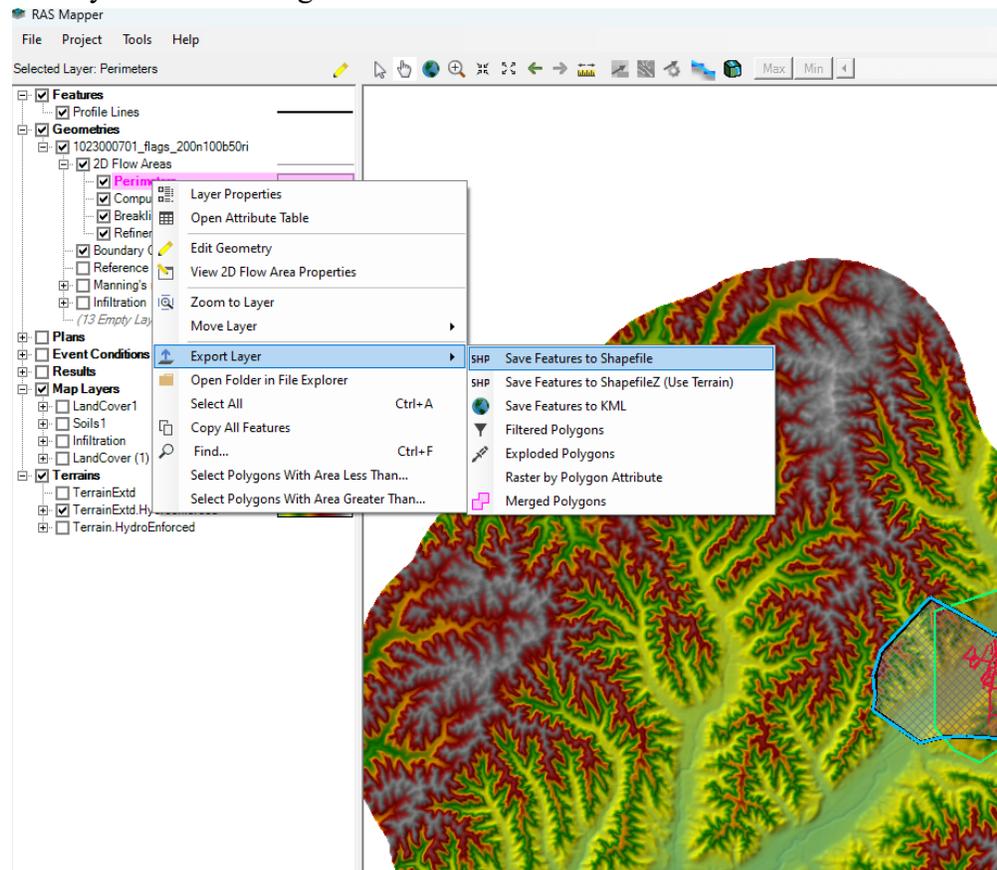
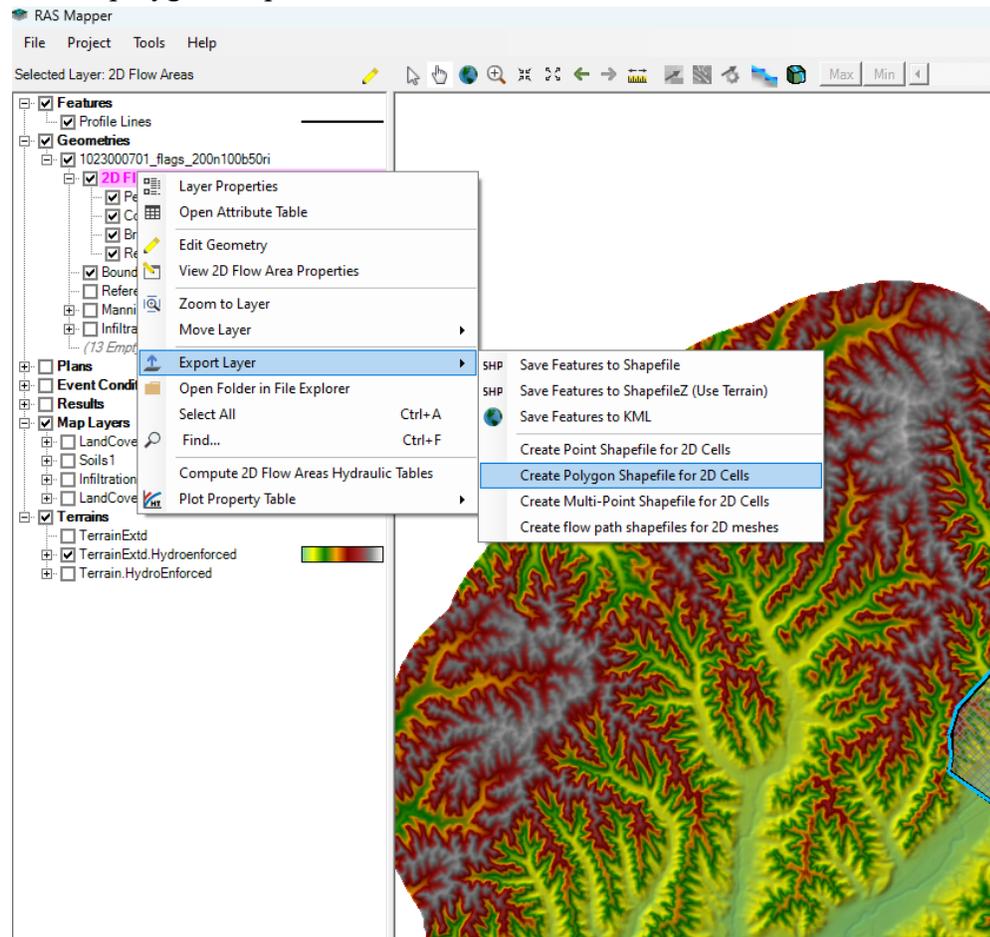


# Steps to obtain data for a breakout model

- 1) Open your larger model in HEC-RAS RASMapper and locate the table of contents
- 2) Begin by exporting your perimeter, breaklines, refinement regions, manning's n calibration regions, burnlines, and possibly your mesh if you want to use the exact same mesh
  - a. For the non-mesh exports, you can export the data by right clicking the feature name in the table of contents and selecting "export layer," then "save features to shapefile" like shown below. Make sure when exporting these files, the breaklines and refinement regions have the correct cell spacing you would like to use in the breakout model you are creating, or you note to change these in the new model when you start building it from scratch



- b. For the mesh exports, right click 2D flow areas, then select “export layer” and “create polygon shapefile for 2D cells” as shown below



- 3) Save the landcover, soils, and infiltration data to your new model folder. Typically, it will be saved in a folder automatically and look like this:

Name	Date modified	Type	Size
Infiltration.hdf	6/27/2024 2:00 PM	HDF File	13 KB
LandCover.img	6/27/2024 2:00 PM	Disc Image File	201 KB
LandCover.img.aux.xml	6/27/2024 2:00 PM	XML File	1 KB
LandCover.img.vat.cpg	6/27/2024 2:00 PM	CPG File	1 KB
LandCover.img.vat.dbf	6/27/2024 2:00 PM	DBF File	5 KB
LandCover.img.xml	6/27/2024 2:00 PM	XML File	9 KB
LandCover.rnd	6/27/2024 2:00 PM	RRD File	87 KB
LandCover.tif	6/27/2024 2:00 PM	TIF File	231 KB
LandCover1.backup.hdf	6/27/2024 2:00 PM	HDF File	13 KB
LandCover1.hdf	6/27/2024 2:00 PM	HDF File	13 KB
LandCover1.tif	6/27/2024 2:00 PM	TIF File	231 KB
Soils.tif	6/27/2024 2:00 PM	TIF File	5,088 KB
Soils1.hdf	6/27/2024 2:00 PM	HDF File	9 KB
Soils1.tif	6/27/2024 2:00 PM	TIF File	12,159 KB

- 4) If there is an MSE distribution or rainfall dss file, make sure to save it to your new model

- 5) Save the terrain files to your new model. If you would like to clip your terrain to make it smaller, closer to your new project's extents, here are some steps to do so:
  - a. In ArcPro, open raster functions. Under Data Management, choose Mosaic. Set "General" tab Output Pixel Type to 32-bit float. In "Parameters" add your rasters. "Blend" is fine - as long as your terrain is all from the same source originally
  - b. The second bit, clipping to your AOI, you want to consider a bit: ArcGIS is not very good at clipping rasters. So, if your clipping geometry is complex, you will want to simplify it. But that will require a couple of pre-processing steps:
    - i. Simplify using Zhou-Jones algorithm with maybe 50/75ft tolerance
    - ii. Graphic buffer by 100ft
    - iii. Repair geometry with OGR option
    - iv. Then, perform the raster clip:
      1. Raster Functions -> Data Management -> Clip
      2. "General" 32-bit float
      3. "Parameters"
      4. Choose raster made from mosaic function
      5. Choose simplified feature class from above
      6. Select: "Use feature geometry..." option in clip. Now, you have an in-memory raster that fits your needs, but you need to save it to disk
  - c. Use Copy Raster Geoprocessing tool
    - i. Set output to TIFF
    - ii. Set "nodata" to -9999
    - iii. Set data type to 32 bit float
    - iv. In Environments tab,
      1. Use some parallel processing. If you have 8 cores, use 6. If you have 64, use 32 (or fewer of course)
      2. Set Snap Raster to be one of your original DEM TIF
      3. Set Alignment to be "output extent"
      4. Set cell size to reference the same raster as Snap Raster
      5. Set compression to LZW
      6. Set resampling to bilinear
- 6) This is optional, but you can copy the projection file over to the new model as well. You can also change the projection in the new model

# Steps to creating a breakout model

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- 1) Create a smaller study size perimeter that you can clip the features to
- 2) Clip the breaklines, burnlines, regions, and mesh (optional) to the new perimeter in GIS (ArcMap, ArcPro)
- 3) Create a plan and unsteady flow file that resembles the larger model you are pulling the data from
  - a. If you are not familiar with creating a model from scratch, just copy the entire model folder from the larger model and make the changes shown below
- 4) Open HEC-RAS RASMapper and set the projection file. Import the perimeter, then the clipped breaklines, refinement regions, mesh (optional, preferred to recreate mesh unless otherwise stated), and channel manning's regions
- 5) Add under "Map Layers" an existing map, and add land cover, soils, and infiltration. You may have to import land cover and soils in a HEC-RAS version 6.3.1 or before due to issues importing them in 6.4.1 and 6.5
- 6) After importing these layers, now import an existing terrain, and make a clone of the existing terrain with "HydroEnforced" at the end for a terrain that contains burnline edits
  - a. You can now add a modification layer to the Terrain.HydroEnforced terrain and select "lines" > "channels," then import the burnlines here
  - b. Once these are imported, stop editing your geometry and change your associations by right clicking on "Geometries," "Manage Geometry Associations," then associating your geometry with the new terrain that is hydro-enforced, manning's n (land cover), and infiltration