

MAROS DATA PREPARATION STEP-BY-STEP

What do I need before I start?

The MAROS Software requires a small but specific set of data in order to produce a result. The data must be carefully formatted to fit the entry requirements in MAROS. The following instructions will help you create an Excel import table for MAROS, as illustrated in Figure 1 and described in Table 1. Spreadsheet column titles and data formats must be exactly as described below. Detailed descriptions of import file formats are presented in the User Manual Appendix A.1.

- 1) **Step 1 Well names:** All of your sample locations should have a unique name. Choose one name for each sample location over time and spell it consistently (e.g. do not use MW-1, MW1 and MW 1 for the same well). For locations where samples are taken from multiple screens or depths, choose a unique name for each depth interval. The column title in the Excel import spreadsheet is "WellName".
- 2) **Step 2 Well location coordinates.** You need to know your well location coordinates in units of feet. Coordinates can be either State Plane or plant coordinates. Negative numbers are OK. Each unique sample location should have coordinates and they should be used consistently (i.e. the same well should always have the same coordinates for every entry). The Excel column titles are "XCoord" (Easting) and "YCoord" (Northing).
- 3) **Step 3 Constituent names.** Use the MAROS constituent names listed in the spreadsheet *MAROS_ConstituentList.xls*, located in the download zip file. Spelling counts (e.g. use "TRICHLOROETHYLENE (TCE)" not "TCE"). The spreadsheet column title is "Constituent".

TABLE 1 REQUIRED FIELD FORMAT FOR EXCEL AND ACCESS IMPORT FILES: SAMPLING RESULTS

Column Number	Field Name	Description
1	WellName	Name of the groundwater well sampled, be sure all wells are "spelled" the same.
2	XCoord	X coordinate of the well, although not mandatory, it is suggested that you enter this field, for graphing purposes
3	YCoord	Y coordinate of the well, although not mandatory, it is suggested that you enter this field, for graphing purposes
4	Constituent	Compound measured - mandatory entry: Follow the ERPIMS format of the naming convention found in the Excel template file (included with software).
5	SampleDate	Date Sample was collected: format mm/dd/yyyy
6	Result	Analytical result: enter result as a number, if non-detect then leave blank
7	Units	Measurement units for result: choices mg/L; ug/L; ng/L; g/L; pg/L
8	DetLim	Reporting Limit (detection limit) - same units as "Result"
9	Flags	Flag "ND" for non-detect (must enter the detection limit), or "TR" for trace amount (must enter both detection limit and the result), if there is a detect in the Result column, leave the flag blank.

- 4) **Step 4 Sample Dates.** Sample dates indicate the date the well was sampled. The date format is mm/dd/yyyy. The column title is "SampleDate".
- 5) **Step 5 Result:** Result is the numerical concentration of the constituent at the well location for the indicated date. Only numerical results *over* the detection limit or trace values are put in the cell. Non-detect results are blank (null). No text values (e.g. "ND" or "<0.001") can be in this field or the file will crash! The Excel import column name is "Result".
- 6) **Step 6 Units:** Record the concentration units used for the result. Usually "ug/L" or "mg/L" are used. If you need units like pCi/L – substitute mg/L and just remember you made the change. The column title is "Units".
- 7) **Step 7 Detection Limits.** Detection limits are entered for each constituent analysis. If the detection limits are unknown, make a good guess. Every entry needs a detection limit. Detection limits are used to estimate values for non-detects within the software (usually ½ detection or minimum detection). The Excel column title is "DetLim".
- 8) **Step 8 Data Flags.** There are only two data flags for MAROS: "ND" for non-detect; and "TR" for trace (J flag) values. No B, H, J, D or other flag is allowed. All non-detects must be flagged with "ND" in the "Flags" column.
- 9) **Step 9** Combine the columns above into one Excel worksheet. No other text, data or information can be on the worksheet. In the MAROS software, choose the "Import New Data" option from the import menu. Choose 'Excel Table' under import option 1 and 'import new data' under option 2.
- 10) **Step 10 Aquifer Parameters:** Aquifer and general plume characteristics should be identified before plume analysis begins. See Figure 2 for a suggested format to organize this data. The MAROS tool requires a general value for aquifer seepage velocity, porosity, saturated thickness and flow direction. A MAROS file can be run multiple times using different aquifer parameters, to examine sensitivity to varying hydraulic characteristics within an aquifer. The plume length and width as well as an approximate source location and estimate of distance to potential receptors are also required. Groundwater sample locations should be identified as being in the source or tail region of the plume. Identify the appropriate regulatory screening levels or risk based concentrations for each COC before you begin.
- 11) If you are running MAROS for the first time, it is advisable to start with a limited data input set until you become familiar with the software. MAROS can examine data for up to 5 constituents at once, but a simple file with one to three constituents is easier to handle for a preliminary run.

	A	B	C	D	E	F	G	H	I	J
1	WellName	XCoord	YCoord	Constituent	SampleDate	Result	Units	DetLim	Flags	
2	MW-1	13	-20	BENZENE	10/4/1988	2.5	mg/L	0.001		
3	MW-1	13	-20	XYLENES, TOTAL	10/4/1988	7.2	mg/L	0.001		
4	MW-1	13	-20	ETHYLBENZENE	10/4/1988	0.38	mg/L	0.001		
5	MW-1	13	-20	TOLUENE	10/4/1988	0.01	mg/L	0.001		
6	MW-12	100	-8	BENZENE	10/4/1988	0.2	mg/L	0.001		
7	MW-12	100	-8	XYLENES, TOTAL	10/4/1988		mg/L	0.001	ND	
8	MW-12	100	-8	ETHYLBENZENE	10/4/1988	0.014	mg/L	0.001		
9	MW-12	100	-8	TOLUENE	10/4/1988	0.03	mg/L	0.001		
10	MW-13	65	23	BENZENE	10/4/1988	0.035	mg/L	0.001		
11	MW-13	65	23	TOLUENE	10/4/1988		mg/L	0.001	ND	
12	MW-13	65	23	ETHYLBENZENE	10/4/1988	0.006	mg/L	0.001		
13	MW-13	65	23	XYLENES, TOTAL	10/4/1988	0.15	mg/L	0.001		
14	MW-14	102	20	BENZENE	10/4/1988	0.04	mg/L	0.001		
15	MW-14	102	20	ETHYLBENZENE	10/4/1988	0.02	mg/L	0.001		
16	MW-14	102	20	TOLUENE	10/4/1988	0.05	mg/L	0.001		
17	MW-14	102	20	XYLENES, TOTAL	10/4/1988	0.21	mg/L	0.001		
18	MW-15	190	-125	BENZENE	10/4/1988		mg/L	0.001	ND	
19	MW-15	190	-125	XYLENES, TOTAL	10/4/1988		mg/L	0.001	ND	
20	MW-15	190	-125	ETHYLBENZENE	10/4/1988		mg/L	0.001	ND	
21	MW-15	190	-125	TOLUENE	10/4/1988		mg/L	0.001	ND	
22	MW-2	-2	30	BENZENE	10/4/1988	0.002	mg/L	0.001		
23	MW-2	-2	30	1,1,1,2-TETRACHLORO	10/4/1988		mg/L	0.001	ND	
24	MW-2	-2	30	XYLENES, TOTAL	10/4/1988		mg/L	0.001	ND	
25	MW-2	-2	30	LEAD	10/4/1988	0.55	mg/L	50		
26	MW-2	-2	30	TOLUENE	10/4/1988	0.05	mg/L	0.001		
27	MW-2	-2	30	ETHYLBENZENE	10/4/1988		mg/L	0.001	ND	
28	MW-2	-2	30	PERCHLORATE	10/4/1988	0.002	mg/L	0.001		
29	MW-2	-2	30	BIARIUM	10/4/1988	0.55	mg/L	50		
30	MW-2	-2	30	COPPER	10/4/1988	0.05	mg/L	0.001		
31	MW-3	35	10	BENZENE	10/4/1988	0.2	mg/L	0.001		
32	MW-3	35	10	1,1,1,2-TETRACHLORO	10/4/1988	0.5	mg/L	0.001		
33	MW-3	35	10	XYLENES, TOTAL	10/4/1988	12	mg/L	0.001		
34	MW-3	35	10	LEAD	10/4/1988	0.85	mg/L	50		
35	MW-3	35	10	TOLUENE	10/4/1988		mg/L	0.001	ND	
36	MW-3	35	10	ETHYLBENZENE	10/4/1988	0.5	mg/L	0.001		
37	MW-3	35	10	PERCHLORATE	10/4/1988	0.02	mg/L	0.001		

Figure 1: MAROS Import File. Your data should look like this before you try to import it.

TABLE X		
AQUIFER INPUT PARAMETERS: EXAMPLE SITE		
LONG-TERM MONITORING OPTIMIZATION		
Parameter	Value	Units
Current Plume Length	650	ft
Maximum Plume Length	700	ft
PlumeWidth	200	ft
SeepageVelocity (ft/yr)*	100	ft/yr
Distance to Receptors (Source to Fence)	800	ft
GWFluctuations	No	--
SourceTreatment	Biodegradation	--
PlumeType	Chlorinated Solvent	--
NAPLPresent	No	--
Trichloroethene (TCE)	Screening Levels	
USEPA MCL	0.005	mg/L
Parameter	Value	
Groundwater flow direction	E/SE	345
Porosity	0.31	--
Source Location near Well	MW-1	--
Source X-Coordinate (State Plane)	13015427.53	ft
Source Y-Coordinate (State Plane)	845280.636	ft
Saturated Thickness	20	ft
Parameter	Value	
Centerline wells	MW-1, MW-4, MW-7, MW-11	
Source wells	MW-1, MW-2, MW-3, MW-5	

Figure 2: MAROS requires simple aquifer parameters for some calculations. It is helpful to have aquifer parameters identified before you begin MAROS.