SWAT+ modeling

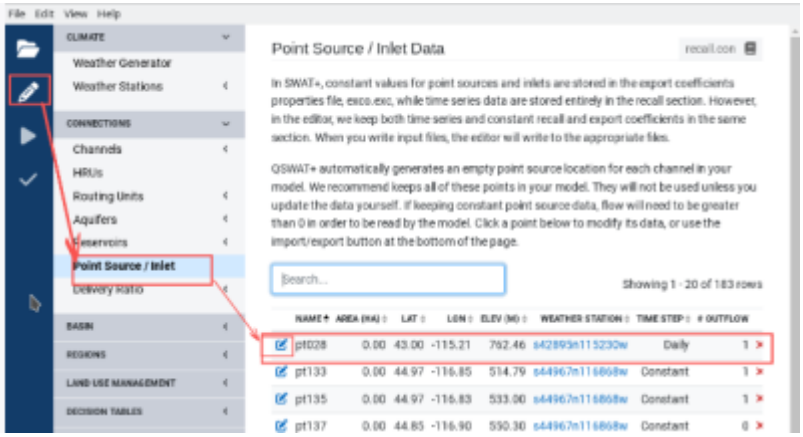
How to add inflow hydrograph

PointID selection for the inlet

The point ID for the inlet is defined when we prepare the SWAT+ model in QSWAT+. We can verify it in QGIS using the Identify Features tool.

Implementation workflow using SWAT+ Editor

Edit SWAT+ Inputs → Point Source/Inlet → Edit Inlet Point → Set the time step to **“Daily”** and import the CSV file prepared for that specific inlet point.



To prepare the input file, we can export the empty recall file in .csv format, add the flow data (in volume, m^3), and then import the updated file back into SWAT+.

Table: sample input file format for the inlet

jday	mo	day_mo	yr	ob_typ	ob_name	flo	sed	orgn	sedp	no3	solp	chla	nh3	no2	cbod	dox	sand	silt	clay	sag	lag	gravel	tmp
1	1	1	2005	pt_day	pt028	16343154.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	1	2	2005	pt_day	pt028	16465483.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

File that are generated or changed in the model

- file.cio: define *recall.con* in *connect* and *recall.rec* in *recall*
- recall.rec
- recall.con
- pt028.rec (example for inlet with point id 028)

How to visualize or print output changes after defining an inflow

- Run the model before and after defining the inflow file, but save the outputs in different Textinout files. Make sure the model prints the channel output so that we can validate it at the

downstream channel section.
- Identify the channel downstream of the inlet.(using QGIS)
- Use the following awk command to extract the flow rate (m^3/s) at the downstream channel.

```
awk '$7=="cha121" {printf "%.10f\n", $48}'
TxtInOut_withinflow/channel_sd_day.txt | head -n 10
```

Structure of generated files

recall.rec

The following shows the structure of the recall.rec file for the SWAT+ model

recall.rec: written by SWAT+ editor v2.3.1 on 2026-05-28 15:44 for SWAT+ rev.60.5.7			
id	name	rec_typ	file
1	pt028	1	pt028.rec

Terminology used in the file is explained as follows

Term	Meaning
pt028	Name of recall object
rec_type	recall type, 1 for daily data
pt028.rec	file containing actual time series

recall.con

The following shows the structure of the recall object connection file for the SWAT+ model

recall.con: written by SWAT+ editor v2.3.1 on 2026-05-28 15:44 for SWAT+ rev.60.5.7															
id	name	gis_id	area	lat	lon	elev	rec	wst	cst	ovfl	rule	out_tot	obj_typ	obj_id	hyd_typ	frac
1	pt028	28	0.00001	43.00159	-115.20618	762.45911	1	s42895n115230w	0	0	0	1	sdc	104	tot	1.00000

Term	value	short_description
wst	s42895n115230w	Pointer to the weather station file
cst	0	No constituent station assigned.
ovfl	0	No overflow routing defined.
rule	0	No management or routing rule applied.
out_tot	1	One downstream routing connection exists.
obj_typ	sdc	**I searched for the sdc in the documentation and couldn't find a clear definition**. One pdf refer it as SWAT DEG CHANNEL but it doesn't provide detailed information. This term is used in the route_unit.con, reservoir.con, recall.con, aquifer.con and chandeg.con
obj_id	104	Identifier of the SDC object receiving the flow.
hyd_typ	tot	Routes total flow and associated constituents without splitting by component.
frac	1.00000	100% of flow are routed to the downstream SDC object.

inlet → SDC → route unit

SWAT+, Modeling

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