"NON_REQUIRED", "")
```

```
# Process: Add Field (3)...
```

```
gp.AddField_management(Dams_snapped__2_, "dsMiCold", "DOUBLE", "", "", "", "", "NON_NULLABLE",  
"NON_REQUIRED", "")
```

```
# Process: Add Field (4)...
```

```
gp.AddField_management(Dams_snapped__5_, "usMiCool", "DOUBLE", "", "", "", "", "NON_NULLABLE",  
"NON_REQUIRED", "")
```

```
# Process: Add Field (5)...
```

```
gp.AddField_management(Dams_snapped__4_, "dsMiCool", "DOUBLE", "", "", "", "", "NON_NULLABLE",  
"NON_REQUIRED", "")
```

```
# Process: Add Field...
```

```
gp.AddField_management(FunctionalRiverNetwork, "Miles", "DOUBLE", "", "", "", "", "NON_NULLABLE",  
"NON_REQUIRED", "")
```

```
# Process: Calculate Field (7)...
```

```
gp.CalculateField_management(FunctionalRiverNetwork__2_, "Miles", "!SHAPE.LENGTH@MILES!",  
"PYTHON_9.3", "")
```

```
# Process: Join Field...
```

```
gp.JoinField_management(FunctionalRiverNetwork__3_, "COMID", flowlines_nahcs_rev2010_10_dbf,  
"COMID", "D_TEMPCL3")
```

```
# Process: Select - Cold...
```

```
gp.Select_analysis(FunctionalRiverNetwork__4_, FunctionalRiverNetwork_Selec_shp, "\"D_TEMPCL3\" =  
'Cold'")
```

```

# Process: Summary Statistics...
gp.Statistics_analysis(FunctionalRiverNetwork_Select_shp,
FunctionalRiverNetwork_SelectColdSumm_dbf, "Miles SUM", "batNetID")

# Process: US Join Field (2)...
gp.JoinField_management(Dams_snapped__3_, "batUSNetID",
FunctionalRiverNetwork_SelectColdSumm_dbf, "batNetID", "SUM_Miles")

# Process: Calculate Field (2)...
gp.CalculateField_management(Dams_snapped__6_, "usMiCold", "[SUM_Miles]", "VB", "")

# Process: Delete Field...
gp.DeleteField_management(Dams_snapped__7_, "SUM_Miles")

# Process: DS Join Field (2)...
gp.JoinField_management(Dams_snapped__8_, "batDSNetID",
FunctionalRiverNetwork_SelectColdSumm_dbf, "batNetID", "SUM_Miles")

# Process: Calculate Field (3)...
gp.CalculateField_management(Dams_snapped__9_, "dsMiCold", "[SUM_Miles]", "VB", "")

# Process: Delete Field (2)...
gp.DeleteField_management(Dams_snapped__10_, "SUM_Miles")

# Process: Select - Cool...
gp.Select_analysis(FunctionalRiverNetwork__4_, FunctionalRiverNetwork_SelectCool_shp,
"\D_TEMPCL3\" = 'Transitional Cool'")

# Process: Summary Statistics (2)...
gp.Statistics_analysis(FunctionalRiverNetwork_SelectCool_shp,
FunctionalRiverNetwork_SelectCoolSumm_dbf, "Miles SUM", "batNetID")

# Process: US Join Field (3)...
gp.JoinField_management(Dams_snapped__22_, "batUSNetID",
FunctionalRiverNetwork_SelectCoolSumm_dbf, "batNetID", "SUM_Miles")

# Process: Calculate Field (5)...
gp.CalculateField_management(Dams_snapped__12_, "usMiCool", "[SUM_Miles]", "VB", "")

# Process: Delete Field (3)...
gp.DeleteField_management(Dams_snapped__13_, "SUM_Miles")

# Process: DS Join Field (3)...
gp.JoinField_management(Dams_snapped__14_, "batDSNetID",
FunctionalRiverNetwork_SelectCoolSumm_dbf, "batNetID", "SUM_Miles")

# Process: Calculate Field (4)...

```

```

gp.CalculateField_management(Dams_snapped__15_, "dsMiCool", "[SUM_Miles]", "VB", "")

# Process: Delete Field (4)...
gp.DeleteField_management(Dams_snapped__16_, "SUM_Miles")

# Process: Add Field (6)...
gp.AddField_management(Dams_snapped__17_, "totMiCold", "DOUBLE", "", "", "", "",
"NON_NULLABLE", "NON_REQUIRED", "")

# Process: Add Field (7)...
gp.AddField_management(Dams_snapped__18_, "totMiCC", "DOUBLE", "", "", "", "", "NON_NULLABLE",
"NON_REQUIRED", "")

# Process: Calculate Field (6)...
gp.CalculateField_management(Dams_snapped__19_, "totMiCold", "[usMiCold] + [dsMiCold]", "VB", "")

# Process: Calculate Field...
gp.CalculateField_management(Dams_snapped__20_, "totMiCC", "[usMiCold] + [dsMiCold] +
[usMiCool] + [dsMiCool]", "VB", "")

```

5.15 Size Class Gains

```

# -----
# Size Class Gains.py
# Created on: Sun Aug 28 2011 01:03:43 PM
# (generated by ArcGIS/ModelBuilder)
# -----

# Import system modules
import sys, string, os, arcgisscripting

# Create the Geoprocessor object
gp = arcgisscripting.create()

# Set the necessary product code
gp.SetProduct("ArcInfo")

# Load required toolboxes...
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Data Management Tools.tbx")
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Analysis Tools.tbx")

# Set the Geoprocessing environment...
gp.scratchWorkspace = "K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6"

# Local variables...
Dams_snapped = "Dams_Snapped"

```

```
FunctionalRiverNetwork_batNetID_SizeClassStats_dbf =
"%scratchworkspace%\\FunctionalRiverNetwork_batNetID_SizeClassStats.dbf"
FunctionalRiverNetwork = "FunctionalRiverNetwork"
Dams_snapped__2_ = "Dams_Snapped"
Dams_snapped__3_ = "Dams_Snapped"
Dams_snapped__4_ = "Dams_Snapped"
Dams_snapped__5_ = "Dams_Snapped"
Dams_snapped__6_ = "Dams_Snapped"
Dams_snapped__7_ = "Dams_Snapped"
Dams_snapped__8_ = "Dams_Snapped"
Dams_snapped__9_ = "Dams_Snapped"
Dams_snapped__10_ = "Dams_Snapped"
Dams_snapped__11_ = "Dams_Snapped"
Dams_snapped__12_ = "Dams_Snapped"
Dams_snapped__13_ = "Dams_Snapped"
Dams_snapped__14_ = "Dams_Snapped"
Dams_snapped__15_ = "Dams_Snapped"
batNet_1a = "batNet_1a"
batNet_1b = "batNet_1b"
batNet_2 = "batNet_2"
batNet_3a = "batNet_3a"
batNet_3b = "batNet_3b"
batNet_4 = "batNet_4"
batNet_5 = "batNet_5"
Dams_snapped__16_ = "Dams_Snapped"
Dams_snapped__22_ = "Dams_Snapped"
Dams_snapped__28_ = "Dams_Snapped"
Dams_snapped__34_ = "Dams_Snapped"
Dams_snapped__40_ = "Dams_Snapped"
Dams_snapped__46_ = "Dams_Snapped"
Dams_snapped__52_ = "Dams_Snapped"
Dams_snapped__20_ = "Dams_Snapped"
Dams_snapped__25_ = "Dams_Snapped"
Dams_snapped__31_ = "Dams_Snapped"
Dams_snapped__37_ = "Dams_Snapped"
Dams_snapped__43_ = "Dams_Snapped"
Dams_snapped__49_ = "Dams_Snapped"
Dams_snapped__55_ = "Dams_Snapped"
Dams_snapped__17_ = "Dams_Snapped"
Dams_snapped__23_ = "Dams_Snapped"
Dams_snapped__29_ = "Dams_Snapped"
Dams_snapped__36_ = "Dams_Snapped"
Dams_snapped__41_ = "Dams_Snapped"
Dams_snapped__47_ = "Dams_Snapped"
Dams_snapped__53_ = "Dams_Snapped"
Dams_snapped__58_ = "Dams_Snapped"
Dams_snapped__18_ = "Dams_Snapped"
Dams_snapped__24_ = "Dams_Snapped"
```

```
Dams_snapped__30_ = "Dams_Snapped"  
Dams_snapped__35_ = "Dams_Snapped"  
Dams_snapped__42_ = "Dams_Snapped"  
Dams_snapped__48_ = "Dams_Snapped"  
Dams_snapped__19_ = "Dams_Snapped"  
Dams_snapped__26_ = "Dams_Snapped"  
Dams_snapped__32_ = "Dams_Snapped"  
Dams_snapped__38_ = "Dams_Snapped"  
Dams_snapped__44_ = "Dams_Snapped"  
Dams_snapped__50_ = "Dams_Snapped"  
Dams_snapped__56_ = "Dams_Snapped"  
Dams_snapped__54_ = "Dams_Snapped"  
Dams_snapped__21_ = "Dams_Snapped"  
Dams_snapped__27_ = "Dams_Snapped"  
Dams_snapped__33_ = "Dams_Snapped"  
Dams_snapped__39_ = "Dams_Snapped"  
Dams_snapped__45_ = "Dams_Snapped"  
Dams_snapped__51_ = "Dams_Snapped"  
Dams_Snapped__59_ = "Dams_Snapped"  
SizeClassGainCalcs_region_join_dbf = "%scratchworkspace%\\SizeClassGainCalcs_region_join.dbf"
```

```
# Process: Add Field...
```

```
gp.AddField_management(Dams_snapped, "usMiles1a", "DOUBLE", "", "", "", "", "NON_NULLABLE",  
"NON_REQUIRED", "")
```

```
# Process: Add Field (2)...
```

```
gp.AddField_management(Dams_snapped__2_, "usMiles1b", "DOUBLE", "", "", "", "",  
"NON_NULLABLE", "NON_REQUIRED", "")
```

```
# Process: Add Field (3)...
```

```
gp.AddField_management(Dams_snapped__3_, "usMiles2", "DOUBLE", "", "", "", "", "NON_NULLABLE",  
"NON_REQUIRED", "")
```

```
# Process: Add Field (4)...
```

```
gp.AddField_management(Dams_snapped__4_, "usMiles3a", "DOUBLE", "", "", "", "",  
"NON_NULLABLE", "NON_REQUIRED", "")
```

```
# Process: Add Field (5)...
```

```
gp.AddField_management(Dams_snapped__5_, "usMiles3b", "DOUBLE", "", "", "", "",  
"NON_NULLABLE", "NON_REQUIRED", "")
```

```
# Process: Add Field (6)...
```

```
gp.AddField_management(Dams_snapped__6_, "usMiles4", "DOUBLE", "", "", "", "", "NON_NULLABLE",  
"NON_REQUIRED", "")
```

```
# Process: Add Field (7)...
```

```
gp.AddField_management(Dams_snapped__7_, "usMiles5", "DOUBLE", "", "", "", "", "NON_NULLABLE",  
"NON_REQUIRED", "")
```



```

# Process: Add Field (8)...
gp.AddField_management(Dams_snapped__8_, "dsMiles1a", "DOUBLE", "", "", "", "",
"NON_NULLABLE", "NON_REQUIRED", "")

# Process: Add Field (9)...
gp.AddField_management(Dams_snapped__9_, "dsMiles1b", "DOUBLE", "", "", "", "",
"NON_NULLABLE", "NON_REQUIRED", "")

# Process: Add Field (10)...
gp.AddField_management(Dams_snapped__10_, "dsMiles2", "DOUBLE", "", "", "", "",
"NON_NULLABLE", "NON_REQUIRED", "")

# Process: Add Field (11)...
gp.AddField_management(Dams_snapped__11_, "dsMiles3a", "DOUBLE", "", "", "", "",
"NON_NULLABLE", "NON_REQUIRED", "")

# Process: Add Field (12)...
gp.AddField_management(Dams_snapped__12_, "dsMiles3b", "DOUBLE", "", "", "", "",
"NON_NULLABLE", "NON_REQUIRED", "")

# Process: Add Field (13)...
gp.AddField_management(Dams_snapped__13_, "dsMiles4", "DOUBLE", "", "", "", "",
"NON_NULLABLE", "NON_REQUIRED", "")

# Process: Add Field (14)...
gp.AddField_management(Dams_snapped__14_, "dsMiles5", "DOUBLE", "", "", "", "",
"NON_NULLABLE", "NON_REQUIRED", "")

# Process: Summary Statistics...
gp.Statistics_analysis(FunctionalRiverNetwork, FunctionalRiverNetwork_batNetID_SizeClassStats_dbf,
"Miles SUM", "NE_SZCL;batNetID")

# Process: Make Table View...
gp.MakeTableView_management(FunctionalRiverNetwork_batNetID_SizeClassStats_dbf, batNet_1a,
"\NE_SZCL" = '1a', "", "NE_SZCL NE_SZCL VISIBLE NONE;batNetID batNetID VISIBLE NONE;FREQUENCY
FREQUENCY VISIBLE NONE;SUM_Miles SUM_Miles VISIBLE NONE")

# Process: Join Field...
gp.JoinField_management(Dams_snapped__15_, "batUSNetID", batNet_1a, "batNetID", "SUM_Miles")

# Process: Calculate Field...
gp.CalculateField_management(Dams_snapped__16_, "usMiles1a", "[SUM_Miles]", "VB", "")

# Process: Delete Field...
gp.DeleteField_management(Dams_snapped__17_, "SUM_Miles")

# Process: Join Field (8)...

```

```
gp.JoinField_management(Dams_snapped__58_, "batDSNetID", batNet_1a, "batNetID", "SUM_Miles")
```

```
# Process: Calculate Field (8)...
```

```
gp.CalculateField_management(Dams_snapped__20_, "dsMiles1a", "[SUM_Miles]", "VB", "")
```

```
# Process: Delete Field (8)...
```

```
gp.DeleteField_management(Dams_snapped__19_, "SUM_Miles")
```

```
# Process: Make Table View (2)...
```

```
gp.MakeTableView_management(FunctionalRiverNetwork_batNetID_SizeClassStats_dbf, batNet_1b,
"\NE_SZCL" = '1b', "", "NE_SZCL NE_SZCL VISIBLE NONE;batNetID batNetID VISIBLE
NONE;FREQUENCY FREQUENCY VISIBLE NONE;SUM_Miles SUM_Miles VISIBLE NONE")
```

```
# Process: Join Field (2)...
```

```
gp.JoinField_management(Dams_snapped__54_, "batUSNetID", batNet_1b, "batNetID", "SUM_Miles")
```

```
# Process: Calculate Field (2)...
```

```
gp.CalculateField_management(Dams_snapped__22_, "usMiles1b", "[SUM_Miles]", "VB", "")
```

```
# Process: Delete Field (2)...
```

```
gp.DeleteField_management(Dams_snapped__23_, "SUM_Miles")
```

```
# Process: Join Field (9)...
```

```
gp.JoinField_management(Dams_snapped__18_, "batDSNetID", batNet_1b, "batNetID", "SUM_Miles")
```

```
# Process: Calculate Field (9)...
```

```
gp.CalculateField_management(Dams_snapped__25_, "dsMiles1b", "[SUM_Miles]", "VB", "")
```

```
# Process: Delete Field (9)...
```

```
gp.DeleteField_management(Dams_snapped__26_, "SUM_Miles")
```

```
# Process: Make Table View (3)...
```

```
gp.MakeTableView_management(FunctionalRiverNetwork_batNetID_SizeClassStats_dbf, batNet_2,
"\NE_SZCL" = '2_', "", "NE_SZCL NE_SZCL VISIBLE NONE;batNetID batNetID VISIBLE NONE;FREQUENCY
FREQUENCY VISIBLE NONE;SUM_Miles SUM_Miles VISIBLE NONE")
```

```
# Process: Join Field (3)...
```

```
gp.JoinField_management(Dams_snapped__21_, "batUSNetID", batNet_2, "batNetID", "SUM_Miles")
```

```
# Process: Calculate Field (3)...
```

```
gp.CalculateField_management(Dams_snapped__28_, "usMiles2", "[SUM_Miles]", "VB", "")
```

```
# Process: Delete Field (3)...
```

```
gp.DeleteField_management(Dams_snapped__29_, "SUM_Miles")
```

```
# Process: Join Field (10)...
```

```
gp.JoinField_management(Dams_snapped__24_, "batDSNetID", batNet_2, "batNetID", "SUM_Miles")
```

```

# Process: Calculate Field (10)...
gp.CalculateField_management(Dams_snapped__31_, "dsMiles2", "[SUM_Miles]", "VB", "")

# Process: Delete Field (10)...
gp.DeleteField_management(Dams_snapped__32_, "SUM_Miles")

# Process: Make Table View (4)...
gp.MakeTableView_management(FunctionalRiverNetwork_batNetID_SizeClassStats_dbf, batNet_3a,
"\NE_SZCL" = '3a', "", "NE_SZCL NE_SZCL VISIBLE NONE;batNetID batNetID VISIBLE NONE;FREQUENCY
FREQUENCY VISIBLE NONE;SUM_Miles SUM_Miles VISIBLE NONE")

# Process: Join Field (4)...
gp.JoinField_management(Dams_snapped__27_, "batUSNetID", batNet_3a, "batNetID", "SUM_Miles")

# Process: Calculate Field (4)...
gp.CalculateField_management(Dams_snapped__34_, "usMiles3a", "[SUM_Miles]", "VB", "")

# Process: Delete Field (4)...
gp.DeleteField_management(Dams_snapped__36_, "SUM_Miles")

# Process: Join Field (11)...
gp.JoinField_management(Dams_snapped__30_, "batDSNetID", batNet_3a, "batNetID", "SUM_Miles")

# Process: Calculate Field (11)...
gp.CalculateField_management(Dams_snapped__37_, "dsMiles3a", "[SUM_Miles]", "VB", "")

# Process: Delete Field (11)...
gp.DeleteField_management(Dams_snapped__38_, "SUM_Miles")

# Process: Make Table View (5)...
gp.MakeTableView_management(FunctionalRiverNetwork_batNetID_SizeClassStats_dbf, batNet_3b,
"\NE_SZCL" = '3b', "", "NE_SZCL NE_SZCL VISIBLE NONE;batNetID batNetID VISIBLE
NONE;FREQUENCY FREQUENCY VISIBLE NONE;SUM_Miles SUM_Miles VISIBLE NONE")

# Process: Join Field (5)...
gp.JoinField_management(Dams_snapped__33_, "batUSNetID", batNet_3b, "batNetID", "SUM_Miles")

# Process: Calculate Field (5)...
gp.CalculateField_management(Dams_snapped__40_, "usMiles3b", "[SUM_Miles]", "VB", "")

# Process: Delete Field (5)...
gp.DeleteField_management(Dams_snapped__41_, "SUM_Miles")

# Process: Join Field (12)...
gp.JoinField_management(Dams_snapped__35_, "batDSNetID", batNet_3b, "batNetID", "SUM_Miles")

# Process: Calculate Field (12)...
gp.CalculateField_management(Dams_snapped__43_, "dsMiles3b", "[SUM_Miles]", "VB", "")

```

```

# Process: Delete Field (12)...
gp.DeleteField_management(Dams_snapped__44_, "SUM_Miles")

# Process: Make Table View (6)...
gp.MakeTableView_management(FunctionalRiverNetwork_batNetID_SizeClassStats_dbf, batNet_4,
"\NE_SZCL" = '4_', "", "NE_SZCL NE_SZCL VISIBLE NONE;batNetID batNetID VISIBLE NONE;FREQUENCY
FREQUENCY VISIBLE NONE;SUM_Miles SUM_Miles VISIBLE NONE")

# Process: Join Field (6)...
gp.JoinField_management(Dams_snapped__39_, "batUSNetID", batNet_4, "batNetID", "SUM_Miles")

# Process: Calculate Field (6)...
gp.CalculateField_management(Dams_snapped__46_, "usMiles4", "[SUM_Miles]", "VB", "")

# Process: Delete Field (6)...
gp.DeleteField_management(Dams_snapped__47_, "SUM_Miles")

# Process: Join Field (13)...
gp.JoinField_management(Dams_snapped__42_, "batDSNetID", batNet_4, "batNetID", "SUM_Miles")

# Process: Calculate Field (13)...
gp.CalculateField_management(Dams_snapped__49_, "dsMiles4", "[SUM_Miles]", "VB", "")

# Process: Delete Field (13)...
gp.DeleteField_management(Dams_snapped__50_, "SUM_Miles")

# Process: Make Table View (7)...
gp.MakeTableView_management(FunctionalRiverNetwork_batNetID_SizeClassStats_dbf, batNet_5,
"\NE_SZCL" = '5_', "", "NE_SZCL NE_SZCL VISIBLE NONE;batNetID batNetID VISIBLE NONE;FREQUENCY
FREQUENCY VISIBLE NONE;SUM_Miles SUM_Miles VISIBLE NONE")

# Process: Join Field (7)...
gp.JoinField_management(Dams_snapped__45_, "batUSNetID", batNet_5, "batNetID", "SUM_Miles")

# Process: Calculate Field (7)...
gp.CalculateField_management(Dams_snapped__52_, "usMiles5", "[SUM_Miles]", "VB", "")

# Process: Delete Field (7)...
gp.DeleteField_management(Dams_snapped__53_, "SUM_Miles")

# Process: Join Field (14)...
gp.JoinField_management(Dams_snapped__48_, "batDSNetID", batNet_5, "batNetID", "SUM_Miles")

# Process: Calculate Field (14)...
gp.CalculateField_management(Dams_snapped__55_, "dsMiles5", "[SUM_Miles]", "VB", "")

# Process: Delete Field (14)...

```

```

gp.DeleteField_management(Dams_snapped__56_, "SUM_Miles")

# Process: Join Field (15)...
gp.JoinField_management(Dams_snapped__51_, "UNIQUE_ID", SizeClassGainCalcs_region_join_dbf,
"UNIQUE_ID",
"TotNumSzCl;usNumSzCl;usSzClGain;TotMiles1a;TotMiles1b;TotMiles2;TotMiles3a;TotMiles3b;TotMiles
4;TotMiles5;MiNewSzCl;RelGainMi")

```

5.16 Road and RR Stream Crossing Density

```

# -----
# Road and RR Stream Crossing Density.py
# Created on: Sun Aug 28 2011 01:04:06 PM
# (generated by ArcGIS/ModelBuilder)
# -----

# Import system modules
import sys, string, os, arcgisscripting

# Create the Geoprocessor object
gp = arcgisscripting.create()

# Set the necessary product code
gp.SetProduct("ArcInfo")

# Load required toolboxes...
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Data Management Tools.tbx")
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Analysis Tools.tbx")

# Set the Geoprocessing environment...
gp.scratchWorkspace = "K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6"

# Local variables...
batnet_alloc_watershed = "batnet_alloc_watershed"
batNet_Alloc_Watershed_rdr_gte1b_xing_shp__2_ =
"%scratchworkspace%\\batNet_Alloc_Watershed_rdr_.dbf"
batNet_Alloc_Watershed_rdr__dbf__2_ = "%scratchworkspace%\\batNet_Alloc_Watershed_rdr_.dbf"
batNet_Alloc_Watershed_rdr__dbf = "%scratchworkspace%\\batNet_Alloc_Watershed_rdr_.dbf"
Dams_snapped = "Dams_Snapped"
Dams_snapped__2_ = "Dams_Snapped"
Dams_snapped__10_ = "Dams_Snapped"
Dams_snapped__4_ = "Dams_Snapped"
Dams_snapped__7_ = "Dams_Snapped"
Dams_snapped__5_ = "Dams_Snapped"
Dams_snapped__8_ = "Dams_Snapped"
Dams_Snapped__3_ = "Dams_Snapped"

```

```
Dams_snapped__6_ = "Dams_Snapped"  
NHD_1a3_Connectivity_xrd18rr_1a1b = "NHD_1a3_Connectivity_xrd18rr_1a1b"  
batNet_Alloc_Watershed_rdr_gte1b_xing_shp__3_ =  
"%scratchworkspace%\batNet_Alloc_Watershed_rdr_gte1b_xing.shp"
```

```
# Process: Add Field (2)...
```

```
gp.AddField_management(Dams_snapped, "usXingDen", "DOUBLE", "", "", "", "", "NON_NULLABLE",  
"NON_REQUIRED", "")
```

```
# Process: Add Field (3)...
```

```
gp.AddField_management(Dams_snapped__2_, "dsXingDen", "DOUBLE", "", "", "", "",  
"NON_NULLABLE", "NON_REQUIRED", "")
```

```
# Process: Spatial Join...
```

```
gp.SpatialJoin_analysis(batnet_alloc_watershed, NHD_1a3_Connectivity_xrd18rr_1a1b,  
batNet_Alloc_Watershed_rdr_gte1b_xing_shp__3_, "JOIN_ONE_TO_ONE", "KEEP_ALL", "ID 'ID' true  
true false 10 Double 0 10  
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\batnet_alloc_watershed.shp,ID,-1,-  
1;GRIDCODE 'GRIDCODE' true true false 10 Double 0 10  
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\batnet_alloc_watershed.shp,GRIDC  
ODE,-1,-1;batNetID 'batNetID' true true false 9 Long 0 9  
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\batnet_alloc_watershed.shp,batNetI  
D,-1,-1;AreaSqKm 'AreaSqKm' true true false 19 Double 0 0  
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\batnet_alloc_watershed.shp,AreaSq  
Km,-1,-1;FID_mrg_rd 'FID_mrg_rd' true true false 9 Long 0 9  
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,FID_mrg_rd,-1,-  
1;OBJECTID_1 'OBJECTID_1' true true false 10 Double 0 10  
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,OBJECTID_1,-1,-  
1;OBJECTID 'OBJECTID' true true false 9 Long 0 9  
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,OBJECTID,-1,-1;PREFIX  
'PREFIX' true true false 2 Text 0 0  
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,PREFIX,-1,-1;PRETYPE  
'PRETYPE' true true false 20 Text 0 0  
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,PRETYPE,-1,-1;NAME  
'NAME' true true false 40 Text 0 0  
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,NAME,-1,-1;TYPE 'TYPE'  
true true false 20 Text 0 0  
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,TYPE,-1,-1;SUFFIX  
'SUFFIX' true true false 2 Text 0 0  
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,SUFFIX,-1,-1;SHIELD  
'SHIELD' true true false 1 Text 0 0  
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,SHIELD,-1,-  
1;HWY_NUM 'HWY_NUM' true true false 5 Text 0 0  
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,HWY_NUM,-1,-1;ACC  
'ACC' true true false 1 Text 0 0  
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,ACC,-1,-1;FCC 'FCC' true  
true false 3 Text 0 0  
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,FCC,-1,-1;CARTO
```

'CARTO' true true false 10 Double 0 10
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,CARTO,-1,-1;COUNTRY
'COUNTRY' true true false 3 Text 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,COUNTRY,-1,-
1;STATE_ABBR 'STATE_ABBR' true true false 2 Text 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,STATE_ABBR,-1,-
1;STATE 'STATE' true true false 40 Text 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,STATE,-1,-1;SHAPE_LEN
'SHAPE_LEN' true true false 19 Double 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,SHAPE_LEN,-1,-
1;SUMTYPE 'SUMTYPE' true true false 50 Text 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,SUMTYPE,-1,-
1;sourceid 'sourceid' true true false 9 Long 0 9
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,sourceid,-1,-1;CLASS
'CLASS' true true false 1 Text 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,CLASS,-1,-1;priority
'priority' true true false 4 Short 0 4
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,priority,-1,-
1;FID_NHD_1a 'FID_NHD_1a' true true false 9 Long 0 9
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,FID_NHD_1a,-1,-
1;FNODE_ 'FNODE_' true true false 9 Long 0 9
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,FNODE_,-1,-1;TNODE_
'TNODE_' true true false 9 Long 0 9
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,TNODE_,-1,-1;LENGTH
'LENGTH' true true false 19 Double 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,LENGTH,-1,-1;UniqueID
'UniqueID' true true false 9 Long 0 9
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,UniqueID,-1,-1;COMID
'COMID' true true false 9 Long 0 9
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,COMID,-1,-1;FDATE
'FDATE' true true false 8 Date 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,FDATE,-1,-
1;RESOLUTION 'RESOLUTION' true true false 7 Text 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,RESOLUTION,-1,-
1;GNIS_ID 'GNIS_ID' true true false 10 Text 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,GNIS_ID,-1,-
1;GNIS_NAME 'GNIS_NAME' true true false 65 Text 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,GNIS_NAME,-1,-
1;LENGTHKM 'LENGTHKM' true true false 19 Double 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,LENGTHKM,-1,-
1;REACHCODE 'REACHCODE' true true false 14 Text 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,REACHCODE,-1,-
1;FLOWDIR 'FLOWDIR' true true false 15 Text 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,FLOWDIR,-1,-
1;WBAREACOMI 'WBAREACOMI' true true false 9 Long 0 9
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,WBAREACOMI,-1,-
1;FTYPE 'FTYPE' true true false 24 Text 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,FTYPE,-1,-1;FCODE

'FCODE' true true false 9 Long 0 9
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,FCODE,-1,-
1;SHAPE_LENG 'SHAPE_LENG' true true false 19 Double 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,SHAPE_LENG,-1,-
1;ENABLED 'ENABLED' true true false 6 Text 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,ENABLED,-1,-
1;SOURCETHM 'SOURCETHM' true true false 16 Text 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,SOURCETHM,-1,-
1;NHDFLOWLIN 'NHDFLOWLIN' true true false 19 Double 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,NHDFLOWLIN,-1,-
1;OID_ 'OID_' true true false 9 Long 0 9
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,OID_,-1,-1;OBJECTID_2
'OBJECTID_2' true true false 9 Long 0 9
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,OBJECTID_2,-1,-
1;COMID_1 'COMID_1' true true false 9 Long 0 9
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,COMID_1,-1,-
1;STREAMLEVE 'STREAMLEVE' true true false 9 Long 0 9
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,STREAMLEVE,-1,-
1;STREAMORDE 'STREAMORDE' true true false 9 Long 0 9
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,STREAMORDE,-1,-
1;FROMNODE 'FROMNODE' true true false 19 Double 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,FROMNODE,-1,-
1;TONODE 'TONODE' true true false 19 Double 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,TONODE,-1,-
1;HYDROSEQ 'HYDROSEQ' true true false 19 Double 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,HYDROSEQ,-1,-
1;LEVELPATHI 'LEVELPATHI' true true false 19 Double 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,LEVELPATHI,-1,-
1;PATHLENGTH 'PATHLENGTH' true true false 19 Double 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,PATHLENGTH,-1,-
1;TERMINALPA 'TERMINALPA' true true false 19 Double 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,TERMINALPA,-1,-
1;ARBOLATESU 'ARBOLATESU' true true false 19 Double 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,ARBOLATESU,-1,-
1;DIVERGENCE 'DIVERGENCE' true true false 9 Long 0 9
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,DIVERGENCE,-1,-
1;STARTFLAG 'STARTFLAG' true true false 9 Long 0 9
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,STARTFLAG,-1,-
1;TERMINALFL 'TERMINALFL' true true false 9 Long 0 9
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,TERMINALFL,-1,-
1;DNLEVEL 'DNLEVEL' true true false 9 Long 0 9
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,DNLEVEL,-1,-
1;THINNERCOD 'THINNERCOD' true true false 9 Long 0 9
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,THINNERCOD,-1,-
1;UPELVEPAT 'UPELVEPAT' true true false 19 Double 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,UPELVEPAT,-1,-
1;UPHYDROSEQ 'UPHYDROSEQ' true true false 19 Double 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,UPHYDROSEQ,-1,-


```

1;UPMINHYDRO 'UPMINHYDRO' true true false 19 Double 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,UPMINHYDRO,-1,-
1;DNLEVELPAT 'DNLEVELPAT' true true false 19 Double 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,DNLEVELPAT,-1,-
1;DNMINHYDRO 'DNMINHYDRO' true true false 19 Double 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,DNMINHYDRO,-1,-
1;DNDRAINCOU 'DNDRAINCOU' true true false 9 Long 0 9
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,DNDRAINCOU,-1,-
1;TABLE 'TABLE' true true false 24 Text 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,TABLE,-1,-1;NE_SZCL
'NE_SZCL' true true false 6 Text 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,NE_SZCL,-1,-1;GRIDVAL
'GRIDVAL' true true false 9 Long 0 9
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,GRIDVAL,-1,-
1;DA_SQMETER 'DA_SQMETER' true true false 19 Double 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,DA_SQMETER,-1,-
1;DA_SQMI 'DA_SQMI' true true false 19 Double 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,DA_SQMI,-1,-
1;NHD_REGION 'NHD_REGION' true true false 24 Text 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,NHD_REGION,-1,-
1;DELETE 'DELETE' true true false 4 Short 0 4
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,DELETE,-1,-
1;AO_SIZECL 'AO_SIZECL' true true false 10 Text 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,AO_SIZECL,-1,-
1;REGION 'REGION' true true false 50 Text 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,REGION,-1,-1;EDIT
'EDIT' true true false 50 Text 0 0
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,EDIT,-1,-1;batDis2Mth
'batDis2Mth' true true false 19 Double 8 18
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,batDis2Mth,-1,-
1;batUSLen 'batUSLen' true true false 19 Double 8 18
,First,#,K:\\RegionalDatasets\\roads\\NHD_1a3_Connectivity_xrd18rr_1a1b.shp,batUSLen,-1,-1",
"INTERSECTS", "0 Meters", "")

```

Process: Summary Statistics...

```

gp.Statistics_analysis(batNet_Alloc_Watershed_rdr_gte1b_xing_shp_3_,
batNet_Alloc_Watershed_rdr__dbf, "AreaSqKM SUM;Join_Count SUM", "GRIDCODE")

```

Process: Add Field...

```

gp.AddField_management(batNet_Alloc_Watershed_rdr__dbf, "xingDen", "DOUBLE", "", "", "", "",
"NON_NULLABLE", "NON_REQUIRED", "")

```

Process: Calculate Field...

```

gp.CalculateField_management(batNet_Alloc_Watershed_rdr_gte1b_xing_shp_2_, "xingDen",
"[SUM_Join_C] / [SUM_AreaSq]", "VB", "")

```

Process: US Join Field...

```

gp.JoinField_management(Dams_snapped__10_, "batUSNetID",
batNet_Alloc_Watershed_rdrd__dbf__2_, "GRIDCODE", "xingDen")

# Process: Calculate Field (2)...
gp.CalculateField_management(Dams_snapped__4_, "usXingDen", "[xingDen]", "VB", "")

# Process: Delete Field...
gp.DeleteField_management(Dams_snapped__5_, "xingDen")

# Process: DS Join Field (2)...
gp.JoinField_management(Dams_Snapped__3_, "batDSNetID",
batNet_Alloc_Watershed_rdrd__dbf__2_, "GRIDCODE", "xingDen")

# Process: Calculate Field (3)...
gp.CalculateField_management(Dams_snapped__7_, "dsXingDen", "[xingDen]", "VB", "")

# Process: Delete Field (2)...
gp.DeleteField_management(Dams_snapped__8_, "xingDen")

```

5.17 Anadromous Fish Data

```

# -----
# Anadromous Fish Data.py
# Created on: Sun Aug 28 2011 01:18:32 PM
# (generated by ArcGIS/ModelBuilder)
# -----

# Import system modules
import sys, string, os, arcgisscripting

# Create the Geoprocessor object
gp = arcgisscripting.create()

# Set the necessary product code
gp.SetProduct("ArcInfo")

# Load required toolboxes...
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Data Management Tools.tbx")
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Analysis Tools.tbx")

# Set the Geoprocessing environment...
gp.scratchWorkspace = "K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6"

# Local variables...
RegionAnadFish_current = "RegionAnadFish_current"
Dams_snapped = "Dams_Snapped"

```

FunctionalRiverNetwork_Disso = "FunctionalRiverNetwork_Disso"
alewife2__2_ = "in_memory\\alewife2"
blueback2 = "in_memory\\blueback2"
hickshad2__2_ = "in_memory\\hickshad2"
amshad2__2_ = "in_memory\\amshad2"
atlstur2__2_ = "in_memory\\atlstur2"
strbass2__2_ = "in_memory\\strbass2"
atlsalm2 = "in_memory\\atlsalm2"
FunctionalRiverNetwork_Disso__23_ = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__2_ = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__15_ = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__24_ = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__16_ = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__3_ = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__25_ = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__5_ = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__4_ = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__26_ = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__7_ = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__6_ = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__27_ = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__9_ = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__8_ = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__28_ = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__11_ = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__10_ = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__29_ = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__13_ = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__12_ = "FunctionalRiverNetwork_Disso"
alewife1 = "in_memory\\alewife1"
blueback1 = "in_memory\\blueback1"
hickshad1 = "in_memory\\hickshad1"
amshad1 = "in_memory\\amshad1"
atlstur1 = "in_memory\\atlstur1"
strbass1 = "in_memory\\strbass1"
atlsalm1 = "in_memory\\atlsalm1"
func_w_alewife1 = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__30_ = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__31_ = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__32_ = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__33_ = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__34_ = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__35_ = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__14_ = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__17_ = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__18_ = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__19_ = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__20_ = "FunctionalRiverNetwork_Disso"

```

FunctionalRiverNetwork_Disso__21_ = "FunctionalRiverNetwork_Disso"
FunctionalRiverNetwork_Disso__22_ = "FunctionalRiverNetwork_Disso"
Dams_snapped__2_ = "Dams_Snapped"
Dams_snapped__3_ = "Dams_Snapped"
Dams_snapped__4_ = "Dams_Snapped"
Dams_snapped__13_ = "Dams_Snapped"
Dams_snapped__6_ = "Dams_Snapped"
Dams_snapped__7_ = "Dams_Snapped"
Dams_snapped__8_ = "Dams_Snapped"
Dams_Snapped__9_ = "Dams_Snapped"
Dams_Snapped__16_ = "Dams_Snapped"
Dams_Snapped__10_ = "Dams_Snapped"
Dams_Snapped__11_ = "Dams_Snapped"
Dams_Snapped__5_ = "Dams_Snapped"
Dams_Snapped__12_ = "Dams_Snapped"
Dams_Snapped__14_ = "Dams_Snapped"
Dams_Snapped__18_ = "Dams_Snapped"
Dams_Snapped__17_ = "Dams_Snapped"
huc250 = "huc250"
diad_fish_list_sum_dbf =
"K:\NE_Aquatic_Connectivity\GIS_Data\Diadromous_fish\diadromous_state_waters_3_Feb_2010\
diad_fish_list_sum.dbf"
huc250__3_ = "huc250"
DamsFalls_Use1_snapped1_historicHUCJoin_shp__4_ =
"%scratchworkspace%\DamsFalls_Use1_snapped1_historicHUCJoin.shp"
huc250_Select_shp = "%scratchworkspace%\huc250_Select.shp"
DamsFalls_Use1_snapped1_historicHUCJoin_shp =
"%scratchworkspace%\DamsFalls_Use1_snapped1_historicHUCJoin.shp"
Dams_Snapped__15_ = "Dams_Snapped"
huc250__2_ = "huc250"
DamsFalls_Use1_snapped1_historicHUCJoin_shp__5_ =
"%scratchworkspace%\DamsFalls_Use1_snapped1_historicHUCJoin.shp"

# Process: Select...
gp.Select_analysis(RegionAnadFish_current, alewife2__2_, "\"alewife\" =2")

# Process: Select Layer By Location...
gp.SelectLayerByLocation_management(FunctionalRiverNetwork_Disso,
"SHARE_A_LINE_SEGMENT_WITH", alewife2__2_, "", "NEW_SELECTION")

# Process: Add Field...
gp.AddField_management(FunctionalRiverNetwork_Disso__23_, "alewife", "SHORT", "", "", "", "",
"NON_NULLABLE", "NON_REQUIRED", "")

# Process: Calculate Field...
gp.CalculateField_management(FunctionalRiverNetwork_Disso__2_, "alewife", "2", "VB", "")

# Process: Select (2)...

```

```

gp.Select_analysis(RegionAnadFish_current, blueback2, "\"blueback\" = 2")

# Process: Select Layer By Location (2)...
gp.SelectLayerByLocation_management(FunctionalRiverNetwork_Disso,
"SHARE_A_LINE_SEGMENT_WITH", blueback2, "", "NEW_SELECTION")

# Process: Add Field (2)...
gp.AddField_management(FunctionalRiverNetwork_Disso__24_, "blueback", "SHORT", "", "", "", "",
"NON_NULLABLE", "NON_REQUIRED", "")

# Process: Calculate Field (2)...
gp.CalculateField_management(FunctionalRiverNetwork_Disso__16_, "blueback", "2", "VB", "")

# Process: Select (3)...
gp.Select_analysis(RegionAnadFish_current, hickshad2__2_, "\"hickshad\" =2")

# Process: Select Layer By Location (3)...
gp.SelectLayerByLocation_management(FunctionalRiverNetwork_Disso,
"SHARE_A_LINE_SEGMENT_WITH", hickshad2__2_, "", "NEW_SELECTION")

# Process: Add Field (3)...
gp.AddField_management(FunctionalRiverNetwork_Disso__25_, "hickshad", "SHORT", "", "", "", "",
"NON_NULLABLE", "NON_REQUIRED", "")

# Process: Calculate Field (3)...
gp.CalculateField_management(FunctionalRiverNetwork_Disso__5_, "hickshad", "2", "VB", "")

# Process: Select (4)...
gp.Select_analysis(RegionAnadFish_current, amshad2__2_, "\"amshad\" =2")

# Process: Select Layer By Location (4)...
gp.SelectLayerByLocation_management(FunctionalRiverNetwork_Disso,
"SHARE_A_LINE_SEGMENT_WITH", amshad2__2_, "", "NEW_SELECTION")

# Process: Add Field (4)...
gp.AddField_management(FunctionalRiverNetwork_Disso__26_, "amshad", "SHORT", "", "", "", "",
"NON_NULLABLE", "NON_REQUIRED", "")

# Process: Calculate Field (4)...
gp.CalculateField_management(FunctionalRiverNetwork_Disso__7_, "amshad", "2", "VB", "")

# Process: Select (5)...
gp.Select_analysis(RegionAnadFish_current, atlstur2__2_, "\"atlstur\" =2")

# Process: Select Layer By Location (5)...
gp.SelectLayerByLocation_management(FunctionalRiverNetwork_Disso,
"SHARE_A_LINE_SEGMENT_WITH", atlstur2__2_, "", "NEW_SELECTION")

```

```

# Process: Add Field (5)...
gp.AddField_management(FunctionalRiverNetwork_Disso__27_, "atlstur", "SHORT", "", "", "", "",
"NON_NULLABLE", "NON_REQUIRED", "")

# Process: Calculate Field (5)...
gp.CalculateField_management(FunctionalRiverNetwork_Disso__9_, "atlstur", "2", "VB", "")

# Process: Select (6)...
gp.Select_analysis(RegionAnadFish_current, strbass2__2_, "\"strbass\" =2")

# Process: Select Layer By Location (6)...
gp.SelectLayerByLocation_management(FunctionalRiverNetwork_Disso,
"SHARE_A_LINE_SEGMENT_WITH", strbass2__2_, "", "NEW_SELECTION")

# Process: Add Field (6)...
gp.AddField_management(FunctionalRiverNetwork_Disso__28_, "strbass", "SHORT", "", "", "", "",
"NON_NULLABLE", "NON_REQUIRED", "")

# Process: Calculate Field (6)...
gp.CalculateField_management(FunctionalRiverNetwork_Disso__11_, "strbass", "2", "VB", "")

# Process: Select (7)...
gp.Select_analysis(RegionAnadFish_current, atlsalm2, "\"atlsalm\" = 2")

# Process: Select Layer By Location (7)...
gp.SelectLayerByLocation_management(FunctionalRiverNetwork_Disso,
"SHARE_A_LINE_SEGMENT_WITH", atlsalm2, "", "NEW_SELECTION")

# Process: Add Field (7)...
gp.AddField_management(FunctionalRiverNetwork_Disso__29_, "atlsalm", "SHORT", "", "", "", "",
"NON_NULLABLE", "NON_REQUIRED", "")

# Process: Calculate Field (7)...
gp.CalculateField_management(FunctionalRiverNetwork_Disso__13_, "atlsalm", "2", "VB", "")

# Process: Select (8)...
gp.Select_analysis(RegionAnadFish_current, alewife1, "\"alewife\" =1")

# Process: Select Layer By Location (8)...
gp.SelectLayerByLocation_management(FunctionalRiverNetwork_Disso,
"SHARE_A_LINE_SEGMENT_WITH", alewife1, "", "NEW_SELECTION")

# Process: Calculate Field (8)...
gp.CalculateField_management(func_w_alewife1, "alewife", "1", "VB", "")

# Process: Select (9)...
gp.Select_analysis(RegionAnadFish_current, blueback1, "\"blueback\" = 1")

```

```

# Process: Select Layer By Location (9)...
gp.SelectLayerByLocation_management(FunctionalRiverNetwork_Disso,
"SHARE_A_LINE_SEGMENT_WITH", blueback1, "", "NEW_SELECTION")

# Process: Calculate Field (9)...
gp.CalculateField_management(FunctionalRiverNetwork_Disso__30_, "blueback", "1", "VB", "")

# Process: Select (10)...
gp.Select_analysis(RegionAnadFish_current, hickshad1, "\"hickshad\" =1")

# Process: Select Layer By Location (10)...
gp.SelectLayerByLocation_management(FunctionalRiverNetwork_Disso,
"SHARE_A_LINE_SEGMENT_WITH", hickshad1, "", "NEW_SELECTION")

# Process: Calculate Field (10)...
gp.CalculateField_management(FunctionalRiverNetwork_Disso__31_, "hickshad", "1", "VB", "")

# Process: Select (11)...
gp.Select_analysis(RegionAnadFish_current, amshad1, "\"amshad\" =1")

# Process: Select Layer By Location (11)...
gp.SelectLayerByLocation_management(FunctionalRiverNetwork_Disso,
"SHARE_A_LINE_SEGMENT_WITH", amshad1, "", "NEW_SELECTION")

# Process: Calculate Field (11)...
gp.CalculateField_management(FunctionalRiverNetwork_Disso__32_, "amshad", "1", "VB", "")

# Process: Select (12)...
gp.Select_analysis(RegionAnadFish_current, atlstur1, "\"atlstur\" =1")

# Process: Select Layer By Location (12)...
gp.SelectLayerByLocation_management(FunctionalRiverNetwork_Disso,
"SHARE_A_LINE_SEGMENT_WITH", atlstur1, "", "NEW_SELECTION")

# Process: Calculate Field (12)...
gp.CalculateField_management(FunctionalRiverNetwork_Disso__33_, "atlstur", "1", "VB", "")

# Process: Select (13)...
gp.Select_analysis(RegionAnadFish_current, strbass1, "\"strbass\" =1")

# Process: Select Layer By Location (13)...
gp.SelectLayerByLocation_management(FunctionalRiverNetwork_Disso,
"SHARE_A_LINE_SEGMENT_WITH", strbass1, "", "NEW_SELECTION")

# Process: Calculate Field (13)...
gp.CalculateField_management(FunctionalRiverNetwork_Disso__34_, "strbass", "1", "VB", "")

# Process: Join Field (3)...

```

```
gp.JoinField_management(huc250, "HUC", diad_fish_list_sum_dbf, "LOCATION",
"ATL_STURG;BLU_HERR;HICK_SHAD;ALEWIFE;AMER_SHAD;STRIPED_BA;ATL_SALMON")
```

```
# Process: Add Field (8)...
```

```
gp.AddField_management(Dams_snapped, "dsAlewife", "SHORT", "", "", "", "", "NON_NULLABLE",
"NON_REQUIRED", "")
```

```
# Process: Add Field (9)...
```

```
gp.AddField_management(Dams_snapped__2_, "dsBlueback", "SHORT", "", "", "", "", "NON_NULLABLE",
"NON_REQUIRED", "")
```

```
# Process: Add Field (10)...
```

```
gp.AddField_management(Dams_snapped__3_, "dsAmshad", "SHORT", "", "", "", "", "NON_NULLABLE",
"NON_REQUIRED", "")
```

```
# Process: Add Field (11)...
```

```
gp.AddField_management(Dams_snapped__4_, "dsHickshad", "SHORT", "", "", "", "", "NON_NULLABLE",
"NON_REQUIRED", "")
```

```
# Process: Add Field (12)...
```

```
gp.AddField_management(Dams_snapped__13_, "dsAtlStur", "SHORT", "", "", "", "", "NON_NULLABLE",
"NON_REQUIRED", "")
```

```
# Process: Add Field (13)...
```

```
gp.AddField_management(Dams_snapped__6_, "dsStrBass", "SHORT", "", "", "", "", "NON_NULLABLE",
"NON_REQUIRED", "")
```

```
# Process: Add Field (14)...
```

```
gp.AddField_management(Dams_snapped__7_, "dsAtlSalm", "SHORT", "", "", "", "", "NON_NULLABLE",
"NON_REQUIRED", "")
```

```
# Process: Select (14)...
```

```
gp.Select_analysis(RegionAnadFish_current, atlsalm1, "\"atlsalm\" = 1")
```

```
# Process: Select Layer By Location (14)...
```

```
gp.SelectLayerByLocation_management(FunctionalRiverNetwork_Disso,
"SHARE_A_LINE_SEGMENT_WITH", atlsalm1, "", "NEW_SELECTION")
```

```
# Process: Calculate Field (14)...
```

```
gp.CalculateField_management(FunctionalRiverNetwork_Disso__35_, "atlsalm", "1", "VB", "")
```

```
# Process: Join Field (2)...
```

```
gp.JoinField_management(Dams_snapped__8_, "batDSNetID", FunctionalRiverNetwork_Disso__22_,
"batNetID", "alewife;blueback;hickshad;amshad;atlstur;strbass;atlsalm")
```

```
# Process: Calculate Field (15)...
```

```
gp.CalculateField_management(Dams_Snapped__17_, "dsAlewife", "[alewife]", "VB", "")
```



```

# Process: Calculate Field (16)...
gp.CalculateField_management(Dams_Snapped__9_, "dsBlueback", "[blueback]", "VB", "")

# Process: Calculate Field (17)...
gp.CalculateField_management(Dams_Snapped__16_, "dsAmshad", "[amshad]", "VB", "")

# Process: Calculate Field (18)...
gp.CalculateField_management(Dams_Snapped__10_, "dsHickshad", "[hickshad]", "VB", "")

# Process: Calculate Field (19)...
gp.CalculateField_management(Dams_Snapped__11_, "dsAtIStur", "[atlstur]", "VB", "")

# Process: Calculate Field (20)...
gp.CalculateField_management(Dams_Snapped__5_, "dsStrBass", "[strbass]", "VB", "")

# Process: Calculate Field (21)...
gp.CalculateField_management(Dams_Snapped__12_, "dsAtISalm", "[atlsalm]", "VB", "")

# Process: Delete Field...
gp.DeleteField_management(Dams_Snapped__14_,
"alewife;blueback;hickshad;amshad;atlstur;strbass;atlsalm")

# Process: Select (15)...
gp.Select_analysis(huc250__3_, huc250_Select_shp, "\"ATL_STURG\" >0 OR \"BLU_HERR\" >0 OR
\"HICK_SHAD\" >0 OR \"ALEWIFE\" >0 OR \"AMER_SHAD\" >0 OR \"STRIPED_BA\" >0 OR
\"ATL_SALMON\" >0 OR \"HUC\" in (4150304, 4150306, 4150307) ")

# Process: Spatial Join...
gp.SpatialJoin_analysis(Dams_Snapped__18_, huc250_Select_shp,
DamsFalls_Use1_snapped1_historicHUCJoin_shp__5_, "JOIN_ONE_TO_ONE", "KEEP_ALL", "Use 'Use'
true true false 4 Short 0 4
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,Use,
-1,-1;UNIQUE_ID 'UNIQUE_ID' true true false 50 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,UNI
QUE_ID,-1,-1;OnNode 'OnNode' true true false 4 Short 0 4
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,OnN
ode,-1,-1;UniqueNHD 'UniqueNHD' true true false 9 Long 0 9
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,Uniq
ueNHD,-1,-1;COMID 'COMID' true true false 9 Long 0 9
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,CO
MID,-1,-1;GNIS_NAME 'GNIS_NAME' true true false 65 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,GNIS
_NAME,-1,-1;NE_SZCL 'NE_SZCL' true true false 6 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,NE_
SZCL,-1,-1;GRIDVAL 'GRIDVAL' true true false 9 Long 0 9
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,GRI
DVAL,-1,-1;NHD_REGION 'NHD_REGION' true true false 24 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,NHD

```

_REGION,-1,-1;AO_SIZECL 'AO_SIZECL' true true false 10 Text 0 0
 ,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,AO_SIZECL,-1,-1;Comment 'Comment' true true false 200 Text 0 0
 ,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,Comment,-1,-1;emID 'emID' true true false 9 Long 0 9
 ,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,emID,-1,-1;NIDID 'NIDID' true true false 20 Text 0 0
 ,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,NIDID,-1,-1;STATE_ID 'STATE_ID' true true false 16 Text 0 0
 ,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,STATE_ID,-1,-1;STATE 'STATE' true true false 2 Text 0 0
 ,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,STATE,-1,-1;DAM_NAME 'DAM_NAME' true true false 50 Text 0 0
 ,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,DAM_NAME,-1,-1;DAM_NAME2 'DAM_NAME2' true true false 50 Text 0 0
 ,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,DAM_NAME2,-1,-1;WATERBODY 'WATERBODY' true true false 100 Text 0 0
 ,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,WATERBODY,-1,-1;TYPE_ID 'TYPE_ID' true true false 16 Text 0 0
 ,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,TYPE_ID,-1,-1;P_CODE 'P_CODE' true true false 6 Text 0 0
 ,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,P_CODE,-1,-1;PrimPurp 'PrimPurp' true true false 1 Text 0 0
 ,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,PrimPurp,-1,-1;COND 'COND' true true false 16 Text 0 0
 ,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,COND,-1,-1;deg_barr 'deg_barr' true true false 4 Short 0 4
 ,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,deg_barr,-1,-1;PO_NAME 'PO_NAME' true true false 28 Text 0 0
 ,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,PO_NAME,-1,-1;AtFalls 'AtFalls' true true false 4 Short 0 4
 ,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,AtFalls,-1,-1;RevuedPass 'RevuedPass' true true false 4 Short 0 4
 ,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,RevuedPass,-1,-1;CTBasin 'CTBasin' true true false 4 Short 0 4
 ,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,CTBasin,-1,-1;HistFishOc 'HistFishOc' true true false 4 Short 0 4
 ,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,HistFishOc,-1,-1;AtlCoast 'AtlCoast' true true false 4 Short 0 4
 ,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,AtlCoast,-1,-1;Source_1 'Source_1' true true false 50 Text 0 0
 ,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,Source_1,-1,-1;batSnapped 'batSnapped' true true false 1 Text 0 0
 ,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,batSnapped,-1,-1;batLineID 'batLineID' true true false 9 Long 0 9
 ,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,batLineID,-1,-1;batRegion 'batRegion' true true false 25 Text 0 0
 ,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,batR

```

egion,-1,-1;batSnapDis 'batSnapDis' true true false 9 Double 3 8
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,batS
napDis,-1,-1;batDisAlng 'batDisAlng' true true false 17 Double 8 16
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,batD
isAlng,-1,-1;batDis2Mth 'batDis2Mth' true true false 17 Double 8 16
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,batD
is2Mth,-1,-1;batFuncUS 'batFuncUS' true true false 17 Double 8 16
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,batF
uncUS,-1,-1;batCountUS 'batCountUS' true true false 8 Long 0 8
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,batC
ountUS,-1,-1;batLenUS 'batLenUS' true true false 17 Double 8 16
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,batL
enUS,-1,-1;batFuncDS 'batFuncDS' true true false 17 Double 8 16
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,batF
uncDS,-1,-1;batDis2M_1 'batDis2M_1' true true false 17 Double 8 16
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,batD
is2M_1,-1,-1;batCountDS 'batCountDS' true true false 8 Long 0 8
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,batC
ountDS,-1,-1;batTotUSDS 'batTotUSDS' true true false 17 Double 8 16
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,batT
otUSDS,-1,-1;batAbs 'batAbs' true true false 17 Double 8 16
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,batA
bs,-1,-1;batRel 'batRel' true true false 17 Double 8 16
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,batR
el,-1,-1;batDSDnsty 'batDSDnsty' true true false 17 Double 8 16
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,batD
SDnsty,-1,-1;batUSDnsty 'batUSDnsty' true true false 17 Double 8 16
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,batU
SDnsty,-1,-1;batImpass 'batImpass' true true false 4 Short 0 4
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,batI
mpass,-1,-1;batDSFalls 'batDSFalls' true true false 4 Short 0 4
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,batD
SFalls,-1,-1;batDSHydro 'batDSHydro' true true false 4 Short 0 4
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,batD
SHydro,-1,-1;batUSNetID 'batUSNetID' true true false 8 Long 0 8
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,batU
SNetID,-1,-1;batDSNetID 'batDSNetID' true true false 8 Long 0 8
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,batD
SNetID,-1,-1;HUC_8 'HUC_8' true true false 8 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,HUC
_8,-1,-1;HUC_10 'HUC_10' true true false 10 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,HUC
_10,-1,-1;HUC_12 'HUC_12' true true false 12 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,HUC
_12,-1,-1;HU_10_NAME 'HU_10_NAME' true true false 80 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,HU
_10_NAME,-1,-1;HU_12_NAME 'HU_12_NAME' true true false 80 Text 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,HU

```

12_NAME,-1,-1;US_PerImp 'US_PerImp' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,US_PerImp,-1,-1;US_PercNat 'US_PercNat' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,US_PercNat,-1,-1;US_PercAg 'US_PercAg' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,US_PercAg,-1,-1;usAg100 'usAg100' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,usAg100,-1,-1;dsAg100 'dsAg100' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,dsAg100,-1,-1;usNat100 'usNat100' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,usNat100,-1,-1;dsNat100 'dsNat100' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,dsNat100,-1,-1;usImp100 'usImp100' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,usImp100,-1,-1;dsImp100 'dsImp100' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,dsImp100,-1,-1;ConsLand 'ConsLand' true true false 4 Short 0 4
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,ConsLand,-1,-1;usCons100 'usCons100' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,usCons100,-1,-1;dsCons100 'dsCons100' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,dsCons100,-1,-1;usNatARA 'usNatARA' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,usNatARA,-1,-1;dsNatARA 'dsNatARA' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,dsNatARA,-1,-1;usAgARA 'usAgARA' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,usAgARA,-1,-1;dsAgARA 'dsAgARA' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,dsAgARA,-1,-1;usImpARA 'usImpARA' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,usImpARA,-1,-1;dsImpARA 'dsImpARA' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,dsImpARA,-1,-1;usSmDamDen 'usSmDamDen' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,usSmDamDen,-1,-1;dsSmDamDen 'dsSmDamDen' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,dsSmDamDen,-1,-1;NatSrvHUC8 'NatSrvHUC8' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,NatSrvHUC8,-1,-1;NtvFshRich 'NtvFshRich' true true false 4 Short 0 4
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,NtvFshRich,-1,-1;FishHUC8 'FishHUC8' true true false 4 Short 0 4
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,FishHUC8,-1,-1;MussHUC8 'MussHUC8' true true false 4 Short 0 4
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,Mus

sHUC8,-1,-1;CrayHUC8 'CrayHUC8' true true false 4 Short 0 4
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,Cray
HUC8,-1,-1;EBTJVhlthy 'EBTJVhlthy' true true false 4 Short 0 4
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,EBTJ
Vhlthy,-1,-1;usMiCold 'usMiCold' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,usMi
Cold,-1,-1;dsMiCold 'dsMiCold' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,dsMi
Cold,-1,-1;usMiCool 'usMiCool' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,usMi
Cool,-1,-1;dsMiCool 'dsMiCool' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,dsMi
Cool,-1,-1;totMiCold 'totMiCold' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,tot
MiCold,-1,-1;totMiCC 'totMiCC' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,tot
MiCC,-1,-1;usMiles1a 'usMiles1a' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,usMi
les1a,-1,-1;usMiles1b 'usMiles1b' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,usMi
les1b,-1,-1;usMiles2 'usMiles2' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,usMi
les2,-1,-1;usMiles3a 'usMiles3a' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,usMi
les3a,-1,-1;usMiles3b 'usMiles3b' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,usMi
les3b,-1,-1;usMiles4 'usMiles4' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,usMi
les4,-1,-1;usMiles5 'usMiles5' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,usMi
les5,-1,-1;dsMiles1a 'dsMiles1a' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,dsMi
les1a,-1,-1;dsMiles1b 'dsMiles1b' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,dsMi
les1b,-1,-1;dsMiles2 'dsMiles2' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,dsMi
les2,-1,-1;dsMiles3a 'dsMiles3a' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,dsMi
les3a,-1,-1;dsMiles3b 'dsMiles3b' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,dsMi
les3b,-1,-1;dsMiles4 'dsMiles4' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,dsMi
les4,-1,-1;dsMiles5 'dsMiles5' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,dsMi
les5,-1,-1;TotNumSzCl 'TotNumSzCl' true true false 16 Double 6 15
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,TotN
umSzCl,-1,-1;usNumSzCl 'usNumSzCl' true true false 16 Double 6 15
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,usN

```

umSzCl,-1,-1;usSzClGain 'usSzClGain' true true false 16 Double 6 15
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,usSz
ClGain,-1,-1;TotMiles1a 'TotMiles1a' true true false 16 Double 6 15
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,Tot
Miles1a,-1,-1;TotMiles1b 'TotMiles1b' true true false 16 Double 6 15
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,Tot
Miles1b,-1,-1;TotMiles2 'TotMiles2' true true false 16 Double 6 15
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,Tot
Miles2,-1,-1;TotMiles3a 'TotMiles3a' true true false 16 Double 6 15
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,Tot
Miles3a,-1,-1;TotMiles3b 'TotMiles3b' true true false 16 Double 6 15
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,Tot
Miles3b,-1,-1;TotMiles4 'TotMiles4' true true false 16 Double 6 15
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,Tot
Miles4,-1,-1;TotMiles5 'TotMiles5' true true false 16 Double 6 15
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,Tot
Miles5,-1,-1;MiNewSzCl 'MiNewSzCl' true true false 16 Double 6 15
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,MiN
ewSzCl,-1,-1;RelGainMi 'RelGainMi' true true false 16 Double 6 15
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,RelG
ainMi,-1,-1;usXingDen 'usXingDen' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,usXi
ngDen,-1,-1;dsXingDen 'dsXingDen' true true false 19 Double 0 0
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,dsXi
ngDen,-1,-1;dsAlewife 'dsAlewife' true true false 4 Short 0 4
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,dsAl
ewife,-1,-1;dsBlueback 'dsBlueback' true true false 4 Short 0 4
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,dsBl
ueback,-1,-1;dsAmshad 'dsAmshad' true true false 4 Short 0 4
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,dsA
mshad,-1,-1;dsHickshad 'dsHickshad' true true false 4 Short 0 4
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,dsHi
ckshad,-1,-1;dsAtIStur 'dsAtIStur' true true false 4 Short 0 4
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,dsAt
IStur,-1,-1;dsStrBass 'dsStrBass' true true false 4 Short 0 4
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,dsSt
rBass,-1,-1;dsAtISalm 'dsAtISalm' true true false 4 Short 0 4
,First,#,K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6\\DamsFalls_Use1_snapped1.shp,dsAt
ISalm,-1,-1;JOINFISH 'JOINFISH' true true false 16 Double 0 16
,First,#,%scratchworkspace%\\huc250_Select.shp,JOINFISH,-1,-1, "INTERSECTS", "0 Meters", "")

```

```
# Process: Add Field (15)...
```

```
gp.AddField_management(DamsFalls_Use1_snapped1_historicHUCJoin_shp__5_, "HistFishOC",
"SHORT", "", "", "", "", "NON_NULLABLE", "NON_REQUIRED", "")
```

```
# Process: Calculate Field (22)...
```

```
gp.CalculateField_management(DamsFalls_Use1_snapped1_historicHUCJoin_shp__4_, "HistFishOC",
"[JOINFISH] ", "VB", "")
```

```
# Process: Join Field...
gp.JoinField_management(Dams_Snapped__18_, "UNIQUE_ID",
DamsFalls_Use1_snapped1_historicHUCJoin_shp, "UNIQUE_ID", "HistFishOc")

# Process: Delete Field (2)...
gp.DeleteField_management(huc250__3_,
"ATL_STURG;BLU_HERR;HICK_SHAD;ALEWIFE;AMER_SHAD;STRIPED_BA;ATL_SALMON")
```

5.18 Final Data Prep for Export

```
# -----
# Final Data Prep for Export.py
# Created on: Sun Aug 28 2011 01:04:42 PM
# (generated by ArcGIS/ModelBuilder)
# -----

# Import system modules
import sys, string, os, arcgisscripting

# Create the Geoprocessor object
gp = arcgisscripting.create()

# Load required toolboxes...
gp.AddToolbox("C:/Program Files/ArcGIS/ArcToolbox/Toolboxes/Data Management Tools.tbx")

# Set the Geoprocessing environment...
gp.scratchWorkspace = "K:\\NE_Aquatic_Connectivity\\GIS_Data\\RegionAnalysis6"

# Local variables...
Dams_snapped = "Dams_Snapped"
Dams_Snapped2 = "Dams_Snapped2"
FinalGISTable_for_NCAT_dbf = "%scratchworkspace%\\FinalGISTable_for_NCAT.dbf"

# Process: Make Feature Layer...
gp.MakeFeatureLayer_management(Dams_snapped, Dams_Snapped2, "\\STATE\\" not in ('KY', 'NC',
'TN', 'OH') AND \"UNIQUE_ID\" not like 'Fall%', "", "Join_Count Join_Count VISIBLE NONE;NIDID NIDID
VISIBLE NONE;UNIQUE_ID UNIQUE_ID VISIBLE NONE;STATE_ID STATE_ID VISIBLE NONE;STATE STATE
VISIBLE NONE;DAM_NAME DAM_NAME VISIBLE NONE;DAM_NAME2 DAM_NAME2 VISIBLE
NONE;WATERBODY WATERBODY VISIBLE NONE;P_CODE P_CODE VISIBLE NONE;PrimPurp PrimPurp
VISIBLE NONE;YEAR YEAR VISIBLE NONE;COND COND VISIBLE NONE;COMID COMID VISIBLE
NONE;NESZCL NESZCL VISIBLE NONE;AO_sizecl AO_sizecl VISIBLE NONE;GRIDVAL GRIDVAL VISIBLE
NONE;NHD_NAME NHD_NAME VISIBLE NONE;deg_barr deg_barr VISIBLE NONE;Use Use VISIBLE
NONE;PO_NAME PO_NAME VISIBLE NONE;Latit Latit VISIBLE NONE;Longit Longit VISIBLE
NONE;Comment Comment VISIBLE NONE;AtFalls AtFalls VISIBLE NONE;RevuedPass RevuedPass VISIBLE
NONE;emID emID VISIBLE NONE;CTBasin CTBasin VISIBLE NONE;HistFishOc HistFishOc VISIBLE
```

NONE;batSnapped batSnapped VISIBLE NONE;batLineID batLineID VISIBLE NONE;batRegion batRegion VISIBLE NONE;batSnapDis batSnapDis VISIBLE NONE;batDisAlng batDisAlng VISIBLE NONE;batDis2Mth batDis2Mth VISIBLE NONE;batFuncUS batFuncUS VISIBLE NONE;batCountUS batCountUS VISIBLE NONE;batLenUS batLenUS VISIBLE NONE;batFuncDS batFuncDS VISIBLE NONE;batCountDS batCountDS VISIBLE NONE;batTotUSDS batTotUSDS VISIBLE NONE;batAbs batAbs VISIBLE NONE;batRel batRel VISIBLE NONE;batDSDnsty batDSDnsty VISIBLE NONE;batUSDnsty batUSDnsty VISIBLE NONE;batUSNetID batUSNetID VISIBLE NONE;batDSNetID batDSNetID VISIBLE NONE;batDSHydro batDSHydro VISIBLE NONE;batDSFalls batDSFalls VISIBLE NONE;batDSImpas batDSImpas VISIBLE NONE;HUC_8 HUC_8 VISIBLE NONE;HUC_10 HUC_10 VISIBLE NONE;HUC_12 HUC_12 VISIBLE NONE;HU_10_NAME HU_10_NAME VISIBLE NONE;HU_12_NAME HU_12_NAME VISIBLE NONE;US_Perclmp US_Perclmp VISIBLE NONE;US_PercNat US_PercNat VISIBLE NONE;US_PercAg US_PercAg VISIBLE NONE;usAg100 usAg100 VISIBLE NONE;dsAg100 dsAg100 VISIBLE NONE;usNat100 usNat100 VISIBLE NONE;dsNat100 dsNat100 VISIBLE NONE;usImp100 usImp100 VISIBLE NONE;dsImp100 dsImp100 VISIBLE NONE;ConsLand ConsLand VISIBLE NONE;usCons100 usCons100 VISIBLE NONE;dsCons100 dsCons100 VISIBLE NONE;NatSrvHUC8 NatSrvHUC8 VISIBLE NONE;NtvFshRich NtvFshRich VISIBLE NONE;FishHUC8 FishHUC8 VISIBLE NONE;MussHUC8 MussHUC8 VISIBLE NONE;CrayHUC8 CrayHUC8 VISIBLE NONE;EBTJVhlthy EBTJVhlthy VISIBLE NONE;usMiCold usMiCold VISIBLE NONE;dsMiCold dsMiCold VISIBLE NONE;usMiCool usMiCool VISIBLE NONE;dsMiCool dsMiCool VISIBLE NONE;totMiCold totMiCold VISIBLE NONE;totMiCC totMiCC VISIBLE NONE;usMiles1a usMiles1a VISIBLE NONE;usMiles1b usMiles1b VISIBLE NONE;usMiles2 usMiles2 VISIBLE NONE;usMiles3a usMiles3a VISIBLE NONE;usMiles3b usMiles3b VISIBLE NONE;usMiles4 usMiles4 VISIBLE NONE;usMiles5 usMiles5 VISIBLE NONE;dsMiles1a dsMiles1a HIDDEN NONE;dsMiles1b dsMiles1b HIDDEN NONE;dsMiles2 dsMiles2 HIDDEN NONE;dsMiles3a dsMiles3a HIDDEN NONE;dsMiles3b dsMiles3b VISIBLE NONE;dsMiles4 dsMiles4 HIDDEN NONE;dsMiles5 dsMiles5 HIDDEN NONE;usNatARA usNatARA VISIBLE NONE;dsNatARA dsNatARA VISIBLE NONE;usAgARA usAgARA VISIBLE NONE;dsAgARA dsAgARA VISIBLE NONE;usImpARA usImpARA VISIBLE NONE;dsImpARA dsImpARA VISIBLE NONE;usXingDen usXingDen VISIBLE NONE;dsXingDen dsXingDen VISIBLE NONE;dsAlewife dsAlewife VISIBLE NONE;dsBlueback dsBlueback VISIBLE NONE;dsAmshad dsAmshad VISIBLE NONE;dsHickshad dsHickshad VISIBLE NONE;dsAtIStur dsAtIStur VISIBLE NONE;dsStrBass dsStrBass VISIBLE NONE;dsAtISalm dsAtISalm VISIBLE NONE;usSmDamDen usSmDamDen VISIBLE NONE;dsSmDamDen dsSmDamDen VISIBLE NONE;TotNumSzCI TotNumSzCI VISIBLE NONE;usNumSzCI usNumSzCI VISIBLE NONE;usSzCIGain usSzCIGain VISIBLE NONE;TotMiles1a TotMiles1a VISIBLE NONE;TotMiles1b TotMiles1b VISIBLE NONE;TotMiles2 TotMiles2 VISIBLE NONE;TotMiles3a TotMiles3a VISIBLE NONE;TotMiles3b TotMiles3b VISIBLE NONE;TotMiles4 TotMiles4 VISIBLE NONE;TotMiles5 TotMiles5 VISIBLE NONE;MiNewSzCI MiNewSzCI VISIBLE NONE;RelGainMi RelGainMi VISIBLE NONE")

Process: Copy Rows...

gp.CopyRows_management(Dams_Snapped2, FinalGISTable_for_NCAT_dbf, "")