

# Installation Instructions for the Massachusetts Sustainable-Yield Estimator (MA SYE) version 1.6 tool

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## Abbreviations

GIS            Geographic-information system

HUC           Hydrologic Unit Code

PC            personal computer

# Installation Instructions for the Massachusetts Sustainable-Yield Estimator (MA SYE) version 1.6 tool

## Installation

The following section describes the installation instructions, software, files, and folders required to successfully run the Massachusetts Sustainable Yield Estimator (MA SYE) tool. The MA SYE tool was designed to run on a personal computer (PC) and has not been tested on other computer types.

### Placing files and folders in the appropriate locations

After the files have been downloaded and unzipped, folders and files should be placed in the appropriate directory with the permissions shown in table 1. The following files are required to successfully use the MA SYE tool:

- *StreamStatsDB.mdb*: This geodatabase contains elevation data, flow paths and other spatial information needed for basin delineation.
- *basins folder*: This folder contains the stream network, as subfolders named by their 8-digit hydrologic-unit code (HUC), statewide data layers of basin characteristics and stream locations.
- *SYE\_v1pt6.mxd*: This is the ArcMap document containing the MA SYE toolbar.
- *SYE\_ReferenceGageInformation.xls*: This file contains information related to the reference-streamflow gages.
- *SustainableYieldEstimator\_v1.6.xls*: This is the spreadsheet template for the MA SYE tool.
- *syewateruse\_v1pt6.mdb*: This geodatabase contains the water-use locations and related data. This database is obtained from the Massachusetts Department of Environmental Protection.

Table 1. Files and folders, permissions, and locations of the files and folders required to use the Massachusetts Sustainable-Yield Estimator tool.

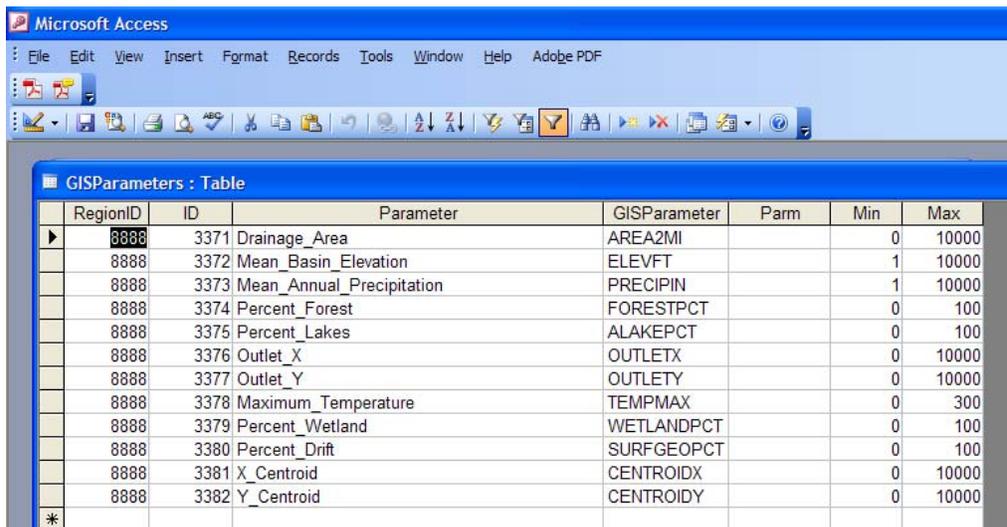
File or folder	Permissions	Location to place file or folder
StreamStatsDB.mdb	Read/Write	C:\Program Files\ESRI\WaterUtils\ArcHydro9\Bin
basins	Read	Shared or local drive
SYE_ReferenceGageInformation.xls	Read	Shared or local drive
SustainableYieldEstimator_v1.6.xls	Read	Shared or local drive
SYE_v1pt6.mxd	Read/Write	Local drive
syewateruse_v1pt6.mdb	Read/Write	Local drive

## Getting started

Before beginning the MA SYE installation, make sure all of the relevant files have been downloaded and placed in a single folder. This folder is referred to as the ‘basins’ folder in the installation instructions and on the MA SYE software webpage.

The following is a list of the installation steps for the MA SYE tool:

1. Go into C:\Program Files\ESRI\WaterUtils\ArcHydro9\Bin and open the database file ArcHydroSchema.mdb.
2. Open the table titled ‘GISParameters’.
3. For each record with a RegionID value of 8888 (there are 12 records total), change the ID field value to match the values in figure 1.
4. Open the ArcMap document SYE\_v1pt6.mxd.
5. In the ArcMap document, select Tools -> Extensions and be sure the box next to Spatial Analyst is checked. Close the dialog box.
6. In the ArcMap document, select Tools -> Customize. In the Toolbars tab, be sure the boxes next to Arc Hydro Tools 9 and Streamstats Setup 9 are checked. Close the dialog box.



RegionID	ID	Parameter	GISParameter	Parm	Min	Max
8888	3371	Drainage_Area	AREA2MI		0	10000
8888	3372	Mean_Basin_Elevation	ELEVFT		1	10000
8888	3373	Mean_Annual_Precipitation	PRECIPIN		1	10000
8888	3374	Percent_Forest	FORESTPCT		0	100
8888	3375	Percent_Lakes	ALAKEPCT		0	100
8888	3376	Outlet_X	OUTLETX		0	10000
8888	3377	Outlet_Y	OUTLETY		0	10000
8888	3378	Maximum_Temperature	TEMPMAX		0	300
8888	3379	Percent_Wetland	WETLANDPCT		0	100
8888	3380	Percent_Drift	SURFGEOPT		0	100
8888	3381	X_Centroid	CENTROIDX		0	10000
8888	3382	Y_Centroid	CENTROIDY		0	10000

Figure 1. The correct ID values and parameters for RegionID 8888 in the GISParameters table of the ArcHydroSchema.mdb database.

7. Save the ArcMap document with the same or new name.
8. Add the following layers to the ArcMap document by selecting Go to File -> Add Data or clicking the yellow-and-black Add Data icon on the ArcMap Standard Toolbar:
  - basins\global.mdb\Layers (This will add 7 data layers to the Layers list)
  - basins\sustainable\_yield\global\_bcs\tempmax30y
  - basins\sustainable\_yield\global\_bcs\surfgeo\_g
  - basins\sustainable\_yield\global\_bcs\regions\_g
  - basins\sustainable\_yield\global\_bcs\precip\_30yr
  - basins\sustainable\_yield\global\_bcs\forest\_g
  - basins\sustainable\_yield\global\_bcs\all\_wet\_g
  - basins\sustainable\_yield\global\_bcs\all\_ow\_g

- basins\sustainable\_yield\global\_bcs\other\_features.mdb\Layers\exclude\_polys
- basins\global\_bcs\other\_features.mdb\NHDFlowline
- syewateruse\_v1pt6.mdb\wateruse\_pnts
- optional layers such as a state boundary, towns, topographic map images

Note: Do not build pyramids, if prompted.

9. Turn all layers off except the optional base-map layers of interest by right-clicking on “Layers” in the table of contents and choosing “Turn All Layers Off.”

10. On the ArcHydro toolbar, select ApUtilities -> Additional Utilities -> Configure Function Parameters. In the dialog box, set the following conditions (only done the first time you use this tool):

- Application as HydroConfig,
- Function group as StreamStats, and
- Configuration as MA\_SYE.

11. On the StreamStats Setup 9 toolbar, select the OpenSocket tool (fig. 2). The first time you select the OpenSocket tool in the MA SYE ArcMap document you will be prompted to enter a path to your basins directory. Select the directory that ends with \basins (the directory where your HUC folders reside), then click ok. A dialog box will then pop up. In the dialog box, set the following conditions:

- Cataloging Unit Polygon as hucpoly,
- Cataloging Unit Edge as Streams3D, and
- Cataloging Unit Junction as Point3D.



**Figure 2.** The StreamStats Toolbar, which is used to delineate contributing basins to an ungaged location in the Massachusetts Sustainable-Yield Estimator.

Two additional layers titled “GlobalWatershed” and “GlobalWatershedPoint” will now appear in the table of contents. These layers store the delineated basins and basin characteristics. Do not change the names of these layers.

You are now ready to begin using the MA SYE tool. Note that the StreamStatsDB.mdb gets overwritten in the C:\Program Files\ESRI\WaterUtils\ArcHydro9\Bin folder when ArcHydro gets updated, so you will need to keep a back up of this file in another location. Also note that once the link between the OpenSocket tool and the basins directory is established, you cannot move the location of the basins directory or the MA SYE ArcMap document; otherwise, you will need to go through the installation steps again.