CE-QUAL-W2 MODEL OUTPUTS

OVERVIEW

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CE-QUAL-W2 Workshop, 2024

July 08 - 09, 2024

US Army Corps of Engineers

Environmental Systems Modeling Team

ERDC ENGINEER RESEARCH & DEVELOPMENT CENTER

W2 Model Outputs

- Model preprocessor outputs
  - pre.opt
  - pre.wrn
  - pre.err
- Model outputs
  - w2.wrn
  - W2.err
  - W2ErrorDump.csv

W2 Model Output Files

1 SNP - Snapshot
2 PRF - Profile
3 SPR - Spreadsheet profile
4 W2L – W2Post
5 CPL - Contour
6 TECPLOT - Contour
7 FLUX - Kinetic fluxes
8 TSR - Time series
9 WLEVEL – Water level
10 FLOWBAL - Flow balance
11 NPBAL – N and P mass balance
12 WDO - Withdrawal outflow
13 RESTART

W2 Model Output Control

SNP PRINT - Snapshot print	SNP			
SNPC, ON or OFF	ON			
NSNP, # of dates	2			
SNP DATE SNPD(NSNP) output days in Julian days	64.5	64.7	92.7	106.7
SNP FREQ SNPF(NSNP) Frequency of output in days	0.05	7	100	100
SCR PRINT - Screen print	SCR			
SCRC: ON or OFF, update screen output	ON			
NSCR: # of dates	1			
SCR DATE: SCRD(NSCR), output days in Julian days	64.5			
SCR FREQ: SCRF(NSCR), frequency of output in days	0.25			
PRF PLOT - Profile output	PRFC			
PRFC- Specifies if information is written to the profile file, ON or OFF	ON			
NPRF- # of profile dates	1			
NIPRF- # of segments to output	3			
PRF DATE- PRFD(NPRF) output dates in Julian days	64.7			
PRF FREQ- PRFF(NPRF) frequency of output, days	1			
PRF SEG- IPRF(NIPRF) segment number	10	18	26	
SPR PLOT - spreadsheet output	SPR			
SPRC- Specifies if information is written to the spreadsheet profile file, ON, O	ONV			
NSPR- # of dates	1			
NISPR- # of segments	1			
SPR DATE- SPRD(NSPR) - starting date of output in Julian days	100.7			
SPR FREQ- SPRF(NSPR) - output frequency- days	10			
SPR SEG- ISPR(NISPR) - segment # of spreadsheet output	26			
DSI W2Linkage File for W2Post (used to be called VPL PLOT)	W2L			
VPLC- ON or OFF Specifies if information is written to the W2 Linkage file, ON	ON			
NVPL- # of dates	1			
VPL DATE- VPLD(NVPL)- starting date of output in Julian days	1			
VPL FREQ- VPLF(NVPL)- output frequency- days	0.5			

CPL PLOT - contour plot output	CPL
CPLC Specifies if information is output to the contour file, ON or OFF	ON
NCPL Number of contour plot dates	1
TECPLOT Turns ON or OFF TECPLOT output format	ON
CPL DATE- CPLD(NCPL)- starting date of output, output dates	1
CPL FREQ- CPLF(NCPL)- output frequency- days	7
FLUXES- water quality kinetic flux output	FLUX
FLXC Specifies if information is sent to the kinetic flux output file, ON or OFF	ON
NFLX Number of kinetic flux dates	1
FLX DATE- FLXD(NFLX)- starting date of output in Julian days	1
FLX FREQ- FLXF(NFLX)- output frequency days	60
TSR PLOT- time series plot output	TSR
TSRC- time series ON or OFF	ON
NTSR- # of time series dates	1
NITSR- # of locations for the time series output	1
TSR FILE TSRFN time series output file name prefix and suffix	tsr.csv
TSR DATE- TSRD(NTSR)- start date of output in Julian days	1
TSR FREQ- TSRF(NTSR)- frequency of output in days	0.1
TSR SEG- ITSR(NITSR)- segment number of time series output	31
TSR LAYER- ETSR(NITSR)- depth or layer# of time series output	0
Water level output	**WLEVEL**
WLC- time series of water levels ON or OFF at all segments	ON
WL FREQ- WLF- frequency of output in days	0.1
Flow balance output	**FLOWBAL**
FLOWBALC- summary of flows from all sources/sinks+volume balance check	ON
FLOWBAL FREQ- FLOWBALF- frequency of output in days	7
N and P mass balance output	**NPBAL**
NPBALC- summary of all N and P sources/sinks	ON
NP Balance FREQ- NPBALF- frequency of output in days	7

W2 Model Output Control

	CST FLUX - Turn on fluxes in each waterbody,	KFNAME2	CFWBC1	CFWBC2	CFWBC3	CFWBC4	CFWBC5
1	TISS settling in - source, kg/day	TISSIN	OFF	OFF	OFF	OFF	OFF
2	TISS settling out - sink, kg/day	TISSOUT	OFF	OFF	OFF	OFF	OFF
3	PO4 algal respiration - source, kg/day	PO4AR	OFF	OFF	OFF	OFF	ON
4	PO4 algal growth - sink, kg/day	PO4AG	OFF	OFF	OFF	OFF	ON
5	PO4 algal net- source/sink, kg/day	PO4AP	OFF	OFF	OFF	OFF	ON
6	PO4 epiphyton respiration - source, kg/day	PO4ER	OFF	OFF	OFF	OFF	ON
7	PO4 epiphyton growth - sink, kg/day	PO4EG	OFF	OFF	OFF	OFF	ON
8	PO4 epiphyton net- source/sink, kg/day	PO4EP	OFF	OFF	OFF	OFF	ON
9	PO4 POM decay - source, kg/day	PO4POM	OFF	OFF	OFF	OFF	ON
10	PO4 DOM decay - source, kg/day	PO4DOM	OFF	OFF	OFF	OFF	ON
11	PO4 OM decay - source, kg/day	PO4OM	OFF	OFF	OFF	OFF	ON
12	PO4 sediment decay - source, kg/day	PO4SED	OFF	OFF	OFF	OFF	ON
13	PO4 SOD release - source, kg/day	PO4SOD	OFF	OFF	OFF	OFF	ON
14	PO4 net settling - source/sink, kg/day	PO4SET	OFF	OFF	OFF	OFF	ON
15	NH4 nitrification - sink, kg/day	NH4NITR	OFF	OFF	OFF	OFF	OFF
16	NH4 algal respiration - source, kg/day	NH4AR	OFF	OFF	OFF	OFF	OFF
17	NH4 algal growth - sink, kg/day	NH4AG	OFF	OFF	OFF	OFF	OFF
18	NH4 algal net - source/sink, kg/day	NH4AP	OFF	OFF	OFF	OFF	OFF
19	NH4 epiphyton respiration - source, kg/day	NH4ER	OFF	OFF	OFF	OFF	OFF
20	NH4 epiphyton growth - sink, kg/day	NH4EG	OFF	OFF	OFF	OFF	OFF
21	NH4 epiphyton net - source/sink, kg/day	NH4EP	OFF	OFF	OFF	OFF	OFF
22	NH4 POM decay - source, kg/day	NH4POM	OFF	OFF	OFF	OFF	OFF
23	NH4 DOM decay - source, kg/day	NH4DOM	OFF	OFF	OFF	OFF	OFF
24	NH4 OM decay - source, kg/day	NH4OM	OFF	OFF	OFF	OFF	OFF
25	NH4 sediment decay - source, kg/day	NH4SED	OFF	OFF	OFF	OFF	OFF
26	NH4 SOD release - source, kg/day	NH4SOD	OFF	OFF	OFF	OFF	OFF
27	NH3 gas loss - sink, kg/day	NH3GAS	OFF	OFF	OFF	OFF	OFF
28	NO3 denitrification - sink, kg/day	NO3DEN	OFF	OFF	OFF	OFF	OFF
29	NO3 algal growth - sink, kg/day	NO3AG	OFF	OFF	OFF	OFF	OFF
30	NO3 epiphyton growth - sink, kg/day	NO3EG	OFF	OFF	OFF	OFF	OFF
31	NO3 sediment uptake - sink, kg/day	NO3SED	OFF	OFF	OFF	OFF	OFF
32	DSi algal growth - sink, kg/day	DSIAG	OFF	OFF	OFF	OFF	OFF
33	DSi epiphyton growth - sink, kg/day	DSIEG	OFF	OFF	OFF	OFF	OFF
34	DSi PBSi decay - source, kg/day	DSIPIS	OFF	OFF	OFF	OFF	OFF
35	DSi sediment decay - source, kg/day	DSISED	OFF	OFF	OFF	OFF	OFF
36	DSi SOD release - source, kg/day	DSISOD	OFF	OFF	OFF	OFF	OFF
37	DSi net settling - source/sink, kg/day	DSISET	OFF	OFF	OFF	OFF	OFF
38	PBSi algal mortality - source, kg/day	PSIAM	OFF	OFF	OFF	OFF	OFF
39	PBSi net settling - source/sink, kg/day	PSINET	OFF	OFF	OFF	OFF	OFF
40	PBSi decay - sink, kg/day	PSIDK	OFF	OFF	OFF	OFF	OFF
41	LDOM decay - sink, kg/day	LDOMDK	OFF	OFF	OFF	OFF	OFF
42	LDOM decay to RDOM - sink, kg/day	LRDOM	OFF	OFF	OFF	OFF	OFF
43	RDOM decay - sink, kg/day	RDOMDK	OFF	OFF	OFF	OFF	OFF
44	LDOM algal mortality - source, kg/day	LDOMAP	OFF	OFF	OFF	OFF	OFF
45	LDOM epiphyton mortality - source, kg/day	LDOMEP	OFF	OFF	OFF	OFF	OFF
46	LPOM decay - sink, kg/day	LPOMDK	OFF	OFF	OFF	OFF	OFF
47	LPOM decay to RPOM - sink, kg/day	LRPOM	OFF	OFF	OFF	OFF	OFF
48	RPOM decay - sink, kg/day	RPOMDK	OFF	OFF	OFF	OFF	OFF
49	LPOM algal production - source, kg/day	LPOMAP	OFF	OFF	OFF	OFF	OFF
50	LPOM epiphyton production - source, kg/day	LPOMEP	OFF	OFF	OFF	OFF	OFF
51	LPOM net settling - source/sink, kg/day	LPOMSET	OFF	OFF	OFF	OFF	OFF
52	RPOM net settling - source/sink, kg/day	RPOMSET	OFF	OFF	OFF	OFF	OFF
53	CBOD decay - sink, kg/day	CBODDK	OFF	OFF	OFF	OFF	OFF
54	DO algal production - source, kg/day	DOAP	OFF	OFF	OFF	OFF	OFF
55	DO algal respiration - sink, kg/day	DOAR	OFF	OFF	OFF	OFF	OFF
56	DO epiphyton production - source, kg/day	DOEP	OFF	OFF	OFF	OFF	OFF
57	DO epiphyton respiration - sink, kg/day	DOER	OFF	OFF	OFF	OFF	OFF
58	DO POM decay - sink, kg/day	DOPOM	OFF	OFF	OFF	OFF	OFF
59	DO DOM decay - sink, kg/day	DODOM	OFF	OFF	OFF	OFF	OFF
60	DO OM decay - sink, kg/day	DOOM	OFF	OFF	OFF	OFF	OFF
61	DO nitrification - sink, kg/day	DONITR	OFF	OFF	OFF	OFF	OFF
62	DO CBOD uptake - sink, kg/day	DOCBOD	OFF	OFF	OFF	OFF	OFF
63	DO reaeration - source/sink, kg/day	DOREAR	OFF	OFF	OFF	OFF	OFF
64	DO sediment uptake - sink, kg/day	DOSED	OFF	OFF	OFF	OFF	OFF
65	DO SOD uptake - sink, kg/day	DOSOD	OFF	OFF	OFF	OFF	OFF
66	TIC algal uptake - sink, kg/day	TICAG	OFF	OFF	OFF	OFF	OFF
67	TIC epiphyton uptake - sink, kg/day	TICEG	OFF	OFF	OFF	OFF	OFF
68	Sediment decay - sink, kg/day	SEDDK	OFF	OFF	OFF	OFF	OFF
69	Sediment algal settling - sink, kg/day	SEDAS	OFF	OFF	OFF	OFF	OFF
70	Sediment LPOM settling - source,kg/day	SEDLPOM	OFF	OFF	OFF	OFF	OFF
71	Sediment net settling - source/sink, kg/day	SEDSET	OFF	OFF	OFF	OFF	OFF
72	SOD decay - sink, kg/day	SODDK	OFF	OFF	OFF	OFF	OFF

W2 Model Output Control

WITH OUTPUT- withdrawal output	WDO
WDOC- withdrawal output ON or OFF	ON
NWDO- # of withdrawal output dates	1
NIWDO- # of withdrawal output segments	1
WDO FILE WDOFN withdrawal output file name prefix and suffix	wdo.csv
WITH DAT- WDOD(NWDO)- start date of output in Julian days	1
WITH FREQ- WDOF(NWDO)- frequency of output days	0.1
WITH SEG- IWDO(NIWDO)- segment number of withdrawal	31
RESTART	**RESTART**
RSOC- Restart control ON or OFF- for writing restart files	OFF
NRSO- # of restart dates and frequencies of output	0
RSIC- Restart read in control- ON or OFF- read in a restart file	OFF
RSI FILE RSIFN- restart in file name	rso150.opt
RSO DATE- RSOD(NRSO) - output dates in Julian days	1
RSO FREQ- RSOF(NRSO) - frequency of output in days	50

File names - global	FILE NAMES	
QWD FILE QWDFN - withdrawals	qwd.npt	
QGT FILE QGTFN - gate	qgt.npt	
WSC FILE WSCFN - wind sheltering	wsc.npt	
SHD FILE SHDFN - shading	shade.npt	
VPLFN - W2 post output, DSI W2Post output file	degray.w2l	
Waterbody Dependent File names	WB1	WB2
BTHFN bathymetry file	bth1.csv	
METFN meteorological file	met.npt	
EXTFN light extinction	ext_1.npt	
ATMDEPFN atmospheric deposition file name	atm_deposition_wb1.csv	
VPRFN vertical profile	vpr.npt	
LPRFN longitudinal profile	lpr.npt	
SNPFN snapshot	snp.opt	
PRFFN profile output	prf.opt	
CPLFN contour plot output	cpl.opt	
SPRFN spreadsheet output	spr.csv	
FLXFN flux output	flx.opt	

Review DeGray Reservoir Output Files

- Run the DeGray W2 model
- Review the following W2 model output files

- **pre.opt** - Preprocessor
- **tsr_1_seg31.csv** – Segment time series plot
- **spr.csv** – Segment spreadsheet profile
- **flx.opt** – Segment flux
- **kflux_wb1.csv** – Waterbody flux
- **qwo_31.csv** - Withdrawal outflow file for flow
- **two_31.csv** - Withdrawal outflow file for temperature
- **cwo_31.csv** - Withdrawal outflow file for constituent concentrations
- **dwo_31.csv** - Withdrawal outflow file for derived constituent concentrations
- **wl.csv** – Surface water level
- **flowbal.csv** - Waterbody flow balance
- **massbal.csv** - Waterbody N and P mass balance
- **degray.w2l** - W2Post Postprocessor
- **snp.opt** - Snapshot

Questions?