



BASINS Technical Note 2

BASINS Scripts and Extracted Data Fields

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An ongoing need of BASINS users, as reflected in list server and technical support questions, is to understand which data layers and data fields are utilized in performing BASINS' customized GIS analyses (TARGET, ASSESS, and Data Mining), reports (Point Source Inventory, Water Quality Summary, Landuse Distribution, TRI Emission, State Soil Characteristic, and Watershed Topographic), and models (TOXIROUTE, QUAL2E, and NPSM).

Previously, a table was provided to guide BASINS 2.0 Beta users in appending BASINS data sets, or in creating their own BASINS data layers from scripts. This technical note more fully documents BASINS AVENUE scripts and data fields extracted by BASINS and updates the previous table to include RF3 modeling and other modifications performed during the upgrade from beta to final versions of BASINS 2.0.

The following is two tables: Table 1. BASINS Avenue Scripts, their Functional Description and Data Needs; and Table 2. Data Fields Used by BASINS Tools and Models, and their Format. Table 2 lists all the database fields used by BASINS tools and models. The format for each field is provided to guide users in appending or editing existing tables.

Table 1. BASINS Avenue Scripts, their Functional Descriptions and Data Needs.

Script Name	Description	Data Used
Project Builder		
basins.projectbuilder	Builds ArcView project files (*.apr) which contain the BASINS customized environment and all necessary data to run the BASINS program.	All BASINS Core Data
extbudup.ave	Updates extbud.src file to keep track of the BASINS system status.	None
labelnew.ave	Creates labels for a theme based on a selected attribute field.	None
startup.basins	Sets BASINS Arcview global and environmental variables.	None
Assessment Tools		
_b.targetpermitteddischarges	Performs broad-based analysis on point source loadings data within the entire project area extracted. Display average loadings for each cataloging units on the map and a bar chart.	Permit Compliance System, Permitted Discharges 1991-96, Permitted Discharges Parameter Table 1991-96
_b.targetwaterquality	Performs broad-based analysis on water quality data within the entire project area extracted. Display average concentrations for each cataloging units on the map and a bar chart.	Water Quality Stations, Water Quality Data 1970-97, Water Quality Parameter Table 1970-97
_b.assesspermitteddischarges	Performs point source discharge assessment on individual stations or facilities within a given watershed (cataloging unit) or group of watersheds.	Permit Compliance System, Permitted Discharges 1991-96, Permitted Discharges Parameter Table 1991-96
_b.assesswaterquality	Performs water quality assessment on individual stations or facilities within a given watershed (cataloging unit) or group of watersheds.	Water Quality Stations, Water Quality Data 1970-97, Water Quality Parameter Table 1970-97

Table 1. BASINS Avenue Scripts, their Functional Descriptions and Data Needs (cont.)

Script Name	Description	Data Used
view.selectfordatamining	Replaces the original ArcView Selection Tool script to work with data mining.	Permit Compliance System, Permitted Discharges 1991-96, Permitted Discharges Parameter Table 1991-96; Water Quality Stations, Water Quality Data 1970-97, Water Quality Parameter Table 1970-97; Bacteria Stations, Bacteria Data 1970-97, Bacteria Parameter Table 1970-97.
view.dataminingselect	Selects monitoring stations and link the attribute tables together to perform data mining on point sources, water quality, or bacteria data.	Permit Compliance System, Permitted Discharges 1991-96, Permitted Discharges Parameter Table 1991-96; Water Quality Stations, Water Quality Data 1970-97, Water Quality Parameter Table 1970-97; Bacteria Stations, Bacteria Data 1970-97, Bacteria Parameter Table 1970-97.
view.dataminingcreatedocs	Creates data mining views and tables to display selected data for point sources, water quality, or bacteria data.	Permit Compliance System, Permitted Discharges 1991-96, Permitted Discharges Parameter Table 1991-96; Water Quality Stations, Water Quality Data 1970-97, Water Quality Parameter Table 1970-97; Bacteria Stations, Bacteria Data 1970-97, Bacteria Parameter Table 1970-97.
view.dataminingselectupdate	Update script for data mining tool.	None
table.selectfordatamining	Selects monitoring stations from the table and link the attribute tables together to perform data mining on point sources, water quality, or bacteria data.	Permit Compliance System, Permitted Discharges 1991-96, Permitted Discharges Parameter Table 1991-96; Water Quality Stations, Water Quality Data 1970-97, Water Quality Parameter Table 1970-97; Bacteria Stations, Bacteria Data 1970-97, Bacteria Parameter Table 1970-97.
table.selectfordataminingupdate	Update script for data mining tool	None

Table 1. BASINS Avenue Scripts, their Functional Descriptions and Data Needs (cont.)

Script Name	Description	Data Used
Report Generating Tools		
report.generator.pointsources	Creates a point source summary table, a pollutant discharge loading table, and a map to display the distribution of point sources, and to evaluate their proximity to RF1 streams.	Permit Compliance System, Permitted Discharges 1991-96, Permitted Discharges Parameter Table 1991-96, Reach File, V1,V3.
report.generator.waterquality	Creates a water quality inventory table, a water quality station summary table, and a map to display the distribution of water quality monitoring stations.	Water Quality Stations, Water Quality Data 1970-97, Water Quality Parameter Table 1970-97, Reach File, V1, V3.
report.generator.landuse	Creates a land use distribution table by major land use category, a detailed land use distribution table, and a map to display the distribution of land use.	USGS land use data and Reach file, V1, V3.
report.generator.triair	Creates a TRI air emission inventory table to provide a complete list of all TRI facilities within the watershed(s), a detailed table to report TRI air emission for the selected pollutant in a given year, and a map to display the distribution of TRI facilities.	TRI air release data 1987-95, TRI parameter table, Reach File, V1, V3.
report.generator.statsgo	Creates a table of aggregated values of the selected parameter by STATSGO map unit and by subwatershed. Also generates maps showing the spatial variability of the selected soil parameter by map unit and by subwatershed overlaid with the Reach File network (RF1) and the boundary of the selected watershed.	STATSGO state soil data, soil component, soil layer, and Reach File, V1, V3.
report.generator.dem	Creates a DEM summary table, an elevation distribution chart, and a elevation map.	USGS DEM data and Reach File, V1, V3.
report.createsadir	Checks and creates subdirectories for the generated reports.	NONE
report.createmap	Creates the report maps.	NONE
report.update	Update script for the report menu.	NONE

Table 1. BASINS Avenue Scripts, their Functional Descriptions and Data Needs (cont.)

Script Name	Description	Data Used
Watershed Delineation Tools		
watershed.delineatesetup	Sets up an editable environment for users to delineate subwatersheds.	Cataloging unit boundaries, Reach File, V1, V3.
watershed.delineate	This script is used to delineate the watershed, users use the mouse to draw the boundaries of subwatersheds, the script will created a subwatershed theme in the Basins View.	Cataloging unit boundaries, Reach File, V1, V3.
watershed.delineatefinalize	Finishes up the delineation and assign the subwatershed ID for each delineation.	Cataloging unit boundaries, Reach File, V1, V3.
watershed.delineateupdate	Update script for the delineation tool.	NONE
watershed.removelinesetup	Sets up an editable environment for users to clean invalid delineated subwatersheds.	Cataloging unit boundaries, Reach File, V1, V3.
watershed.removeline	Removes the invalid delineation lines to clean the subwatersheds.	Cataloging unit boundaries, Reach File, V1, V3.
watershed.removelineupdate	Update script for the Clean tool.	NONE
Water Quality Observation Data Tools		
wqobs_addstation	Adds stations in the Water Quality Observation Stations theme.	Water Quality Observation Stations
wqobs_delete	Delete the selected station in the Water Quality Observation Stations theme.	Water Quality Observation Stations
wqobs_move	Moves the stations in the Water Quality Observation Stations theme.	Water Quality Observation Stations
wqobs_update_station	Updates attribute of each selected stations in the Water Quality Observation Stations theme.	Water Quality Observation Stations
wqobs_append	Appends user defined dbf table to the existing table or create one if does not exist.	Water Quality Observation Stations
wqobs_report	Reports information on the selected water quality stations.	Water Quality Observation Stations

Table 1. BASINS Avenue Scripts, their Functional Descriptions and Data Needs (cont.)

Script Name	Description	Data Used
Models		
model.toxiroute	Generates input files for running TOXIROUTE model and automatically start the model from the script and then back the script once the model finished.	Permit Compliance System, Permitted Discharges 1991-96, Permitted Discharges Parameter Table 1991-96, Reach File, V1.
model.toxirouteupdate	Update script for the model toxiroute menu.	NONE
model.qual2e	Generates three input files for model QUAL2E, i.e. stream network from reach file 1, PCS loads and boundary conditions. Then starts the model QUAL2E.	Permit Compliance System, Permitted Discharges 1991-96, Permitted Discharges Parameter Table 1991-96, Reach File, V1.
model.qual2eupdate	Update script for the model QUAL2E menu.	NONE
visualize.modeloutput	Displays the model output of Toxiroute or QUAL2E on the map.	Permit Compliance System, Permitted Discharges 1991-96, Permitted Discharges Parameter Table 1991-96, Reach File, V1.
visualize.modeloutput.coloring	Shades reach segments with different colors and generates corresponding legend.	Permit Compliance System, Permitted Discharges 1991-96, Permitted Discharges Parameter Table 1991-96, Reach File, V1.
visualize.modeloutput.toxroute	Generates a view that contains output from TOXIROUTE model and some related themes.	Permit Compliance System, Permitted Discharges 1991-96, Permitted Discharges Parameter Table 1991-96, Reach File, V1.
visualize.modeloutput.qual2e	Generates a view that contains output from QUAL2E model and some related themes.	Permit Compliance System, Permitted Discharges 1991-96, Permitted Discharges Parameter Table 1991-96, Reach File, V1.
visualize.modeloutputupdate	Update script for the visualize menu.	NONE
model.npsm.main	Main script for NPSM GIS interface. Call model.npsm.new or model.npsm.new-RF3 to perform NPSM modeling.	NONE

Table 1. BASINS Avenue Scripts, their Functional Descriptions and Data Needs (cont.)

Script Name	Description	Data Used
model.npsm.new	Writes WSD file and calls reaches, slope, ftable, pcstable, and newview scripts.	Permit Compliance System, Permitted Discharges 1991-96, Permitted Discharges Parameter Table 1991-96, Reach File, V1, Land Use
model.npsm.new-rf3	Writes WSD file and calls reaches, slope, ftable, pcstable, and newview scripts for RF3 subwatershed.	Permit Compliance System, Permitted Discharges 1991-96, Permitted Discharges Parameter Table 1991-96, Reach File, V1, Reach File, V3, Land Use.
model.npsm.ftable	Creates PTF file (stream cross section info) for RF1 subwatersheds.	Reach File, V1
model.npsm.ftable-rf3	Creates PTF file (stream cross section info) for RF3 subwatersheds.	Reach File, V3
model.npsm.reaches	Creates RCH file for RF1 subwatersheds.	Reach File, V1
model.npsm.reaches-rf3	Creates RCH file for RF3 subwatersheds.	Reach File, V3
model.npsm.slope	Calculates slope values for the WSD file.	Reach File, V1
model.npsm.slope-rf3	Calculates slope values in the WSD file for RF3 subwatersheds.	Reach File, V3
model.npsm.newview	Creates new views at end of NSPM execution.	None
model.npsm.pcstable	Creates the PSR file for RF1 subwatersheds.	Permit Compliance System, Permitted Discharges 1991-96, Permitted Discharges Parameter Table 1991-96.
model.npsm.pcstable-rf3	Creates the PSR file for RF3 subwatersheds.	Permit Compliance System, Permitted Discharges 1991-96, Permitted Discharges Parameter Table 1991-96.
Utilities		
model.npsm.addtheme	Main script for add theme button.	NONE
model.npsm.addlanduse	Adds landuse themes to basins view.	landuse data
model.npsm.addwatershed	Add delineated subwatershed boundary themes to basins view.	subwatershed boundaries
model.npsm.addwatershed-rf1	Finalizes importing RF1 subwatershed boundary themes to basins view.	subwatershed boundaries, Reach File, V1

Table 1. BASINS Avenue Scripts, their Functional Descriptions and Data Needs (cont.)

Script Name	Description	Data Used
model.npsm.addwatershed-rf3	Finalizes importing RF3 subwatershed boundary themes to basins view.	subwatershed boundaries. Reach File, V3
basins.re-classifylanduse	Selects the landuse to be re-classified and call sub-script basins.re-classifylanduse-entiretheme or basins.re-classifylanduse-selected to reclassify the land use.	landuse data
basins.re-classifylanduse-entiretheme	Reclassifies the entire land use theme.	landuse data
basins.re-classifylanduse-selected	Reclassifies the selected land use theme.	landuse data
basins.re-classify_dem	Reclassifies DEM. User enters top and bottom percentage values (spotlights ridges and valleys). The standard deviation for current extent is calculated and divided by the percentages to yield the interval for the outer classes. Middle classes just use the standard deviation as is.	DEM (polygon) data
query-waterquality	Lookup table for water quality criteria.	Water Quality Criteria Table
query-storetagency	Lookup table for STORET Agency Codes.	STORET Agency Codes
query.siccode	Lookup table for SIC codes	Standard Industrial Classification Codes
query.projection	Lookup for projection and datum parameters.	None

Table 2. Data Fields Used by BASINS Tools and Models, and their Format

Table Name	Field Name	Field Type	Field Width	Decimal
Target, Assess and Data Mining				
PCS Primary Attribute Table	Shape	Shapepoint	6	0
	Id	Char	30	0
	Mad_id	Decimal	12	0
	Fac_id	Char	12	0
	Facility_n	Char	60	0
	Madi	Char	60	0
	Prs1	Decimal	16	6
	Prs2	Decimal	16	6
	Bcu	Char	8	0
	Npdes	Char	16	0
	Cu	Char	16	0
PCS Loading Table	Npdes	Char	9	0
	Parameter	Char	7	0
	Lbye	Decimal	17	6
	Bcu	Char	8	0
PCS Parameter Table	Parameter	Char	13	0
	Pram_name	Char	70	0
	Chemical_n	Char	45	0
	Cas_number	Char	24	0
WQ Primary Attribute Table	Shape	Shapepoint	6	0
	Id	Char	28	0
	Agency	Char	8	0
	Location	Char	48	0
	Bcu	Char	8	0
	Wrs1	Decimal	16	6
	Wrs2	Decimal	16	6

Table 2. Data Fields Used by BASINS Tools and Models, and their Format (cont.)

Table Name	Field Name	Field Type	Field Width	Decimal
WQ Summary Data Table	Id	Char	28	0
	Station	Char	15	0
	Agency	Char	8	0
	Bwqid	Decimal	12	0
	Parameter	Char	5	0
	No_obs	Decimal	8	0
	Mean	Decimal	16	7
	A15th_p	Decimal	16	7
	A25th_p	Decimal	16	7
	A50th_p	Decimal	16	7
	A75th_p	Decimal	16	7
	A85th_p	Decimal	16	7
WQ Parameter Table	Std	Decimal	16	7
	Bcu	Char	8	0
	Parm_code	Char	9	0
	Parm_name	Char	48	0
	Units	Char	20	0
	Sample_typ	Char	40	0
	Up_ref_lvl	Decimal	10	2
	Lw_ref_lvl	Decimal	10	2

Table 2. Data Fields Used by BASINS Tools and Models, and their Format (cont.)

Table Name	Field Name	Field Type	Field Width	Decimal
Models				
Reach File, V1 Primary Attribute Table	Rivrch	Char	11	0
	Type	Char	1	0
	Divergence Code	Decimal	1	0
	Milept	Decimal	13	6
	Length	Decimal	13	6
	Segl	Decimal	13	6
	Ulcsrm	Char	11	0
	Urcsm	Char	11	0
	Dscsm	Char	11	0
	Ccsm	Char	11	0
	Mnflow	Decimal	18	6
	Mnvelo	Decimal	18	6
	Svtnflow	Decimal	18	6
	Svtnvelo	Decimal	18	6
	Lev	Decimal	2	0
	Pname	Char	30	0
	Pslope	Decimal	19	5
	Pdepth	Decimal	19	5
	Pwidth	Decimal	19	5
	Pmile	Decimal	13	6
	Ptemp	Decimal	19	5
	Pph	Decimal	19	5
	Pk1	Decimal	19	5
	Pk2	Decimal	19	5
	Pk3	Decimal	19	5
	Pmann	Decimal	19	5
	Psod	Decimal	19	5
	Pbgdo	Decimal	19	5
	Pbgnh3	Decimal	19	5
	Pbgbod5	Decimal	19	5
	Pbgnbod	Decimal	19	5
	Ptopele	Decimal	19	5
	Pbotele	Decimal	19	5

Table 2. Data Fields Used by BASINS Tools and Models, and their Format (cont.)

Table Name	Field Name	Field Type	Field Width	Decimal
Reach File, V3 Primary Attribute Table	Cu	Decimal	8	0
	Seg	Decimal	4	0
	Mi	Char	5	0
	Length	Decimal	12	3
	Reachtype	Char	1	0
	Level	Decimal	2	0
	Divergence	Decimal	1	0
	Pname	Char	30	0
	Segl	Decimal	6	2
	rf3rchid	Char	17	0
	Dsrf3rchid	Char	17	0
	Curf3rchid	Char	17	0
PCS Primary Attribute Table	Ulrf3rchid	Char	17	0
	Urrf3rchid	Char	17	0
	Divrf3rchi	Char	17	0
	Facility_n	Char	60	0
PCS Parameter Table (PCS_PARM)	Npdes	Char	16	0
	Cuseg	Char	13	0
	Mi	Decimal	7	2
	Parameter	Char	5	0
PCS Loading Table (PCS_LOAD)	Pram_Name	Char	70	0
	Npdes	Char	9	0
	Parameter	Char	5	0
IFD	Load (lbs/hr)	Decimal	17	6
	Npdes	Char	9	0
	Flow (cfs)	Decimal	20	6
Landuse	Area	Decimal	18	5
	LuCode	Char	2	0
Land use name (level2)	Level2	Char	25	0